



centre for
sustainable
energy

CLIMATE EMERGENCY SUPPORT PROGRAMME

Energy Efficiency in homes – a guide for parish and town Councils

Summary:

- **Background**

Setting the context with an overview of the links with emissions from buildings and climate change, the challenge of decarbonising our heat supply, the energy efficiency of buildings in the UK and the co-benefits of housing retrofit.

- **Principles of energy efficiency**

A run through of the energy hierarchy concept and how heat is lost in buildings.

- **Low and zero cost measures**

A list of low and zero cost measures that improve the energy efficiency of homes.

- **Buying genuinely green electricity**

An explanation of what a true green tariff means.

- **Principles of retrofit**

An overview of what to consider when retrofitting buildings, including the whole-house approach, and avoiding unintended consequences.

- **Heritage, historic and listed buildings**

Some tips for retrofitting heritage, historic and listed buildings including how to best engage with your local authority's conservation and planning department.

- **Housing tenure types**

An overview of different tenure types in housing: social housing, private rented and private owner-occupier.

- **What local councils can do to stimulate local retrofit**

Some suggestions for what local councils can do to stimulate local retrofit, from retrofitting council-owned buildings, engaging with the community and stimulating the local market for retrofit.

- **Summary of key points**

Background

Energy use in buildings

According to the Committee on Climate Change (CCC), energy use in our homes has accounted for about 20% of UK greenhouse gas emissions in 2019. These UK wide emissions need to fall by at least 24% by 2030 from 1990 levels if we are to meet our targets for emissions reductions, but we are currently not on track for this¹. In terms of the action community leaders can take at the local level, addressing energy use in buildings needs to be up there at the top of your list.

So where do our emissions come from in the built environment? What is the biggest culprit? As previously mentioned, most of UK's emissions related to the built environment are from existing buildings and mainly from what we call "operational emissions" (energy used for heating, lighting, appliances), and mostly from the residential sector.

Heating

Heating our homes resulted in a staggering 10% of the UK's carbon footprint in 2015² – and that's not even including heating for commercial premises and community buildings.

Decarbonising our heat supply is therefore one of the biggest areas that needs to be addressed for us to achieve net zero emission targets. Most of the buildings we'll be living in when 2050 comes around already exist now, so decarbonising our existing stock is vital, although we must also do more to pressure government and the building industry to build better new homes as well.

The challenge of decarbonising our heat supply

The majority of our homes still use fossil fuels as the main source of heat (*see graph on the right*). Well over 80% are heated with gas. Only about 8% of the UK housing stock is heated with electric heating, which is at least in part because traditionally it has been the most expensive form of heating. To hit our zero carbon targets, decarbonisation of heat is crucial, but it's also a really big challenge.

Partly because to decarbonise we need to electrify our heat. So there will be more electricity needed for heat, and we already use electricity for lighting, appliances, and much of our cooking (which will also need to be electrified). However, our electricity isn't very green at the moment.

The Fig. 2, below, is a snapshot of the power production methods on 5th February 2020. It shows that at that moment in time only 22% of our electricity was produced by renewable energy; approx. 15% via nuclear (low carbon – but not without its pollution issues) whilst the majority, approx. 54%, was from fossil fuels (the rest was made up from imports from the EU, which is likely a mix of fossil fuel and clean energy).

