BOOSTING THE IMPACT OF LOW-CARBON TECHNOLOGY THROUGH ADVICE

Identifying gaps and solutions for impactful advice in social housing

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CHANGEWORKS.

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Glossary of terms and abbreviations

Term	Abbreviation
Air source heat pump	ASHP
Customer liaison officer	CLO
Ground source heat pump	GSHP
Energy efficiency officer	EEO
Energy Efficiency Standard in Social Housing [2]	EESSH [2]
Energy Performance Certificate	EPC
Housing Association	HA
Mechanical Ventilation with Heat Recovery	MVHR
Registered Social Landlord	RSL
Social Housing Net Zero Heat Fund	SHNZHF
Social Housing Net Zero Standard	SHNZS
Solar photovoltaic panels	Solar PV

Executive Summary

Background

Scotland's transition to net zero requires substantial retrofit activity across the social housing sector, which accounts for around 23% of Scottish households.[1] This retrofit is likely to include the installation of low-carbon technologies such as heat pumps, solar PV, batteries, ventilation with heat recovery, and smart meters. To ensure that retrofit measures can reduce energy bills, improve comfort and wellbeing, and cut emissions, it is increasingly recognised that tenants must receive appropriate, timely and accessible advice. Evidence shows that disengaged tenants, who do not understand or trust their new systems, are less likely to use them efficiently and realise the benefits of doing so.

Focusing on the installation of low-carbon technologies, this research examined how energy advice is currently delivered in retrofit programmes, the barriers landlords face, and opportunities to improve outcomes for both tenants and social landlords. Using a mix of literature review, policy analysis, EPC data analysis, tenant and stakeholder interviews, and a survey of Scottish social landlords, the study provides a comprehensive picture of the gaps in advice provision and the steps needed to embed advice as a core component of retrofit delivery.

Insights for social landlords

The report sets out evidence as to the benefit of providing well-coordinated advice to tenants before, during, and after installation of retrofit technologies. It shows that effective advice can benefit social landlords as well as improve outcomes for tenants. While many existing funding schemes do not include requirements nor cover the costs of advice provision, evidence indicates that advice not only makes tenants more comfortable, willing and competent with the upgrades, it can help them use the installed technology to its full potential, leading to larger energy and financial savings and increased comfort.

Key Findings

Scale of retrofit and potential low-carbon technology installation

- 71% of social housing is in EPC band C or higher. This is higher than both the private rented sector at 50% and the owner-occupied sector at 52%.[2]
- Analysis of over 425,000 Scottish social-rented homes (for which EPC data is available) shows that almost 88% require a heating system upgrade, while over 56% could potentially receive solar PV.
- Since 2008, around 84,000 installations of low-carbon technology measures have taken place across the sector.
- This highlights not only the scale of further retrofit required in the sector, but also the scale of need for advice and support for tenants.
- The provision of advice can help tenants to use new heating systems, renewable energy technology and ventilation efficiently, allowing landlords to reduce long-term maintenance, complaints and arrears linked to energy costs.

[1] Scottish Government. 2026. Households in Scotland by housing tenure: Scottish Household Survey, 2024. (Online) Available: https://www.gov.scot/publications/households-in-scotland-by-housing-tenure-scottish-household-survey-2024/pages/characteristics-of-households-by-tenure/

[2] Scottish Government. 2026. Scottish House Condition Survey: 2024 Key Findings. (Online) Available: https://www.gov.scot/publications/scottish-house-condition-survey-2024-key-findings/pages/2-energy-efficiency/

Current advice provision is highly variable and fragmented

- Although most landlords offer some form of energy advice, advice timing and format differ widely between organisations. Inconsistent practice within and between projects can mean that tenants feel underprepared for new systems and unaware of their responsibilities around tariffs, metering or system maintenance.
- Social landlords and other stakeholders surveyed mostly used face-to-face visits, leaflets and events to deliver advice. Only five landlords reported providing advice before, during and after installation, i.e., the approach shown to be most effective. Monitoring and evaluation is limited: only two landlords routinely conduct formal post-installation evaluation.
- Overly technical and/or contradictory information is common. Fear of increased energy bills or lack of confidence in using new systems also leads some tenants to revert to old habits, undermining system performance.

Gaps in funding, guidance and standards

- Current Scottish funding programmes do not explicitly require energy advice, despite recognising the importance of tenant engagement. Conflicting or unclear guidance creates uncertainty for landlords.
- Short-term, competitive funding cycles hinder long-term planning and limit staff capacity. Funding schemes primarily prioritise capital measures and advice is rarely an eligible cost, as alignment with PAS 2035 is not required.
- Many registered social landlord staff and retrofit installers also lack the technical knowledge or confidence to advise tenants on new low-carbon technology effectively. This environment makes it difficult to deliver consistent, proactive tenant support.

Recommendations summary

Delivery model recommendations:

- **Pre-install stage:** an opportunity to inform tenants of what works are going to take place and why and provide information on any changes to meters and tariffs and possible changes in energy bills.
- **Installation stage**: pertinent to demonstrate how to use new systems, to provide simple, plain-language information sheets on new technology, and to require handovers from contractors to ensure standardised practice.
- **Post-install stage**: essential to follow up with tenants, to provide continued basic assistance with using new systems, and to signpost to further sources of support as issues arise.

Wider recommendations:

- **Advice provision should become a standardised requirement of funded retrofit projects**, not an optional add-on.
- **Monitoring and evaluation should be embedded within project funding**, enabling assessment of project outcomes, the impact of the advice and the need for further advice and support.
- **Workforce capability and consistency should be strengthened** by ensuring projects use installers who have received training in providing energy advice.
- **Collaboration between social landlords should be fostered** to share learning and resources related to advice and support.

1. Introduction

Scotland's transition to net zero requires the widespread adoption of low-carbon technologies in homes, including heat pumps, solar PV, and battery storage. Alongside improvements including insulation, increased air tightness and ventilation technologies. The installation of any or all of these measures is known as 'retrofit'.[3]

Almost a quarter (23%) of Scottish households live in social housing,[4] which has the highest rate of fuel poverty across tenures.[5] In the sector, low-carbon heating and energy generation technology is often installed as part of large-scale retrofit programmes, yet many tenants face significant challenges adapting to these systems without tailored, accessible energy advice.[6]

1.1 Existing evidence demonstrates the importance of advice

Existing literature demonstrates that low-carbon technology in social housing not only lowers energy use and fuel bills, but offers more comfortable homes and improved wellbeing for tenants.[7] However, these positive outcomes cannot be fully achieved without the proper operation of these systems. User behaviour and knowledge of how to operate technology are key to efficient use.[8] For example, a large-scale study of heat pump installations, showed that greater user understanding of the systems, empowered householders and led to more continuous and higher energy efficiency.[9] [10]

However, research shows a common theme in the social housing sector of landlords installing systems and instructing tenants not to touch controls.[11] Households frequently struggle to operate unfamiliar low-carbon systems efficiently without tailored support. For example, research from 2015 highlighted that heat pumps *"introduce considerable disjunction"* in the systems of support available in the UK, and householders often find themselves without reliable, comprehensible guidance.[12] Without clear advice, tenants tend to revert to previous patterns of use, which are often inefficient and can lead to higher energy bills. Instruction manuals are usually too technical and housing providers are often not fully equipped to offer in-depth energy system guidance.

In contrast to the UK, some evidence from other European countries shows that tenants are not facing the same issues with understanding renewable energy installations in homes. This suggests that clearer instructional methods are being used elsewhere, with approaches that actively engage tenants proving to be the most effective.[13] Evidence also shows that users can become rapidly confident in using unfamiliar

[3] Scottish Government. 2017. Climate change: evidence review of mitigation options in the Built Environment sector. (Online) Available: https://www.gov.scot/publications/evidence-review-potential-wider-impacts-climate-change-mitigation-options-built/documents/
[4] Scottish Government. 2026. Households in Scotland by housing tenure: Scottish Household Survey, 2024. (Online) Available: https://www.gov.scot/publications/households-in-scotland-by-housing-tenure-scottish-household-survey-2024/pages/characteristics-of-households-by-tenure/
[5] Scottish Government. 2026. Scottish House Condition Survey: 2024 Key Findings. (Online) Available: https://www.gov.scot/publications/scottish-house-condition-survey-2024-key-findings/pages/3-fuel-poverty/
[6] McCabe, A. et al. 2018. The application of renewable energy to social housing: A systematic review
[7] Moore, N. et al. 2015. Improving the installation of renewable heating technology in UK social housing properties through user centred design; Saunders, R. W. 2012. Can premium tariffs for micro-generation and small scale renewable heat help the fuel poor, and if so, how? Case studies of innovative finance for community energy schemes in the UK.
[8] Caird, S. et al. 2012. Domestic heat pumps in the UK: user behaviour, satisfaction and performance.
[9] Ibid
[10] Judson, J. E. P. et al. 2015. The Co-Construction of Energy Provision and Everyday Practice: Integrating Heat Pumps in Social Housing in England.
[11] Moore, N. et al. 2015. Improving the installation of renewable heating technology in UK social housing properties through user centred design.
[12] Judson, E. P. et al. 2015. The Co-Construction of Energy Provision and Everyday Practice: Integrating Heat Pumps in Social Housing in England.
[13] Ibid

systems if it is clear what they stand to gain from doing so, and that technological illiteracy should therefore not be assumed.[14]

1.2 The value of advice required in the social housing sector

While the benefit of energy advice has been shown in research to date, much focus has concentrated on the owner-occupied sector. However, the issues described above are particularly acute in social housing, where tenants typically have little or no choice in whether or how new systems are installed. Meanwhile, the policy and funding environment in which social landlords operate creates additional demands that must be navigated.

As explained above, evidence shows that disengaged tenants, who do not understand or trust their new systems, are less likely to use them efficiently, and more likely to fall into debt due to unexpected energy bills or turn new systems off completely. Timely and effective advice is key to countering these outcomes and to realising the benefits of retrofit for tenants. For example, analysis from Changeworks' Affordable Warmth Services found that tenants who received preventive energy advice, ahead of retrofit projects, saved an average of £218 per year.[15]

Maximising the impact of the installed technology is also important for meeting social landlords' goals of retrofit projects: reducing carbon emissions from housing stock, reducing tenants' energy bills and improving the health and wellbeing of tenants. Changeworks' previous research highlights how efficient use of low-carbon technologies may result in reduced maintenance costs related to damp and mould, a smaller risk of arrears related to high energy costs, but also knock-on effects such as improved health.[16] Building preventative advice into these projects is important for achieving these outcomes. Landlords will also benefit from the avoidance of post-installation support for tenants related to inefficient use of new technologies.

As such, there exists a need to understand the extent and shape of energy advice in social housing related to retrofit, its impact for households, and how it can be delivered in the face of limited resources that will likely remain a challenge for landlords.

What does this report tell us?

To address the above, this research sought to:

1. **Describe current practices**: Document how energy advice is currently defined, delivered and resourced within Scottish retrofit programmes, noting areas of consistency and divergence.
2. **Compare standards and policies across the UK:** Analyse differences in retrofit standards (e.g. PAS 2030 and 2035) and associated funding mechanisms to understand their implications for advice provision and tenant support.
3. **Assess delivery models and practical considerations**: Explore different approaches to delivering advice and assess their potential strengths, weaknesses, and resource requirements in a social housing context.

[14] Sunikka-Blank, M. et al. 2011. Improving Energy Efficiency of Social Housing Areas: A Case Study of a Retrofit Achieving an "A" Energy Performance Rating in the UK

[15] This saving was enacted through pre- and post-installation advice and support, leading to a combination of behavioural changes to reduce energy consumption, the prevention of energy debts and rent arrears, and assistance with access to grants to reduce outstanding debts. This indictive saving was calculated using data from follow-up surveys to capture the outcome of the advice.

