

RISE

Retrofit information,
support & expertise

Breaking barriers to low carbon heating

Supply chain advice pack

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Funded by:



Department for
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& Net Zero

www.riseretrofit.org.uk

Introduction

Achieving the UK's net-zero goals requires rapid progress in low-carbon heating, yet the retrofit supply chain continues to face financial, technical, behavioural, and regulatory barriers that slow adoption. Evidence shows that uptake of low-carbon heating technologies remains far below the levels needed, with fewer than 1% of UK homes currently having a heat pump installed¹. High upfront costs, persistent skills shortages (labelled 'significantly off track' by the Climate Change Committee²), property constraints, and low consumer confidence continue to present significant challenges.

This advice pack summarises the main barriers affecting the retrofit supply chain and provides practical, actionable solutions supported by current sector insights.

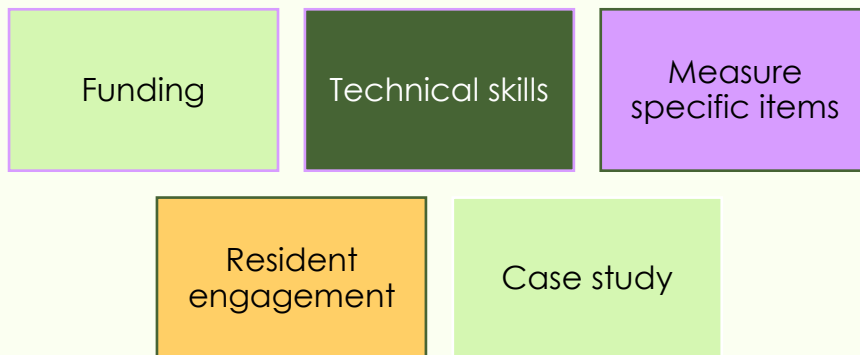
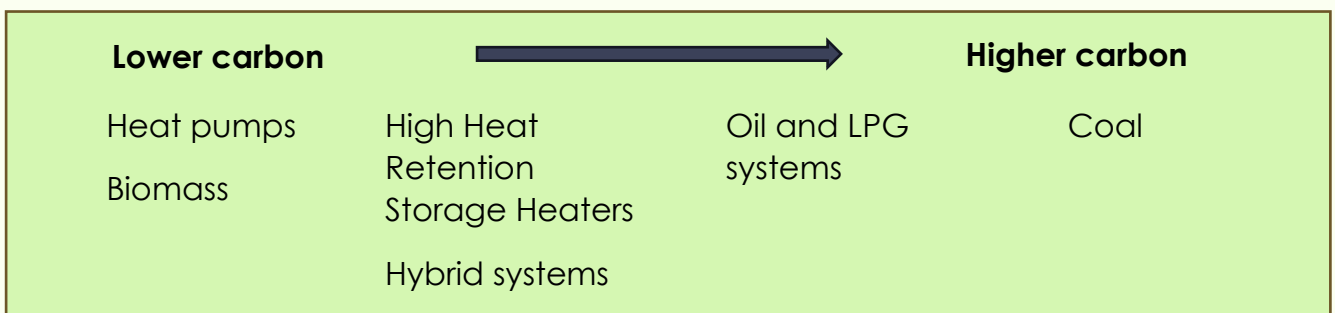


Figure 1. Barriers to low-carbon heating

What do we mean by low carbon heating?

Here we mean the actual heating technology itself, to differentiate between fabric first terms. Low carbon heating can include heat pumps, biomass, electric storage heaters or heat networks distributing low carbon heat. Please note this is a rough guide and it will vary per home – the PAS process will determine which measures are most suitable.



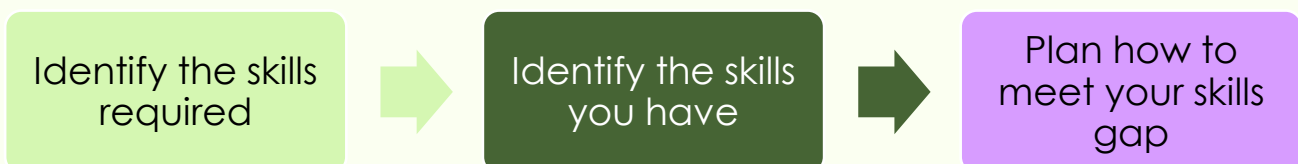
¹ UK Parliament, Retrofitting homes for net zero, available [here](#)

² The Climate Change Committee, 2024 Progress Report to Parliament, available [here](#)

Possible barriers	Solutions
Costs	<ul style="list-style-type: none"> • There are usually grant funded schemes running which you can make use of. • There are currently several schemes such as Warm Homes scheme (running until 2028), ECO 4 (running until December 2026) and more offering low carbon measures.
Fabric first	<ul style="list-style-type: none"> • Fabric first is a principle of PAS 2035:2023 and should also help lower running costs of low carbon heating.
Varying technology costs across the market – lack of accurate costs	<ul style="list-style-type: none"> • Engage with installers early and provide as much accurate information as you can. • Seek contingency funding in case of movement.
Maintenance costs	<ul style="list-style-type: none"> • Ask the installer and manufacture early on what the maintenance schedule looks like, e.g servicing a heat pump once a year and check if there are businesses which offer that servicing for your model. • Check-in with maintenance teams to get their approvals and buy-in before install.
Bills and running costs	<ul style="list-style-type: none"> • Run calculations using the desired model/s and factor in the typical household usage to check this before install. • Engage with the resident about costs before install.