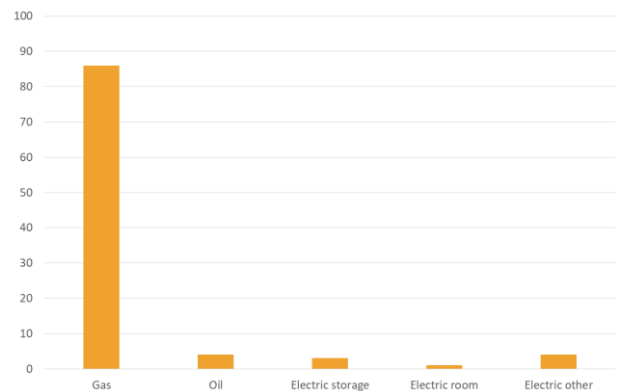
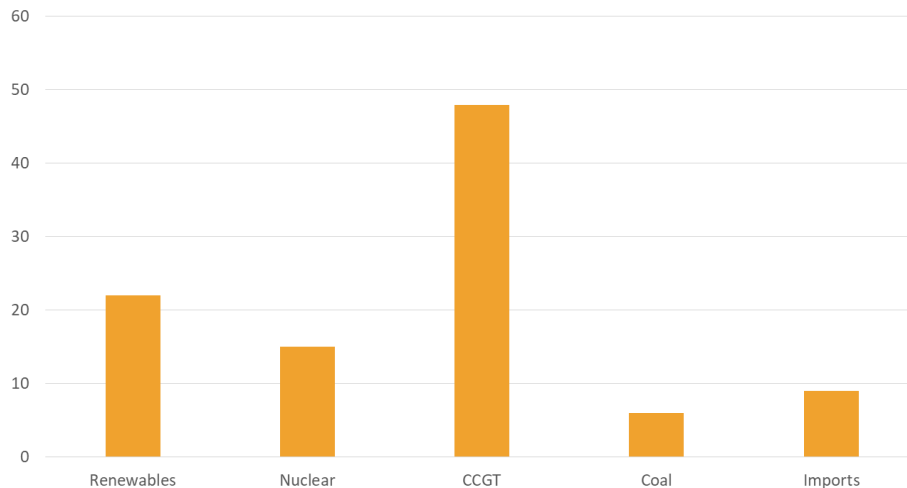


Fig. 1: UK domestic heating by fuel type

¹ Committee on Climate Change, 2019, UK Housing: Fit for Future?: www.theccc.org.uk/wp-content/uploads/2019/02/UK-housing-Fit-for-the-future-CCC-2019.pdf.

² UK Green Building Council: <https://www.ukgbc.org/climate-change/>

Power source % of total (UK)



These figures come from: www.gridwatch.co.uk and they are updated every 15 minutes. (CCGT = combined cycle gas turbine (a power plant which uses gas to make electricity))

Fig. 2: UK electricity by source, 5th Feb 2020

Another challenge the UK faces is losses of power in our electricity grid. Around 54% of energy produced is lost from the system before it even arrives at our homes.³

All in all, we have some major issues in our energy system; how it generates energy; and how it transfers energy around the country. Localised electricity generation and local heat networks may improve this, along with other energy efficiency measures. This is why local generation of renewable electricity, for local use (at the household or at the community scale) is really important, and complements activities to reduce energy use in our buildings.

SAP ratings

A SAP rating is an energy efficiency rating for a home or building – and is used for Energy Performance Certificates or (EPCs). A SAP calculation is a score from 1 to 100+ for the annual energy costs for a house, based on:

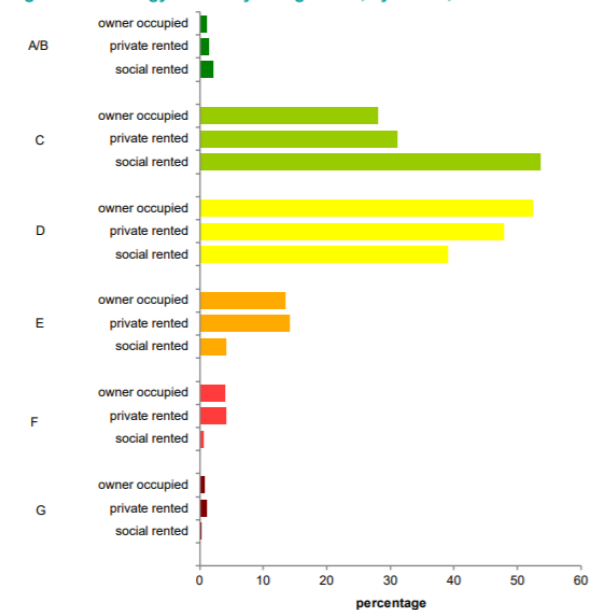
- The elements of structure
- The heating and hot water system
- The internal lighting
- The renewable technologies used in the home.