[16] Changeworks. 2026. Co-benefits of net zero retrofit and stock investment management: Social landlords in Scotland. (Online) Available: https://www.changeworks.org.uk/wp-content/uploads/2026/01/2026-Changeworks-Co-benefits-of-Retrofit_Final-Consultation-Report-compressed.pdf

4. **Engage sector stakeholders to identify barriers and opportunities:** Gather perspectives from tenants, landlords, advice providers and retrofit professionals to understand perceived gaps and explore practical improvements to advice provision.
5. **Develop evidence-informed recommendations**: Based on findings, produce a set of recommendations with stakeholders for how energy advice could be better integrated into future retrofit delivery and funding structures.

How did we go about this?

To meet the aims of the project, the research took a mixed-methods approach, including:

- **A review of academic and grey literature** related to behaviour surrounding carbon emission reductions, the role of energy advice and the forms it takes and retrofit and low-carbon technology in the social housing context.
- **A review of policy and funding structures** related to retrofit in the Scottish social housing context, and the potential barriers and opportunities it presents for landlords.
- **Analysis of national-level secondary data** to estimate the extent of low-carbon technology installations[17] in Scottish social housing and the scale of further retrofit and related advice needed.
- **Interviews with sector stakeholders, social landlords and tenants** to understand the reality of providing and receiving energy advice in the Scottish social housing context and the impact that it has (number of completed interviews: 12).[18]
- **A survey of Scottish social landlords** to understand current advice delivery models and the context they operate in (number of complete responses: 13).

A project advisory group was established to inform and guide the research. This consisted of stakeholders from across the sector, including tenant representative groups, academia, trade bodies for RSLs and installation contractors, and retrofit agencies. Changeworks wishes to thank the group for their contribution.

Changeworks also wishes to thank the William Grant Foundation who funded this research.

[17] See Table 1 for the types of technology included in the analysis.
[18] Six interviews were undertaken with representatives of organisations such as charities, tenants' groups and industry bodies. Three follow-up interviews were also undertaken with social landlords and three with tenants. These interviews focussed on the current landscape of energy advice delivery as well as what stakeholders believed was needed to provide effective advice and support. See Appendix B for the topic guide used in the stakeholder interviews.

2. Estimating the Advice Gap

To better understand the scale of energy advice needed in the social-rented sector in Scotland, Changeworks estimated the number of installations required to meet existing targets (i.e., those properties that do not have low-carbon heating or energy generation technology). As mentioned above, it is important to also consider mechanical ventilation (with or without heat recovery). However, these measures are highly dependent on individual properties, and there is limited data availability on existing ventilation installations. Therefore, these measures are not included in this analysis.

Around 425,000 socially rented properties in Scotland have EPC records registered since 2008. Changeworks estimates that this represents just under three quarters of the social-rented sector in Scotland as a whole.[19] First, the number of properties that have already had low-carbon technology installed were established using national EPC data (see appendix A), before filtering to the social-rented sector only.

Since 2008, there have been **around 84,000 installations of low-carbon technology** in socially rented properties (Table 1). Not including smart meters, batteries or infrared heaters.

Table 1 Number of known installations. Source: Changeworks' analysis of Scottish Government EPC data.

Technology	Known installations in social-rented sector*
Electric (non-HHR) storage heaters	34,600
Solar PV	19,100
High heat retention (HHR) electric storage heaters	12,600
Air source heat pump	11,800
Solar thermal	5,200
Ground source heat pump	300
Battery storage	Not captured in EPC data
Infrared heating	Unknown, but is a subset of electrically fuelled room heaters (3,600)
Smart meters	Not captured in EPC data

*Note: Known properties with installations from 2008 to Q3 2025. Figures rounded to the nearest 100.

From this, Changeworks estimated the number of properties requiring heating system upgrades and solar PV in the Scottish social housing sector (Table 2). To align more closely with the latest information around reformed EPCs, properties requiring a heating upgrade are defined as those with a heating system type rating of D and lower (see Appendix A.II).[20]

[19] As a cross-check for completeness, the Scottish House Condition Survey (2021) was used. In that dataset there are an estimated 577,685 properties with a tenure of registered social landlord. This means Changeworks' EPC sample of 425,400 represents just under three quarters of the estimated whole.

[20] The exception to our alignment is around electric storage heaters, specifically those which are not defined as high heat retention (HHR). While these would be considered category B, direct electric, Changeworks would still recommend these be upgraded to HHR standard.

Table 2 Estimated upgrades required. Source: Changeworks analysis of Scottish Government EPC data.

Upgrades	Potential number needed (and percentage of total social-rented households)*
Heating system	373,400 (**88%**)
Solar PV	238,300[21] (**56%**)

*As of Q3 2025. Rounded to the nearest 100

As seen in Table 2, **88% of social-rented housing in Scotland requires a heating upgrade** to meet the carbon emissions reduction targets. There is also the potential to reduce fuel bills by **installing solar PV on as much as 56% of properties**.

As this research explores, a key part of achieving these goals is ensuring that technology has maximum impact through advice and support for householders. The scale of this challenge requires a coordinated approach to ensure this is achieved.

[21] For solar PV potential, the EPC database does not contain information on roof orientation. As such we have assumed that all houses, bungalows, and top floor flats which do not currently have a solar installation have the potential to have them. This means that in reality, not all of these properties will be considered suitable after physical inspection, so the numbers presented here can be thought of as an upper bound.

3. Overview of Existing Advice Delivery

3.1 Introduction

To maximise the carbon emissions reductions from low-carbon technologies installed in the home, residents must know how and why to effectively use them. This is of particular importance in social housing, where the decision to install these systems will not have been taken by tenants. The benefits of this advice are clear, however there is no consistent method of delivering it, and the various providers of information and support can sometimes contradict each other. It is particularly important to address fears amongst tenants and habits entrenched from using older systems, in a tailored way with multiple points of contact. This model of ongoing support is suggested as being critical to successfully lower emissions and provide affordable warmth.

The following section outlines details of existing advice delivery including:

- The role of standards and funding
- Models
- Outcomes
- Challenges

3.2 Landscape: standards and funding

Social housing retrofit in Scotland is largely driven and shaped by standards and funding requirements. Advice is included as part of these structures in varying depth. Key policy drivers include government fuel poverty targets, landlord decarbonisation and wellbeing statutory requirements and voluntary goals. However, persistent barriers continue to hinder large-scale progress.[22]. The policy landscape surrounding retrofit in Scotland can be inconsistent and planning projects and therefore advice delivery is made difficult by the lack of continuity.

3.2.1 Standards

Standards have the potential to inform advice delivery best practice (through guidance) and to ensure that advice forms part of the retrofit process. This has the potential to work particularly well when standards form a requirement of funding. There are two key standards in the social housing retrofit space: PAS 2030 and 2035 and the Social Housing Net Zero Standard (SHNZS).

PAS 2030

Publicly Available Specification (PAS) 2030:2023 sets out the required standards for energy efficiency measures installed in domestic buildings as part of a retrofit process.[23] This includes a range of measures, but mostly fabric based (i.e. insulation) and installation of gas appliances. It does include MVHR, for which it states the following information should be provided to the client at handover:

- An explanation of the purpose and relevance of the written information provided;
- An explanation of which controls/components should not be adjusted by the system user; and

[22] Changeworks. 2026. Co-benefits of net zero retrofit and stock investment management: Social landlords in Scotland. (Online) Available: https://www.changeworks.org.uk/wp-content/uploads/2026/01/2026-Changeworks-Co-benefits-of-Retrofit_Final-Consultation-Report-compressed.pdf
[23] BSI. 2023. PAS 2030:2023 (online): PAS 2030:2023 Energy Efficiency in Existing Dwellings | BSI

- A demonstration of: how to set user controls for maximum efficiency;
- Any safety checks that the system user should undertake; and
- What to do in the case of an emergency or perceived emergency.

PAS 2035

The UK Publicly Available Specification (PAS) 2035 sets out the process standard for the energy retrofit of domestic building.[24] PAS 2035 offers substantive guidance around advice delivery. Its use is mandatory for some government-funded projects such as the Warm Homes Scotland programme and discontinued Energy Company Obligation (ECO) programme and the Social Housing Development Fund (SHDF). However, beyond these programmes the PAS standards have only limited voluntary use in the Scottish social housing context. PAS 2035 is costly and complex to deliver, which has resulted in limited use in practice to date and therefore little impact on advice delivery.

The Standard states that advice must be delivered as part of every domestic retrofit and overseen by the retrofit coordinator and also incorporates the evaluation of projects after installation. The Standard specifies that advice is given to all occupants of the dwelling and also to the landlord, in the case of social housing. The advice must be accessible to recipients, 'i.e. taking account of language, the age of the occupants, any hearing or sight difficulties, etc.'[25] Advice must be given at each stage of the retrofit process, including customised advice at the inception of the retrofit project and at handover, concerning:

- Behaviours (such as ventilation and heating)
- Building maintenance needs
- Energy costs and changing tariffs
- Retrofit technologies themselves
- Monitoring and evaluation to check outcomes have been achieved

Social Housing Net Zero Standard (SHNZS)

This minimum energy efficiency and performance standard was designed to replace Energy Efficiency Standard for Social Housing 2 (EESSH2) which sets minimum energy efficiency requirements for social housing in Scotland. It is currently being consulted on, while EESSH2 is on hold.[26] Although it is not yet mandatory, it is expected to be enforced through the Scottish Housing Regulator (SHR) within the Scottish Social Housing Charter, establishing reporting duties on energy and heating standards.

At present, as SHNZS is principally a performance standard setting minimum energy use and clean heating requirements, it does not incorporate requirements for energy advice. EESSH2, which it will eventually replace, states that 'effective tenant engagement and advice is vital for successful outcomes' regarding the proper use of energy and ventilation systems.

Other voluntary standards

Other standards, such as Enerphit[27] and AECB Carbon Lite,[28] contain no reference to advice provision.

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[24] BSI. 2023. PAS 2035:2023: Retrofitting dwellings for improved energy efficiency – Specification and guidance. (Online) Available: https://retrofitacademy.org/wp-content/uploads/2024/11/PAS2035_2023.pdf
[25] BSI. 2023. *PAS 2035:2023*: *Retrofitting dwellings for improved energy efficiency – Specification and guidance*. (Online) Available: https://retrofitacademy.org/wp-content/uploads/2024/11/PAS2035_2023.pdf (p.25)
[26] UK Government. 2023. *Social housing net zero standard: consultation*. (Online) Available: https://www.gov.scot/publications/consultation-new-social-housing-net-zero-standard-scotland/
[27] See: https://blog.passivehouse-international.org/the-enerphit-standard-how-does-it-phit-in/
[28] AECB. 2025.*The CarbonLite Standards* (Online) Available: https://aecb.net/wp-content/uploads/2025/07/CarbonLite-Standards-Detailed-Guidance-v7.pdf

3.2.2 Funding schemes

Funding schemes have the potential to play a role in shaping advice delivery. They may incorporate advice provision specifics as part of their own criteria of deliver or defer to one of the standards. However currently, advice is not consistently required nor covered as an eligible expense across existing funding schemes, meaning that landlords therefore need to fund delivery themselves.

Social Housing Net Zero Heat Fund (SHNZHF)

The SHNZHF is a Scottish Government initiative that helps fund the retrofit of existing homes. It is a key delivery mechanism for the government's net zero housing policy. Funding does not require nor cover the cost of energy advice, although Scottish Government progress reports show that some projects have incorporated such provision.

