House of Commons

Energy Security and Net Zero Committee

Retrofitting homes for net zero

First Report of Session 2024–25

HC 453

Energy Security and Net Zero Committee

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Contents

Summary

Four in five homes that will be occupied in 2050 have already been built and most will need retrofitting with low carbon heating systems and energy efficiency improvements for the UK to achieve net zero emissions. The Climate Change Committee projects that all home heating will come from low carbon sources by 2050, with most coming from electric heating systems such as heat pumps or low carbon heat networks. Today, however, fewer than 3% of homes are connected to a heat network and fewer than 1% have a heat pump installed. The UK housing stock is also among the least energy efficient in Europe, which has trapped many households in fuel poverty.

Most witnesses told us that government schemes to support home retrofit have lacked the long-term funding commitments needed to provide consumers, installers and the supply chain with confidence. We also heard that consumers lack access to impartial advice and are poorly informed by Energy Performance Certificates. We call on the Government to provide far longer-term certainty for its retrofit support schemes, launch a national warm homes advice service and introduce a carbon metric to certify the energy performance of homes.

Electricity is around four times more expensive than gas in the UK, which deters many consumers from switching to low carbon heating systems. Rebalancing policy costs and reducing the cost of electricity relative to gas is the key recommendation that we make in this Report. We urge the Government to introduce measures that encourage the installation of new low carbon heating systems and that make the installation of new fossil fuel heating systems less attractive in homes. We also call on the Government to take a prompt decision on hydrogen heating to provide much needed certainty. We conclude that measures must be focused on supporting and encouraging those least likely to be able to afford a transition, low income households.

Barriers to making the required changes to facilitate home retrofit include a lack of skilled workers and a deficit of consumer confidence caused by an unnecessarily complicated landscape for consumer protections and workforce accreditation. We recommend that the Government increases incentives for workers to upskill on low carbon retrofit, including via the Growth and Skills Levy mechanisms, and introduces a national workforce accreditation scheme as a prerequisite for carrying out any retrofit work to ensure that consumers know who they can trust.

Introduction

1. Retrofitting our homes with low carbon heating systems and energy efficiency improvements is an essential milestone on the road to net zero. At least 80% of buildings that will be occupied in 2050 have already been built[1] and the UK housing stock is among the least energy efficient in Europe,[2] accounting for around 13% of national greenhouse gas emissions.[3] While good progress has been made towards decarbonising electricity production, natural gas still accounts for around 85% of fuel used for domestic heating and cooking.[4] Many consumers are also struggling to afford their heating bills, with more than a third of households in England spending over 10% of their income after housing costs on home energy in 2023.[5] According to many charities, this would classify such households as being in fuel poverty.[6]

2. Our inquiry scrutinised the Government's plans to retrofit homes in line with the UK's legally-binding net zero commitment, ahead of the publication of its promised Warm Homes Plan. We also updated the evidence gathered by our predecessor Committee in its inquiry on Heating our homes, which opened a call for evidence in July 2023.[7] Our evidence indicated that around 29 million homes will need to be retrofitted by 2050,[8] yet the current rate of progress puts the UK far off track and many witnesses expressed concern about the lack of long-term policy certainty.[9] We heard that while new support schemes have been brought forward, many are too complicated, short-term and fail to engage consumers and the supply chain.[10] This is

1 The Chartered Institute of Building (HEA0034)
2 National Warm Homes Council (RFH0017)
3 Department for Energy Security and Net Zero, "2023 UK greenhouse gas emissions, provisional figures", 10 January 2025
4 National Grid, "Heating our homes with hydrogen", 10 January 2025
5 Department for Energy Security and Net Zero, "Annual Fuel Poverty Statistics in England, 2024", 10 January 2025
6 National Energy Action, "Fuel poverty statistics explainer", 10 January 2025
7 Energy Security and Net Zero Committee, "Heating our homes", 10 January 2025
8 Q5 [Joanne Wheeler]
9 For example, Centre for Sustainable Energy (RFH0011), Citizens Advice (HEA0075) and Construction Industry Training Board (CITB) (RFH0009)
10 For example, Centre for Sustainable Energy (RFH0011), EDF (HEA0119) and E3G (HEA0013)

compounded by workforce challenges and an unhelpful regime for certifying the energy performance of homes that often provides consumers with poorly conceived advice.[11]

3. Since launching our inquiry, we have received more than 50 pieces of written evidence from a variety of stakeholders including industry bodies, retrofit professionals, consumer support groups, charities and members of the public. These build on 173 submissions of written evidence made to our predecessor Committee. We also held three oral evidence sessions in late 2024 and early 2025 where we questioned 17 witnesses, including the Minister for Energy Consumers, Miatta Fahnbulleh. This follows six oral evidence sessions held by our predecessor Committee, in which 35 witnesses were questioned including the then Minister for Energy Efficiency and Green Finance, Lord Callanan, and representatives from Ofgem, the energy regulator for Great Britain. We are very grateful to everyone who has supported these inquiries and especially those who provided evidence.

Background

4. The UK Government has a legally binding target to reduce carbon emissions by 78% by 2035 compared to 1990 levels[12] and has committed to delivering a clean power system by 2030.[13] These are essential milestones to keep the UK on track to achieve net zero by 2050. The Government has acknowledged that retrofitting homes over the next decade will play a crucial role in helping the UK to achieve net zero.[14]

5. However, at present, just 5% of homes use low carbon heating systems and most are poorly insulated, with two thirds of households living in draughty, damp or overheated homes.[15] The Climate Change Committee (CCC), the UK Government's independent advisory body on climate change, is sceptical of progress. Its 2023 Progress Report to Parliament observes that, since 2010, progress to decarbonise buildings "has stalled, with no further substantive reductions in emissions", adding that progress remains "broadly insufficient" to ensure the UK can achieve net zero by 2050.[16] In its 2024 update, the CCC notes that the rollout of low carbon heating systems,

11 For example, Checkatrade (RFH0005), Country Land and Business Association (CLA) (RFH0001), EDF (HEA0119) and MCS Foundation (RFH0048)

12 Department for Business, Energy and Industrial Strategy, "UK enshrines new target in law to slash emissions by 78% by 2035", 10 January 2025

13 Department for Energy Security and Net Zero, "Clean Power 2030 Action Plan", 10 January 2025

14 Department for Energy Security and Net Zero, "Warm Homes: Local Grant", 10 January 2025

15 Energy Systems Catapult, "A Guide to the Decarbonisation of Heat in the UK ", 10 January 2025

16 Climate Change Committee, "2023 Progress Report to Parliament", 10 January 2025

such as heat pumps, also remains "significantly off track".[17] Highlighting the scale of the challenge, Emma Pinchbeck, Chief Executive of the CCC, told us that the buildings sector has the largest gap between government ambition and necessary policy of all sectors that the CCC has analysed for progress against the Government's 2035 emissions targets.[18]

6. The CCC estimates that an investment of around £250bn will be needed to decarbonise the UK's homes between 2020 and 2050, equating to £8bn each year until then.[19] Citizens Advice told us that the average cost of retrofitting an individual home, such as to install a low carbon heating system and energy efficiency upgrades, is just under £15,000, and it warned us the costs of home retrofit remain prohibitive for many households.[20] However, the benefits of retrofitting homes are also significant. Research by Citizens Advice found that upgrading all homes to Energy Performance Certificate (EPC) Band C would deliver around £40bn in benefits to the UK economy in the period to 2030 and up to £100bn in further benefits over the following decade. Included in the £40bn is almost £24bn of consumer bill savings, more than £9bn in societal savings and around £4bn in energy system savings. It also includes around £2bn in savings to the NHS over the years leading to 2030, with a further £600m every year to 2040, by significantly reducing levels of cold-related illnesses and mental health conditions.[21] A properly insulated home also improves comfort and reduces energy bills for households.[22]

7. This is especially important against a backdrop of high fuel poverty. Statistics from the Department for Energy Security and Net Zero (DESNZ) show that an estimated 13% of households (3.17m) in England were living in fuel poverty in 2023 under the Low Income Low Energy Efficiency metric, which is the official metric used by the Government. However, the statistics also show that the proportion of households having to spend more than 10% of their income on domestic energy after housing costs, which is the measure used by many charities to determine levels of fuel poverty, was 36.4% (8.91m) in 2023, up from 20.5% in 2021 (4.93m).[23] When we questioned her, Minister for Energy Consumers, Miatta Fahnbulleh, acknowledged that many more households would consider themselves to be in fuel poverty than

17 Climate Change Committee, "2024 Progress Report to Parliament", 10 January 2025
18 Q283 [Emma Pinchbeck]
19 Climate Change Committee, "The Sixth Carbon Budget", 10 January 2025
20 Citizens Advice (HEA0075)
21 Citizens Advice, "Unlocking the benefits of energy efficiency", 10 January 2025
22 Energy Demand Research Centre (RFH0022)
23 Department for Energy Security and Net Zero, "Annual Fuel Poverty Statistics in England, 2023", 10 January 2025

government statistics would suggest, owing to the large proportion of their income that they have to spend on domestic energy to maintain a warm and healthy home.[24]

8. We heard evidence that government retrofit support schemes have been too numerous, complicated and short-term, which has failed to instil confidence amongst consumers, installers and the supply chain.[25] Witnesses told us that while some schemes are on a positive trajectory, others have delivered significantly below target and failed to support both the vulnerable and those with the ability to pay.[26] By increasing awareness, simplifying their eligibility criteria and providing far longer-term certainty, we were told that schemes had the potential to deliver at pace and scale, as well as better enable area-based retrofit.[27]

9. The shortcomings of Energy Performance Certificates (EPC) as a mechanism to support the retrofit of homes was a recurring theme throughout our inquiry. EPC ratings are based on the costs of heating a home, rather than its carbon footprint. This means that EPCs favour cheaper heating and often recommend that consumers install a new gas boiler instead of lower carbon, but initially more expensive, systems such as heat pumps. Under the current EPC framework, replacing a gas boiler with a heat pump can, in fact, downgrade a home's energy performance score, which in turn can negatively impact the property's value.[28] EPC assessments are also regarded as being subjective and variable in quality, despite being used for various purposes, including to determine eligibility for support schemes.[29]

10. Witnesses told us that many consumers lack access to impartial information and advice on home retrofit. For example, OVO Energy told us that the UK public has a "fundamental lack of awareness" of support available to facilitate retrofit projects, as well as little understanding of how energy efficient homes already are and what measures could improve this.[30] A National Home Energy Survey in 2023 found that only half of British people had even heard of a heat pump,[31] while research by Santander shows that almost two thirds of UK households are unaware of their home's EPC rating or how to improve it.[32]

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24 Q78 [Miatta Fahnbulleh MP]
25 For example, Q6 [Robert Panou] and Q6 [Joanne Wheeler]
26 For example, Data Communications Company (RFH0021), Calor (RFH0019) and Finance and Leasing Association (RFH0040)
27 For example, Q54 [Madeleine Gabriel], Q52 [Andy Prendergast] and Stonewater (RHF0051)
28 Which?, "Why EPCs aren't ready for low-carbon heating", 10 January 2025
29 myenergi LTD (HEA0115)
30 OVO Energy (HEA0101)
31 The Eco Experts, "The National Home Energy Survey 2023", 10 January 2025
32 Santander, "Tomorrow's homes", 10 January 2025

11. France, like many countries across Europe, has introduced a national advice service, or one-stop-shop, to increase the availability of impartial consumer energy advice, which has been attributed to the success of its low carbon heating rollout.[33] The UK Government, on the contrary, has been criticised for lacking a strategy to engage and inform consumers on home retrofit.[34] Chapter 1 reviews the adequacy of the Government's retrofit support schemes and the provision of consumer information and advice.

12. According to the most recent census, almost three quarters of households in England and Wales use mains gas central heating. A further 9% use electric heating, with a higher percentage among those living in urban areas or off the gas grid. The data also shows that around 15% of households are not connected to the gas grid at all, with 3% of all households using heating oil. Less than 1% of households reported heating their home using solely renewable energy.[35]

13. Heat pumps and low carbon heat networks are expected to decarbonise most home heating in the UK. The CCC projects in its Seventh Carbon Budget Report that, under its Balanced Pathway to net zero, 52% of existing homes in the UK will need to be heated using a heat pump in 2040, compared to around 1% in 2023. From 2035 onwards, it projects that all new heating systems installed in homes will be low carbon, with most being heat pumps with a smaller role for low carbon heat networks and direct electric heating.[36] Currently, however, less than 3% of homes in the UK are connected to a heat network[37] and around 1% have a heat pump.[38] We were told that reducing the cost of electricity relative to gas, including by rebalancing the policy costs levied on consumer energy bills, could greatly stimulate demand for low carbon heating systems, which in turn could accelerate growth in the wider market and supply chain.[39]

14. Some stakeholders argue that hydrogen could also play a role in decarbonising home heating.[40] The previous Government committed to taking a decision on the possible role of hydrogen by 2026,[41] but the new Government has said that much has changed since that target was set,

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33 For example, Finance and Leasing Association (RFH0040) and MCS Foundation (HEA0070)

34 For example, Aldersgate Group (RFH0030) and National Audit Office, "Decarbonising home heating", 10 January 2025

35 Office for National Statistics, "Census 2021: How homes are heated in your area", 10 January 2025

36 Climate Change Committee, "The Seventh Carbon Budget", 1 March 2025

37 Energy UK, "Towards a roadap for heat networks", 10 January 2025

38 UK Parliament, "Heat pumps", 10 January 2025

39 For example, Q47 [Madeleine Gabriel], E.ON (HEA0155) and Octopus Energy (HEA0153)

40 For example, Cadent Gas (HEA0094) and Q50 [Mike Foster]

41 Department for Energy Security and Net Zero, "Hydrogen heating: overview", 10 January 2025

including decisions taken not to progress with hydrogen village trials and to pause work on the planning for a hydrogen town pilot. It has committed to providing strategic clarity as soon as possible and consulting on the role of hydrogen in home heating in 2025.[42] The CCC warns that a lack of certainty on its use is creating "systemic uncertainty", which is hindering the growth of supply chains for low carbon heat.[43] Ofgem told us that it would welcome an early decision on hydrogen,[44] while the CCC and National Infrastructure Commission have advised the Government against its use for home heating altogether.[45]

15. The Government has committed to introducing a Future Homes Standard that, if enacted, would mandate the installation of low carbon heating systems in new homes.[46] However, the Government has not set a timeline for phasing out fossil fuel heating systems in existing homes and progress to install low carbon heating systems has so far been inadequate.[47] While the previous Government set a target to install 600,000 heat pumps per year by 2028 and up to 1.9m per year by 2035,[48] the CCC reports that current installation rates are around one tenth of this.[49] The Regulatory Assistance Project, a global NGO working on energy policy, told us that the deployment of heat pumps, heat networks and energy efficiency measures such as insulation, the three critical technologies to retrofit homes for net zero, are all "way off-track".[50] Thermal Storage UK warned us that, to keep the UK on track with net zero, more than 350 homes will need to be upgraded every working hour on every working day for the next 27 years.[51] Chapter 2 reviews the decarbonisation of home heating.

16. The evidence that we received made clear that the UK does not currently have enough skilled workers to retrofit homes at pace and scale, and the Government has not published a clear plan recognised by industry to address this. Finance for the Future told us there is a twin crisis in the home retrofit sector, a lack of new entrants and a rapidly ageing workforce, that threatens our ability to maintain even current levels of energy efficiency

42 Department for Energy Security and Net Zero, "Hydrogen Strategy Update to the Market: December 2024", 10 January 2025
43 Climate Change Committee, "2023 Progress Report to Parliament", 10 January 2025
44 Q682 [Neil Kenward]
45 Climate Change Committee, "The Seventh Carbon Budget", 5 March 2025 and National Infrastructure Commission, "Hydrogen heating", 10 January 2025
46 Ministry of Housing, Communities and Local Government, "Reporting on the Future Homes Standard and solar panels", 10 January 2025
47 For example, Data Communications Company (RFH0021), EDF (HEA0119), Heat Pump Association (HEA0082) and NexGen Carbon Zero Ltd (RFH0025)
48 HM Government, "The Ten Point Plan for a Green Industrial Revolution", 10 January 2025
49 Climate Change Committee, "2024 Progress Report to Parliament", 10 January 2025
50 The Regulatory Assistance Project (HEA0076)
51 Thermal Storage UK (HEA0014)

work.[52] While projected workforce requirements vary, it is widely reported that retrofitting the UK's homes will require at least 100,000 more trained workers.[53]

17. The landscape for workforce accreditation and consumer protections is also unnecessarily complicated: an analysis by Citizens Advice in 2021 found that there are at least 12 different consumer schemes covering energy efficiency, low carbon heat and small-scale energy generation, which makes it hard for consumers to find trusted tradespeople and know which schemes they can rely upon.[54] Recent home insulation scandals, including measures installed under government funded schemes, have further undermined consumer trust and highlighted the need for clear avenues for redress when things go wrong.[55] Chapter 3 assesses the workforce challenges facing the retrofit sector.