To make it easier to understand, they are banded into 7 bands, A to G, where A is very energy efficient.

³ 'Less Waste More Growth' report:

https://www.theade.co.uk/assets/docs/resources/Less_Waste_More_Growth_Report.pdf

Figure 2.10: Energy efficiency rating bands, by tenure, 2018



Base: all dwellings
 Notes:
 1) RdSAP changed to version 9.93 in half of the two year combined dataset
 2) underlying data are presented in Annex Table 2.7
 Source: English Housing Survey, dwelling sample

Fig. 3: SAP ratings. English Housing Survey 2018-2019

The graph to the left gives the SAP ratings of domestic properties in the UK (English Housing Survey 2018-19)⁴. The UK performs poorly compared to many EU countries, having little housing in the very highest bands, A and B, but there are a significant number of properties in bands C and D, which is encouraging. We need to move these up if we can, by making improvements to them.

However there are still a large number (although it's a small percentage) in the lower energy efficiency ratings E, F, G). To reach our carbon targets we need to move as many of these as possible as high up the ratings as we can. Some will be starting from a poor baseline and have high potential, whereas others will already have achieved many of the improvements that are possible without substantial cost and disruption to improve further. Some could be improved by

the installation of renewables, but local planning issues might be stopping this. Some will be heritage buildings and this will limit what interventions can be applied.

Co-benefits of energy efficient home retrofit

It's important to note that poor quality of the housing stock also exacerbates existing health and social problems. Around 11% of UK households are fuel poor and so can't afford to heat their homes adequately and the health cost to the NHS of conditions exacerbated by poor housing is currently estimated to be £1.4 – 2.0 billion per year in England alone.⁵ Tackling the climate emergency through housing therefore tackles a health crisis as well!

Other co-benefits to improving our buildings include a reduction in energy bills, addressing fuel poverty, creating jobs through the building trade, reducing excess winter and summer deaths and better quality of working spaces to support greater productivity.

Principles of energy efficiency

The Energy Hierarchy

If we are to reach our carbon targets, we're going to need to look seriously now at how we can quickly and massively reduce emissions from the energy being used for space and water heating in all our buildings. So how do we do this?

⁴ Ministry of Housing, Communities and Local Government, English Housing Survey Headline Report, 2018-19 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/860076/2018-19_EHS_Headline_Report.pdf

⁵ Committee on Climate Change, 2019, UK Housing: Fit for Future?: www.theccc.org.uk/wp-content/uploads/2019/02/UK-housing-Fit-for-the-future-CCC-2019.pdf.

- We need to move away from carbon intensive forms of heating such as gas and switch to renewable sources of heat
- We need to reduce the heat loss in our buildings through insulation
- We need to change our behaviours to reduce our energy demand

The order in which we do this is important.

To reduce our energy use and decarbonise our homes in the most cost efficient way, we need to consider the “energy hierarchy”.

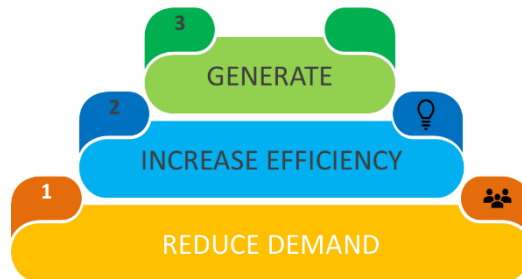


Fig. 4: The Energy Hierarchy

This pyramid is a simplistic representation of the energy hierarchy. Basically, cost effectiveness (bang for your buck or £ per carbon saving) decreases as you go up the pyramid. There is no point spending a great deal of money on a heat pump and generating renewable heat if your building is just going to lose a lot of that heat through poorly insulated walls and draughty windows.