Energy Efficient Scotland: Area Based Schemes (EES:ABS)

ABS projects are a Scottish Government–funded programme under Energy Efficient Scotland, delivered by local authorities, targeting fuel-poor areas to provide energy efficiency measures. EES:ABS is not aimed at the social housing sector, but if social housing stock is included in projects (for example, within an area or block of flats) then work must align with PAS 2030:2023; which suggests high-level advice provision for certain measures (see above). The wider ABS guidance states that 'Households receiving assistance via ABS must be directed to other suitable advice and support networks.'.[29]

ECO4

Until recently, ECO4 was funded by energy companies through the Home Heating Cost Reduction Obligation for installation of energy efficiency measures in British Households. Using guidance from OFGEM, the energy companies determined which retrofit projects they choose to fund, the level of funding they provide and the retrofit coordinator and installers they work with. ECO4 was aligned with PAS 2035 and therefore in principle, incorporated energy advice provision.

[29]Scottish Government. 2025. Area Based Schemes Programme Guidance 2024-2025 (ABS 12) to 2026-2027 (ABS 14) (online): FOI+202500489302+-+Information+released+-+Appendix+1.pdf

3.3 Advice models

Interview participants made clear that energy advice and support for social housing tenants in Scotland is highly variable, shaped by organisational capacity, funding sources and project type. While many social landlords distribute written materials and maintain staff presence on-site, there is no single, consistent model for delivery. Some organisations deploy dedicated energy advisers or energy efficiency officers (EEOs), while others incorporate energy advice into more general housing or maintenance roles. The focus on energy advice is a relatively new development; historically, social landlords concentrated on fuel poverty rather than broader energy efficiency or net zero goals. The expansion of net zero-focussed projects has made advice provision more central, though practice differs widely.

Overview of Survey of Social Landlords

Changeworks surveyed a number of Scottish social landlords in October 2025 to better understand current advice provision in the sector. This included questions on what retrofit projects had been undertaken, when in the retrofit process advice was given and by whom, what methods were used, and whether monitoring or evaluation took place to capture the outcomes for tenants. The survey received 13 responses, including from local authorities and housing associations.

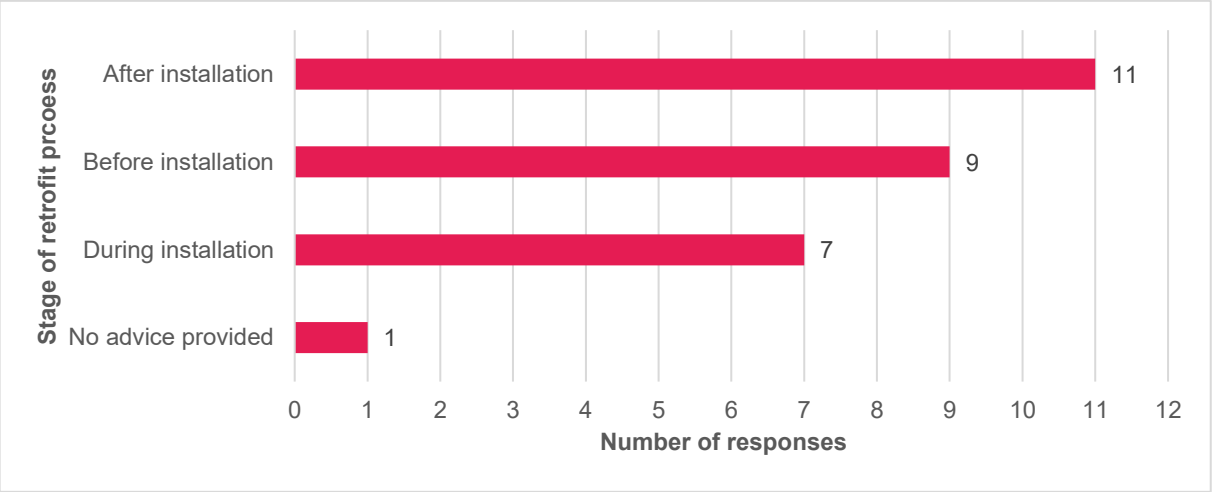
ASHPs and solar PV were the most frequently installed measures amongst respondents, followed by electric storage heaters, smart meters and battery storage. Infrared heating and GSHPs had only one response each. Six respondents said that these measures were installed in fewer than 50 households, while four stated that 50-199 received them. Two respondents said that installations took place in over 1000 households.

Funding for the low-carbon technology was secured from a variety of programmes. Most commonly this was through the Social Housing Net Zero Heat Fund, followed by local authority programmes, ECO funding, and Energy Efficient Scotland: Area Based Schemes.

3.3.1 Timings

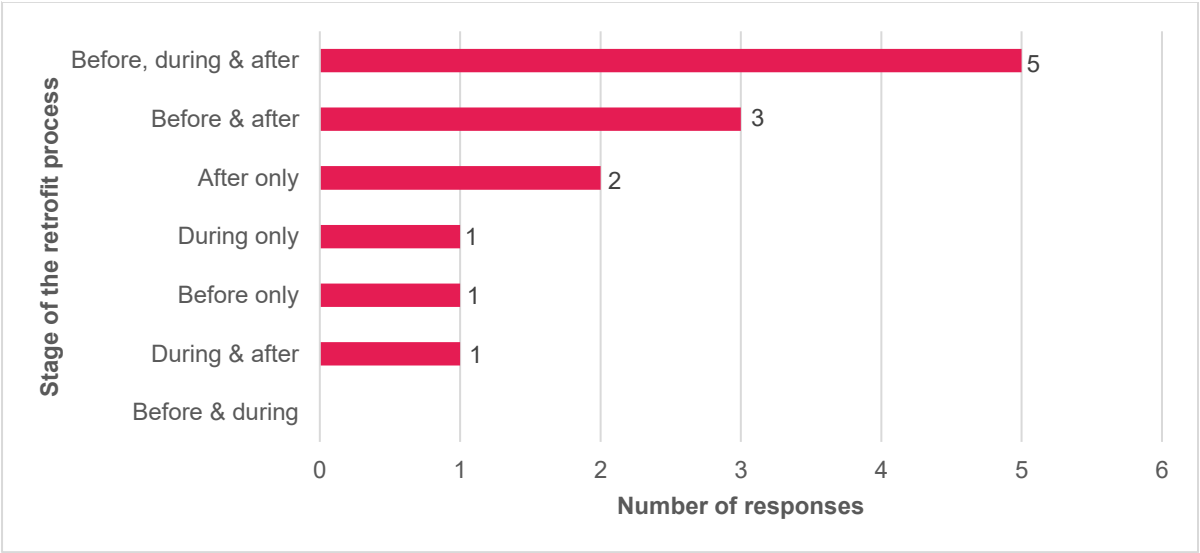
Respondents to the landlord survey were asked about when advice was given to tenants during the retrofit process. Respondents could select more than one answer. Only one respondent said that advice was not provided to tenants (Figure 1). All other respondents reported that it was delivered after installation, while nine said that it was beforehand, and seven during the installation process.

Figure 1: When advice is given to tenants. Source: Changeworks' survey of social landlords, 2025 (Base:13)



As shown in Figure 2, five respondents reported giving advice before, during and after the installation took place, while three gave advice before and after installation, and one during and after works. Only four respondents said that advice was given at only one of the stages.

Figure 2: When advice is given to tenants. Source: Changeworks' survey of social landlords, 2025 (Base: 13)



3.3.2 Actors delivering advice

Current delivery models use a range of actors to deliver advice. These include social landlords themselves, installers, manufacturers, independent advice delivery organisations, and tenants (through peer-to-peer learning).

Changeworks' survey data provides insight into the actors currently involved in advice delivery. Seven respondents stated that advice was given by the social housing provider only. Four respondents said that advice was given by both the housing provider and the installation contractor, while two stated that it was given by these organisations and by independent advice organisations.

Independent advice organisations can include national service providers such as Home Energy Scotland (although run via regional hubs), Energy Action Scotland, Citizens Advice Scotland. Regional energy agencies include Changeworks, SCARF, Energy Agency, and a number of other more localised service providers, such as Green Kirkcaldy. These organisations have a wealth of knowledge on advice delivery best practice, breadth of experience and resources.

Tenant case study: Maggie*

Maggie has lived at her housing association property for almost a decade. Around nine years ago, she has had an **ASHP installed, followed by cavity wall insulation and solar panels** in late 2025.

Before the installation took place, Maggie **received a letter** from her housing association informing her of the work taking place. From there, the **majority of the communication received was from the installers** themselves.

Maggie had different experiences with the two different stages of work. During the installation of the ASHP, Maggie experienced some **difficulties and miscommunication with the installers** but overall had a relatively smooth experience. She was informed about lifting the carpet around her radiators. However, there were issues with fitting a fan and the right size water tank, which had to be fitted after the ASHP. She received **more information** regarding the cavity wall insulation and solar panel installation. However, **practical information regarding the installation was not provided** and she was only told about the need to lift carpets for fitting cables when an electrician arrived, meaning she needed to clear her bedroom at short notice.

Maggie's overall experience was one of **little guidance and limited information**. She felt that, had she been given certain information earlier on, the installation process would have been smoother. She also felt that her housing association was not very involved in the process and **would have appreciated a greater level of engagement**.

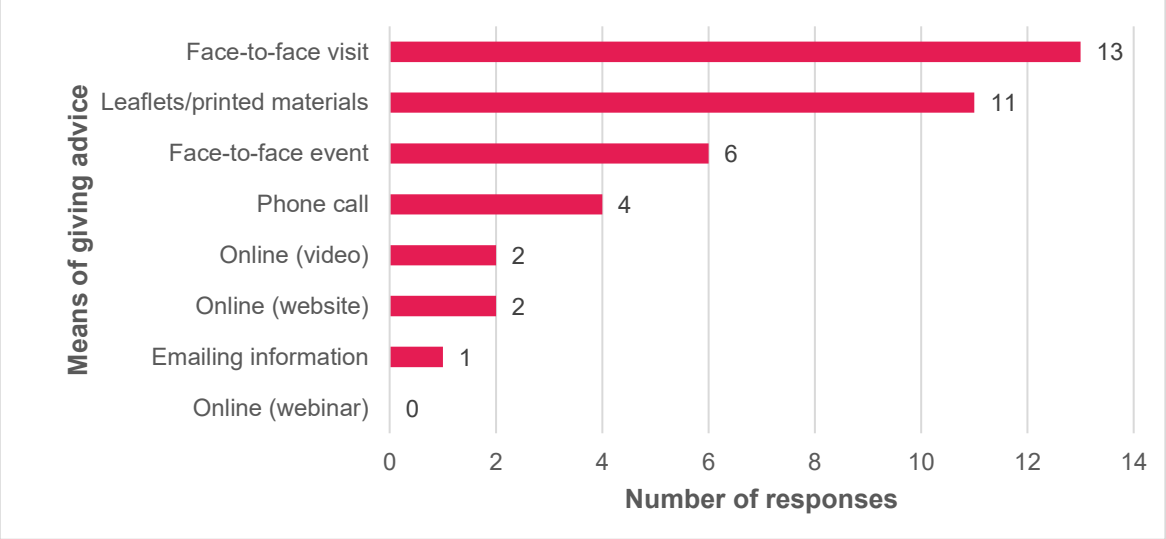
At the moment, Maggie **feels comfortable using the heating system at a basic level**. She calls the installers when things go wrong, who send an engineer. Her experience with the **installers is that they often do not have enough training or experience and have to come out multiple times** to fix a simple issue. Often, an issue is fixed but reoccurs soon after, and the installers must return.

*Note: Names of tenant case study participants have been changed throughout to ensure anonymity.