Technical skills

Delivering low-carbon heating at scale depends on a well-resourced, multi-skilled, accredited workforce. Supply-chain organisations face mounting pressure to expand capacity, meet certification requirements, and manage complex PAS-aligned processes while maintaining high quality and competitive pricing.



Possible barriers	Solutions
Supply chain skills gaps	<ul style="list-style-type: none"> • There are usually grant funded schemes running which you can make use of. • For example the Warm Homes Skills Programme outlined in the section below.
PAS 2035 roles	<ul style="list-style-type: none"> • The Warm Homes Skills Programme funds PAS 2035/2038 qualifications. • Use formal training and competency frameworks delivered by Retrofit Academy and AECB to ensure clear progression routes into specialist roles such as Retrofit Assessor, Coordinator and Designer. • Utilise the new RICS Residential Retrofit Standard (2025) which offers a more robust approach for PAS 2035 teams, helping mitigate documentation and QA inconsistencies.
Heritage aspects	<ul style="list-style-type: none"> • Refer to Historic England's guidance (2024) on improving energy efficiency in traditional buildings to ensure fabric upgrades, airtightness and moisture control are handled appropriately. • Use local authority heritage retrofit guidance (e.g., Oxford 2024³; London Councils 2025⁴) to navigate planning requirements, assess significance, and balance retrofit benefits with conservation constraints.
Microgeneration Certification Scheme (MCS)	<ul style="list-style-type: none"> • Use MCS-approved training routes (e.g., BPEC, LCL, NICEIC, OFTEC) to meet competency requirements under the MCS 025 standard for heat pumps and other renewables. • Complete required qualifications such as Water Regulations Certificates and Level 3 ASHP installation and commissioning courses to achieve MIS 3005-1 compliance and access Boiler Upgrade Scheme (BUS) and Warm Homes funding.
Specific technologies	<ul style="list-style-type: none"> • Access specialist technology training (e.g., Level 3 heat pump commissioning, hybrid heating, MVHR, solar PV and battery training) to ensure competency across low-carbon systems. • Use manufacturer-led training to understand system-specific commissioning, servicing and performance requirements before installation.

³ Oxford City Council, Heritage Retrofit Guidance, available [here](#)

⁴ London Councils, London Councils Heritage Retrofit Guide, available [here](#)

Warm Homes Skills Programme

This is a Government funded programme, run by the Midlands Net Zero Hub (MNZH). It's designed to build supply chain skills and capacity for retrofit to help meet Net Zero. Visit the MNZH page [here](#) for more.

Work Package 1: Home Retrofit professionals

- All Level 3 or 4 Domestic Retrofit Assessment recognised qualifications aligned to PAS 2035, including the combination with the Domestic Energy Assessor (DEA) course.
- Level 5 Retrofit Coordination and Risk Management Assessment recognised qualification aligned to PAS 2035.

Work Package 2: Fabric Insulation and Solar Photovoltaic (PV) Installation

- NVQ Level 2 or 3 or equivalent award in fabric insulation or Small Scale Solar PV installation resulting in a proven competency in line with PAS 2035/2030 or MCS standards; or
- NVQ Level 3 or equivalent award in Energy Efficiency for Older and Traditional Buildings

Work Package 3: Shorter CPD and entry-level courses

- NVQ Level 2 or equivalent award in Understanding Domestic Retrofit
- NVQ Level 3 Introduction to Domestic Retrofit in line with the PAS 2035 standard.
- An award in Energy Efficiency and Retrofit of Non-Domestic Buildings in line with the PAS 2038 standard.

Measure specific items

Warm Homes Compliance

PAS 2035: 2023

MCS

Trustmark

SAP/RdSAP

Measures in Warm Homes project may be SAP or RdSAP measures and must also comply with the scheme guidance, including following PAS 2035, MCS and Trustmark requirements. The PAS 2035 standard which is mandatory to comply with government funded scheme, like Warm Homes, involves a Retrofit Designer role determining the suitable measures for the home. This section explores some wider considerations around measure suitability.

Measure	Considerations
Heat pump	<ul style="list-style-type: none">• Appropriate outdoor space to place it.• Complying with permitted development rights.