52 Finance for the Future, Green New Deal Group (HEA0032)

53 For example, Checkatrade (RFH0005) and Q376 [Ian Morrison]

54 Citizens Advice, "The net zero protections puzzle: Helping people piece together home energy improvements", 10 January 2025

55 BBC News, "Spray foam insulation ruined our house sale", 10 January 2025 and Department for Energy Security and Net Zero, "Action taken to protect households with poor-quality insulation", 25 January 2025

1 Support schemes and advice

Retrofit support schemes

18. The Government has committed to publishing a Warm Homes Plan (WHP) in summer 2025 that will set out how it intends to retrofit five million homes over five years. This will include measures to boost the installation of low carbon heating systems and insulation through retrofit support schemes.[56] Most witnesses to our inquiry were broadly supportive of these proposals and said that national retrofit policy was moving in a positive direction, although many warned us that the WHP is not ambitious enough to meet the UK's net zero and fuel poverty targets.[57]

19. While retrofitting five million homes over five years would mark a substantial increase on the current rate of home retrofit, Joanne Wheeler, Co-Head of Policy and Places at the UK Green Building Council, told us that it would not keep the UK on track to improve all 29m homes that will need retrofitting by 2050 to achieve the Government's emission reduction targets.[58] We also heard calls for greater policy certainty to give consumers, workers and the supply chain the confidence they need to invest in retrofit. Robert Panou, Director of Asset Strategy and Investment at social housing provider Stonewater, told us that the WHP requires a long-term policy position on the phase out of fossil fuel heating and action to rebalance gas and electricity prices to drive the uptake of low carbon heating systems.[59]

20. The WHP also comes against a backdrop of high levels of fuel poverty and the Government's commitment to deliver a clean power system by 2030. Maya Fitchett, Policy Analyst at National Energy Action, warned us that details set out in the WHP so far would fail to keep the Government on track to meet its statutory fuel poverty target for 2030, noting that six million households in England were projected to have been in fuel poverty in winter 2024–25.[60] A report by the Committee on Fuel Poverty in 2024 found that

56 Department for Energy Security and Net Zero, "Help to save households money and deliver cleaner heat to homes", 10 January 2025
57 For example, Q2 [Maya Fitchett and Joanne Wheeler]
58 Q5 [Joanne Wheeler]
59 Qq3–4 [Robert Panou]
60 Q5 [Maya Fitchett]

levels of fuel poverty have not fallen to any meaningful extent in five years.[61] Moreover, the National Energy System Operator warns that while improved home insulation could reduce home electricity demand for heat by 11% and create 2.5 TWh of annual electricity demand savings by 2030, this would require insulation to be rolled out at around twice the pace of ambitions set out for the WHP.[62]

Long-term certainty

21. Most witnesses to our inquiry were highly critical of the stop-start nature of government retrofit support schemes and the sheer number that have been introduced over the last decade. We heard that the proliferation of schemes with short-term funding cycles has inhibited the development of supply chains and created a confusing landscape for consumers and installers to navigate.[63] The Northern Housing Consortium told us that retrofit support schemes have typically operated over "short-term, boom and bust" funding cycles and have "fizzled out without making significant progress".[64]

22. Since 2013, there have been at least 10 government support schemes aiming to accelerate the rollout of energy efficiency measures and low carbon heating systems in homes, in addition to several one-off winter support payments.[65] These include the Boiler Upgrade Scheme (BUS), Domestic Renewable Heat Incentive, Energy Company Obligation (ECO), Great British Insulation Scheme (GBIS), Green Deal, Green Homes Grant, Home Upgrade Grant, Local Authority Delivery Scheme, Social Housing Decarbonisation Fund, Warm Homes: Local Grant and Warm Homes: Social Housing Fund.[66] Over 4m energy efficiency improvements were installed in 2.7m homes through these various schemes between 2013 and the end of 2023.[67] Since our predecessor Committee last took evidence, the new Government has already introduced two new schemes: the Warm Homes: Local Grant and Warm Homes: Social Housing Fund.[68]

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61 Committee on Fuel Poverty, "Annual Report 2024", 10 January 2025

62 NESO, "Clean Power 2030: Annex 1", 5 March 2025

63 For example, Ashden Climate Solutions (HEA0017), Centre for Sustainable Energy (RFH0011) and EDF (HEA0119)

64 Northern Housing Consortium (HEA0015)

65 Department for Energy Security and Net Zero, "Household Energy Efficiency", 10 January 2025

66 Department for Energy Security and Net Zero, "Household Energy Efficiency", 10 January 2025 and Ofgem, "Environmental and Social Schemes", 10 January 2025

67 Department for Energy Security and Net Zero, "Household Energy Efficiency", 10 January 2025

68 Department for Energy Security and Net Zero, "Help to save households money and deliver cleaner heat to homes", 10 January 2025

23. Evidence sent to us broadly recognised that a lack of long-term certainty and the shortcomings of past schemes have significantly damaged both supplier and consumer confidence, with lasting implications for the success of schemes today.[69] There was resounding agreement among witnesses on the need for much longer-term policy and funding certainty.[70] For example, E3G explained that the primary issues undermining the delivery of retrofit measures are the short-term horizon of support schemes, limited timeframes to spend money and stop-start policies. It added that this has undermined industry confidence to invest in skills and supply chains and led to installers leaving the market.[71] DESNZ officials acknowledged in their evidence the need for schemes to be consolidated and simplified. Jessica Skilbeck, Director for Net Zero Buildings: Portfolio and Affordability at DESNZ, told us: "we absolutely recognise the complexity of the picture and the need to simplify it for the end consumer".[72]

24. It is clear from the evidence that we received that longer-term funding cycles are needed to instil confidence and deliver retrofit at pace and scale.[73] Robert Panou told us that short-term funding cycles have forced social housing providers to deliver "bite-sized" projects because they are unable to plan far ahead, inhibiting their ability to deliver at scale.[74] Joanne Wheeler agreed that the stop-start nature of schemes "really undermines confidence" and observed that the timescale for support schemes is often so short, providers are unable to identify the appropriate houses to retrofit in the time available, let alone deliver home improvements. She added that a 10-year programme is needed to provide industry with the confidence and certainty that it needs.[75]

25. We also heard that there are clear lessons to be learned from earlier schemes. Dhara Vyas, then Deputy CEO of Energy UK, told us that many schemes were relatively more successful before 2010, adding that decisions since then to reduce government funding for green policies, such as for home retrofit, has resulted in 98% fewer energy efficiency measures being installed, when compared to the trajectory that schemes were delivering on in 2010.[76] This is supported by the CCC, which reported that, in the period 2008 to 2022, most progress to reduce emissions from buildings took place

69 For example, Centre for Sustainable Energy (RFH0011), Chartered Institute of Building (CIOB) (HEA0034) and ROCKWOOL UK (HEA0022)
70 For example, Centre for Sustainable Energy (RFH0011), E3G (HEA0013), EDF (HEA0119)
71 E3G (HEA0013)
72 Q34 [Jessica Skilbeck]
73 For example, Q6 [Joanne Wheeler] and Q6 [Robert Panou]
74 Q6 [Robert Panou]
75 Q6 [Joanne Wheeler]
76 Q92 [Dhara Vyas]

before 2014. It noted that this was enabled by policy measures designed to support investments in energy efficiency, which have since been cut in funding and scope, resulting in emissions from the sector flatlining.[77]

26. Most schemes today continue to operate over short funding cycles. The GBIS, which supports households living in energy inefficient homes and particular council tax bands with the costs of home insulation,[78] was announced in March 2023 and only has funding confirmed until March 2026.[79] Short-term funding is among the reasons why the GBIS has struggled to gain momentum and engage the supply chain.[80] Despite the previous Government forecasting that 300,000 households would benefit from the programme by 2026, fewer than 45,000 households have seen measures installed so far.[81] Analysis by the UK Green Building Council shows that even if the GBIS did achieve its target, it would only support just over 1% of the homes that need retrofitting by 2050.[82]

27. Minister for Energy Consumers, Miatta Fahnbulleh, was unable to confirm to us whether the Government was committed to the ECO beyond 2026,[83] when it is due to expire, despite the scheme accounting for around 83% of all energy efficiency measures installed under government support schemes in 2023.[84] Dhara Vyas told us that, despite the sector experiencing a "mess of schemes" in recent years, the ECO has continued to perform strongly, primarily because it is delivered via suppliers.[85] Maya Fitchett told us that established schemes such as the ECO are crucial because they are well understood by consumers.[86]

28. However, we also heard clear evidence that existing schemes, including the ECO, need reform. For example, the Brighton and Hove Energy Services Co-Operative told us that various iterations of the ECO have become a "pointless, timewasting and bureaucratic exercise", explaining that customers often end up covering most installation costs themselves, are unable to find a provider or find that organisations entrusted to provide

77 Climate Change Committee, "2024 Progress Report to Parliament", 10 January 2025
78 Department for Energy Security and Net Zero, "Apply for support from the Great British Insulation Scheme", 10 January 2025
79 Department for Energy Security and Net Zero, "Summary of the Great British Insulation Scheme", 10 January 2025
80 The Regulatory Assistance Project (HEA0076)
81 Department for Energy Security and Net Zero, "Summary of the Great British Insulation Scheme", 10 January 2025
82 UK Green Building Council, "Powering Up Britain: What did we learn from the announcements?", 10 January 2025
83 Q81 [Miatta Fahnbulleh MP]
84 Department for Energy Security and Net Zero, "Household Energy Efficiency", 10 January 2025
85 Q94 [Dhara Vyas]
86 Q11 [Maya Fitchett]

work are unreliable or unable to deliver measures. It concluded that the latest round of the ECO and GBIS were "pointless" due to a lack of installers to deliver work for consumers.[87]

29. Rising costs and the increasing complexity of schemes were also identified as factors that have undermined the delivery of retrofit measures. For example, the MCS Foundation told us that, on average, ECO4, the latest iteration of the scheme, spends £26,000 per home, compared to £3,500 under ECO3. It added that these increased costs, combined with inflation, risk ECO4 running out of funding before meetings its target to upgrade 400,000 homes.[88] We also heard that the increasing complexity of schemes including the ECO has resulted in a striking rise in non-compliance and retrofit failures that was not witnessed with earlier iterations,[89] which has led stakeholders to call for such schemes to be simplified.[90] Miatta Fahnbulleh said in her evidence that the Government was committed to ensuring all retrofit support schemes work in a "better, harder and in a more integrated way" but was not clear on how this would be achieved.[91]

Eligibility and simplification

30. Many witnesses to our inquiry called for government support schemes and their eligibility requirements to be simplified.[92] Joanne Wheeler, Co-Head of Policy and Places at the UK Green Building Council, told us that while schemes should be targeted at the fuel poor and vulnerable, their eligibility criteria should be as broad as possible because, at present, providers and installers spend a considerable amount of time and money trying to identify eligible households, rather than spending money on installing retrofit measures.[93] She added that many households were simply unaware which schemes they were eligible for.[94] To plan for a scale-up in the delivery of support between now and 2030, Scottish Power proposed the introduction of a single, larger and more integrated scheme.[95] DESNZ officials agreed in their evidence to us that schemes should be simpler and better engage consumers.[96]

87 Brighton and Hove Energy Services Co-op (BHESCo) (RFH0002)
88 MCS Foundation (RFH0048)
89 Q156 [Simon Ayers]
90 Insulated Render and Cladding Association, "Optimising the delivery of an effective nationwide retrofit programme", 5 March 2025
91 Q81 [Miatta Fahnbulleh MP]
92 For example, Energy Demand Research Centre and University of Sussex Energy Group (RFH0022), Q6 [Joanne Wheeler] and the National Retrofit Hub (RFH0010)
93 Q6 [Joanne Wheeler]
94 Q8 [Joanne Wheeler]
95 Scottish Power (HEA0160)
96 Q39 [Selvin Brown]

31. We also heard concerns over the appropriateness of measures currently used to determine eligibility for support. For example, accessing support under the GBIS requires a home to have an Energy Performance Certificate (EPC), which are widely reported to be inaccurate and based on subjective assessments.[97] Many homes do not have an EPC at all, including one in five homes in Wales, which makes such households ineligible for support through such schemes.[98] Smart DCC told us that using EPCs to determine eligibility can "undermine the effectiveness of programmes and lead to inefficient allocation of resources".[99] The Energy Demand Research Centre agreed, explaining that the restrictive nature of eligibility criteria for recent schemes has excluded households that are either in, or at risk of, fuel poverty.[100]

32. The evidence that we received made clear that some schemes have become uneconomic for delivery partners and a large amount of money is spent on bureaucracy rather than delivering retrofit.[101] David Robson, Director at the National Insulation Association, proposed that a maximum of 10% of allocated budgets should be spent on administering schemes, with 90% reserved for delivery.[102] Witnesses told us that some schemes have also been introduced with unrealistic cost assessments, which has made the supply chain reluctant to participate.[103] This has been exacerbated by high inflation and workforce shortages, which mean that the advertised costs of engaging with schemes such as the GBIS no longer reflect actual market conditions.[104]

33. Some schemes, such as the BUS, delivered on a positive overall trajectory in 2024 compared to previous years, with 2024 witnessing the highest number of certified heat pump installations in the UK on record.[105] However, we also heard evidence that many schemes have failed to support vulnerable and fuel poor households with the costs of home retrofit, while at the same time failing to encourage able-to-pay households to contribute their own funds. For example, the BUS, which primarily supports able-to-pay households who can afford to make up the shortfall between grant values and the cost of a heat pump, spent less than half of its allocated funding to 2025 and does

97 myenergi LTD (HEA0115)
98 Care & Repair Cymru (HEA0024)
99 Smart DCC (HEA0093)
100 Energy Demand Research Centre and University of Sussex Energy Group (RFH0022)
101 For example, Brighton and Hove Energy Services Co-op (BHESCo), (RFH0002), E3G (HEA0013) and National Insulation Association (HEA0113)
102 Q116 [David Robson]
103 For example, Brighton and Hove Energy Services Co-op (BHESCo) (RFH0002) and Centrica (HEA0079)
104 Centrica (HEA0079)
105 MCS Foundation, "2024 is the best year on record for certified heat pump installations in the UK", 10 January 2025

not cover other retrofit measures that might be needed alongside a new heating system, which has kept home retrofit financially out of reach for many households.[106]

34. Smart DCC argued that, to be considered successful, a support scheme should ensure that a high percentage of eligible households receive support, while also making a clear and positive impact on levels of energy efficiency. It told us that existing schemes have under-delivered on both metrics, especially for the fuel poor.[107] Miatta Fahnbulleh acknowledged to us that support schemes should be simpler and provide much longer-term certainty. She explained that navigating the landscape of support as a consumer or supplier is currently "very, very hard", adding that stop-start schemes and the lack of long-term certainty has failed to instil confidence.[108] She added that the Government was looking at the potential to support scaled, area-based retrofit interventions, such as by partnering with regional and local government.[109]

35. This approach was widely supported in the evidence that we received. For example, Madeleine Gabriel, Director of Sustainable Future at Nesta, told us that area-based retrofit can speed up the pace of national delivery and instil confidence among households, who can witness neighbours undertaking the same home improvements and avoid the need to take an individual decision on the most appropriate measure for their particular home. She added that scaled interventions could also reduce costs via economies of scale.[110] Nesta told us in its written evidence that a street-by-street approach will be needed to support the mass adoption of low carbon heating systems in the 2030s and 2040s, which would need to be planned and align with regional and national plans.[111] Andy Prendergast, National Secretary for the Private Sector at the GMB, agreed that planning scaled interventions that were appropriate for a particular local area would give households, workers and the supply chain far greater confidence when compared to a more piecemeal approach.[112]

36. Stonewater told us that retrofit support schemes could better facilitate area-based retrofit by increasing the availability of data on retrofit measures that have already been installed in a local area and providing flexibility in funding across different housing tenures.[113] Joanne Wheeler agreed that there should be greater flexibility in finance models to deliver

106 Calor (RFH0019) and Finance and Leasing Association (RFH0040)
107 Data Communications Company (RFH0021)
108 Q80 [Miatta Fahnbulleh MP]
109 Q69 [Miatta Fahnbulleh MP]
110 Q54 [Madeleine Gabriel]
111 Nesta (RFH0050)
112 Q52 [Andy Prendergast]
113 Stonewater (RHF0051)

interventions at scale. For example, she said that it should be easier for neighbours to install the same measures at the same time, but using different funding models.[114] She added that while a coordinated, national retrofit strategy is necessary, it should be delivered with local authorities and communities who better understand the local housing stock, demographics, supply chain and workforce.[115]

37. Consumer confidence in government retrofit schemes has been undermined by a series of recent scandals involving poor-quality home retrofit, including solid wall insulation installed under the ECO and GBIS.[116] Miatta Fahnbulleh noted in her evidence that retrofit schemes delivered by local authorities and social housing providers also provide households with stronger protections compared to those that rely on applications by individual households. She explained that when retrofit work is commissioned by the local authority or social housing provider, additional checks are typically required that ensure higher levels of accountability and oversight for the quality of work.[117]

38. **CONCLUSION**
There is a clear and urgent need to provide long-term certainty for the sector through the Government's retrofit support schemes. Stop-start measures and short funding cycles have undermined the confidence of consumers, installers and the wider supply chain. The Government has not clarified how it will support retrofit beyond 2026, when key schemes are due to expire.

39. **CONCLUSION**
It is critical that the Government streamlines and simplifies its support schemes, especially their eligibility requirements. Many schemes are too complicated and have failed to support fuel poor households, while also failing to incentivise able-to-pay households to invest their own money.

114 Q17 [Joanne Wheeler]
115 Qq36–37 [Joanne Wheeler]
116 Department for Energy Security and Net Zero, "Action taken to protect households with poor-quality insulation", 30 January 2025
117 Q81 [Miatta Fahnbulleh MP]

40. **RECOMMENDATION**
The Government must announce a long-term programme for how it plans to support home retrofit beyond 2026 in its Warm Homes Plan. This should include a reduction in the number of schemes offered; significantly relaxed eligibility criteria to prioritise uptake; funding commitments until at least 2035; and a strategy to facilitate area-based retrofit.