3.3.3 Methods of delivery

Advice delivery is often carried out via a number of different methods. The survey data shows that most respondents provided a combination of forms of advice, usually including face-to-face visits, events and leaflets or other printed materials (Figure 3). Four respondents reported phoning tenants in addition to the aforementioned methods. Two respondents also provided online resources, while two gave advice only through face-to-face visits.

Figure 3: How advice was given to tenants. Source: Changeworks' survey of social landlords, 2025



Stakeholder interviewees felt that written materials remain the most common form of support, ranging from generic leaflets and quick-start guides to user manuals, particularly for newer technologies such as ASHPs. Some participants stated that some of this material is from external sources such as Changeworks (or adapted from them), while others stated that materials were also created by in-house social landlord teams. However, the level of tailoring varies greatly, with some participants arguing that advice and guidance is too broad or technical. Some social landlords have produced their own guides for tenants, covering metering, tariffs and efficient system use, yet they note that the effectiveness of these materials depends on tenant literacy, confidence and ongoing support.

Stakeholder interviewees also reported that tenant engagement practices vary considerably. Some teams visit homes to explain metering changes or technology upgrades directly, especially in projects involving district heating or complex billing arrangements. Where on-site staff can help interpret information, such as in sheltered housing, greater levels of tailored support can be given. Many participants highlighted wider difficulties in engaging tenants, and noted that where engagement is weaker, tenants can end up feel ill-informed, leading to confusion and mistrust around costs and responsibilities.

In the survey, landlords were asked what they would do to improve their advice delivery in the future. Almost all respondents (11) said that follow-up engagement after installation would be helpful in future projects, while more in-person demonstrations, online materials and clearer written guidance were advocated by most. Having access to an advice helpline was thought to be beneficial by two respondents, while improved staff training and greater use of remote monitoring technology was also highlighted by one and two respondents, respectively.

3.3.4 Evaluating retrofit outcomes and the role of advice

In response to the survey, two landlords reported that formal monitoring and evaluation took place after installation to understand whether they met the desired outcomes of the project, while six stated that informal feedback was gathered (Figure 4). Five respondents reported no evaluation.

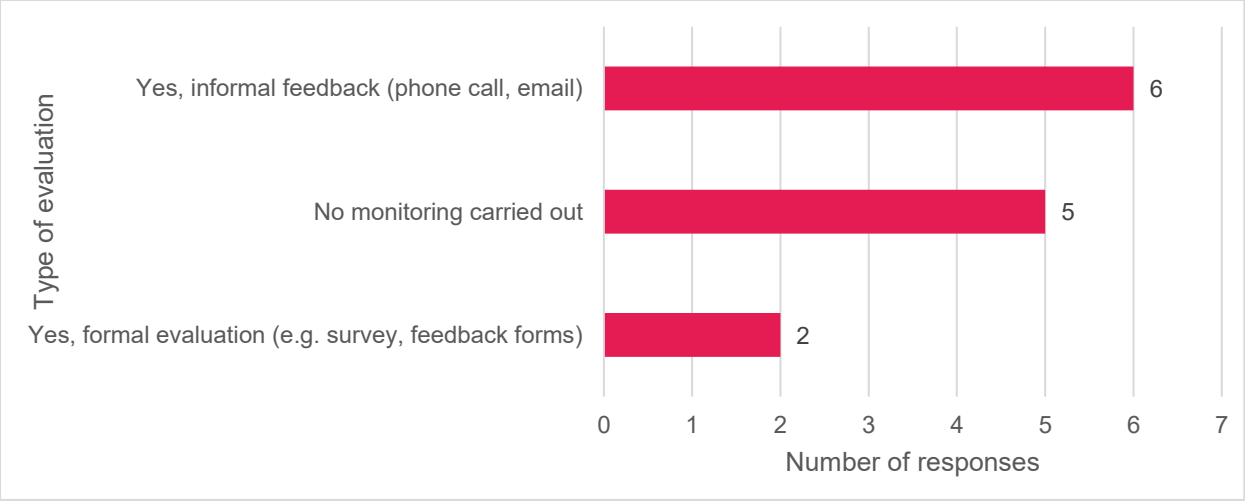
Where monitoring and evaluation took place (either formally or informally), this was in all cases undertaken by the housing provider rather than independent contractors or advice services. Those organisations installing measures in fewer than 50 properties, or those installing only one or two technology types, were less likely to carry out any kind of monitoring or evaluation.

Landlords were asked to describe how the evaluation findings were used. Four respondents said that the outcomes were informally noted (for example, in staff meetings), four reported using the information in internal reports and two shared the outcomes with project partners or installers. Four respondents said that it was used to improve the advice or information given to tenants after installations. Additionally, three respondents stated that internal guidance or staff training were updated as a consequence, while one reported that no changes were made.

In general, most respondents said that feedback from tenants has been mostly positive, while two said that is has been mixed, and four reported having received no formal feedback. All but three respondents stated that tenants experienced some kind of problem after installation. The most common issue reported was ‘difficulties with heating controls’ (seven responses). Five respondents also stated that technical faults with systems were experienced by tenants, while problems with tariffs (or accessing the Smart Energy Guarantee), higher than expected energy bills and homes being too cold were also reported.

Most respondents also believed that advice and support provided to tenants helped or would have helped prevent or reduce these issues, while one did not.

Figure 4: Whether landlord evaluated project. Source: Changeworks’ survey of social landlords, 2025 (Base:13)



4. Barriers to advice uptake

4.1 Overcoming fears and adapting behaviours

Several existing evidence sources discuss the behaviours and common misconceptions that can lead to inefficient energy use of low-carbon technology. Fears of higher costs and tenants gravitating towards familiar patterns of energy use (such as switching heating off at night) have all been found to have an impact.[30] This highlights the need for advice to address the benefits of efficient use of renewable energy installations, both in terms of cost and keeping homes warm.

One study, for example, found that social housing tenants using ground source heat pumps stated that they had become "less careful" in their use of heating after installation.[31] Most of this group were following advice and heating their home overnight and when unoccupied, but saw this as wasteful rather than more efficient. This implies that, while advice had been provided on using the heat pumps properly, information on the benefits of doing so had not, potentially leading to less efficient behaviours later on.

Several sources explain that a 'rebound effect' may occur after retrofit, whereby tenants use more energy after the installation of renewable energy systems.[32] This is often due to the perception of cheaper or more consistent heat from systems like heat pumps, leading to higher overall energy consumption.[33] However, research suggests that social tenants can be more energy efficient than other groups through careful energy use.[34] This highlights the importance of tenants understanding how to use new technology properly and the potential advantages of doing so.

4.2 Ineffective methods of engaging tenants

Existing literature suggests that efforts to advise social housing tenants on energy efficiency have often proved ineffective. This is largely because they rely on one-way, information-based strategies that overlook the complexity of behaviour change and fail to engage tenants as active participants. Research suggests that, even when engagement occurs, ineffective communication can undermine outcomes.[35] For example, overly complex instructions, inconsistent messaging, or insufficient explanation about system operation frequently leaves tenants confused or disengaged.[36] Studies reported residents being given only minimal guidance at installation, without follow-up materials tailored to their ongoing needs.[37] Similarly, evidence relating to properties with elderly residents showed that they often did not understand how the technology worked and did not know their role within its use.[38]

> *"So, perplexity kind of sets in and it's something you get used to."* – Jennifer (housing association tenant)

[30] McCabe, A. et al. 2018. The application of renewable energy to social housing: A systematic review; Caird, S. et al. 2012. Domestic heat pumps in the UK: user behaviour, satisfaction and performance.; Judson, E. P. et al. 2015. The Co-Construction of Energy Provision and Everyday Practice: Integrating Heat Pumps in Social Housing in England.
[31] Caird, S. et al. 2012. Domestic heat pumps in the UK: user behaviour, satisfaction and performance.
[32] Crilly, M. et al. 2012. Retrofitting homes for energy efficiency: An integrated approach to innovation in the low carbon overhaul of UK social housing; McCabe, A. et al. 2018. The application of renewable energy to social housing: A systematic review; Caird, S. et al. 2012. Domestic heat pumps in the UK: user behaviour, satisfaction and performance
[33] Lowery, D. 2012. Evaluation of a social housing retrofit and its impact on tenant energy use behaviour.
[34] Jansson-Boyd, C. V. et al. 2017. Complementing retrofit with engagement: exploring energy consumption with social housing tenants.
[35] Jansson-Boyd, C. V. et al. 2017. Complementing retrofit with engagement: exploring energy consumption with social housing tenants.
[36] Moore, N. et al. 2015. Improving the installation of renewable heating technology in UK social housing properties through user centred design.
[37] Ibid
[38] Brown, P. et al. 2014. Retrofitting social housing: reflections by tenants on adopting and living with retrofit technology.

These issues were reflected in stakeholder interviews, where a recurring issue highlighted across participants was the inconsistent training and technical knowledge of social housing staff. While customer liaison officers (CLOs) or energy officers may receive training through bodies like Energy Action Scotland, interviewees noted that advice quality across the sector can be inconsistent and sometimes conflicting. Staff responsible for tenant communication may lack understanding of underlying issues such as ventilation, damp or system design.

One participant noted that installers are sometimes restricted from speaking directly with tenants, creating information gaps between technical teams and tenants. The handover was also suggested to be a useful point at which staff members of social landlord organisations could receive training on the systems being installed, i.e., being present at handovers in order to receive the same advice from installers as tenants and therefore be in a position to assist tenants and other staff in the future. Meanwhile, it was noted that additional works are sometimes needed later in the retrofit process due to home assessments having not been carried out early on to ensure properties' suitability for technologies, which can create extra costs and delays.

As seen in section 3.3, the literature describes how housing providers often used leaflets, verbal guidance, or basic instructions to engage with tenants and inform them of how to use technology.[39] However, this form of communication may only produce short-term awareness rather than lasting behavioural change if it occurs only at the point of installation. Evidence suggests that without ongoing advice tenants are unlikely to recognise the benefits of installations and embed new practices into their daily routines.[40] Assumptions that residents will independently learn to manage systems once basic information is provided are unlikely to prove successful, as personal routines and perceptions of efficiency strongly influence levels of adoption.[41] This also implies that a change of tenant would present additional challenges if ongoing advice is not supplied, especially for those unfamiliar with such technology.

Stakeholder interviewees shared that energy advice often focuses on information provision rather than personalised guidance. Tenants also reported being overwhelmed by technical detail or left without practical demonstrations. Stakeholders felt that, in their experience, tenants needed *"someone to show them how to operate systems, rather than being handed a leaflet"*. Without a focus on tenant habits or comfort, it was noted, advice often overlooks how residents actually use energy in their daily lives. It was noted that plain language resources, intended for social housing tenants, have been made by third sector organisations,[42] however it is unclear how widely these are currently used. Social landlords recounted referring tenants to third-party organisations for further or more specific advice is some cases, but this is reportedly not always possible.

[39] Jansson-Boyd, C. V. et al. 2017. Complementing retrofit with engagement: exploring energy consumption with social housing tenants
[40] Judson, E. P. et al. 2015. The Co-Construction of Energy Provision and Everyday Practice: Integrating Heat Pumps in Social Housing in England
[41] Ibid
[42] See: Carbon Coop. Plain English Retrofit Guides.

Tenant case study: Helen

Helen is a housing association tenant, and she has had an ASHP and solar panels installed over the last two years. These replaced her storage heaters, which she believes were much less efficient and cost her more far more money.

She **received very limited communication** from both the installers and her housing association before, during and after the installation process. At some points this **created difficulties** for Helen. For example, her landlord informed her of when the installation was going to take place, but not that she would need to leave the house. Otherwise, the information she received was from the installers. This included a leaflet on running the ASHP, however, **as she has dyslexia, Helen found the leaflet difficult to understand**. During the installation, **the installers gave her basic information** such as how to set the thermostat and informed her that the heating must be left on. She **received a follow-up phone call from the installers** regarding the solar panels, but not for the ASHP.