Thus, the standard advice is usually to:

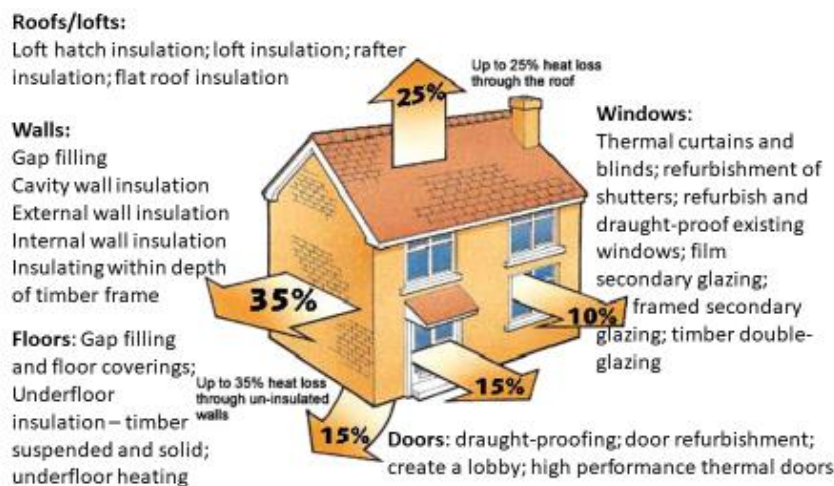
1. Start with **reducing energy demand**. You can do this through **behavioural change** – is there anything that the householder, or you as a council, can do to reduce energy use? Smart heating and lighting can provide more control (via smart phones) take away some of the user control which can make savings. Also consider advising people how to use their heating controls properly, how to set their thermostats and so on.
2. Next is to look at **increasing energy efficiency** – insulation, windows and doors, better appliances within the building etc.
3. Then look at **generating renewable energy** if appropriate and possible such as maybe replacing your gas heating system with an air source heat pump or ground source heat pump

It’s important to be aware of this when you are thinking of your own improvements in your council buildings as well as when you talk to your community. Always advise residents to reduce their use and increase the efficiency of the home through insulating before thinking of generating renewable energy. CSE has a range of leaflets and information that you can share for this purpose.

Reducing heat loss

We’ve looked at energy use in the home and we know it is mainly used for heat, so reducing heat loss is vital. We can do this by increasing the efficiency of our homes.

The graphic below shows the average heat loss through the materials of the house. In terms of reducing heat loss, we need to look at roofs and lofts, walls, windows, floors and doors:



www.cse.org.uk/downloads/file/love_your_old_home_workbook_standard.pdf

Fig. 5: Heat losses from buildings

It's worth noting that although buildings are different and that each house or building will have a different heat loss ratio, typically the most heat loss will be from the walls.

Low and zero cost measures

Retrofitting our homes to reduce energy use and make them more efficient isn't just about doing the big high-cost measures. There are a number of low and zero cost measures that you could be doing as a council, and encouraging others to do. You can read more about this: <https://www.cse.org.uk/local-energy/download/low-and-zero-cost-energy-improvements-to-community-buildings-359>

Insulation and draught proofing – eg: fit heavy curtains, fit draught proofing brushes and seals around windows, doors and between floor boards, fit secondary glazing...

Space and water heating – eg: install a central heating programmer and thermostat, learn how to use heating controls, install and adjust Thermostatic Radiator Valves (TRVs), make sure the heating is turned off at night and when building is not occupied, insulate your hot water tank, ensure radiators aren't covered...

Lighting – eg: get energy-saving light bulbs, switch off lights when not in use, maximise natural light, consider motion sensors and dimmer switched...