Information and advice

41. The evidence that we received made clear that many consumers do not have sufficient access to impartial information and advice on home retrofit, which is inhibiting their ability to make informed decisions and delaying action to decarbonise their homes.[118] Witnesses made clear that many consumers are simply unaware of home retrofit measures, let alone the support available or benefits they could bring.[119] OVO Energy told us the public has a "fundamental lack of awareness" of support available to facilitate retrofit, as well as a "lack of understanding about how energy efficient homes are and what measures may help improve energy efficiency".[120] We heard from the MCS Foundation that the lack of personalised, independent advice is a major barrier to the uptake of low carbon heating systems,[121] while Dr Emily Nurse, Head of Net Zero at the CCC, explained that a campaign of "myth-busting" would be required to tackle misinformation and boost consumer confidence.[122]

42. A 2023 study by Citizens Advice found that many consumers are unconvinced of the benefits of home retrofit and are primarily interested in well-known and widely understood measures, rather than those that could bring the largest benefits or contribute most to the decarbonisation of their homes.[123] This is compounded by a lack of policy certainty and high levels of misinformation: TrustMark told us that a complex advice landscape, combined with much of it being commercially driven or inaccurate, has resulted in low awareness and trust in home retrofit, and consequently low demand.[124]

43. Moreover, we heard that many consumers do not know where they can access quality, personalised and impartial advice on home retrofit. A 2023 survey by Which? found that 69% of homeowners who had searched online

118 For example, Centre for Sustainable Energy (RFH0011) and Thermal Storage UK (RFH0008)
119 For example, Centre for Sustainable Energy (RFH0011) and OVO (HEA0101)
120 OVO (HEA0101)
121 MCS Foundation (HEA0070)
122 Q313 [Dr Emily Nurse]
123 Citizens Advice, "Demand: Net Zero", 10 January 2025
124 TrustMark (RFH0006)

for advice on insulation wanted information that was more tailored to their particular home. Almost half of respondents said it was difficult to know where to even start looking for information.[125] A 2022 survey by Historic England suggested that the challenge was especially acute for homeowners in listed and historic properties. It found that most free and credible advice is often too generic or technical, while tailored advice for listed homes is prohibitively expensive.[126]

44. We heard that many consumers would be more receptive to home retrofit if they heard positive experiences from neighbours who have already retrofitted their homes, rather than being advised by government. TrustMark suggested that community sessions could drive demand for retrofit by sharing positive examples from the local area,[127] while Charlotte Lee, Chief Executive of the Heat Pump Association, agreed that positive stories from neighbours are one of the best ways to increase confidence and local support.[128] Some witnesses called for advice to be better embedded into communities. Maya Fitchett told us that consumers should be signposted to advice in touchpoints such as food banks or GP surgeries,[129] while Positive Money agreed that retrofit is more effective with a "bottom-up approach".[130]

National advice service

45. There were many calls from witnesses for the introduction of a national advice service for home retrofit in England, often referred to as a one-stop-shop, to provide consumers with impartial information and advice that is relevant to their specific home and signpost them to trusted tradespeople and financial support.[131] Energy Saving Trust already runs a national energy advice service in Scotland and Wales, but such a service does not yet exist in England.[132] We heard from TrustMark that there is currently a "postcode lottery" for the provision of information and advice across the country[133] and consumers need a central and standardised source of information and advice to provide them with confidence to invest in home retrofit.[134]

125 Which?, "Worryingly few households planning insulation improvements to their homes, despite concern about high energy prices, Which? reveals", 10 January 2025
126 Historic England, "Survey of Listed Building Owners and Occupiers", 10 January 2025
127 TrustMark (HEA0011)
128 Q186 [Charlotte Lee]
129 Q137 [Maya Fitchett]
130 Positive Money (HEA0020)
131 For example, Centre for Sustainable Energy (RFH0011), Finance and Leasing Association (RFH0040), MCS Foundation (HEA0070) and The Institution of Engineering and Technology (HEA0041)
132 Qq19–27 [Joanne Wheeler]
133 Q452 [Dr Richard Hauxwell-Baldwin]
134 Q146 [Simon Ayers]

46. France operates a national advice service called FranceRenov that provides tailored advice on home retrofit online, over the phone and in 450 offices and then signposts consumers to certified installers and financial support options. We heard that this is a key factor contributing to record heat pump sales in France and could be easily replicated in the UK.[135] The Embassy of Denmark in London told us that Denmark has also introduced a national advice service, which has helped municipalities to lower their costs and streamline consumer messaging.[136] Dr Ciaran Byrne, Director of National Retrofit at the Sustainable Energy Authority of Ireland, explained that Ireland has introduced more than 850 sustainable energy communities, which provide advice and identify local retrofit priorities.[137]

47. Based on the evidence provided to us by stakeholders from other European countries, it is clear that the UK could benefit from a more dynamic approach to providing consumers with information and advice.[138] Dr Ciaran Byrne told us that an effective advice service should provide consumers with assurances in case things go wrong, clear avenues for redress and a single contact point throughout the entire retrofit journey.[139] Adrian Joyce, Secretary General of EuroACE, advised us that mixed funding is the best approach to financing such a service, whereby the state provides some funding and the rest is paid for by installers participating in an affiliated workforce accreditation scheme, which then refers consumers to trusted and certified installers.[140]

48. The Energy Saving Trust already delivers similar advice programmes in Wales and Scotland, via Nest and Home Energy Scotland respectively. It estimates that if the advice and support already provided in Scotland was replicated in England, it could cost around £3–5m per every 100,000 homes served but, if delivered at scale, the scheme has the potential to deliver lifetime savings of more than £10bn per year. From its experience delivering such programmes, it says that every £1 spent on advice could see a return on investment of almost £15.[141] Its written evidence also made clear that a national advice service can be a key driver of home retrofit and ensure efficient delivery of government retrofit schemes. It told us that after receiving advice from one of its advisors in Scotland, 42% of customers installed at least one energy efficiency or low carbon heating improvement.

135 MCS Foundation (HEA0070)
136 Embassy of Denmark, London (HEA0144)
137 Q584 [Dr Ciaran Byrne]
138 For example, Q584 [Dr Ciaran Byrne] and Embassy of Denmark, London (HEA0144)
139 Q594 [Dr Ciaran Byrne]
140 Q592 [Adrian Joyce]
141 Energy Saving Trust, "Warm Homes Expert Advice Service in England", 10 January 2025

Heat pumps were the most common measure installed following its advice in 2022–23, which highlights the benefits that such a service could bring to the rollout of low carbon heating.[142]

49. However, the evidence also made clear that local authorities would need to be supported if they were to play a leading role in disseminating information and advice locally. For example, Hampshire County Council told us that many local authorities cannot afford the start-up costs of an advice service, even when there is a clear business case, noting that Hampshire County Council would need £500,000 to launch a self-sustaining scheme.[143] In her evidence to us, Miatta Fahnbulleh acknowledged the need for a centralised source of trusted consumer advice. She said:

> We have a digital platform, a helpline and local demonstrators. If I am candid, it probably is not a one stop shop that people can reach for, that they even know is there, quite frankly, and that allows them to navigate through the system. In a world where we need to make this as easy for consumers as possible, there is one place you go, you pick up your phone, you get advice that you can trust, and that helps you navigate through the system.[144]

50. **CONCLUSION**
Many consumers have a fundamental lack of awareness of the benefits of home retrofit and where to access quality, impartial information and advice. This is preventing them from making informed decisions and delaying the retrofit of their homes.

51. **CONCLUSION**
There is a clear need for a single, trusted source of free information and advice on home retrofit that can be accessed via multiple sources. Such provision already exists in Scotland and Wales but does not in England. Consumer advice should also be better embedded within communities and the Government should seek to encourage the sharing of experiences between neighbours and among the workforce to increase engagement around low carbon home retrofit.

142 Energy Saving Trust (RFH0035)
143 Hampshire County Council (HEA0053)
144 Q101 [Miatta Fahnbulleh MP]

52. **CONCLUSION**
One-stop-shops have proven successful in many neighbouring countries, especially when affiliated with a workforce accreditation scheme that signposts consumers to trusted installers. There are clear and tangible links between their introduction in countries such as France and the success of their low carbon heating rollouts and high levels of consumer engagement. Such an approach would be easily replicable in the UK.

53. **RECOMMENDATION**
We recommend that the Government establishes a national warm homes advice service for England to signpost consumers to independent advice, trusted installers and financial options. This should be available online, over the phone and in person. While it may be publicly-funded at first, it should be affiliated with a retrofit workforce accreditation scheme that can signpost consumers to trusted installers and provide a model for the service to become financially self-sustaining over time. A pilot should be launched ahead of winter 2025.

Energy Performance Certificates

54. Energy Performance Certificates (EPCs) were widely criticised throughout our inquiry and we heard many calls for reform of the EPC system.[145] The Centre for Sustainable Energy said that there is "broad consensus across the retrofit sector that EPCs are a blunt tool and are not suitable for planning retrofit",[146] while Fuel Poverty Action warned that EPCs "fall short of effectively guiding consumers towards informed decisions during the transition to sustainable homes".[147] Many witnesses noted that EPCs remain a useful and simple tool for understanding home energy efficiency but there was near unanimity that the underlying framework needs reform.[148] Jessica Skilbeck, Director for Net Zero Buildings: Portfolio and Affordability at DESNZ, acknowledged that the EPC framework needs to evolve to support the needs of retrofitting homes.[149]

55. While initially designed as a metric for the cost of energy in a home, witnesses told us that the usage of EPCs has since evolved.[150] Jonathan Bean, Policy and Parliament Lead at Fuel Poverty Action, warned that there is a "lack of clarity about what they are for", adding that consumers are

145 For example, Centre for Sustainable Energy (RFH0011) and Fuel Poverty Action (HEA0154)
146 Centre for Sustainable Energy (RFH0011)
147 Fuel Poverty Action (HEA0154)
148 MCS Service Company (HEA0078)
149 Q19 [Jessica Skilbeck]
150 For example, Q405 [Jonathan Bean]

"very muddled" about whether EPCs are about energy bills, the broader costs of home heating or carbon emissions.[151] The evidence that we received made clear that, over the years, EPCs have become devalued, especially by estate agents and landlords, and are of low concern when people are looking to improve their home or move house.[152]

56. Particular concerns were raised over the recommendations that are made to consumers following an EPC assessment.[153] EPC ratings are based on the costs of home heating, rather than its carbon footprint, which means that cheaper heating sources provide a better EPC score.[154] Electricity is around four times more expensive than gas in the UK because gas sets the marginal wholesale price of electricity and more environmental and social levies are placed on electricity bills than gas bills.[155] This means that EPCs favour gas heating and typically recommend installing a new gas boiler, rather than a lower carbon, but initially more expensive, heating system like a heat pump. Replacing a gas boiler with a heat pump can, in fact, reduce a property's EPC score, which can negatively impact the property's value.[156]

57. As a tool to support the decarbonisation of homes, we heard clear evidence that EPCs do not help consumers to make informed decisions.[157] EDF told us that EPCs are "fundamentally flawed" in the recommendations they make to households,[158] while Robert Panou warned that EPCs do not go far enough to drive changes in consumer behaviour.[159] Which? shared research with us that found that just one quarter of households would recommend getting an EPC, with many respondents to its study reporting that the information provided by EPCs was inaccurate, outdated or poorly explained. Many were also critical of the recommendations made, describing them as inflexible and disconnected with their priorities as homeowners.[160]

58. Concerns were also raised widely over the accuracy and consistency of EPCs. The National Retrofit Hub told us that the validity of EPCs for 10 years is too long to provide consumers with accurate, up-to-date information.[161] Elmhurst Energy advised that an EPC should never be older than three years

151 Q405 [Jonathan Bean]
152 For example, Q403 [Zoe Guijarro]
153 For example, Mears Group (HEA0124), National Retrofit Hub (RFH0010) and Which? (RFH0012)
154 EDF (HEA0119)
155 Nesta, "The electricity-to-gas price ratio explained", 10 January 2025
156 For example, EDF (HEA0119), Nesta (HEA0066) and Which?, "Why EPCs aren't ready for low-carbon heating", 10 January 2025
157 For example, EDF (HEA0119)
158 EDF (HEA0119)
159 Q23 [Robert Panou]
160 Which? (RFH0012)
161 National Retrofit Hub (RFH0010)

to maintain the relevance of its recommendations and estimates.[162] We also heard that, despite EPC assessments being standardised across industry, the results are often subjective to the individual assessor, which leads to inconsistencies, confusion and a lack of accurate data.[163] Historic England explained that EPCs are often especially inaccurate when measuring historic properties and can significantly underestimate their thermal performance.[164] However, we also heard that EPCs are familiar to many consumers and therefore most witnesses called for reform of the underlying methodology, rather than replacing the framework altogether.[165]

Carbon metric

59. There was widespread agreement among our witnesses that a carbon metric should be introduced alongside the cost metric in EPCs to better equip them as a tool for advising consumers on how to retrofit their homes.[166] Jonathan Bean told us that "everyone agrees the EPCs are flawed and need changing", adding that "we do need to separate the bill aspect from the carbon aspect".[167] Drayton by Schneider Electric told us that "the future aim of EPCs should be to provide a carbon rating" for homes,[168] while the National Retrofit Hub advised us that EPCs should provide both improved cost and carbon metrics to enable consumers to make more informed decisions.[169]

60. We also heard evidence on how the EPC framework could better account for the possible adverse effects of home retrofit. The National Retrofit Hub told us that measures relating to health and wellbeing, such as ventilation, damp and mould, are not currently considered by EPCs.[170] In a consultation that it held with industry, 87% of respondents agreed that EPCs should reflect the impact of retrofit and a building's condition on occupant health and wellbeing.[171] Robert Panou agreed that EPCs should provide better advice to households on the health of a property and its occupants when recommending how a home could be retrofitted.[172] However, the evidence that we received also makes clear that while a focus on damp and mould is important, a far greater number of households live in homes that are cold

162 Elmhurst Energy (HEA0055)
163 myenergi LTD (HEA0115)
164 Historic England (HEA0033)
165 Energy Saving Trust (RFH0035)
166 For example, CLA (HEA0006), Fuel Poverty Action (HEA0154), National Retrofit Hub (RFH0010) and Q24 [Robert Panou and Joanne Wheeler]
167 Q414 [Jonathan Bean]
168 Drayton by Schneider Electric (HEA0005)
169 National Retrofit Hub (RFH0010)
170 National Retrofit Hub (RFH0010)
171 National Retrofit Hub, "EPC Reform", 10 January 2025
172 Q31 [Robert Panou]

and energy inefficient without damp or mould problems, and notes that these issues alone can result in ill health and higher energy bills.[173] The 2022 English Housing Survey shows that while 4% of households in England had damp problems, over a third live in cold and poorly insulated homes.[174]

61. In 2023, the previous Government consulted on a new Home Energy Model to estimate the energy performance of homes.[175] The new Government consulted on EPC reform in 2024, which it says will aim to provide households with more accurate information on how to reduce carbon emissions from their home and tackle fuel poverty.[176] Robert Panou warned us that the consultation has caused nervousness in the social housing sector, as it has the potential to downrate properties overnight with its proposed reforms to the measurement framework.[177] The Government has also proposed to raise minimum energy efficiency standards required of privately rented homes in England and Wales to the equivalent of EPC C by 2030.[178]

62. **CONCLUSION**

We are deeply concerned that Energy Performance Certificates, as currently calibrated, provide some consumers with poorly conceived advice and have a strong bias against low carbon, but initially more expensive, heating systems. As a cost-based metric, Energy Performance Certificates are not, as they stand, an effective tool for decarbonising UK homes. To the contrary, they are deterring consumers from making the switch to low carbon heating.

173 For example, the National Home Decarbonisation Group (NHDG) and National Insulation Association (NIA) (RFH0026)

174 Department for Levelling Up, Housing and Communities, "English Housing Survey 2022", 10 January 2025

175 Department for Energy Security and Net Zero, "Home Energy Model: replacement for the Standard Assessment Procedure (SAP)", 10 January 2025

176 Department for Energy Security and Net Zero, "Reforms to the Energy Performance of Buildings regime", 10 January 2025

177 Q22 [Robert Panou]

178 Department for Energy Security and Net Zero, "Improving the energy performance of privately rented homes in England and Wales", 5 March 2025

63. **CONCLUSION**

Energy Performance Certificate assessments vary greatly in quality and consistency. It is therefore troubling that they are expected to perform such a range of functions that they were never initially designed for, such as determining eligibility for government support schemes. If the Government is to continue using Energy Performance Certificates for such purposes, reform of the Energy Performance Certificate metric must come quickly. The validity of Energy Performance Certificates for 10 years is also too long to say with confidence that all assessments and recommendations remain relevant.

64. **RECOMMENDATION**

This report highlights the high and stagnating levels of energy poverty in the UK and the current disincentive that Energy Performance Certificates have on low carbon heating options due to price concerns. We therefore recommend that the Government reforms the Energy Performance Certificate metric with a renewed focus on both emissions and energy costs. This should be used to recommend home improvements to households who should then be signposted to independent advice following an assessment.