Helen was also **not informed or guided through switching her electricity tariff**, which she finds confusing. Relatedly, she was **told by the installers that she would receive money back** from electricity supplied to the grid **but is unsure whether her or the housing association receives this**. She has also experienced problems with her new smart meter, despite which she must still submit meter readings.

Altogether, **Helen felt her housing association was not sufficiently involved** in the process. She highlighted that she would have appreciated **more guidance on the whole process**, as well as some simple **tips on saving electricity and other energy advice**. In particular, she felt that **in-person visits would have been beneficial**, as well as **simple written guidance**.

Existing literature highlights that ongoing or follow-up engagement with tenants is crucial in achieving long-term energy reductions; advice and services tailored to specific user groups, using intermediaries to engage tenants and hands-on demonstration are all proposed.[43] The question of who is responsible for administering this advice remains, with evidence relating to who is best placed to do so being scarce. Existing research shows that local authorities and housing associations can be well placed to provide advice and support to tenants in retrofit projects, at least as a first point of contact. Such organisations have been shown to be seen as trustworthy sources of advice, meaning that advice is more likely to be enacted and therefore result in better outcomes for both the tenant and in meeting project goals.[44] However, this appears to be dependent on the relationship between the landlord and the tenant, as some stakeholders and tenants involved in this research mentioned examples of mistrust, in particular not wanting to share financial circumstances.

[43] Bahaj, A. S. and James, P. A. B. 2007. Urban energy generation: The added value of photovoltaics in social housing. ; Judson, E. P. et al. 2015. The Co-Construction of Energy Provision and Everyday Practice: Integrating Heat Pumps in Social Housing in England.; McCabe, A. et al. 2018. The application of renewable energy to social housing: A systematic review

[44] Sugar, K. et al. 2022. Energy Efficient Scotland Transition Programme Survey Evaluation. (Online) Available: https://www.pure.ed.ac.uk/ws/portalfiles/portal/289802145/energy_efficient_scotland_transition_programme_survey_evaluation.pdf

The negative impact from tenants receiving inconsistent advice is highlighted, however, with conflicting information from manufacturers, contractors and housing providers having been reported to act as a barrier to lowering energy consumption.[45] Several stakeholders therefore suggested that, beyond basic help and support, social landlords should signpost tenants to third party organisations for more in-depth advice.

To avoid this, one source recommends a single provider of all information and advice,[46] while another suggests home improvement agencies are well-placed to be transformed into 'housing support hubs' that would link into national health, wellbeing and environmental programmes.[47] It is also suggested that long-term funding is needed in order to build relationships between government, organisations, suppliers and households and provide effective advice.[48]

4.3 Funding constraints

Financial constraints are another major barrier to advice delivery in both the literature and stakeholder interviews. The requirement for social landlords to provide substantial match-funding has placed them under growing pressure by having to manage funding alongside rising costs, competing investment demands and the need to keep rents affordable. Additional resources, in terms of funding, skills, and staff capacity, are reportedly needed to support local authorities to deliver effective engagement and advice services.[49]

According to an evaluation of the SHDF and PAS 2035**,** advice does not always carry through from initial contact to post-installation, leaving households unsupported.[50] Householders were reportedly often faced with out-of-date information, or had a need for more specific advice relevant to their household type.[51] Meanwhile, there can be confusion on the part of landlords as to how new roles (e.g., the retrofit assessor or retrofit coordinator) fit into the project, and what constitutes as sufficient detail to evidence compliance.[52]

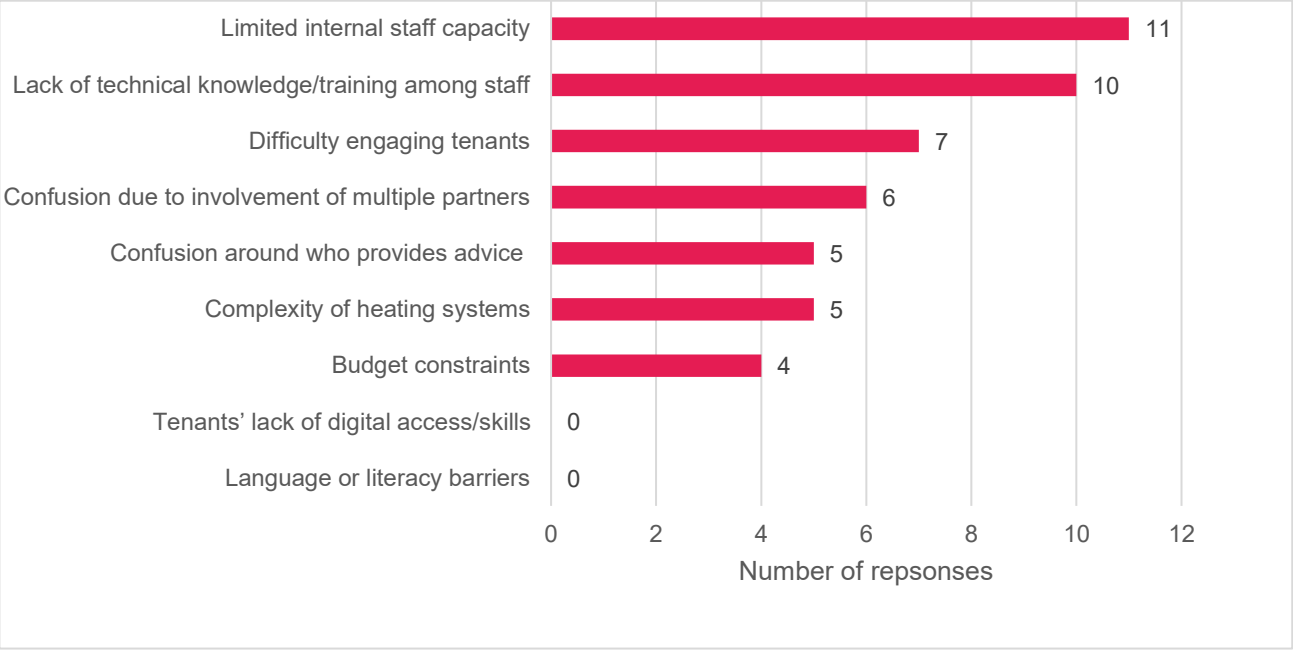
Research by the Scottish Futures Trust[53] called for a shift away from short term, competitive grant funding, towards a stable, long-term investment framework that gives social landlords the confidence to plan and deliver retrofit at scale. They argued that this would significantly enhance and extend the delivery of SHNZHF. Similarly, research by the Existing Homes Alliance called for stable, long-term programmes to justify investment in people and training.[54] These steps would pave the way for better advice delivery by removing some of the barriers, including funding, consistency, planning and resource.

The barriers highlighted most consistently in the stakeholder interviews were a shortage of funding, staff capacity, and structural support. Reportedly these barriers underpin most of the challenges facing organisations delivering energy advice and support to social housing tenants in Scotland. These findings mirror those of the survey in relation to limited staff capacity, however, in contrast, only four survey

[45] Hafner, R. J. et al. 2020. Energy use in social housing residents in the UK and recommendations for developing energy behaviour change interventions
[46] Sugar, K. et al. 2025. Re-imagining home energy advice in the UK. https://www.edrc.ac.uk/wp-content/uploads/2025/07/Re-imagining-home-energy-advice-in-the-UK.pdf
[47] Hafner, R. J. et al. 2020. Energy use in social housing residents in the UK and recommendations for developing energy behaviour change interventions
[48] Sugar, K. et al. 2025. Re-imagining home energy advice in the UK. https://www.edrc.ac.uk/wp-content/uploads/2025/07/Re-imagining-home-energy-advice-in-the-UK.pdf
[49] Ibid.
[50] UK Government. 2024. SHDF Wave 1 Thematic Case Study. (Online) Available: https://assets.publishing.service.gov.uk/media/676163b994c0d990c1ef3959/shdf-wave-1-thematic-case-study.pdf
[51] Sugar, K. et al. 2022. Energy Efficient Scotland Transition Programme Survey Evaluation. (Online) Available: https://www.pure.ed.ac.uk/ws/portalfiles/portal/289802145/energy_efficient_scotland_transition_programme_survey_evaluation.pdf
[52] UK Government. 2024. SHDF Wave 1 Thematic Case Study. (Online) Available: https://assets.publishing.service.gov.uk/media/676163b994c0d990c1ef3959/shdf-wave-1-thematic-case-study.pdf
[53] Scottish Futures Trust. 2025. Financing and funding the decarbonisation of Scotland's social housing. (Online) Available: https://www.scottishfuturestrust.org.uk/publications/documents/financing-and-funding-the-decarbonisation-of-scotlands-social-housing-summary-report-1
[54] Existing Homes Alliance Scotland. 2023). Making Retrofit Work – Rapid Review of Fuel Poverty & Energy Efficiency Delivery Programmes. (Online) Available: https://existinghomesalliancescotland.co.uk/wp-content/uploads/2023/10/EHA-Rapid-Review-of-Scottish-Government-Fuel-Poverty-and-Energy-Efficiency-Delivery-Programmes-Briefing-August-2023.pdf

respondents stated that budget constraints were a barrier to advice provision (Figure 4). Interview participants noted that independent advice providers also have limited or reduced capacity to deliver advice. These cuts mean fewer opportunities for tenants to receive trusted, in-person support, leaving social landlords and other organisations to fill the gap. Stakeholders explained that many organisations rely on multiple short-term funding streams that require constant management and provide little scope for longer-term planning. The timing and competitiveness of these cycles often determine whether projects can go ahead at all.

Figure 4: Barriers organisations face in giving advice. Source: Changeworks' survey of RSLs, 2025 (Base:13)



Social landlords themselves are often seen as well placed to support tenants due to their existing relationships and infrastructure, but they rarely have sufficient staff or budget to make energy advice a core service. Interviewees noted that even well-established independent organisations, such as charities who offer advice services, are limited by funding constraints and cannot always reach tenants directly. However, these stakeholders also noted that with early notification and planning they can make applications to funders to support the delivery of advice. These organisations noted that they are well placed with trained staff to support landlords who might not have internal capacity to deliver such services. They reported some of the more successful projects are instances where landlords have come to them in advance and have incorporated advice from the outset of the project, enabling early intervention.

Current policy and funding structures compound the problem. While programmes like the Social Housing Net Zero Heat Fund (SHNZHF) and area-based schemes have expanded retrofit activity, they finance capital measures as opposed to ongoing engagement, advice, or monitoring. Participants stressed the need for funding to cover the entire "customer journey", including post-installation support, since handovers from installers do not always happen. Short-term or unclear government guidance, particularly around emerging standards such as Social Housing Net Zero Standard (SHNZS), creates uncertainty for planning. Housing associations frequently act as early adopters of new technologies or funding models, it was thought, yet this leaves them exposed to higher risk and difficulty in communicating the benefits to tenants. Especially where measures may raise bills.

Several interviewees stated that much staff time is consumed by applying for and managing overlapping funding packages rather than improving delivery. However, it was noted that some funders are reportedly

shifting focus towards long-term, in-depth delivery rather than simply high-volumes of installations. One participant also noted that funding limitations disproportionately affect rural and island communities, where installation and engagement costs are higher, meaning these areas are often deprioritised.

4.4 Lack of standardisation of advice

Stakeholders highlighted technical and policy guidance remains of varying quality and fragmented. There is little clarity on what constitutes good energy advice and workforce competence varies; engineers and installers reportedly often work “by rule of thumb” and training standards differ between courses. Furthermore, the online resources available for installers are frequently not based on Scottish regulations, offering limited relevance or incorrect information on what is required for installations in the Scottish context.