Appliances – eg: Make sure to buy highly rated energy efficient appliances, defrost the freezer regularly, only boil as much water as you need in the kettle, don't leave appliances on standby – switch them off at the plug...etc...

Buying genuinely green electricity

One of the easiest low cost action you can do or that you can encourage householders can do is to do is switch to a genuinely **Green electricity tariff**.

There is some 'greenwash' around energy tariffs that is worth understanding before you decide who to switch to. REGO (Renewable Energy Generation Origin) certificates are issued by Ofgem (the regulator) when renewably generated electricity is produced. However, they can be de-coupled from the renewable energy generation they were attached to, sold off very cheaply to other energy suppliers, and they can then 'match' their electricity units to REGOs, which effectively means they can sell dirty electricity under a so

called green tariff. Lots of people think that it doesn't matter, and that so long as the REGOs are purchased then green electricity generation is being encouraged, but that's not the case.

This is quite complicated to get your head around, and there isn't enough time to go too much into detail here but we would recommend our more detailed guidance note here:

<https://www.cse.org.uk/advice/advice-and-support/green-electricity-tariffs>

Principles of retrofit

The priorities for retrofit will be different in different areas, depending on what the housing stock is like, and the demographic of your residents. So if you have lots of large semis built 40-50 years ago, the ways to make them more energy efficient will differ to the actions you'd prioritise in Victorian terraces, or in more modern flats. And if you have a large proportion of older, vulnerable people they will have different needs and abilities than young families or wealthy professional singles, or well-off retirees. That includes different levels of income and access to funds to pay for improvements.

So when we talk about principles of retrofit it's not generally as simple as 'follow these 3 steps'.

Rather, there are a whole set of things to take into consideration to make sure that changes are made in a sympathetic way that are suitable for the people who live there and that will not damage or adversely affect the building.

Every home is different, and should be retrofitted differently. But there are some things (e.g. Loft insulation, energy saving bulbs, high efficiency boilers, draught proofing) that would benefit almost every home.

To get more information on low-carbon retrofit, check out CSE's advice leaflet:

<https://www.cse.org.uk/downloads/advice-leaflets/insulation-and-heating/renewables/building-performance/advice-leaflet-whole-house-approach.pdf>

Retrofit considerations

Look at the whole building

- **How is the building used? And who by?** Are there options for the occupants to change the way they use the building to reduce their energy use and address issues like damp and mould?
- **Can small behavioural changes improve building issues and energy consumption?** For example, to avoid damp and mould, things like – putting lids on pans when cooking, shutting doors to kitchens and bathrooms (when cooking/washing) can improve the way the building functions and potentially use less energy than physical improvements like putting in a mechanical ventilation unit as a source of mitigation.
- **Does the way the building is used affect the intended purpose of the building?** Sometimes the use of a building can be counterproductive to the operation of how the building was meant to work putting excess stress on the building fabric and increasing energy usage.
- **Monitoring energy use can help identify where costs are being incurred and maybe changes can be made.** This can just be taking regular meter readings and keeping on top of costs of gas and electric. This is often how people understand where they can make changes.
- **What is the building construction? Traditional or modern? Lightweight or heavy mass?** You need to take a different approach depending on how the building is constructed. Taking the existing

construction of the building into consideration means you can take advantage of ‘built in’ solutions like maximising solar gain; natural light; natural ventilation.

Make (all) the right improvements

- **Solar gain:** Designed appropriately, buildings can benefit from low winter sun and be shielded from the hot summer sunshine. Solar gain is one of the things you’d look at in a whole-house retrofit. Things like window shades and light tunnels can be retrofitted to make the most of a building’s orientation.
- **Heating options** – how long with the existing boiler last? What other options are available? Is the technology going to be ready in time (Hydrogen through gas pipes?) What can you do now to mitigate against additional cost in the future? Converting from gas to an air source heat pump for example requires bigger radiators – if doing works to the floor, can an underfloor heating system be installed to be used at a later day if not with existing system?
- **Fabric first:** Going back to the energy hierarchy, installing low cost fabric measures can have the biggest impact. Draughts are how we are most likely to feel the cold. Draught-proofing is cheap and relatively easy to do. Loft insulation pays for itself in 2 years (if 300mm deep); and LEDs last years!
- **Generation** – add the renewable energies to save even more on bills.