2 Decarbonising home heating

Incentives for electrification

65. The UK's technological pathway for decarbonising home heating was one of the most polarising aspects of the evidence that we received. There were particular divisions between the electric heating and gas heating sectors, with the former arguing that electric heat pumps and low carbon heat networks will account for most decarbonisation,[179] while the latter argued that a hydrogen network will be crucial to provide consumers with choice.[180] However, there was broad agreement on both sides that technological uncertainty is slowing down the retrofit of UK homes. Moreover, almost all pathways that witnesses shared with us included a significant role for electric heating across the UK, regardless of the possible role of hydrogen.[181]

66. The CCC projects in its Seventh Carbon Budget Report that, under its Balanced Pathway to net zero, 52% of existing homes in the UK will need to be heated using a heat pump in 2040, compared to around 1% in 2023. This will require the annual rate of heat pump installations to increase from around 60,000 in 2023 to nearly 450,000 by 2030 and 1.5m by 2035. After this point, all new heating systems installed in homes will need to be low carbon, with the majority being heat pumps alongside a smaller role for low carbon heat networks and direct electric heating.[182] Currently, however, fewer than 3% of homes in the UK are connected to a heat network, most of which rely on fossil fuel sources,[183] and around 1% have a heat pump installed.[184]

179 For example, Centre for Sustainable Energy (RFH0011) and Heat Pump Association (HEA0082)
180 For example, Energy & Utilities Alliance (EUA) (HEA0037)
181 For example, Cadent Gas (HEA0094), Centre for Sustainable Energy (RFH0011) and EDF (HEA0119)
182 Climate Change Committee, "The Seventh Carbon Budget", 1 March 2025
183 Energy UK, "Towards a roadmap for heat networks", 10 January 2025
184 UK Parliament, "Heat pumps", 10 January 2025

Rollout and finance

67. Witnesses told us that the UK's rollout of electric heating systems lags behind almost all other European countries.[185] While the UK housing stock was primarily built to accommodate gas, which some witnesses argued has inhibited its ability to decarbonise when compared to some neighbours,[186] nations with a similar or even colder climate than the UK have proven the efficacy of technologies such as heat pumps: around 60% of buildings in Norway and 40% in Finland and Sweden are fitted with a heat pump.[187] While annual installations stand at less than 1,000 per million of the population in the UK, Germany is installing around 2,000 per million, France 5,000 per million and Finland 20,000 per million.[188] This is despite 90% of UK homes having sufficient insulation and electrical capacity to operate a heat pump.[189] Electricity is also much more expensive relative to gas in the UK compared to many neighbours, which is deterring consumers from switching to electric heating from fossil fuel heating. Today, electricity in the UK is around four times more expensive than gas with a price ratio of 3.7, the worst ratio in Europe,[190] compared to 2.0 in France, 1.5 in Finland and 1.0 in Sweden.[191]

68. The evidence that we received made clear that, despite government support, including grants of up to £7,500 provided through the Boiler Upgrade Scheme (BUS), heat pumps remain unaffordable for many households.[192] A study by The Eco Experts found that 75% of households who installed a heat pump in the year to March 2023, which includes the period following the introduction of the BUS, had an income of over £100,000.[193] Joanne Wheeler told us that encouraging owner-occupiers, who account for around 62% of households,[194] to adopt low carbon heating would require a broader suite of policies than grant funding alone to encourage them to invest their own money.[195] She noted that very few policies are currently targeted at owner-occupiers, adding that around £15bn is spent every year to install around 1.3m new kitchens across the UK, which demonstrates that

185 Q276 [Dr Emily Nurse]
186 Q188 [Dr Tony Ballance]
187 International Energy Agency, "The Future of Heat Pumps", 10 January 2025
188 Climate Change Committee, "2023 Report to Parliament", 10 January 2025 and Intergas (HEA0073)
189 HM Government, "Heat Pump Investment Roadmap", 10 January 2025
190 Nesta, "Cheaper electricity, fairer bills", 10 January 2025
191 European Heat Pump Association, "European Heat Pump Market and Statistics Report 2024", 10 January 2025
192 For example, Q20 [Joanne Wheeler] and Finance and Leasing Association (RFH0040)
193 The Eco Experts, "The National Home Energy Survey 2023", 10 January 2025
194 Office for National Statistics, "Housing, England and Wales: Census 2021", 10 January 2025
195 Q2 [Joanne Wheeler]

there is no shortage of private money being spent on home improvements, including for disruptive work. To unlock similar investments in low carbon retrofit, she said greater incentives would be required, including financial levers such as a stamp duty rebate or green mortgages, to demonstrate the value retrofit can bring to a home.[196]

69. Providing consumers with a range of financial options is important as we were told that the upfront costs of heat pumps are unlikely to fall significantly. The All-Party Parliamentary Group for Energy Studies told us that while the UK market for heat pumps may not be mature, the global market is, which means there is "no basis for assuming a reduction in unit costs". It added that most of the costs involved with a heat pump is in its installation.[197] The UK Energy Research Centre echoed this, telling us the Government must "actively pursue lower costs", rather than relying on the market, if upfront costs are to fall.[198]

70. However, Madeleine Gabriel, Director of Sustainable Future at Nesta, told us that economies of scale in the delivery of heat pumps could reduce upfront costs in time, adding that if the Government could reduce running costs via improved efficiency and reducing the cost of electricity relative to gas, the lifetime costs of a new heat pump could fall in line with that of a replacement gas boiler.[199] She explained that, over time, most households would pay for a low carbon heating system using finance, such as low-cost loans or salary sacrifice schemes, like many already do when buying a new car.[200]

71. We heard evidence that the proliferation of green financial products, such as green mortgages and property linked finance, is contingent on government providing the long-term certainty needed to minimise risks for the finance and lending sectors.[201] Emma Pinchbeck, Chief Executive of the CCC, told us that clearly demonstrating cost savings for consumers from technologies such as heat pumps, as well as lower electricity prices, would be key for making the business case that is needed to unlock new finance models.[202] The Financing and Leasing Association explained that scaling the market for green finance would require a common framework to increase the consistency, credibility and transparency of new green home

196 Q20 [Joanne Wheeler]
197 All-Party Parliamentary Group for Energy Studies (HEA0039)
198 UK Energy Research Centre (HEA0097)
199 Qq47–63 [Madeleine Gabriel]
200 Q63 [Madeleine Gabriel]
201 For example, TrustMark (RFH0006) and National Insulation Association (HEA0113)
202 Q314 [Emma Pinchbeck]

finance products.[203] When asked about regulatory changes to increase the availability of green finance, Minister for Energy Consumers, Miatta Fahnbulleh, told us:

> There are lots of products in the market, and people are not taking them up, so we are asking ourselves why that is and what we might design that is different. My objective is to get as close to low upfront costs as we can, because that is a big barrier to people engaging. There are lots of different ways we can do that, from low-cost loans to green mortgages, through to things like subscription models.[204]

72. In April 2025, while this Report was in the process of being agreed, the Government launched a consultation on proposals to expand the BUS. This includes proposals to broaden the range of low carbon technologies eligible for support under the BUS, including air-to-air heat pumps and heat batteries, and to allow households access to third-party ownership finance products alongside BUS grants to support them with upfront installation costs.[205]

Technological certainty

73. We heard a weight of evidence calling for a clear technological pathway for the future of home heating to be set out by the Government. Madeleine Gabriel told us that electrification is the most feasible and lowest-cost option to decarbonise home heating, primarily because electric technologies can be much more efficient than alternatives. While hydrogen is proposed by some stakeholders as a possible alternative, Nesta told us that the costs of producing low carbon hydrogen would have to come down very significantly to have any viable role in home heating, noting that it would take about five to six times more green electricity to produce electrolytic hydrogen for heating than to heat homes directly with electric heat pumps.[206] EDF told us that government indecision on the role of hydrogen is a major barrier to the retrofit of homes because consumers, installers and the supply chain do not have the certainty they need to make informed decisions.[207]

203 Finance and Leasing Association (RFH0040)
204 Q104 [Miatta Fahnbulleh MP]
205 Department for Energy Security and Net Zero, "Boiler Upgrade Scheme and certification requirements for clean heat schemes", 14 May 2025
206 Q48 [Madeleine Gabriel]
207 EDF (HEA0119)

74. The previous Government said that it would take a strategic decision on the possible role of hydrogen for domestic heat by 2026.[208] However, witnesses told us that failing to take a decision earlier than this is undermining sector confidence and slowing the rollout of proven low carbon technologies such as heat pumps.[209] The new Government has said that "much has changed" since the 2026 target was set, including decisions not to progress with hydrogen village trials and planning for a town pilot. It has committed to providing strategic clarity on hydrogen as soon as possible and consulting on its possible role in home heating in 2025.[210]

75. The CCC's Seventh Carbon Budget Report states that heat pumps will be the "dominant low carbon heating technology" as the UK progresses to net zero, adding that "there is no role for hydrogen heating in residential buildings",[211] a position supported by the National Infrastructure Commission.[212] It adds that the Government should confirm that there will be no role for hydrogen in home heating to provide consumers and investors with confidence that most home heating will be electrified in future.[213]

Policy costs

76. The cost of electricity in the UK tracks the cost of gas because gas generation sets the marginal wholesale price. This means that when gas prices rise, there is direct, upwards pressure on retail electricity prices. Consequently, when consumers switch from fossil fuel heating systems to electric alternatives, they, unlike generators, are unable to benefit from the lower production costs of low carbon electricity.[214] We received a weight of evidence describing this as a major barrier to the decarbonisation of home heating and calling for this to be reviewed.[215] For example, E3G told us: "There is a need to change this perverse incentive, to ensure that consumers will always benefit from shifting to heat pumps".[216] Secretary of State for Energy Security and Net Zero, Ed Miliband, acknowledged in his evidence to us that the costs of home heating are exposed to international gas prices, over which the UK lacks control.[217]

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208 Department for Energy Security and Net Zero, "Hydrogen heating: overview", 10 January 2025

209 For example, EDF (HEA0119) and Octopus Energy (HEA0153)

210 Department for Energy Security and Net Zero, "Hydrogen Strategy Update to the Market: December 2024", 10 January 2025

211 Climate Change Committee, "The Seventh Carbon Budget", 5 March 2025

212 National Infrastructure Commission, "Hydrogen heating", 10 January 2025

213 Climate Change Committee, "The Seventh Carbon Budget", 5 March 2025

214 Nesta, "The electricity-to-gas price ratio explained", 10 January 2025

215 For example, Finance and Leasing Association (RFH0040) and Heat Pump Association (HEA0082) and Mitsubishi Electric (RFH0024)

216 E3G (HEA0013)

217 Q384 [Ed Miliband MP]

77. Research published by Nesta in 2024 found that a typical dual-fuel household pays roughly the same amount for their gas bill (£833) as electricity (£844), even though they use more than four times more gas than electricity. This is partly because the gas price sets the electricity price 97% of the time. It found that electricity being much more expensive than gas is a major barrier to the adoption of low carbon heating systems such as heat pumps and causes acute fuel poverty for homes that use direct electric heating.[218] Emma Pinchbeck told us that making electricity cheaper relative to gas is crucial for meeting the Government's 2035 emissions targets and said that doing so is the "primary recommendation" the CCC would make to government.[219] The CCC's Seventh Carbon Budget Report reinforces this as a priority recommendation.[220]

78. The Government has also historically imposed more social and environmental levies on electricity bills than gas bills.[221] These levies, referred to as policy costs, include funding for the Renewables Obligation, Feed-in-Tariff, ECO and Warm Home Discount.[222] These equate to around 16% of a typical electricity bill, costing the average consumer around £141 each year, compared to 5.5% and £46 for a typical gas bill. These policy costs generate around £5.9bn in revenue for the Government each year and contribute to electricity being almost four times more expensive than gas.[223]

79. The evidence that we received was overwhelmingly supportive of removing policy costs from electricity bills, or rebalancing them between electricity and gas.[224] Octopus Energy told us: "by shifting policy costs from electricity to gas, heat pumps would be cheaper and greener to run, which, as we've seen across Europe, is the tipping point for mass take up".[225] E.ON added that rebalancing policy costs would be necessary in order to put a "compelling proposition" to customers to switch to low carbon heating.[226] Madeleine Gabriel told us that rebalancing levies is the key action the Government needs to take to reduce the running costs of electric heating,[227] adding that the current distribution of levies severely disadvantages households with direct electric heating.[228]

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218 Nesta, "Cheaper electricity, fairer bills", 10 January 2025
219 Q273 [Emma Pinchbeck]
220 Climate Change Committee, "The Seventh Carbon Budget", 5 March 2025
221 Nesta, "The electricity-to-gas price ratio explained", 10 January 2025
222 House of Commons Library, "Domestic energy prices", 10 January 2025
223 Nesta, "Cheaper electricity, fairer bills", 10 January 2025
224 For example, Centre for Sustainable Energy (RFH0011), Institution of Engineers in Scotland (HEA0026) and Mitsubishi Electric (RFH0024)
225 Octopus Energy (HEA0153)
226 E.ON (HEA0155)
227 Q47 [Madeleine Gabriel]
228 Q52 [Madeleine Gabriel]

80. Witnesses differed in how they proposed to rebalance policy costs. Dr Tony Ballance, Chief Strategy and Regulation Officer at Cadent Gas, told us that moving policy costs off electricity bills and onto general taxation, rather than gas bills, was the fairest way to rebalance gas and electricity prices without penalising those remaining on the gas network.[229] However, research by Nesta finds that moving all policy costs from electricity bills onto general taxation would cost the Exchequer around £4.8bn per year, which would need to be made up by tax rises, a suggestion that the Secretary of State admitted would likely prove unworkable in the current fiscal climate.[230] On the contrary, Nesta said that rebalancing policy costs between electricity and gas bills would be revenue neutral.[231]

81. While some witnesses raised concerns over the impact of rebalancing on households remaining on the gas network,[232] Nesta explained that rebalancing policy costs equally between gas and electricity bills would see cheaper electricity bills offset most of the rise in gas bills for those remaining on the gas network. It added that rebalancing would dramatically reduce the price ratio of electricity to gas in the UK to as low as 2.4, which it said would create a strong incentive for households to switch to low carbon heating. Meanwhile, it argued that households who use direct electric heating, who often face the most acute fuel poverty, would experience benefits in the "hundreds of pounds a year", while a typical household could reduce its annual heating bill by £420 by switching from a gas boiler to a heat pump, equating to more than £6,000 in savings over the lifetime of a heat pump.[233]

82. Nesta added that rebalancing would be most effective if delivered alongside targeted support for lower-income and vulnerable households remaining on the gas network to offset any bill rises, such as via an increase to the Warm Home Discount, which provides a one-off £150 electricity bill discount for those on low incomes and certain Pension Credits. It said that this targeted support would be far less costly than moving all policy costs onto general taxation and with progressive benefits. It explained that doubling the Warm Home Discount would be sufficient to fully mitigate the effects of rebalancing for at least 95% of households eligible for the scheme, adding that the number of eligible households losing out in this scenario is "likely to be negligible".[234]

229 Q171 [Dr Tony Ballance]
230 Q395 [Ed Miliband MP]
231 Nesta, "Cheaper electricity, fairer bills", 10 January 2025
232 For example, Q171 [Dr Tony Ballance]
233 Nesta, "Cheaper electricity, fairer bills", 10 January 2025
234 Nesta, "Cheaper electricity, fairer bills", 10 January 2025

83. We heard similar calls to rebalance policy costs between gas and electricity bills from numerous stakeholders including EDF, Good Energy, the Heat Pump Association, the Association for Decentralised Energy and the Social Market Foundation, among several others.[235] Notably, countries including Denmark have accompanied measures to reduce the cost of electricity relative to gas with a mandatory phase-out of fossil fuel heating systems, alongside subsidies for the costs of new electric systems. This ensures that the most vulnerable, such as those living in social housing, do not remain reliant on increasingly expensive fossil fuels.[236]

84. The Secretary of State recognised that Nesta's research was an "interesting contribution to the debate" and "puts it quite well". He added that while the "principled case for these levies not falling on electricity is clear", the challenge would be delivering this in practice and without unintended consequences.[237] Jonathan Brearley, Chief Executive of Ofgem, added that Nesta's proposal was "the right thing to do from the perspective of getting to net zero" but noted that it would require a plan to deal with any distributional consequences.[238] We asked Minister for Energy Consumers, Miatta Fahnbulleh, to explain why the Government places most policy costs on electricity bills, rather than gas, and whether she agreed that this encourages consumers to keep their fossil fuel heating systems. In response, she said:

> It is absolutely the case that at the moment there is a differential between the prices of gas and electricity, and that has a knock-on effect on the running cost of something like a heat pump. That is a problem for us because we need the running cost to be as cheap as, if not cheaper than, the cost of a gas boiler. … No doubt, when you speak to experts, they will all say that rebalancing needs to happen.[239]

Consumer engagement

85. Witnesses informed us that the public's interest in, and understanding of, low carbon technologies such as heat pumps is low.[240] A study by The Eco Experts in 2023 found that just 24% of British adults would install a heat pump if it was free and almost half (49%) had not even heard of a heat

235 EDF (HEA0119), Good Energy (HEA0134), the Heat Pump Association (HEA0082), the Association for Decentralised Energy (HEA0109) and the Social Market Foundation (HEA0086)

236 European Heat Pump Association, "Which countries are scrapping fossil fuel heaters?", 10 January 2025

237 Qq388–395 [Ed Miliband MP]

238 Q428 [Jonathan Brearley]

239 Q85 [Miatta Fahnbulleh MP]

240 For example, the Institution of Engineering and Technology (HEA0041) and TrustMark (RFH0006)

pump.[241] This is despite 92% of heat pump owners saying they were highly satisfied with the technology after two winters.[242] Polling from Ipsos also shows that more than a third (34%) of British adults are unaware of the lowest carbon options to heat their homes.[243]

86. The evidence that we received also highlighted the volume of misinformation plaguing the sector, which is undermining consumer confidence and the ability of households to make informed decisions. The Institution of Engineering and Technology told us: "A significant problem in raising consumer confidence is the dissemination of conflicting information that often lacks credibility".[244] In its written evidence, Dimplex called on the Government to be firmer on mis-selling and misinformation. It warned us that many stakeholders in the retrofit sector were making claims that are "scientifically impossible", including on the running costs of heating systems. It added that installers are worried about inadvertently misleading customers owing to the volume of misinformation in the sector, which leaves many feeling unsure what measures are actually going to deliver benefits and which are being falsely marketed.[245]

87. Several witnesses called for a dedicated consumer engagement strategy for electric heating to increase interest in low carbon heating systems and provide a reliable source of information. The MCS Foundation told us that there needs to be a national awareness campaign to inform consumers of the benefits of retrofit.[246] Nesta told us that most consumers have "very limited information on how different home heating systems work", adding that it is important that advice is accurate, unbiased and makes clear which heating choices are likely to be most affordable.[247]

88. Miatta Fahnbulleh acknowledged in her evidence the importance of "winning hearts and minds" of consumers. She told us that the Government would not force people to take on upgrades in their homes but, rather, would persuade them that doing so would be best for their finances and quality of life.[248] She added that while many households were persuaded by the green credentials of home retrofit, they were mostly persuaded by whether it was good for them financially. She said the Government would design the Warm Homes Plan to ensure financial benefits for consumers.[249]

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241 The Eco Experts, "The National Home Energy Survey 2023", 10 January 2025
242 Department for Energy Security and Net Zero, "Boost to heat pump rollout with plans for cheaper and easier installation", 10 January 2025
243 Ipsos, "Brits want to fight climate change, but a third of consumers unaware of how to make homes greener", 10 January 2025
244 The Institution of Engineering and Technology (HEA0041)
245 Dimplex (RFH0034)
246 MCS Foundation (HEA0070)
247 Nesta (HEA0066)
248 Q69 [Miatta Fahnbulleh MP]
249 Q72 [Miatta Fahnbulleh MP]

89. **CONCLUSION**
Uncertainty over the UK's technological direction for decarbonising heat is undermining consumer confidence and supply chain development. In particular, the Government's failure to decide on the role of hydrogen for home heating is obstructing the rollout of proven electric technologies such as heat pumps. Consumers, installers and the supply chain require long-term certainty to invest in low carbon heating technologies.