Interviewees suggested practical solutions; given the scarcity of resources. Developing specialist expertise within social landlords and integrating advice costs into projects were identified as crucial steps. One participant argued that it would be better to deliver fewer projects to a higher standard, creating visible success stories to build confidence in low-carbon technology. Meanwhile, monitoring and evaluation is reported to be needed in order to evidence tenants’ experience and measure outcomes in the long-term. Organisations reportedly generally want to work together and share learning, yet data-sharing restrictions and burdensome reporting deter coordination. Past collaborative models (some supported by EU funding) showed promise but faltered under administrative complexity. Participants called for a national support unit or network to pool expertise, disseminate best practice, and ensure lessons from initiatives such as the SNZHF are captured and applied.

5. Key Considerations for Effective Advice

5.1 Embed advice across the retrofit process

As discussed in section 4, the literature indicates that the most effective and efficient way to deliver energy advice is to engage tenants throughout the entire process. Specifically, consulting tenants early when designing heating systems, and maintaining consistent engagement during and after installation. This enables households to raise questions and concerns whilst also learning about the benefits of new low-carbon heating systems. This also helps address tenant concerns of work being done *to* them, rather than *with* or *for* them, therefore increasing engagement with and efficient use of new heating technologies.

In the retrofit process, stakeholders stated that this means engagement during early consultations, pre-installation, system handovers, and follow-up visits. Tenants need both proactive engagement to prepare them for change and reactive support to deal with issues if they arise. A "whole-process" approach with an understanding of both the technology and tenant experience was thought to offer the best chance of ensuring new energy systems are used effectively, affordably and with confidence, and that retrofit measures therefore achieve their goals.

5.2 Consider who is best placed to deliver advice

Local authorities

Local authorities and housing associations can be well placed to provide advice and support to tenants in retrofit projects, at least as a first point of contact. Existing literature suggests this is particularly beneficial where there are staff 'on site' and able to be readily engaged by tenants.[55] Social landlords have been shown to be seen as trustworthy sources of advice.[56]

Interviewees noted that building trust is critical, as tenants are more likely to act on advice from a familiar, local and consistent source. They acknowledged that, while social landlord staff are often best placed to initiate contact, they need the technical competence and confidence to explain systems and signpost to external support and advisors when required.

Advice organisations

One stakeholder, from an organisation that provides energy advice, felt that independent advisors are particularly valuable as they are able to be impartial, which is of importance when tenants feel unable to discuss financial issues directly with social landlord staff. It was noted that independent advice services can help to fill gaps in capacity, as well as offering technical knowledge. However, landlords risk losing these competencies if this knowledge has not been built in-house and this external support is no longer able to be accessed.

Installers

Meanwhile, interviewees noted that installers play an essential role, but cannot always provide follow-up support, therefore coordination between installers, social landlords and advice services is vital. Stakeholders stated that there is an opportunity to ensure installers and engineers are trained to deliver advice effectively by aligning with further education courses that are already available, including fully-funded courses.[57] Other

[55] climatexchange. 2024. Case-study-Heat-pump-installation-North-Lanarkshire-Council-Lorne-Gardens.pdf
[56] Sugar, K. et al. 2022. Energy Efficient Scotland Transition Programme Survey Evaluation. (Online) Available: https://www.pure.ed.ac.uk/ws/portalfiles/portal/289802145/energy_efficient_scotland_transition_programme_survey_evaluation.pdf
[57] For example: https://www.nescol.ac.uk/courses/bpec-heat-pump-systems/

sources of training may help to address challenges in more rural areas (such as the Energy Saving Trust's mobile heat pump training centre).[58]

Community and peer-to-peer learning
While one-to-one consultations may not be feasible at scale, community-focused events, group workshops and peer-to-peer learning opportunities can help build trust and mitigate feelings of risk associated with behavioural changes. Where tenants hear positive accounts from others, confidence in new systems increases, encouraging engagement and adoption.

Community-based information sharing has been shown by several studies to be an effective strategy for promoting energy efficiency among social housing tenants, as trust and peer support strongly shape behavioural change.[59] Evidence also notes that tenants often seek advice from people they already know and rely on, even if these individuals are not experts in the technology.[60] Community events and peer learning, such as visiting homes with new installations, help tenants build practical knowledge while encouraging positivity toward reducing consumption.[61] This highlights the role of social networks in embedding lasting behavioural change and implies that successful advice strategies should recognise and use such networks. It is suggested that such interactions may also generate social co-benefits, enhancing communication, cooperation and collective action.[62]

5.3 Ensure advice content is tailored to context

Recognise and incorporate tenant motivations
Stakeholder interviewees stated that meaningful communication requires more than distributing information; effective advice involves two-way dialogue that takes account of a tenant's circumstances, motivations and comfort needs.

Currently, tenants are found to often lack clarity on efficient usage patterns and the implications for costs, which can undermine system performance. However, for many tenants, reducing bills is a primary motivation for engagement,[63] implying that advice connected directly to financial savings and cost management can be persuasive in encouraging sustained behavioural change. Many tenants are not interested in technology itself (in contrast to home-owners), but care about saving money and maintaining comfort. Advice should therefore translate technical goals like emissions reductions into language focused on affordability and wellbeing. However, existing literature also stated that it is equally important not to oversell the benefits of renewable technologies, both for tenants' understanding of systems and for maintaining trust.[64]

> *"So it may be ethical, which I completely applaud, but it's not ethical on your purse in any shape or form."* – Helen (housing association tenant)

[58] See: https://energysavingtrust.org.uk/business/energy-efficiency/green-installer/heat-pump-training/
[59] Jansson-Boyd, C. V. et al. 2017. Complementing retrofit with engagement: exploring energy consumption with social housing tenants.; Hafner, R. J. et al. 2020. Energy use in social housing residents in the UK and recommendations for developing energy behaviour change interventions.; Moore, N. et al. 2015. Improving the installation of renewable heating technology in UK social housing properties through user centred design.
[60] Brown, P. et al. 2014. Retrofitting social housing: reflections by tenants on adopting and living with retrofit technology.
[61] Moore, N. et al. 2015. Improving the installation of renewable heating technology in UK social housing properties through user centred design
[62] Hafner, R. J. et al. 2020. Energy use in social housing residents in the UK and recommendations for developing energy behaviour change interventions.
[63] Lowery, D. 2012. Evaluation of a social housing retrofit and its impact on tenant energy use behaviour.
[64] Brown; McCabe, A. et al. 2018. The application of renewable energy to social housing: A systematic review

Accessibility

Existing literature suggests the most effective methods of energy advice delivery combines clear, accessible guidance with an understanding of tenants' needs, motivations and lifestyles. For example, the Zero Emissions Social Housing Taskforce recommended that the Scottish Government should develop tailored materials within its public engagement strategy, so that social tenants and other groups may be introduced to lowcarbon technologies in the home.[65]

The stakeholder interviews revealed a strong consensus amongst participants that tenants need clearer, more practical and more personalised energy advice, particularly around tariffs, metering and understanding new heating systems. They detailed that tailoring advice for specific groups, such as families and elderly tenants, and offering materials in multiple formats and languages can also make support more inclusive.

Written and verbal information can play an important role in laying the groundwork for awareness and behavioural change,[66] and existing literature highlighted the importance of providing simple, written materials that explain controls, running costs, and troubleshooting is noted as particularly valuable.[67] Interview participants agreed, stating that advice materials should be concise (ideally no more than two pages), practical and supported by signposting to trusted sources for more detail.

Practical steps

Related practical advice, such as assisting households to review energy tariffs, may also encourage engagement.[68] Stakeholders highlighted how tenants often do not realise that responsibility for managing energy tariffs and suppliers lies with them, rather than the social landlord. This gap in understanding is compounded by low levels of digital confidence, limited awareness of switching options, and, sometimes, complex metering arrangements. Many households still have meters set up for previous systems, meaning they cannot access the most appropriate or cost-effective tariffs. When new technologies such as ASHPs and batteries are installed, meters may need changing and tenants often lack the support to do so. Smart meters are a key enabler for tailored tariffs and accurate billing, but stakeholders highlighted that to maximise the benefits they need to be installed early and accompanied by hands-on advice. It was suggested that advice about ventilation and draughtproofing is also needed, but must be tailored to each home since there is no single solution appropriate for all.

Delivery methods

Stakeholders felt that face-to-face interaction was preferred. In particular, locally-based advisors embedded in communities can attend local events, home visits, or drop-ins. Creative engagement methods, such as published tenant success stories or demonstration "show homes", help normalise new technologies by showing relatable examples.

[65] ZEST. 2021. Achieving net zero in social housing: Zero Emissions Social Housing Taskforce report. https://www.gov.scot/publications/achieving-net-zero-social-housing-zero-emissions-social-housing-taskforce-report/documents/
[66] Hafner, R. J. et al. 2020. Energy use in social housing residents in the UK and recommendations for developing energy behaviour change interventions.; Moore, N. et al. 2015. Improving the installation of renewable heating technology in UK social housing properties through user centred design.
[67] McCabe, A. et al. 2018. The application of renewable energy to social housing: A systematic review
[68] Bouzarovski, S. 2025. https://www.sciencedirect.com/science/article/pii/S0143622825001778?via%3Dihub

Tenant case study: Jennifer

Jennifer is a housing association tenant who moved into a new-build flat with an ASHP in 2025.

When Jennifer moved to the property, **she did not know that an ASHP was going to be her heating source**. She called her housing association to ask for instructions, and she was directed to **booklets** that she found in a cabinet. Jennifer **did not find these easy to understand** and she felt that they were more intended for the installers or engineers rather than the end user. The heating system is divided into three zones within her flat, which must each be programmed individually.

Jennifer **struggled navigating the system** and even **professionals who ended up being called out did not know** how to operate the system and would have to find instructions on YouTube. She ended up **reaching out to Changeworks for assistance with her heating** as she struggled to get guidance from the housing association or the maintenance professionals on how to operate the system. She now has **some control over the system** and can set each zone manually but is **frustrated with its complexity**.

Overall, Jennifer **would have appreciated more accessible information and assistance**. She feels that she is usually comfortable working things out for herself, but that this would not be possible for some neighbours who have struggled with the same.

6. Near- and Long-Term Opportunities for Improvement in Current Practice

6.1 Challenges for providing advice

This section examines how advice and support for tenants is currently delivered throughout the retrofit process in Scotland's social housing sector and how advice delivery may be improved. It draws on both the evidence reviewed and the perspectives of stakeholders and tenants engaged as part of this research to identify near-term opportunities for improvements and long-term areas where broader action is needed to resolve current challenges:

- **Advice content and context:** The type and volume of information can be overwhelming. Many of the materials and case studies available are not aimed at tenants. Tenants will not have the same level of prior knowledge or interest in technology compared with home-owners and are more motivated by warmth and costs.
- **Who is best placed to deliver advice:** There is often confusion as to who is responsible for advice provision at each stage. Landlords are largely seen as a trusted advice provider, some tenants reportedly reluctant to go to landlords with problems related to finances. Handovers were not always being undertaken by installers, partly owing to their availability, but also to the particulars of the work required of them. Inconsistent training and technical knowledge among installers and housing association support and maintenance staff. Energy advice is not always a feature of training and certification.
- **Monitoring and evaluation:** Even when advice is provided, measuring success is reportedly difficult and inconsistent. Findings were not necessarily translated into changes in the delivery of the project or advice.
- **Guidance and standards:** Technical and policy guidance is fragmented, and there is little clarity on what constitutes 'good' energy advice. Alongside this is a challenging regulatory environment. Only PAS 2035 incorporates a requirement for advice provision. However, many projects are funded through schemes, which do not require PAS 2035.
- **Funding and capacity:** Funding insecurity is a significant barrier to delivering effective energy advice. Social landlords rarely have sufficient staff or budget capacity to make advice a core service. Funding cycles currently mean that advice and support is often difficult to factor into projects, while they are often unable to be included as a project cost. Participants stressed the need for funding to cover the entire 'customer journey', including post-installation support and monitoring.