	<ul style="list-style-type: none"> • Understanding permitted noise levels. • Water cylinder considerations. • Radiator re-sizing: often the existing radiators are not large enough for a heat pump which has a constant lower temp. output, compared with a boiler
Biomass boiler	<ul style="list-style-type: none"> • Space for the measure - it is typically larger than a normal gas boiler • Long-term fuel source proximity – consider the carbon associated to their transportation and production of the fuel.
High heat retention storage heaters	<ul style="list-style-type: none"> • Typically only recommended where a heat pump is not feasible. Electrical qualifications and testing are essential. • Model efficiency may require research • Appropriate fire safety measures will need to be followed.

Resident Engagement

Resident engagement is also part of the PAS 2035 process. Retrofit success hinges on resident cooperation, understanding, and satisfaction. For the supply chain, poor engagement leads to access issues, failed appointments, installation delays, complaints, and under-performing systems, all of which increase operational cost and reputational risk.

Possible barriers	Solutions
Concerns of high energy bills	<ul style="list-style-type: none"> • Energy bill modelling should be completed before the install and tailored to the resident and communicated with the resident. • Explore other saving routes – e.g. are they eligible for a free energy visit scheme (such as LEAP) or further measures.
Concerns of disruptive install process	<ul style="list-style-type: none"> • Explain what the install process is like early on. • Try to accommodate for best install timings. • Try to arrange alternative respite options during the install process. e.g. nearby community centre. • Be clear on the number of visits required for the full process: often PAS requires multiple visits and roles so be upfront to reduce drop-outs.

Concerns of future maintenance	<ul style="list-style-type: none"> • Explain any future maintenance and cover what is the need, when, how much it is and what qualifications are needed.
Operation of a new system	<ul style="list-style-type: none"> • A handover should be provided and it is a requirement of the PAS 2035 process. You should give the handover in a format which is suitable for the resident. • You may wish to prepare the information in several different formats such as leaflets or videos. • Assign budget for re-visits or follow-up queries. • Engage with the manufacturer or technical experts of the product for your own full understanding. • Temperature check your team's confidence levels in explaining things to residents and offer training for any gaps. • Lessons learned loops: get feedback from residents early on and implement any feedback into future installs. • Follow-up/check-in: in an agreed or required follow-up time to check use is as planned and resolve any issues.
Fears from press on poor installs	<ul style="list-style-type: none"> • Explain the quality assurance and installation standards you are using and what a customer can do if they feel unhappy at any point in the process. • Have a quality assurance and quality management system in place. • Have a complaints management policy in place in case anything does go wrong.

Case study

Electrification of Heat Demonstration Project – Energy Saving Trust

Project overview:

- 742 homes had heat pumps installed across a broad mix of property types:
 - 41% detached
 - 43% semi detached
 - 11% mid terrace
 - 6% flats
- 3 delivery contractors installed the systems:
 - Warmworks (Scotland)
 - E.ON (North East England)
 - OVO Energy (South East England, excl. London)



Source: Energy Saving Trust

Barriers addressed:


- Resident engagement
- Installation disruption
- Handover quality

Effective solutions observed:

- Clear early communication about expected disruption.
- Strong site-management practices.
- Proactive, simple resident communications.
- Recognition that technical quality alone is not enough and that resident confidence.

Summary

Low-carbon heating offers significant benefits for comfort, affordability and decarbonisation, but delivery remains complex. Costs fluctuate with fabric condition and system requirements, meaning clear funding routes, realistic bill forecasts and blended finance are essential to build trust. At the same time, success depends on a skilled, PAS-aligned workforce able to design low-temperature systems, manage emitter and electrical upgrades, and navigate the constraints common in flats, terraces and older homes. Measure selection is equally sensitive: mis-specification around space, noise, storage or fabric can undermine performance, making thorough surveying and whole-home planning crucial. Resident engagement remains central, people need simple explanations,



confidence in the installer, and effective, thorough handovers that support new heating habits. Because low-carbon systems rely on coordinated heating, controls, connectivity and power upgrades, close collaboration between installers, DNOs, manufacturers and landlords is essential. When this coordination is paired with clear funding, skilled delivery, robust design and strong resident support, low-carbon heating can deliver reliable comfort, lower bills and meaningful progress towards net zero.

Resources



Podcast: All RISE podcasts are available [here](#).

Podcast: "Harnessing Heat: The Language of Air Source Heat Pumps" available [here](#).



Masterclass: All RISE masterclasses are available [here](#).

Masterclass "Low carbon heating solutions" available [here](#).



Advice pack: All RISE advice packs available [here](#).

Advice pack: "Heat Pump Installation Considerations" available [here](#).



This pack aims to share insights, good practices, and lessons learned from the sector. It is intended for informational purposes only and does not constitute as recommendations or endorsements of specific suppliers, products, or services or as legal advice. Please always check the latest regulations.

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