90. **CONCLUSION**
Electricity is much more expensive than gas in the UK because gas generation sets the marginal wholesale price and most levies are placed on electricity bills, rather than gas. This is a significant disincentive for consumers switching from fossil fuel to electric heating and a major barrier to decarbonising homes. Lowering the price of electricity relative to gas has been the tipping point needed to encourage the mass uptake of low carbon heating systems in some European countries.

91. **CONCLUSION**
Levels of public awareness of electric heating systems are worryingly low. Many consumers are simply unaware of technologies such as heat pumps, let alone their benefits and support available to them. This is compounded by misinformation and factionalism in parts of the home heating sector, which undermines the credibility of proven technologies and obstructs consumers from making informed decisions.

92. **RECOMMENDATION**
We recommend that the Government, by the end of 2025, considers reducing the policy cost difference between gas and electricity bills, creating an incentive for households to adopt electric heating systems. The Government should do this carefully, recognising that almost all gas use is for essentials such as heating and cooking, differentiating gas from electricity. During this process, the Government must provide support for those who lose out due to the policy cost changes.

93. **RECOMMENDATION**
The Government must produce an engagement strategy to set out the costs and benefits of electric heating and build confidence for consumers, installers and the supply chain. This should include a plan to tackle misinformation and introduce consumer and workforce champions who can share experiences of electric heating systems. Measures must be focused on supporting and encouraging those least likely to be able to afford a transition, low income households.

Hydrogen and gas network

Hydrogen heating

94. The previous Government said that it would take a strategic decision on the role of hydrogen for domestic heating by 2026.[250] The new Government has committed to consulting on its possible use in 2025 and says it will provide strategic direction as soon as possible.[251] Miatta Fahnbulleh told us that the Government is committed to finishing the review of hydrogen started under the previous Government and considering the evidence base in full.[252]

95. Many witnesses told us that this delay, which allows time for its viability to be assessed in trials, creates an uncertain investment landscape that threatens to inhibit the development of both a wider hydrogen supply chain and a market for low carbon heating systems such as heat pumps.[253] According to analysis by E3G, a widespread rollout of hydrogen boilers could cost the Government up to £40bn per year in subsidies. It noted that the Government's indecision in ruling out the deployment of hydrogen boilers is already placing upwards pressure on consumer bills, as additional funding is needed to support the gas network in keeping this option on the table.[254] Independent bodies have also offered a sceptical analysis. The Climate Change Committee's Seventh Carbon Budget Report and the National Infrastructure Commission's Second National Infrastructure Assessment say that the Government should rule out hydrogen for home heating altogether.[255]

96. Some witnesses to our inquiry supported hydrogen for home heating on the grounds that it would provide consumers with choice and be less disruptive for households familiar with natural gas heating.[256] Cadent Gas told us: "The question is not a binary one of heat pumps or hydrogen, but one of how much of each technology we will need to decarbonise heat at least cost".[257] However, hydrogen village trials have faced strong local opposition and supply issues. For example, proposed hydrogen village trials in Redcar and Ellesmere Port both saw protests over safety, cost and the ability to opt out

250 Climate Change Committee, "2023 Report to Parliament", 10 January 2025
251 Department for Energy Security and Net Zero, "Hydrogen Strategy Update to the Market: December 2024", 10 January 2025
252 Q94 [Miatta Fahnbulleh MP]
253 For example, Centre for Sustainable Energy (RFH0011) and EDF (HEA0119)
254 E3G, "Decisions on UK hydrogen heat", 5 March 2025
255 Climate Change Committee, "The Seventh Carbon Budget", 5 March 2025 and National Infrastructure Commission, "Second National Infrastructure Assessment", 10 January 2025
256 For example, Cadent Gas (HEA0094)
257 Cadent Gas (HEA0094)

of trials, with the latter being scrapped due to local objections.[258] While the Redcar project was due to go ahead, the previous Government scrapped the project due to the main source of hydrogen being unavailable.[259] As a result, it also decided not to progress with planned work on a hydrogen town pilot until after a strategic decision on the possible role on hydrogen for home heating is made.[260] This follows the collapse of Cadent's hydrogen trial in Whitby in 2022, where safety and lack of choice were cited as the key reasons for public dissatisfaction.[261] Akshay Kaul, Director General for Infrastructure at Ofgem, told us: "The clear indication from the hydrogen heating trials experience is that consumers resist change".[262]

97. Some analysts have questioned whether consumers would choose hydrogen heating over its alternatives at all: a 2023 study by Nesta found that less than half of British adults agree that hydrogen should be used for home heating.[263] In its written evidence, Nesta explained that choice is not currently a strong feature of the home heating market, with most households deciding to replace their incumbent energy system with a like-for-like system. It said that moving to an electrified system would "be the route to expand choice", while hydrogen heating "just preserves the status quo".[264]

98. However, on a visit to the H100 Fife green hydrogen project in Scotland, our predecessor Committee witnessed how a local green hydrogen gas network could operate, with minimal changes for residents used to natural gas heating, and how the project was working to foster local support. Since the visit, the project has completed construction of the world's first domestic hydrogen gas network that will allow residents to opt-in to heat their homes with green hydrogen.[265] The Secretary of State told us the Government was supportive of this trial continuing and expected the first homes to be connected by summer 2025, providing benefits to the wider hydrogen economy.[266]

258 BBC News, "Redcar hydrogen trial scrapped by government", 10 January 2025
259 Department for Energy Security and Net Zero, "Hydrogen village trial: Open letter to Gas Distribution Networks and further information", 10 January 2025
260 Department for Energy Security and Net Zero, "Hydrogen heating town pilot: Letter to Gas Distribution Networks - Update", 10 January 2025
261 The Guardian, "'We've got no choice': locals fear life as lab rats in UK hydrogen heating pilot" 10 January 2025
262 Q483 [Akshay Kaul]
263 Nesta, "Understanding the public view on hydrogen boilers", 10 January 2025
264 Nesta (RFH0050)
265 SGN, "We've completed construction of our world-first green gas network", 10 January 2025
266 Q404 [Ed Miliband MP]

99. The previous Government announced that it would only require domestic gas boilers to be hydrogen-ready, which means they could be easily converted from using natural gas to operate on a hydrogen gas network, if it was decided in 2026 that hydrogen would play a major role in decarbonising domestic heat, and, even then, only from 2030.[267] Dr Tony Ballance told us that the ability to have hydrogen-ready boilers installed would be important to ensure that any future transition to hydrogen down the line was as straightforward and low cost as possible.[268] However, EDF advised us that mandating hydrogen-ready boilers from 2026 without a clear role for hydrogen "could act as a distraction for many consumers wishing to decarbonise their heating with proven electrified heating technologies, such as heat pumps".[269]

100. Hydrogen boilers remain at a prototype stage. Once fully developed, the Eco Experts estimate that hydrogen boilers could cost a similar amount upfront to a natural gas boiler, between £570 and £2,700.[270] While an air source heat pump can cost between £7,000 and £10,000 for a two- or three-bedroom house, the BUS offers grants of up to £7,500 against these costs, making them roughly cost comparable, and they are expected to become cheaper as their efficiency improves.[271] The Eco Experts add that it would cost significantly more to heat a home using green hydrogen compared to natural gas, with an estimated annual cost of around £960,[272] compared to £694 for a natural gas boiler and £939 for a heat pump.[273] While blue hydrogen is two to three times less expensive than green hydrogen, it is not a low carbon fuel,[274] and Nesta's research finds that the running costs of heat pumps could be reduced by £420 per year if policy costs on gas and electricity bills were rebalanced.[275] Such action to reduce the running costs of heat pumps, alongside grant support for upfront costs through the BUS, could make heat pumps equivalent or even cheaper to install and run than a natural gas boiler for a consumer.[276]

101. In 2021, Neil Kenward, Director of Strategy, Economics, Research and Net Zero at Ofgem, told the predecessor Business, Energy and Industrial Strategy Committee that Ofgem needed "clarity around timelines and

267 Department for Energy Security and Net Zero, "Improving boiler standards and efficiency", 10 January 2025
268 Q179 [Dr Tony Ballance]
269 EDF (HEA0119)
270 The Eco Experts, "How much does a hydrogen boiler actually cost?", 10 January 2025
271 Department for Energy Security and Net Zero, "Apply for the Boiler Upgrade Scheme", 10 January 2025
272 The Eco Experts, "How much does a hydrogen boiler actually cost?", 10 January 2025
273 The Eco Experts, "How much do air source heat pumps actually cost?", 10 January 2025
274 The Eco Experts, "How much does a hydrogen boiler actually cost?", 10 January 2025
275 Nesta, "Cheaper electricity, fairer bills", 10 January 2025
276 For example, Nesta, "Cheaper electricity, fairer bills", 10 January 2025

processes" on key technologies including hydrogen to deliver the network planning needed to decarbonise home heating.[277] In 2024, Mr Kenward told us that Ofgem still does not have that clarity, adding that the regulator would like government to take a decision on the role of hydrogen for heating ahead of 2026 to enable Ofgem to develop and regulate those networks.[278] Ofgem reiterated its calls for an earlier decision on hydrogen in our evidence session in 2025.[279] Its Chief Executive, Jonathan Brearley, also updated us on the regulator's position on hydrogen, telling us:

> Our assessment at the moment is that for the majority of households across the country [...] electricity should be a really good solution in the long term for heating. There will probably be pockets where it is difficult to put heat pumps in and to electrify. That is where we need some alternatives and that is why we are carrying on with the H100 trial with SGN.[280]

102. Ofgem made clear in its evidence that policy certainty from the Government on hydrogen would help to drive the market for heat pumps and allow the regulator to better prepare for future regulation. Jonathan Brearley told us that policy clarity on hydrogen could help catalyse the heat pump market, adding "there are limits to what we can do" without clear direction.[281] Akshay Kaul added: "Once you make a policy decision on electricity versus other alternatives, then we can start to plan the future of the system, particularly on the gas side, much better. We can also start to take a look at these economic issues in terms of who pays, how much and at what time".[282]

103. Much of the written evidence to our inquiry also called for an earlier decision on hydrogen and refuted its viability for use in domestic heating. The Centre for Sustainable Energy told us that the Government needs to clarify that "heat pumps and heat networks are the two key solutions and that hydrogen boilers are not a solution likely to be viable for home heating".[283] The Institution of Engineers in Scotland told us that hydrogen for heating is "a crazy idea" that cannot be applied to most houses in the UK. It advised that all efforts on the hydrogen economy should be refocused onto areas where it could make a genuine impact.[284] The Northern Housing Consortium added:

277 Business, Energy and Industrial Strategy Committee, "Decarbonising heat in homes", 10 January 2025
278 Q645 [Neil Kenward]
279 Qq486–7 [Akshay Kaul]
280 Q483 [Jonathan Brearley]
281 Q485 [Jonathan Brearley]
282 Q487 [Akshay Kaul]
283 Centre for Sustainable Energy (RFH0011)
284 Institution of Engineers in Scotland (IES) (HEA0026)

> The feasibility of [hydrogen] playing anything beyond a peripheral role in domestic heating is minimal. This is unlikely to change between now and 2026 and, rather than waiting, government should provide additional certainty to the market by publishing a clear position statement on the extremely limited role that hydrogen will play in heating homes.[285]

104. In its Seventh Carbon Budget published in 2025, which maps a pathway by which the UK can reach net zero by 2050, the CCC concludes that there will be "no role for hydrogen heating in residential buildings". It notes that hydrogen production and infrastructure will not be available for widespread uptake until the mid-2030s and meeting demand using blue hydrogen would create additional emissions and greater reliance on natural gas imports. In contrast, it notes that capabilities exist to ramp up heat pump installations right away. It therefore concludes that adopting hydrogen for home heating would delay the decarbonisation of homes, significantly increase indirect emissions from the sector and put the UK's overall emissions reduction targets at risk.[286]

Phasing out fossil fuel heating

105. Many witnesses to our inquiry also called for a clear timeline for phasing out fossil fuel heating on and off the gas grid.[287] The previous Government had announced a ban on installing new oil and LPG boilers for homes off the gas grid from 2026. However, in September 2023, it announced that it would delay this ban until 2035.[288] In January 2025, it was widely reported in the media that the new Government would not adopt this policy at all, which would mean that no mandate exists to phase out fossil fuel heating in any existing homes at any point in the future.[289] This is despite the Government claiming that the vast majority of homes will be heated by heat pumps in future[290] and a de facto ban on new gas boilers in new homes expected to be introduced under the Future Homes Standard from 2025.[291]

106. We heard a weight of evidence from both the electric and gas heating sectors calling for a clear deadline to ban the installation of new fossil fuel heating systems. Calor, Energy UK, Good Energy, Nesta and OVO Energy

285 Northern Housing Consortium (HEA0015)
286 Climate Change Committee, "The Seventh Carbon Budget", 5 March 2025
287 For example, Centre for Sustainable Energy (RFH0011), Energy UK (HEA0080), Nesta (HEA0066) and OVO Energy (HEA0101)
288 Prime Minister's Office, "PM recommits UK to net zero by 2050", 10 January 2025
289 iNews, "Government to ditch 2035 gas boiler ban despite heat pump drive", 10 January 2025
290 Q96 [Miatta Fahnbulleh MP]
291 Ministry of Housing, Communities and Local Government, "Reporting on the Future Homes Standard and solar panels", 10 January 2025

were among several stakeholders who gave evidence that specifically recommended that the Government introduces a phase out date of 2035, beyond which there should be no installation of new fossil fuel heating systems in new or existing homes, to provide a backstop to ensure that no fossil fuels are used to heat UK homes by 2050.[292] OVO Energy told us that without a clear regulatory signal, the rollout of low carbon heating systems would be slower and "everyone will face higher costs in the long run".[293]

107. Nesta noted that a clear phase out date for internal combustion engine cars has sent a clear signal to consumers to switch to electric vehicles, adding that a clear phase out date would not only ensure that no fossil fuels are used for heating by 2050, but also "shape the behaviour of consumers and businesses many years in advance of the deadline".[294] 2024 was a positive year for the sale of electric vehicles in the UK, accounting for 19.6% of new vehicle market share, up from 16.5% in 2023.[295] Dr Emily Nurse told us that the CCC expects electric vehicles to soon reach price parity with internal combustion engine vehicles, which would be a tipping point for demand.[296] In contrast, while just under 60,000 certified heat pump installations were made in the UK in 2024,[297] around 1.65m natural gas boilers are sold in the UK every year.[298]

108. There was also support for a mandated phase-out of new fossil fuel heating systems from the gas heating sector. Calor told us that the Government should phase out replacement fossil fuel boilers both on and off the gas grid at the same time and recommended that it should do this by 2035, or even 2030. It said that this would also allow suppliers of off gas grid energy technologies to develop and replace current fuels with renewable liquid gases.[299] Ofgem also called for an orderly and planned transition from gas to electricity. Akshay Kaul told us: "We are very keen to avoid a disorderly spiral away from gas to electricity. It is much better to have an orderly transition".[300] This evidence supports the first priority recommendation for buildings made by the CCC in its 2024 Progress Report, which calls on