6.2 Improving advice provision: near-term opportunities

Embed advice across the retrofit process

Both the wider evidence reviewed, and the findings of the stakeholder engagement, point to a need for advice to be provided at all stages of the retrofit process. As seen above, half of the survey respondents stated that advice was delivered in such a way. This advice delivery is most effective when planned in from the beginning of the project, including establishing key actors, roles and content provision.

Ensure advice content is tailored to context

Recognise and incorporate tenant motivations

Before installation, the evidence shows that tenants should be told what works are going to take place and why they are being done, so that they understand what to expect from low-carbon technology. This includes the differences that they should expect from their previous heating systems, for example the low flow temperatures associated with ASHPs, or ventilation requirements necessitated by higher levels of insulation. Interview participants made clear that tenants should be given information at this stage of the process as to the need to change tariffs to save money (if applicable), and the need to arrange for the installation of smart meters. More generally, it is clearly important that tenants are given information in relation to any possible changes in energy costs that may result from new measures.

Accessibility

In order to provide more effective, personalised advice, participants stated that home assessments should be undertaken before works begin, in order to avoid further use of staff time and expense at later stages. These also allow for tenants to be given advice that corresponds to their personal circumstances (e.g., age, disabilities, occupancy level) and their usage habits.

Instead of large volumes of technical information, interview participants suggested that tenants should be provided with simple, plain-language information sheets that cover the essential information they need to know for running new systems. Interviewees also found that face-to-face visits and demonstrations are crucial to effectively supporting tenants.

Delivery methods

The use of pilot properties, such as those upgraded during void periods, create opportunities for ‘show homes’ with new heating systems and other technologies installed. A limited number of instances in which social landlords are creating such examples exist, but a wider use of such a practice would enable tenants and private householders to engage with measures before they are rolled out more widely. As interview participants noted, such examples would not only allow tenants to see things like ASHPs in-person and in-use, and thus know what to expect from such systems, they would also be able to understand the aesthetic changes that may occur with the installations of new technologies in their home. Such ‘show homes’ would also be effective alongside other community events and network-building, which the literature and interview participants note is effective in ensuring tenants can help each other with new installations and share their experiences and advice.

Additionally, stakeholders highlighted particular forms of pre-installation communications that would improve the outcomes of projects. Relatable ‘good news’ stories, created and distributed before installation begins, could delineate the experience of tenants who have had successful measures installed in their home. These are already being provided by some social landlords, and they are shown to serve a dual purpose of informing communities of tenants about energy efficiency measures and preparing those tenants who are to receive them for the beginning of projects. Again, this aligns with the findings of the wider evidence, that shows that more targeted and personalised information should be given.

After installation, the evidence suggests that tenants need access to basic information for how to use any new technologies and systems that have been installed in their home and know where to find further information and advice. The technical knowledge and specific advice able to be offered by third party organisations was suggested to be of particular value at this stage. Additionally, this is shown to be another opportunity to ensure that tenants are given advice relating to the energy tariffs most appropriate for their usage and for the technologies installed in their home.

Consider who is best placed to deliver advice

Social landlords
Social landlords are a trustworthy source of initial contact, particularly in introducing the technology and providing practical and timely advice about the installation. There is also a role for them to play in being a constant touch point to overcome problems, however this requires adequate training, capacity and accessibility. It is important that other relevant staff across the organisation are also trained on new systems, to enable on-going support across the lifetime of the technology, as opposed to just the course of the project. This is particularly pertinent in the case of tenants moving into a previously retrofitted home as seen in one of the tenant case studies. Staff should be able to provide basic assistance with systems and in signposting tenants to others where technical or dedicated, independent advice is appropriate.

Advice organisations
Advice organisations have depth of expertise, existing knowledge and resources and can bring additional capacity into projects. They can also support landlords to seek and apply for funding to facilitate advice provision if brought in at an early stage.

Installers
When done well, handovers from installers can be effective in tenants becoming familiar with new technologies; it was suggested that these should be required when contracting retrofit works to ensure they are standardised practice.

There is the opportunity to demonstrate the use of new systems to tenants and social landlord staff during installation, recognising the benefits of face-to-face practical demonstration and making the most of installers being in the home. Training can also be provided by advice organisations to upskill social landlord staff in the delivery of advice and members of the community to enable peer-to-peer learning.

6.3 Improving advice provision: long-term opportunities

Training

Up-skilling and further training for installers should be explored to mitigate workforce issues and ensure the standard and quality of advice is upheld. This should be considered in the context of existing standards and in the procurement of installers to drive quality in the delivery of advice.

Funding models

Funded schemes should be expanded to include support for advice provision and multi-year investment made in order to improve the outcomes and therefore return on investment. In addition, advice provision and guidance should be included as a requirement for receiving funding for retrofit works. Formalising advice in such a way will help to ensure that tenants are not given conflicting advice by different parties, as responsibilities will be more clearly defined.

Embedding advice in funding agreements could also improve monitoring and evaluation through standardisation of delivery and measurement practices. Particularly, if there were established best-practice models for how advice could be delivered in specific types of projects. This would ensure that outcomes could be more easily assessed and improvements made to services across the sector.

Where possible, social landlords would benefit from including advice delivery when self-funding retrofit projects in order to prevent higher spending in the future. Third party organisations may also be able to assist landlords to seek funding from other sources.

Collaboration

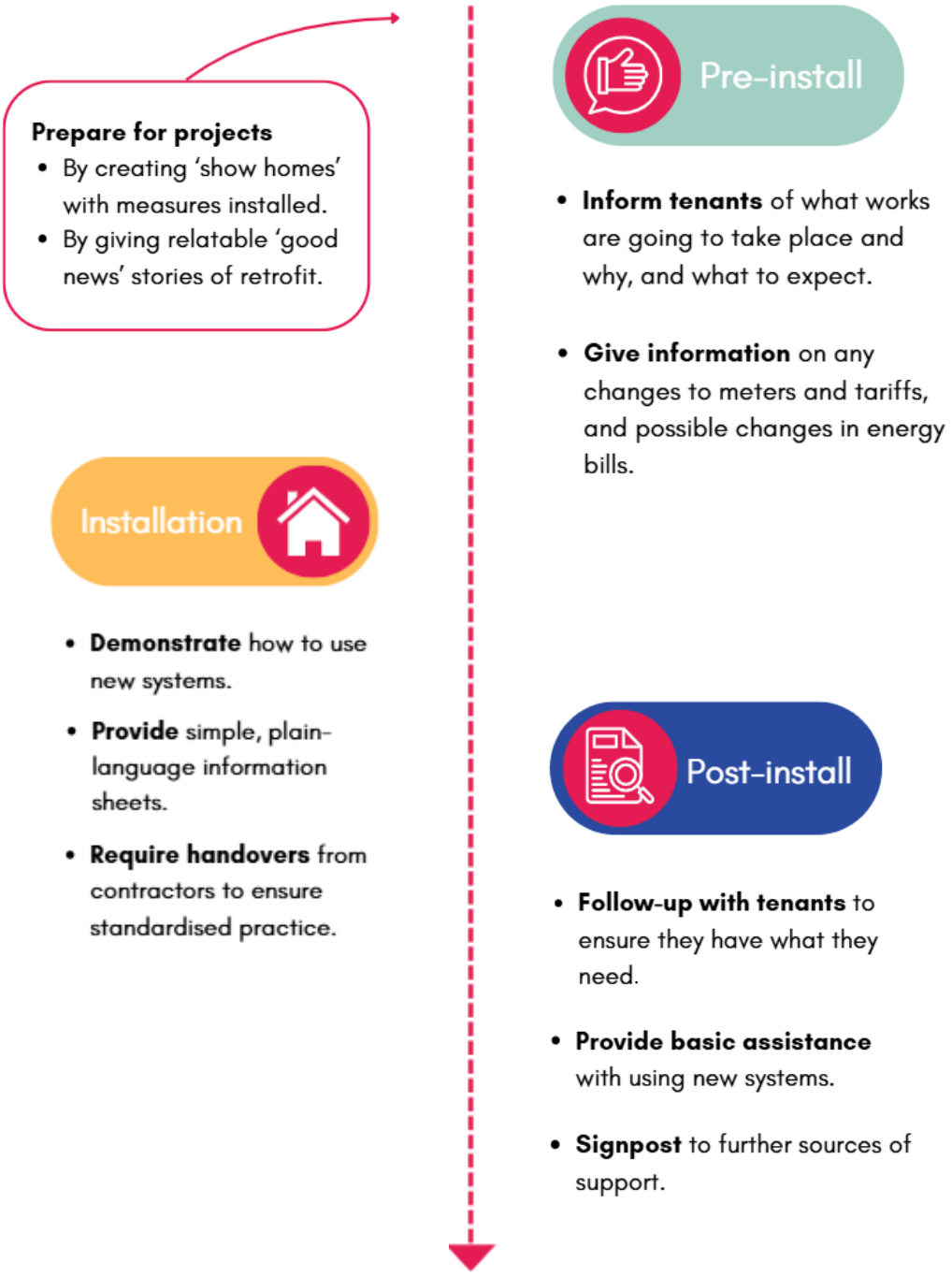
Relatedly, collaboration between social landlords should be fostered to maximise positive outcomes in the sector and help to standardise advice and support practices. Several participants state that the will to collaborate exists, but that it has been constrained by funding. There therefore appears to be an opportunity to collaborate and share knowledge and resources to improve outcomes across landlords.

Research participants also called for a national support unit or network to pool expertise, disseminate best practice, and ensure lessons from initiatives such as the SHNZHF are captured and applied.

7. Recommendations

7.1 Delivery model recommendations

A ‘whole journey’ approach should be taken to providing advice and support in order to address issues arising in the research, improve retrofit outcomes and support tenants. This should account for needs of tenants at each stage of the process, as well as continuing after installation is complete. This section details a best practice ‘timeline’ for advice delivery in social housing retrofit projects, before detailing each stage further.



Pre-install

Embed advice across the retrofit process

- Advice and support should be incorporated into projects from the outset, ensuring that it is factored into project costs and timelines.
- Design a monitoring and evaluation plan for the project to understand if the outcomes are met, capture the effectiveness of advice and inform improvements.

Consider who is best placed to deliver advice

- A range of different actors should be considered to support advice delivery design. These should include social landlord staff (repairs and housing teams), installers, manufacturers and third-party advice organisations. When and where these resources are included and the content and method of advice delivery should be carefully considered.
- As part of procurement requirements, contractors should be contracted to give advice and do so in an agreed way; reducing the risk of conflicting advice at later stages.

Ensure advice content is tailored to context

- 'Good news' stories should be created and distributed before installation begins. These should feature examples of tenants who have had successful measures installed in their home, to better engage residents and share experience with other tenants.
- Where possible, pilot properties, such as those upgraded during void periods, provide an opportunity to create 'show homes'[1] with measures installed. This would allow tenants to see measures in-person and in-use and to know what to expect from them.
- Tenants should be told what works are going to take place and why, so that they understand what to expect from measures and the installation process. This includes the differences that they should expect from their previous heating systems or ventilation requirements and details of the installation, such as carpet uplift and redecoration requirements. This is most effective when a variety of methods are used.
- Tenants should be informed about any need to change tariffs and arrange for installation of smart meters, to prepare them for later stages. It should be made clear what actions are the responsibility of the tenant and they should be informed of cost implications that may result from consequences of non-action.