292 For example, Calor (HEA0092), Energy UK (HEA0080), Good Energy (HEA0134), Nesta (HEA0066) and OVO Energy (HEA0101)
293 OVO Energy (HEA0101)
294 Nesta (HEA0066)
295 SMMT, "Record EV market share but weak private demand frustrates ambition", 10 January 2025
296 Q326 [Dr Emily Nurse]
297 MCS Foundation, "2024 was a record year for small-scale renewables", 20 January 2025
298 Department for Energy Security and Net Zero, "Energy Security Bill factsheet", 10 January 2025
299 Calor (HEA0092)
300 Q493 [Akshay Kaul]

government to reinstate a new boiler phase-out to cover all homes. It says that this should be supported by policies that can remove barriers to people choosing low carbon heating options.[301]

109. One of the Government's key mechanisms for encouraging a move away from fossil fuel heating is the Clean Heat Market Mechanism (CHMM). The CHMM is intended to increase the uptake of heat pumps by placing an obligation on boiler manufacturers to match or substitute a percentage of their boiler sales with heat pumps. The Government has proposed to set the first year target of heat pump sales at 6%. Initial plans indicated that the proportion of required heat pump sales would rise gradually year-on-year until around a quarter of boiler sales are matched or substituted. The Government has delayed the introduction of the CHMM by one year until April 2025 and proposed reducing financial penalties for missing credits from £3,000 to £500 for the first scheme year.[302] Mike Foster, Chief Executive at Energy and Utilities Alliance, told us the CHMM is a bad policy that is attempting to address supply issues when the real problem around heat pumps is trying to increase demand.[303]

110. Around 15% of homes in England are located off the gas grid, accounting for more than three quarters of rural homes. A higher proportion of rural homes than urban homes were also built before 1919, which means they are more likely to be constructed in a way that is challenging to upgrade, such as having solid walls, and some have a design that means they would be unsuitable for a heat pump.[304] Some off-grid properties are currently heated using heating oil, which is much more carbon intensive than natural gas heating, and may be decarbonised using renewable liquid fuels.[305]

111. The previous Government consulted on proposals to phase out the installation of oil boilers from 2026 in homes but a response was never published and the proposals were ruled out in 2023.[306] The new Government has not yet set out its plan to decarbonise off-grid homes but has made clear that it will not force any households to remove their current boilers.[307] NIBE Energy Systems told us that a phase-out date for installing new fossil fuel heating systems off the gas grid would ensure that consumers are not left with stranded assets if they make purchases without knowledge of a

301 Climate Change Committee, "2024 Progress Report", 10 January 2025
302 Department for Energy Security and Net Zero, "Addendum to the Clean Heat Market Mechanism Consultation - Government Response", 10 January 2025
303 Q62 [Mike Foster]
304 Country Land and Business Association (CLA) (RFH0001)
305 OFTEC Ltd. and UKIFDA (RFH0016)
306 Prime Minister's Office, "PM recommits UK to net zero by 2050", 10 January 2025
307 OFTEC Ltd and UKIFDA (RFH0016)

subsequent phase out of fossil fuel heating systems. It said that a clear phase out date would also allow off-grid heating technologies and supply chains to develop.[308]

Decommissioning the gas network

112. Witnesses told us that the Government must prepare a costed plan for the decommissioning of some, if not all, of the gas network, regardless of the role that hydrogen may play, as an increasing number of households switch to electric heating systems. Cadent Gas told us this will require planning many years in advance,[309] but the Regulatory Assistance Project warned that no such plan yet exists.[310] The National Infrastructure Commission estimated that the costs of decommissioning the gas network could be up to £75bn.[311] We heard from the Centre for Sustainable Energy that the Government must devise a progressive approach to ensure these costs do not disproportionately impact vulnerable consumers who remain connected to the gas network.[312]

113. Madeleine Gabriel, Director of Sustainable Future at Nesta, told us that the Government does not yet have a plan for decommissioning the gas network and that costs are likely to rise the longer this remains the case. The costs of maintaining the gas network are charged by network companies to energy suppliers, which cover the costs by levying charges on consumer energy bills.[313] She explained that, as the pool of gas customers diminishes as an increasing number switch to electric heating, a decreasing number of consumers would be responsible for the costs of its upkeep. She added that it would not be practical to place these costs on electricity bills instead, owing to the need to keep electricity bills low to encourage the switch to electric heating, which means that the Government will need to devise a plan.[314]

114. We asked Ofgem if the Government should be doing more to plan and prepare for the decommissioning of the gas network. Neil Kenward told us this was an "extremely important and timely question" because, should the Government decide that hydrogen will not play a major role in heating, there will "need to be a national conversation about decommissioning". He explained that Ofgem intended to begin this conversation and would look at

308 NIBE Energy Systems UK (HEA0025)
309 Cadent Gas (HEA0094)
310 The Regulatory Assistance Project (HEA0076)
311 National Infrastructure Commission, "Future of Great Britain's Gas Networks", 10 January 2025
312 Centre for Sustainable Energy (RFH0011)
313 Ofgem, "Understand your electricity and gas bills", 10 January 2025
314 Q48 [Madeleine Gabriel]

ways to minimise the costs involved for consumers.[315] In October 2023, the National Infrastructure Commission published a report that called on the Government to prepare for the end of natural gas use. This made a series of recommendations that included banning new connections to the gas network from 2025; ending the sale of all new fossil fuel boilers in 2035; and establishing a mechanism for local input into decommissioning plans.[316]

115. **CONCLUSION**
Delaying a decision on the role of hydrogen for domestic heating until 2026 continues to create profound uncertainty. This means that consumers are delaying their switch to low carbon heating systems and Ofgem is unable to prepare to regulate our future energy networks as effectively as it otherwise could. With hydrogen trials being cancelled and a weight of evidence in place, it makes sense to take a decision this year.

116. **CONCLUSION**
We are concerned that the Government has not set clear guidelines for the end of the installation of new fossil fuel heating systems on and off the gas grid. Without certainty, consumers, manufacturers and the wider supply chain lack the confidence that they need to make informed decisions. The Government should consider the lessons that can be applied from announcing the end of the sale of new internal combustion engine vehicles in encouraging the uptake and increasing market share for low carbon heating technologies.

117. **CONCLUSION**
The Government urgently needs to develop a plan for repurposing the gas network. Whether hydrogen plays a role in our future heating system or not, much of the gas network will need repurposing, presenting an enormous and costly infrastructural challenge that is only likely to become more expensive. It is concerning that the previous Government's preparations were only at a preliminary stage. This Government should address repurposing of the gas network as a matter of priority.

315 Q659 [Neil Kenward]
316 National Infrastructure Commission, "Government should plan for the end of the use of natural gas", 10 January 2025

118. **RECOMMENDATION**
We urge the Government to take a decision on the possible role of hydrogen for domestic heating no later than summer 2025, alongside the publication of its Warm Homes Plan. This should be informed by the existing evidence gathered through trials and independent analysis.

119. **RECOMMENDATION**
The Government must provide consumers, installers and the supply chain with certainty that most home heating will be powered by electricity in future. It must also set out its view on whether new on-grid and off-grid fossil fuel heating systems should continue to be installed in homes from 2035 and explain how it will minimise the use of fossil fuels in homes by 2050. This is crucial to keep the UK on track with the Climate Change Committee's recommendations in its Seventh Carbon Budget, while also providing a stimulus for the uptake of electric heating systems.

120. **RECOMMENDATION**
The Government must set out comprehensive plans and an analysis of the costs and benefits for repurposing the gas network and clarifying who would bear the costs. It should set out a preliminary analysis by the end of 2025, including a clear timeline and a progressive approach to funding the costs.

121. **RECOMMENDATION**
The Government should review and assess measures designed to shape and influence the clean heat market, including but not limited to the Clean Heat Market Mechanism, to determine if they remain the most effective ways to increase heat pump uptake.

3 Workforce and skills

Upskilling the workforce

122. The evidence that we received was largely critical of the preparedness of the workforce to retrofit UK homes. Finance for the Future warned us of a "twin underlying crisis" in the sector: the lack of new entrants and a rapidly ageing workforce. It said this threatens our ability to maintain even the current level of energy efficiency work.[317] Ashden Climate Solutions told us that more than 400,000 builders and skilled retrofit professionals are needed to retrofit the UK housing stock but warned that just 200,000 people currently work on maintaining and upgrading existing homes.[318] However, while the Centre for Sustainable Energy told us that the lack of skilled tradespeople is "one of the biggest challenges we face",[319] Octopus Energy told us that we do not have a workforce shortage. Instead, it said that the challenge was upskilling the existing workforce.[320]

123. Checkatrade told us that the transition to net zero and decarbonisation of homes will see 29% of construction jobs requiring some degree of upskilling. It said there was an especially pressing need for more apprentices, given that 35% of those working in the trade and construction sector are aged over 50 and three fifths plan to retire between the ages of 61 and 65. It identified three key issues that it said must be addressed to close the sector's skills gap:

- Improving completion rates, given that only one third of people currently undertaking a construction apprenticeship go on to complete it, making the process inefficient and costly.
- Supporting SMEs to invest in training, recognising that there is three times more demand than supply for apprenticeships and many SMEs lack the time and resources to take on an apprentice.

317 Finance for the Future, Green New Deal Group (HEA0032)
318 Ashden Climate Solutions (HEA0017)
319 Centre for Sustainable Energy (HEA0142)
320 Octopus Energy (HEA0153)

- Inspiring young people into apprenticeships, to address the fact that there is a lack of prestige around trade careers, despite work in the construction sector yielding an average wage 13% higher than the national average.[321]

124. Statistics from the Heat Pump Association show that the number of individuals who completed training to become qualified heat pump installers increased by 166% from just under 3,000 in 2022 to close to 8,000 in 2023. This brings the number of heat pump installers qualified in the last two years to just under 11,000 individuals. However, according to its projections, the UK will need 33,000 installers by 2028, requiring a significant scale-up.[322] While more than half of heating engineers are willing to upskill to install heat pumps if there are sufficient incentives, demand for heat pumps remains low compared to gas boilers and the sector is dominated by the self-employed and SMEs, many of whom do not have the time or money to invest in training. The average age of an installer is also above 50, with many nearing retirement.[323] However, there was disagreement in the evidence that we received on the extent of the challenge posed by an ageing workforce, with some witnesses telling us that the Government should focus on increasing the number of new entrants to the retrofit sector.

Retrofit skills plan

125. We heard evidence that skills provision is currently poorly coordinated and many witnesses advocated for a dedicated skills plan for the home retrofit sector.[324] For example, the Centre for Sustainable Energy told us that the lack of skilled tradespeople in the sector is "one of the biggest challenges we face", adding that "we urgently need a national skills strategy".[325] The CITB told us:

> The scale of the challenge to retrofit the UK's homes is so significant that it requires a rapid and lasting transformation of the construction sector, including an industry-wide investment in skills, far-reaching skills reform, and an unprecedented recruitment and upskilling drive. This demand overwhelmingly relates to improvements to existing

321 Checkatrade (RFH0005)
322 Heat Pump Association, "New Industry data shows a 166% Increase in Qualified Heat Pump Installers", 10 January 2025
323 UK Parliament, "Heat pumps", 10 January 2025
324 For example, Centre for Sustainable Energy (HEA0142), Checkatrade (RFH0005), Construction Industry Training Board (CITB) (RFH0009), E3G (HEA0013) and UK100 (HEA0132)
325 Centre for Sustainable Energy (HEA0142)

> buildings to reduce their energy demand and would represent a 13% increase on the current size of the workforce, based on current technologies and ways of working.[326]

126. Witnesses told us that the home retrofit sector presents a great opportunity to create skilled jobs and economic growth. For example, Stonewater said that a coordinated home retrofit programme in England could sustain over 400,000 direct jobs and 500,000 indirect jobs by 2030, and more than 1.2m direct jobs and 1.5m indirect jobs by 2050. It added that there are clear opportunities to retrain existing heating engineers currently working with fossil fuel heating systems to install low carbon heating systems, but it warned that a long-term skills strategy is needed to ensure that the necessary workforce is upskilled and ready.[327] The previous Government launched a Green Jobs Delivery Group that aimed to produce a Net Zero and Nature Workforce Action Plan, but this was never ultimately published.[328]

127. Maya Fitchett, Policy Analyst at National Energy Action, told us that stop-start retrofit support schemes and policy uncertainty are barriers to upskilling the workforce. She called for a dedicated skills strategy that should develop clear pathways into the sector.[329] We also heard evidence that training providers are reluctant to invest in new courses on low carbon home retrofit owing to the lack of technological certainty in the sector and uncertain demand. For example, Drayton and Schneider Electric told us there is a "distinct lack of appetite" for further education providers to provide courses on low carbon retrofit.[330] NIBE Energy Systems echoed these concerns, noting that training providers need greater certainty. It explained:

> The lack of enthusiasm by colleges to develop their learning facilities is a real worry for industry. There are also difficulties in identifying courses that provide relevant and in demand skills and knowledge as many courses are easily outdated or too broad, and so do not reflect the reality of in practice installations.[331]

128. The Association of Local Energy Officers London provided similar warnings and said colleges and universities were "stuck in a place of uncertainty, not knowing which programmes will still be in place by the time a course is designed, advertised, and the first cohort graduates". It added that longevity of funding and policy is the only way to encourage training bodies to design appropriate programmes.[332] The Social Market Foundation told us

326 Construction Industry Training Board (CITB) (RFH0009)
327 Stonewater (RFH0051)
328 Department for Energy Security and Net Zero, "Green Jobs Delivery Group Summer 2023 statement", 10 January 2025
329 Q150 [Maya Fitchett]
330 Drayton by Schneider Electric (HEA0005)
331 NIBE Energy Systems UK (HEA0025)
332 Association of Local Energy Officers - London (HEA0049)

that there is also little standardisation in training for both heat pump and gas heating engineers, which results in an inconsistently skilled workforce and may allow rogue installers to exploit the absence of clear standards.[333]

129. Evidence to this inquiry was especially critical of the lack of dedicated avenues for vocational training in the sector. Centrica told us that it has had to train engineers in-house due to little progress on dedicated, low carbon vocational training, which it said is necessary to support a strong talent pipeline.[334] We heard many calls for more flexible training including short courses and skills bootcamps that allow existing workers to upskill without taking long periods of time "off the tools".[335] Aadil Qureshi, CEO at Heat Geek, told us that digital training is one solution, especially for experienced engineers.[336]

130. Evidence also highlighted that a particular focus is needed on the workforce challenges facing rural areas and posed by retrofitting homes constructed using traditional building practices. Historic England recommended that all training courses should include knowledge of traditionally-built homes and how they perform. It agreed that shorter-term training courses, development of skills bootcamps and greater flexibility in the Apprenticeship Levy, soon to be replaced with the Growth and Skills Levy, would also be welcome additions.[337] We are taking evidence on apprenticeships and skills training, including the Growth and Skills Levy, in greater detail in our inquiry on Workforce planning to deliver clean, secure energy.[338]

Compensation for upskilling

131. The evidence that we received made clear that current grants and incentives are not enough to encourage workers to take "time off the tools" to retrain and upskill.[339] While the Government offers grants of up to £500 for training through its Heat Training Grant, Drayton and Schneider Electric told us that this is not enough to entice installers to commit to a three or four day course, especially the self-employed.[340] Bright Blue called for an additional payment to compensate sole traders. It told us that the average cost of a heat pump installation course is around £300, and compensation

333 Social Market Foundation (HEA0086)
334 Centrica (HEA0079)
335 For example, Checkatrade (RFH0005) and Qq515–517 and Q523 [Robert Nitsch]
336 Q513 [Aadil Qureshi]
337 Historic England (HEA0033)
338 Energy Security and Net Zero Committee, "Workforce planning to deliver clean, secure energy", 14 May 2025
339 For example, Drayton by Schneider Electric (HEA0005) and Vaillant Group UK Ltd (HEA0021)
340 Drayton by Schneider Electric (HEA0005)

for this time, based on the average earnings for a gas boiler installer, would be around £900.[341] A study by Vaillant found that most heating installers are only willing to spend up to £250 to retrain as a heat pump engineer.[342]

132. Andy Prendergast, National Secretary for the Private Sector at the GMB, told us that many workers are also reluctant to undertake training that may not be used in practice for some time and where local demand is uncertain. He said that, until sufficient demand exists, people are being asked to spend thousands of pounds to learn skills that they may not use for some time, to work on heating systems that are underpinned by little long-term policy certainty. He added that heat pump engineers get paid on average £10,000 less than gas engineers,[343] although Minister for Energy Consumers, Miatta Fahnbulleh, told us DESNZ does not recognise this figure,[344] quoting research by the National Careers Service that suggests average pay is £38,000 for an experienced gas engineer compared to £46,000 for an experienced heat pump engineer.[345]

133. Evidence from the CITB added that clear, employer-backed progression pathways are needed to guide people into careers, noting that only a third of learners on construction-related further education courses in England enter employment or an apprenticeship in industry as their first destination six months after completing their qualification.[346] We also heard warnings over how funding for training is allocated. Calisen told us that funding to train heat pump engineers is currently only available to individuals and does not support training academies or employers who often fund employee training costs. It said this creates a disincentive for employers to provide their own heat pump training and limits economies of scale.[347]

134. Vattenfall told us that many workers are required to have an N/SVQ level 2/3 in plumbing or oil and gas installation before they can upskill into renewable heat. It told us that most workers will not have the time or money to extend their plumbing qualification to include elements of low carbon heating, which means the cost and additional time required becomes a barrier to upskilling. It explained that in Germany, the equivalent plumbing qualification requires equivalent time spent on gas, oil, heat pumps, solar, thermal and biomass, creating a workforce that is widely skilled on low carbon heating technologies. It proposed that in the UK heat pumps and

341 Bright Blue (HEA0019)
342 Vaillant Group UK Ltd (HEA0021)
343 Q65 [Andy Prendergast]
344 Miatta Fahnbulleh, "Retrofitting homes for net zero oral evidence follow up", 10 January 2025
345 National Careers Service, "Gas service technician", 10 January 2025 and National Careers Service, "Heat pump engineer", 10 January 2025
346 Construction Industry Training Board (CITB) (RFH0009)
347 Calisen (HEA0046)

solar should be made core modules of an NVQ in plumbing and not an add on, allowing the gas workforce to easily upskill for work on renewable heat.[348]

135. **CONCLUSION**
The UK has a skilled home heating workforce but its transition to work on low carbon retrofit is not happening at the pace required to upgrade homes at scale. This is compounded by a twin underlying crisis: few new entrants to the sector and an ageing workforce.