Installation

Embed advice across the retrofit process

- At installation, there is the opportunity to demonstrate the use of new systems to tenants, recognising the benefits of face-to-face practical demonstration and making the most of installers being in the home.
- Implement the monitoring and evaluation plan, capturing any relevant data and asking the tenant about their experience before, during and after installation.

Consider who is best placed to deliver advice

- Handovers from installers are important in tenants becoming familiar with new technologies; these should be required when contracting retrofit works to ensure they are standardised practice. It should be clear what is expected of installers in these handovers and what information should be given. The handovers should be spot-checked by quality assurance teams or clerks of works to ensure the content is accurate and sufficiently detailed.
- At handover, there is the opportunity for relevant staff to attend and ensure that they are given the same information from installers to learn about new systems. Staff members can then act as 'staff champions' and be well placed to assist tenants and other staff. Depending on the project and organisation, this may be tenant liaison officers, wardens or repairs officers.

Ensure advice content is tailored to context

- Instead of large volumes of technical information, simple, plain-language information sheets should be provided, covering the essential information needed for running new systems. These should also cover where to go for further information or advice to create clear communication channels.
- Alongside information sheets, advice should be tailored to tenants' varying needs and learning styles. This may include online instructional videos, virtual tours and face-to-face community events. These resources should include tailored signposting to further information, as well as different languages and materials to support those with relevant physical or learning disabilities.

Post-install

Embed advice across the retrofit process

- Tenants should have continual access to basic information for how to use any new systems that have been installed in their home. This is particularly important for tenants moving into a home which has been previously retrofitted.
- Analyse monitoring and evaluation data and use findings to provide additional support and to inform delivery of future projects.

Consider who is best placed to deliver advice

- The social housing provider staff should be made known to tenants as the first point of contact regarding new systems.
- Staff should be trained to provide basic assistance with troubleshooting systems and in signposting tenants to dedicated, independent advice when appropriate.

Ensure advice content is tailored to context

- Staff should know where to find further information from independent sources, including useful online materials and videos. This includes pre-existing resources, such as those provided by the Energy Saving Trust[1] and the Carbon Co-op.[1]
- Tenants should be contacted periodically with support and advice on what energy tariffs most appropriate for their usage and for the technologies installed in their home. It is important to follow-up with tenants to make sure they have done what they need to do.

7.2 Wider recommendations

Funding models

Social landlord-funded projects

- Social landlords should consider developing a business case for investment in advice provision as part of retrofit projects to improve project outcomes and potentially reduce longer-term costs.
- Social landlords should explore funding for the advice element of the project; combining this with wider fuel poverty advocacy work can help to make a case for funding. Third party advice organisations may be able to support social landlords with grant applications.

Grant-funded projects

- Scottish Government should consider extending enabling funding to include advice provision to maximise the impact of retrofit measures and create financial savings for both tenants and landlords.
- Scottish Government should consider including monitoring and evaluation as part of enabling funding, so that outcomes can be measured, further support needs captured and project delivery models improved.
- Scottish Government should consider developing best practice advice delivery models for different project types (e.g. solar PV, batteries, etc) and provide these as guidance within funding schemes, to improve the standards of advice delivery across the sector.

Consistent training

- Social landlords should procure installers and other contractors with training from approved training schemes, which cover advice provision and support to households at install.

Collaboration networks

- There is an opportunity for social landlords to work together to share expertise and resources, e.g., in neighbouring areas where an HA has ‘show homes’. This would reduce the costs of delivery
- Scottish Government should consider the creation of a collaboration space to share learnings from retrofit projects such as SHNZHF, potentially facilitated by an independent organisation.

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Appendices

Appendix A: EPC data analysis

A.I EPC sample methodology

In order to assess the above Changeworks utilised the publicly available Domestic Energy Performance Certificates – Extended Historic Dataset to Q3 2025[69]. This dataset contains around 2.51 million lodged EPCs, however many of these are updates to previously lodged records. After removing all duplicate records, retaining only the most recent record per unique property reference number, around 1.97 million properties with known EPC data remain. Records which were missing key information, such as tenure, property type and heating system, were then removed, leaving 1.71m. Finally, owner-occupied and private-rented properties were filtered out, leaving 425,400 social-rented properties.

A.II Heating system energy ratings. Source: Scottish Government (2025)

Ratings	Heating System Type	Principle
A (Dark green)	Heat Pump	Zero direct emissions, highly efficient (>100%)
B (Bright green)	Heat Network, Direct Electric, Hydrogen	Zero direct emissions, efficient
C (Light green)	Bioenergy, Hybrid (bioenergy/electric)	Near net zero emissions
D (Yellow)	Hybrid (fossil fuel/electric)	Partial zero direct emissions
E (Orange)	Gas, LPG	Emitting, increasing emissions E-G, lower efficiency
F (Dark orange)	Oil	Emitting, increasing emissions E-G, lower efficiency
G (Red)	Coal, Peat	Emitting, increasing emissions E-G, lowest efficiency

[69] statistics.gov.scot : Domestic Energy Performance Certificates – Extended Historic Dataset to Q3 2025

A.III Heating upgrades required, per local authority.

Local Authority	Total known social-rented properties	Heating upgrade required	Percentage requiring heating upgrade
Aberdeen City	15,576	12,686	81.4%
Aberdeenshire	16,247	12,748	78.5%
Angus	10,045	8,809	87.7%
Argyll and Bute	6,621	4,160	62.8%
Clackmannanshire	6,196	5,970	96.4%
Dumfries and Galloway	12,991	10,531	81.1%
Dundee City	16,229	13,891	85.6%
East Ayrshire	11,808	11,447	96.9%
East Dunbartonshire	2,516	2,384	94.8%
East Lothian	6,308	5,572	88.3%
East Renfrewshire	4,231	3,966	93.7%
Edinburgh City	24,157	20,774	86.0%
Eilean Siar	1,995	703	35.2%
Falkirk	14,277	12,919	90.5%
Fife	29,386	28,103	95.6%
Glasgow City	77,232	69,368	89.8%
Highland	12,444	8,414	67.6%
Inverclyde	7,879	6,860	87.1%
Midlothian	4,419	4,040	91.4%
Moray	7,865	7,213	91.7%
North Ayrshire	9,713	9,053	93.2%
North Lanarkshire	33,868	31,790	93.9%
Orkney Islands	1,189	645	54.2%
Perth and Kinross	10,390	8,502	81.8%
Renfrewshire	15,057	14,070	93.4%
Scottish Borders	11,070	9,522	86.0%
Shetland Islands	1,990	671	33.7%
South Ayrshire	7,357	6,935	94.3%
South Lanarkshire	14,959	12,437	83.1%
Stirling	7,153	6,577	91.9%
West Dunbartonshire	13,589	12,795	94.2%
West Lothian	10,642	9,832	92.4%
All Scotland	**425,399**	**373,387**	**87.8%**

A.IV Current solar installations and basic PV potential, per local authority

Local Authority	Total known social-rented properties	Current solar installations	Basic PV potential	Percentage with PV potential
Aberdeen City	15,576	338	6,616	42.5%
Aberdeenshire	16,247	5,157	8,201	50.5%
Angus	10,045	335	6,397	63.7%
Argyll and Bute	6,621	499	4,117	62.2%
Clackmannanshire	6,196	201	4,387	70.8%
Dumfries and Galloway	12,991	353	9,884	76.1%
Dundee City	16,229	496	7,479	46.1%
East Ayrshire	11,808	212	8,929	75.6%
East Dunbartonshire	2,516	312	1,521	60.5%
East Lothian	6,308	422	4,250	67.4%
East Renfrewshire	4,231	30	2,505	59.2%
Edinburgh City	24,157	322	10,307	42.7%
Eilean Siar	1,995	22	1,784	89.4%
Falkirk	14,277	150	9,332	65.4%
Fife	29,386	453	20,186	68.7%
Glasgow City	77,232	1,466	29,984	38.8%
Highland	12,444	1,557	8,961	72.0%
Inverclyde	7,879	91	4,290	54.5%
Midlothian	4,419	460	3,045	68.9%
Moray	7,865	313	6,527	83.0%
North Ayrshire	9,713	1,291	6,556	67.5%
North Lanarkshire	33,868	2,698	19,245	56.8%
Orkney Islands	1,189	78	999	84.0%
Perth and Kinross	10,390	795	6,201	59.7%
Renfrewshire	15,057	216	7,442	49.4%
Scottish Borders	11,070	748	6,772	61.2%
Shetland Islands	1,990	15	1,753	88.1%
South Ayrshire	7,357	39	4,770	64.8%
South Lanarkshire	14,959	271	9,728	65.0%
Stirling	7,153	4,818	1,435	20.1%
West Dunbartonshire	13,589	411	6,623	48.7%
West Lothian	10,642	276	8,045	75.6%
All Scotland	**425,399**	**24,845**	**238,271**	**56.0%**

Appendix B: Stakeholder interview topic guide

Section 1. Definition and understanding

1.1 When you hear the phrase ‘energy advice’, in relation to retrofit, what does it mean to you?

- Prompt: what does it look like, who is involved etc?

1.2 What advice do you think tenants need most when new low-carbon systems are installed?

Section 2: Current delivery

2.1 How do you see advice currently being provided (or not provided) in Scottish social housing retrofits?

2.2 What makes advice services most effective?

2.3 At what stage in the retrofit process should advice ideally be provided (before, during, after installation, a mix)?

2.4 How should advice be linked to installation and follow-up support?

Section 3: Responsibility

3.1 Who do you think is best placed to deliver advice (housing providers, installers, independent agencies, government-funded services)?

3.2 What are the strengths and limitations of these different providers?

Section 4: Success and monitoring

4.1 In your view, what would a successful energy advice service look like?

4.2 How should success be measured?

Section 5: Policy and funding structures

5.1 What role do policy standards (e.g., PAS 2030, PAS 2035) play in shaping how advice is delivered?

5.2 What limitations do you see in current funding or policy structures?

Section 6: Barriers and opportunities

6.1 What are the biggest barriers to effective advice provision?

6.2 What opportunities exist to improve how advice is delivered?

Section 7: Potential solutions

7.1 What practical steps could be taken to make advice more effective and sustainable in the long term?

7.2 If resources are limited, what should be prioritised?

7.3 How can sector collaboration improve consistency of advice delivery?

Tenants/ Tenant Representative Groups/ Consumer group questions

- Can you describe experiences tenants have shared with you about receiving (or not receiving) energy advice during retrofit projects?
- What are the main challenges tenants face when trying to use new heating or energy systems?
- How do tenants prefer to receive advice (in person, written, online, ongoing check-ins)?
- What kinds of advice make the most difference to tenants' confidence and comfort?
- Are there particular groups (e.g. elderly, disabled, families on low incomes) who face greater challenges, and what advice approaches work best for them?

Registered Social Landlords (RSLs)

- How do you currently approach advice provision when retrofits are carried out in your housing stock?
- What internal capacity (skills, staff time, budget) exists for delivering or coordinating advice?
- How do you manage communication with tenants about new technologies?
- What are the main tenant issues or complaints you see after installations?
- What incentives or support would make it easier for you to integrate advice into retrofit programmes?

Industry

- How do industry standards and training programmes address the role of tenant advice?
- Do you think policy/ compliance frameworks adequately capture the importance of advice?
- Any best-practice examples (in Scotland or elsewhere) should be highlighted?
- What needs to change/ happen for advice to be seen as a necessary component of retrofit delivery?

Installers

- What role, if any, do you currently play in providing advice to tenants during or after installation?
- What are the challenges you face in giving advice?
- How do you handle follow-up questions or issues from tenants?
- Would more structured guidance or training on tenant engagement be useful?

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