136. **CONCLUSION**
Training providers are reluctant to invest in courses on low carbon retrofit due to low demand for training. This is underpinned by the uncertain future technical direction of the sector, inadequate training grants, weak promotion of careers in retrofit and low consumer demand for low carbon energy home improvements.

137. **CONCLUSION**
The Heat Training Grant does not adequately incentivise workers to take time off work to upskill on low carbon retrofit or compensate them for lost earnings. Many workers in the retrofit sector are self-employed and cannot afford to take time off work to commit to a multi-day course.

138. **RECOMMENDATION**
We recommend that the Government resumes work undertaken by the previous Government to prepare a Net Zero and Nature Workforce Action Plan. This should be published by the end of 2025 and include a specific roadmap for meeting the skills needs of the home retrofit sector, including via the Growth and Skills Levy mechanisms. It should also ensure that training courses and qualifications for heating engineers cover work on low carbon heating technologies as part of the core curriculum, rather than an add-on. This should be a cross-government endeavour with the Skills Minister accountable to ensure full engagement between the Office for Clean Energy Jobs, Skills England, the Department for Energy Security and Net Zero and the Department for Education. Once it is fully established, Skills England should also prioritise the skills needs of the low carbon retrofit sector.

348 Vattenfall (HEA0161)

139. **RECOMMENDATION**
The Government should increase the value of the Heat Training Grant to provide workers with full compensation for lost earnings when taking time off work to upskill on low carbon retrofit. This should take effect until market demand provides sufficient incentives for the workforce, supply chain and employers to self-fund training.

Accreditation and consumer protections

140. Home retrofit that has been facilitated and funded by government retrofit schemes has come under recent scrutiny as scandals around the quality of work have come to light. In January 2025, the Government announced that routine checks carried out by TrustMark had found widespread cases of poor-quality solid wall insulation installed since 2022 under the latest round of the Energy Company Obligation (ECO4) and the Great British Insulation Scheme (GBIS). As a result, the Government suspended 39 businesses responsible for poor-quality work, who will be forced to fix this at no cost to households and who will remain banned from installing new solid wall insulation under any government scheme unless they fulfil their obligation to put any issues right. It has committed to expanding checks of solid wall insulation measures installed under the schemes, commencing an immediate repair process and instructed Ofgem to take oversight of this work.[349]

141. While the Government is confident that these systemic issues are particular to solid wall insulation installed under these two schemes, it recognises that government-funded retrofit schemes inherited from the previous Government "no longer command confidence".[350] Moreover, we heard evidence of wider issues concerning numerous types of faulty insulation, including cavity wall insulation and spray foam insulation in roofs.[351] Minister for Energy Consumers, Miatta Fahnbulleh, told us that "the system of quality assurance that we have is not fit for purpose". She explained:

> The system at the moment is not the system that you would design. It is far too complicated. It is ad hoc. Accountability and protection for consumers are far too weak. We have to overhaul the whole thing. I am very clear about that, and that is what our reforms will do.[352]

349 Department for Energy Security and Net Zero, "Action taken to protect households with poor-quality insulation", 5 March 2025
350 Department for Energy Security and Net Zero, "Action taken to protect households with poor-quality insulation", 5 March 2025
351 Energy Security and Net Zero Committee, "Retrofitting homes for net zero - Oral evidence", 14 May 2025
352 Q79 [Miatta Fahnbulleh MP]

142. Other retrofit products installed under government schemes have also come under recent scrutiny. For example, some consumers who have had spray foam installed under the Green Homes Grant have struggled to remortgage or sell their home unless they spend thousands to remove it due to concerns over poor fittings leaving moisture trapped and roof timbers at risk of decay. The Residential Property Surveyors Association has found that around 250,000 homes could be un-mortgageable due to retrofitted spray foam insulation.[353] From 2021 to 2022, Citizens Advice saw a 45% increase in complaints relating to spray foam insulation retrofit and, since then, the number of related cases has remained high.[354] Spray foam is still available under the ECO and GBIS and as a result of these issues, the HomeOwners Alliance has advised homeowners not to install spray foam for the time being.[355] The Property Care Association and HomeOwners Alliance estimate that 20% of all insulation fitted in UK homes may have been installed incorrectly.[356]

143. In February 2025, we heard evidence from members of the public who are victims of failed home retrofit installed under government schemes. In this session, we heard of the enormous mental and financial toll that such failures can place on households, as well as the negative impact failures can have on the health of buildings and their occupants, as well as consumer confidence more broadly. These individuals told us that their experience has taken such a toll that they would rather live in a cold home than go through the process of trying to retrofit their home again.[357]

144. Zak Ashraf explained that he is a registered carer for his mother and has spent the past 15 months dealing with major problems at her property caused by a poor installation of solid wall insulation. This has caused significant damage, with the house being declared dangerous, and work to rectify the issues is likely to cost close to £200,000. Despite seeking redress, he explained that no one has taken accountability for these failures or put them right.[358] As a result, he told us: "I have been proactively telling people not to [install insulation]. You would be better off living in a cold house and paying higher bills, because the industry is not regulated properly".[359]

353 Mortgage Solutions, "RPSA warns 250,000 homes could be unmortgageable due to spray foam", 5 March 2025
354 Citizens Advice, "Spray Foam Insulation: Breaking Down the Risks", 5 March 2025
355 HomeOwners Alliance and Property Care Association, "Spray foam: ECO4/Great British Insulation Scheme and lending issues", 5 March 2025
356 HomeOwners Alliance and Property Care Association, "Spray foam: ECO4/Great British Insulation Scheme and lending issues", 5 March 2025
357 For example, Q120 [Zak Ashraf]
358 Q116 [Zak Ashraf]
359 Q120 [Zak Ashraf]

145. Other witnesses echoed the lack of accountability and redress in the sector, both from those responsible for installing faulty insulation and those tasked with overseeing the quality of home retrofit. Shabir Hussain, Domestic Energy Efficiency Manager at Luton Council, told us that "no one takes accountability" when things go wrong. Amanda Hoyles explained that her home has suffered from damp mould and rot following defective cavity wall insulation, which has been ongoing since 2007. As a leaseholder, she has been struggling to secure remedial actions, telling us: "I am a mortgaged owner-occupier with a house that somebody else is destroying and I cannot fix it. I cannot undertake the work myself because they are liable for the structure".[360] She explained that victims are often blamed for the insulation problems themselves and given remedies that are neither logical or address the underlying problem, such as being told to turn the heating up and open the windows.[361]

146. We also heard evidence from Damian Mercer, Manager at Cavity Extraction Ltd, who explained that his business solely exists to remove faulty insulation. He said that his business "should not exist" but does because the quality of workmanship in the sector is "horrendous". He warned that many consumers turn to their guarantees when a retrofitted measure fails, only to find that it offers them little protection in reality. He explained: "The guarantees are not worth the paper they are written on, and everybody is being hoodwinked constantly about these guarantees".[362]

147. The evidence that we received made a compelling case for a national body for workforce certification, consumer advice and redress. Andy Manning, Energy System Transformation Head at Citizens Advice, told us that the sector should move towards having a single accreditation scheme that would cover all home upgrades, regardless of whether they were funded via government schemes or otherwise. He said that delivering retrofit under one single badge would allow for consumer confidence to be restored.[363] He added that routes for redress should also be made as simple as possible, such as through a single Ombudsman.[364] Shabir Hussain agreed there should be a centralised helpline that can refer consumers to the relevant bodies to investigate further.[365]

148. Witnesses overwhelmingly agreed that greater oversight of retrofit work is needed. Damian Mercer told us that in the past, trained individuals, such as clerks of work or retrofit coordinators, ensured oversight on retrofit sites to ensure a high quality of work and command authority over those delivering

360 Q117 [Amanda Hoyles]
361 Q126 [Amanda Hoyles]
362 Q126 [Damien Mercer]
363 Qq151–152 [Andy Manning]
364 Qq151–152 [Andy Manning]
365 Q126 [Shabir Hussain]

measures. He said that today, retrofit schemes relied more on self-policing.[366] According to Ashden, the UK currently has around 1,000 retrofit coordinators, who are trained to oversee the design and management of retrofit measures, but may need around 50,000 by 2030.[367] Shabir Hussain added that a major barrier to enforcing standards is a lack of local council resources. He observed that of 4,215 external wall insulation works completed in Luton, less than one fifth were registered, which means that the remainder are deemed illegal. He told us that while the council could have taken enforcement action, "we decide not to because it is going to cost the homeowner £1,000 just for the inspection plus the remedial cost".[368]

149. The evidence also made clear that, despite the recent failures in home retrofit under government schemes, a far stronger regime of oversight and consumer protections exists for such work when compared to retrofit that is financed privately by consumers.[369] TrustMark, the UK Government-endorsed quality scheme for home improvements, told us that a substantial level of oversight is in place where a consumer uses a business registered with its certification programme, which is a requirement for domestic retrofit under government retrofit schemes. It added that outside of recognised schemes, "little easily accessible consistent levels of consumer protection exist, potentially leaving the customer stranded where things go wrong". It concluded that this was "a factor to the wider uptake of low carbon technologies".[370]

150. Many witnesses to our inquiry made clear that those who fail certification for government retrofit schemes or who are removed from such schemes due to poor quality workmanship should not be allowed to work under different government schemes or operate freely in the privately funded sector. Andy Manning told us: "Removing installers from the accredited list is clearly the right move, but there is effectively a market for those installers to move into where accreditation is not needed. We do need to close those opportunities off".[371] Ofgem acknowledged that evidence of bad installer practice and poor consumer experience remains across several retrofit technologies, both under schemes that Ofgem administers and the wider market, which poses a "barrier to uptake" that "must be addressed".[372]

366 Q137 [Damian Mercer]
367 Ashden, "Retrofit: solving the skills crisis", 5 March 2025
368 Q136 [Shabir Hussain]
369 For example, Citizens Advice (HEA0075), MCS Foundation (HEA0070) and TrustMark (RFH0006)
370 TrustMark (HEA0011)
371 Q156 [Andy Manning]
372 Ofgem (HEA0162)

151. The Chartered Institute of Building recommended to us that all retrofit work should be held to the same recognised standards, such as the PAS 2035 and PAS 2030 standards introduced by the British Standards Institution,[373] and certified by quality endorsed schemes. However, it added that such schemes must recognise that much work will be non-standard due to the heterogeneity of the UK housing stock.[374] In 2023, the Competition and Markets Authority published a report that identified three primary concerns on the levels of consumer protection in the retrofit sector:

- The level and robustness of standards vary, raising the risk of inconsistent protection and poor outcomes for consumers.
- The complaints process is generally confusing.
- Post-installation financial protections have limited scope and contain caveats and exclusions that consumers may not expect.[375]

152. An analysis by Citizens Advice in 2021 found that there are at least 12 different consumer schemes for energy efficiency, low carbon heating technologies and small scale renewables, which makes it challenging for consumers to know which schemes are rigorous and reliable.[376] Which? told us that around 42% of consumers find it hard to know what experience or qualifications to check when looking for a trader in the home retrofit sector, while more than half said that they find it hard to trust trader' claims and customer reviews. Many also said that they were confused by the plethora of certification schemes, trader platforms, consumer codes and trade bodies.[377]

153. Laura Nell, Deputy Director for Policy and Scheme Development at Ofgem, echoed these concerns, telling us: "It is difficult at the moment for customers to understand how much weight they can place on the value of any given certification scheme, given the proliferation of them in the sector".[378] Simon Ayers, Chief Executive of TrustMark, warned that the complexity of schemes can also risk weakening compliance and increasing the likelihood of errors, commenting: "Complexity is the enemy of compliance. Installers are often time poor and admin poor, and they just want to know what the instructions are and what they need to comply with".[379]

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373 Trustmark, "PAS 2035:2019 / PAS 2035/2030:2023", 10 January 2025
374 Chartered Institute of Building (CIOB) (HEA0034)
375 Competition & Markets Authority, "Consumer protection in the green heating and insulation sector", 10 January 2025
376 Citizens Advice, "The net zero protections puzzle: Helping people piece together home energy improvements", 10 January 2025
377 Which? (RFH0012)
378 Q611 [Laura Nell]
379 Q154 [Simon Ayers]

Workforce accreditation scheme

154. We heard many calls in the evidence that we received for consumer protection and certification schemes to be streamlined to make the landscape more easily navigable for consumers.[380] E3G said that current schemes form a "confusing patchwork", which raises the question of "whether the government should bring these in house, rather than having bodies acting as competitive private companies".[381] Citizens Advice was one of several witnesses that called for a single, government-backed accreditation and inspection body for the UK that should be equipped with powers to authorise companies that are active in the market; have the powers to audit providers and prevent a company that falls below minimum standards from operating; and take action to set clear and enforceable consequences if companies break the rules.[382] Energy UK also called for a standardised and accessible route to redress if things go wrong.[383]

155. While some witnesses supported making certification by established bodies standard across the board,[384] Zoe Guijarro told us that many consumers are not familiar with schemes run by the MCS Foundation and TrustMark and simply opt for the cheapest provider. She said a single, government-backed scheme could replicate the success of the Gas Safe Register, with all installers accredited, regardless of how the work is funded.[385] Adrian Joyce, Secretary General of EuroACE, told us the best way to fund a workforce accreditation scheme would be via mixed funding, whereby the state provides some capital and the rest is paid for by participating installers.[386]

156. We also heard that the home retrofit workforce could benefit from a greater focus on certifying competent tradespeople, rather than simply those with qualifications, which can present a higher barrier of entry.[387] For example, Madeleine Gabriel, Director of Sustainable Future at Nesta, told us that there needs to be a shift in standards from a focus on compliance to performance.[388] David Robson, Director at the National Insulation Association, told us:

> We have almost gone too far away from focusing on competency and are focusing too much on qualifications. We need to get that balance right. We have people in our business who have worked in the industry

380 For example, Which? (RFH0012) and Q422 [Zoe Guijarro]
381 E3G (HEA0013)
382 Citizens Advice, "The net zero protections puzzle: Helping people piece together home energy improvements", 10 January 2025
383 Energy UK (HEA0080)
384 For example, Q66 [Mike Foster]
385 Q424 [Zoe Guijarro]
386 Q592 [Adrian Joyce]
387 For example, Q151 [David Robson] and Q66 [Madeleine Gabriel]
388 Q66 [Madeleine Gabriel]

> for 40 years and are not technically qualified, although they are more qualified than anyone in the industry, because those qualifications did not exist when they started.[389]

157. Minister for Energy Consumers, Miatta Fahnbulleh, recognised in her evidence that consumer protection schemes and workforce accreditation programmes are too complex and poorly understood. She agreed that "there should be one certification body"[390] and said that the Government would be reviewing this landscape as part of its Warm Homes Plan, commenting:

> We have standards and accreditation that are quite complicated, and the accountability structures are not wholly clear. […] On the supply and installer side, it is very hard to navigate. Suppliers will tell us it is quite costly to navigate to get the right level of accreditation. The final thing is, if you are on a Government scheme, there is a whole tapestry of accreditation that works. If you are not, good luck.[391]

158. In April 2025, while this Report was in the process of being agreed, the Government launched a consultation on proposals to require the Microgeneration Certification Scheme (MCS) as the sole certification scheme for clean heat installations delivered through various support schemes including the Boiler Upgrade Scheme, Energy Company Obligation 4, Warm Homes: Local Grant and Warm Homes: Social Housing Fund, to remove the option for multiple certification schemes to certify installations.[392]

159. **CONCLUSION**

The consumer protections and workforce accreditation landscapes are excessively complicated, which makes it challenging for consumers to know who to trust. Many consumers are simply unaware of which schemes they can rely upon and what avenues for redress they have if things go wrong. Recent home insulation scandals, including measures installed under government-funded schemes, have further undermined consumer trust.

389 Q151 [David Robson]
390 Q79 [Miatta Fahnbulleh MP]
391 Q111 [Miatta Fahnbulleh MP]
392 Department for Energy Security and Net Zero, "Boiler Upgrade Scheme and certification requirements for clean heat schemes", 14 May 2025

160. **CONCLUSION**
We are especially concerned about the lack of consumer protections and mandatory standards for retrofit work not covered by government grants. This is allowing rogue traders to operate unimpeded. We believe that those who fail certification to carry out government-funded retrofit work should not be allowed to operate in the sector elsewhere.

161. **RECOMMENDATION**
We recommend that the Government introduces a national workforce accreditation scheme and a national contractor licensing scheme as a prerequisite for carrying out any retrofit work. These should be granted powers to revoke licenses or impose financial penalties for poor quality work and provide consumers with clear avenues for redress. A small registration fee would help fund a national warm homes advice service, which would signpost consumers to certified workers. The national workforce accreditation scheme could replicate the successful model adopted by the Gas Safe Register.

162. **RECOMMENDATION**
We found it incredible that the Residential Property Surveyors Association has reported that around 250,000 homes could be un-mortgageable due to spray foam insulation and that the accountability to remedy things remains unclear. We recommend that the Energy Company Obligation, as a policy to put responsibility on installers and commissioners for poor quality work, needs serious improvement.

Conclusions and recommendations

Support schemes and advice

1. There is a clear and urgent need to provide long-term certainty for the sector through the Government's retrofit support schemes. Stop-start measures and short funding cycles have undermined the confidence of consumers, installers and the wider supply chain. The Government has not clarified how it will support retrofit beyond 2026, when key schemes are due to expire. (Conclusion, Paragraph 38)

2. It is critical that the Government streamlines and simplifies its support schemes, especially their eligibility requirements. Many schemes are too complicated and have failed to support fuel poor households, while also failing to incentivise able-to-pay households to invest their own money. (Conclusion, Paragraph 39)

3. The Government must announce a long-term programme for how it plans to support home retrofit beyond 2026 in its Warm Homes Plan. This should include a reduction in the number of schemes offered; significantly relaxed eligibility criteria to prioritise uptake; funding commitments until at least 2035; and a strategy to facilitate area-based retrofit. (Recommendation, Paragraph 40)

4. Many consumers have a fundamental lack of awareness of the benefits of home retrofit and where to access quality, impartial information and advice. This is preventing them from making informed decisions and delaying the retrofit of their homes. (Conclusion, Paragraph 50)

5. There is a clear need for a single, trusted source of free information and advice on home retrofit that can be accessed via multiple sources. Such provision already exists in Scotland and Wales but does not in England. Consumer advice should also be better embedded within communities and the Government should seek to encourage the sharing of experiences between neighbours and among the workforce to increase engagement around low carbon home retrofit. (Conclusion, Paragraph 51)

6. One-stop-shops have proven successful in many neighbouring countries, especially when affiliated with a workforce accreditation scheme that signposts consumers to trusted installers. There are clear and tangible links between their introduction in countries such as France and the success of their low carbon heating rollouts and high levels of consumer engagement. Such an approach would be easily replicable in the UK. (Conclusion, Paragraph 52)

7. We recommend that the Government establishes a national warm homes advice service for England to signpost consumers to independent advice, trusted installers and financial options. This should be available online, over the phone and in person. While it may be publicly-funded at first, it should be affiliated with a retrofit workforce accreditation scheme that can signpost consumers to trusted installers and provide a model for the service to become financially self-sustaining over time. A pilot should be launched ahead of winter 2025. (Recommendation, Paragraph 53)

8. We are deeply concerned that Energy Performance Certificates, as currently calibrated, provide some consumers with poorly conceived advice and have a strong bias against low carbon, but initially more expensive, heating systems. As a cost-based metric, Energy Performance Certificates are not, as they stand, an effective tool for decarbonising UK homes. To the contrary, they are deterring consumers from making the switch to low carbon heating. (Conclusion, Paragraph 62)

9. Energy Performance Certificate assessments vary greatly in quality and consistency. It is therefore troubling that they are expected to perform such a range of functions that they were never initially designed for, such as determining eligibility for government support schemes. If the Government is to continue using Energy Performance Certificates for such purposes, reform of the Energy Performance Certificate metric must come quickly. The validity of Energy Performance Certificates for 10 years is also too long to say with confidence that all assessments and recommendations remain relevant. (Conclusion, Paragraph 63)

10. This report highlights the high and stagnating levels of energy poverty in the UK and the current disincentive that Energy Performance Certificates have on low carbon heating options due to price concerns. We therefore recommend that the Government reforms the Energy Performance Certificate metric with a renewed focus on both emissions and energy costs. This should be used to recommend home improvements to households who should then be signposted to independent advice following an assessment. (Recommendation, Paragraph 64)

Decarbonising home heating

11. Uncertainty over the UK's technological direction for decarbonising heat is undermining consumer confidence and supply chain development. In particular, the Government's failure to decide on the role of hydrogen for home heating is obstructing the rollout of proven electric technologies such as heat pumps. Consumers, installers and the supply chain require long-term certainty to invest in low carbon heating technologies. (Conclusion, Paragraph 89)

12. Electricity is much more expensive than gas in the UK because gas generation sets the marginal wholesale price and most levies are placed on electricity bills, rather than gas. This is a significant disincentive for consumers switching from fossil fuel to electric heating and a major barrier to decarbonising homes. Lowering the price of electricity relative to gas has been the tipping point needed to encourage the mass uptake of low carbon heating systems in some European countries. (Conclusion, Paragraph 90)

13. Levels of public awareness of electric heating systems are worryingly low. Many consumers are simply unaware of technologies such as heat pumps, let alone their benefits and support available to them. This is compounded by misinformation and factionalism in parts of the home heating sector, which undermines the credibility of proven technologies and obstructs consumers from making informed decisions. (Conclusion, Paragraph 91)

14. We recommend that the Government, by the end of 2025, considers reducing the policy cost difference between gas and electricity bills, creating an incentive for households to adopt electric heating systems. The Government should do this carefully, recognising that almost all gas use is for essentials such as heating and cooking, differentiating gas from electricity. During this process, the Government must provide support for those who lose out due to the policy cost changes. (Recommendation, Paragraph 92)

15. The Government must produce an engagement strategy to set out the costs and benefits of electric heating and build confidence for consumers, installers and the supply chain. This should include a plan to tackle misinformation and introduce consumer and workforce champions who can share experiences of electric heating systems. Measures must be focused on supporting and encouraging those least likely to be able to afford a transition, low income households. (Recommendation, Paragraph 93)

16. Delaying a decision on the role of hydrogen for domestic heating until 2026 continues to create profound uncertainty. This means that consumers are delaying their switch to low carbon heating systems and Ofgem is unable to prepare to regulate our future energy networks as effectively

as it otherwise could. With hydrogen trials being cancelled and a weight of evidence in place, it makes sense to take a decision this year. (Conclusion, Paragraph 115)

17. We are concerned that the Government has not set clear guidelines for the end of the installation of new fossil fuel heating systems on and off the gas grid. Without certainty, consumers, manufacturers and the wider supply chain lack the confidence that they need to make informed decisions. The Government should consider the lessons that can be applied from announcing the end of the sale of new internal combustion engine vehicles in encouraging the uptake and increasing market share for low carbon heating technologies. (Conclusion, Paragraph 116)

18. The Government urgently needs to develop a plan for repurposing the gas network. Whether hydrogen plays a role in our future heating system or not, much of the gas network will need repurposing, presenting an enormous and costly infrastructural challenge that is only likely to become more expensive. It is concerning that the previous Government's preparations were only at a preliminary stage. This Government should address repurposing of the gas network as a matter of priority. (Conclusion, Paragraph 117)

19. We urge the Government to take a decision on the possible role of hydrogen for domestic heating no later than summer 2025, alongside the publication of its Warm Homes Plan. This should be informed by the existing evidence gathered through trials and independent analysis. (Recommendation, Paragraph 118)

20. The Government must provide consumers, installers and the supply chain with certainty that most home heating will be powered by electricity in future. It must also set out its view on whether new on-grid and off-grid fossil fuel heating systems should continue to be installed in homes from 2035 and explain how it will minimise the use of fossil fuels in homes by 2050. This is crucial to keep the UK on track with the Climate Change Committee's recommendations in its Seventh Carbon Budget, while also providing a stimulus for the uptake of electric heating systems. (Recommendation, Paragraph 119)

21. The Government must set out comprehensive plans and an analysis of the costs and benefits for repurposing the gas network and clarifying who would bear the costs. It should set out a preliminary analysis by the end of 2025, including a clear timeline and a progressive approach to funding the costs. (Recommendation, Paragraph 120)

22. The Government should review and assess measures designed to shape and influence the clean heat market, including but not limited to the Clean Heat Market Mechanism, to determine if they remain the most effective ways to increase heat pump uptake. (Recommendation, Paragraph 121)

Workforce and skills

23. The UK has a skilled home heating workforce but its transition to work on low carbon retrofit is not happening at the pace required to upgrade homes at scale. This is compounded by a twin underlying crisis: few new entrants to the sector and an ageing workforce. (Conclusion, Paragraph 135)

24. Training providers are reluctant to invest in courses on low carbon retrofit due to low demand for training. This is underpinned by the uncertain future technical direction of the sector, inadequate training grants, weak promotion of careers in retrofit and low consumer demand for low carbon energy home improvements. (Conclusion, Paragraph 136)

25. The Heat Training Grant does not adequately incentivise workers to take time off work to upskill on low carbon retrofit or compensate them for lost earnings. Many workers in the retrofit sector are self-employed and cannot afford to take time off work to commit to a multi-day course. (Conclusion, Paragraph 137)

26. We recommend that the Government resumes work undertaken by the previous Government to prepare a Net Zero and Nature Workforce Action Plan. This should be published by the end of 2025 and include a specific roadmap for meeting the skills needs of the home retrofit sector, including via the Growth and Skills Levy mechanisms. It should also ensure that training courses and qualifications for heating engineers cover work on low carbon heating technologies as part of the core curriculum, rather than an add-on. This should be a cross-government endeavour with the Skills Minister accountable to ensure full engagement between the Office for Clean Energy Jobs, Skills England, the Department for Energy Security and Net Zero and the Department for Education. Once it is fully established, Skills England should also prioritise the skills needs of the low carbon retrofit sector. (Recommendation, Paragraph 138)

27. The Government should increase the value of the Heat Training Grant to provide workers with full compensation for lost earnings when taking time off work to upskill on low carbon retrofit. This should take effect until market demand provides sufficient incentives for the workforce, supply chain and employers to self-fund training. (Recommendation, Paragraph 139)

28. The consumer protections and workforce accreditation landscapes are excessively complicated, which makes it challenging for consumers to know who to trust. Many consumers are simply unaware of which schemes they can rely upon and what avenues for redress they have if things go wrong. Recent home insulation scandals, including measures installed under government-funded schemes, have further undermined consumer trust. (Conclusion, Paragraph 159)

29. We are especially concerned about the lack of consumer protections and mandatory standards for retrofit work not covered by government grants. This is allowing rogue traders to operate unimpeded. We believe that those who fail certification to carry out government-funded retrofit work should not be allowed to operate in the sector elsewhere. (Conclusion, Paragraph 160)

30. We recommend that the Government introduces a national workforce accreditation scheme and a national contractor licensing scheme as a prerequisite for carrying out any retrofit work. These should be granted powers to revoke licenses or impose financial penalties for poor quality work and provide consumers with clear avenues for redress. A small registration fee would help fund a national warm homes advice service, which would signpost consumers to certified workers. The national workforce accreditation scheme could replicate the successful model adopted by the Gas Safe Register. (Recommendation, Paragraph 161)

31. We found it incredible that the Residential Property Surveyors Association has reported that around 250,000 homes could be un-mortgageable due to spray foam insulation and that the accountability to remedy things remains unclear. We recommend that the Energy Company Obligation, as a policy to put responsibility on installers and commissioners for poor quality work, needs serious improvement. (Recommendation, Paragraph 162)

Formal minutes

Wednesday 14 May 2025

Members present:

Bill Esterson (Chair)

Ms Polly Billington

Torcuil Crichton

Sir Christopher Chope

Anneliese Midgley

Melanie Onn

Mike Reader

Bradley Thomas

Claire Young

Retrofitting homes for net zero

Draft Report (*Retrofitting homes for net zero*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 89 read and agreed to.

Paragraph 90 read.

Amendment proposed, in line 15, after "in the UK because" delete "gas generation sets the marginal wholesale price and".—(*Sir Christopher Chope*.)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 2	Noes, 3
Sir Christopher Chope	Torcuil Crichton
Bradley Thomas	Mike Reader
	Claire Young

Question accordingly negatived.

Paragraph 90 agreed to.

Paragraphs 91 to 115 read and agreed to.

Paragraph 116 read.

Amendment proposed, to replace paragraph 116 with "We are pleased that the Government has not prescribed any end date for the installation of new fossil fuel heating systems on and off the gas grid. Such action would be an unwarranted interference in the market and curtail the ability of consumers to choose the heating system which best suits their needs and provides them with best value.".—(*Sir Christopher Chope*.)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 3	Noes, 4
Sir Christopher Chope	Bill Esterson (Chair)
Torcuil Crichton	Anneliese Midgley
Bradley Thomas	Mike Reader
	Claire Young

Question accordingly negatived.

Paragraph 116 agreed to.

Paragraphs 117 and 118 read and agreed to.

Paragraph 119 read.

Amendment proposed, to replace paragraph 119 with "The Government must provide consumers, installers and the supply chain with certainty about how home heating will be provided in the future. It must also set out why new fossil fuel heating systems should continue to be legal up to at least 2050.".—(*Sir Christopher Chope*.)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 2	Noes, 4
Sir Christopher Chope	Torcuil Crichton
Bradley Thomas	Anneliese Midgley
	Mike Reader
	Claire Young

Paragraph 119 agreed to.

Paragraphs 120 to 162 read and agreed to.

Summary agreed to.

Resolved, That the Report be the First Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order 134.

Adjournment

Adjourned till Wednesday 21 May 2025 at 9.00am.

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the inquiry publications page of the Committee's website. In writing this report, the Committee also used oral and written evidence gathered by its predecessor Committee in its inquiry on Heating our homes.

Wednesday 4 December 2024

Maya Fitchett, Policy Analyst, National Energy Action; **Joanne Wheeler**, Co-Head of Policy & Places, UK Green Building Council; **Robert Panou**, Director of Asset Strategy and Investment, Stonewater Q1–26

Mike Foster, Chief Executive, Energy and Utilities Alliance; **Madeleine Gabriel**, Director of Sustainable Future, Nesta; **Andy Prendergast**, National Secretary, GMB Q47–66

Miatta Fahnbulleh MP, Minister for Energy Consumers, Department for Energy Security and Net Zero; **Olivia Haslam**, Deputy Director, Net Zero Buildings Strategy, Net Zero Buildings - Portfolio & Affordability Directorate, Department for Energy Security and Net Zero; **Jessica Skilbeck**, Director, Net Zero Buildings, Department for Energy Security and Net Zero Q67–114

Wednesday 12 February 2025

Zak Ashraf, Member of the public; **Damian Mercer**, Manager, Cavity Extraction Ltd; **Amanda Hoyles**, Member of the public; **Shabir Hussain**, Domestic Energy Efficiency Manager, Luton Council Q115–141

Ian Rippin, Chief Executive, MCS; **Simon Ayers**, Chief Executive, TrustMark; **Andy Manning**, Energy System Transformation Head, Citizens Advice Q142–183

Published written evidence

The following written evidence was received and can be viewed on the inquiry publications page of the Committee's website.

RFH numbers are generated by the evidence processing system and so may not be complete.

1	Aldersgate Group	RFH0030
2	BUUK	RFH0032
3	Baxter Kelly	RFH0043
4	Brighton and Hove Energy Services Co-op (BHESCo)	RFH0002
5	British Energy Efficiency Federation	RFH0004
6	Building Metrix Ltd	RFH0014
7	Building Societies Association	RFH0046
8	Calor	RFH0019
9	Centre for Energy Policy, University of Strathclyde	RFH0015
10	Centre for Sustainable Energy	RFH0011
11	Chartered Trading Standards Institute (CTSI)	RFH0053
12	Checkatrade	RFH0005
13	Construction Industry Training Board (CITB)	RFH0009
14	Country Land and Business Association (CLA)	RFH0001
15	Data Communications Company	RFH0021
16	Dimplex	RFH0034
17	Energy Demand Research Centre and University of Sussex Energy Group	RFH0022
18	Energy Efficiency Infrastructure Group	RFH0055
19	Energy Saving Trust	RFH0035
20	Environmental Investigation Agency	RFH0029
21	Finance and Leasing Association	RFH0040
22	Grundfos Pumps Ltd	RFH0013
23	Groundwork UK	RFH0023
24	HomeServe	RFH0042

25	Kensa Group	RFH0045
26	Luton Council	RFH0056
27	Mineral Wool Insulation Manufacturers Association (MIMA)	RFH0054
28	Mitsubishi Electric	RFH0024
29	mwclubb Ltd	RFH0031
30	National Home Decarbonisation Group (NHDG) and National Insulation Association (NIA)	RFH0026
31	National Housing Federation	RFH0037
32	National Retrofit Hub	RFH0010
33	National Warm Homes Council	RFH0017
34	Nesta	RFH0050
35	NexGen Carbon Zero Ltd	RFH0025
36	OFTEC Ltd and UKIFDA	RFH0016
37	Passivhaus Trust	RFH0038
38	Refurb and Retrofit	RFH0003
39	Royal Institute of British Architects (RIBA)	RFH0052
40	SGN	RFH0036
41	Snugg	RFH0020
42	Star Energy Group Plc	RFH0044
43	Startup Coalition	RFH0007
44	Stonewater	RFH0051
45	Sustainable Energy Association	RFH0027
46	Switchee	RFH0018
47	The MCS Foundation	RFH0048
48	The National Association of Professional Inspectors and Testers (NAPIT)	RFH0047
49	Thermal Storage UK	RFH0008
50	TrustMark	RFH0006, RFH0057
51	UK Sustainable Investment and Finance Association (UKSIF)	RFH0028
52	Voltalis	RFH0041
53	Warmur	RFH0049
54	Warmworks	RFH0039
55	Which?	RFH0012