Avoid unintended consequences

When we make changes to a property we are changing the balance of how that property was designed to function, so part of the challenge is to keep things in balance. For example, adding gas fires creates more **condensation**; putting double glazed windows in reduces air-leakage. Both of these can lead to **increased moisture** in the building, and that can lead to black mould growth, which is bad for human health.

Adding insulation can also reduce the likelihood of **condensation** (and black mould) but if it’s not done well, leaving areas of uninsulated wall/ceiling next to areas that are insulated this becomes a thermal bridge. Heat loss increases at a **thermal bridge** when combined with insulated areas – meaning that the insulation may not even be saving money, as well as providing further opportunities for condensation and black mould.

Insulation, new windows and other fabric improvements can also lead to a reduction in air leakage or background **ventilation**. Whilst this is good for retaining heat, it’s not so good for allowing the release of moisture vapour, and Volatile Organic Compounds (VOCs) and can increase dust and mite issues. So making sure there is **controlled ventilation** is important to manage fresh air and excess moisture.

Heritage, historic and listed buildings

The UK has a rich and varied housing stock, it’s what gives our villages, towns and cities character. However, many of these older buildings, although are often in need of energy efficiency improvements, pose a challenge when it comes to retrofitting them:

- They may be **listed or considered as a historic monuments**, meaning there are limits to what can be done to them without approval from conservation officers.
- They may also be in a **Conservation Area** meaning there are some restrictions to what you can do to them.
- In other locations, the **Local Authority can issue Article 4 notices to restrict permitted development** so that householders are required to apply for planning for even small changes. This isn't always clear when people are guided to the planning portal as this is a catchall for the whole country and doesn't pick up these local amendments.

Apart from the above points, there are crucial things you need to be aware of when making changes to older buildings:

- Older buildings were built primarily from local materials, they were built in the best way known at the time, often utilising knowledge of local craftspeople – these designs are not always accidental or just decorative. Understanding their purpose can be critical in ensuring the building continues to function as intended.
- Older buildings were not designed to keep moisture out in the way that modern buildings are. Moisture therefore moves through the walls as vapour and using modern paints and sealants can trap this inside the stone, making the building cold and increasing problems with damp and mould. Old buildings need to 'breathe'.
- Old buildings had considerably less 'wet use' – daily showers and baths by multiple household members were not the norm. Modern living produces far more moisture than the building would have been used to in the past, and so making sure this is removed promptly is crucial.
- Inappropriate improvements can cause unintended consequences and damage the fabric of a building, health of occupants and harm historic significance (example – sealing the house completely so that you have no ventilation = issues of damp and mould).

When improving energy efficiency or planning a renewables project for traditional buildings, consider:

- A '**whole building approach**' - balanced solutions that save energy, sustain heritage significance, and maintain a comfortable and healthy indoor environment.
- Older buildings have greater **thermal inertia** than their modern counterparts – they heat up and cool down more slowly. This may affect the types of heating and cooling systems that should be installed.
- The '**fabric first**' approach needs knowledgeable and sensitive design and knowledge of the materials specific to the building.

It's important that anyone seeks expert advice when thinking of making changes to their old home and also uses a trusted and experienced contractor who has a track record of working with these types of buildings.

Engaging with your local authority

Local authority capacity has been really hollowed out and there are fewer conservation officers and indeed planning officers than there were. Many local authorities see their responsibility to 'protect and enhance heritage' as something which 'trumps' their responsibility with regard to the climate emergency. This often results in mixed messages and/or a lack of nuance in the advice given to householders by the local planning authority. For example, a household may apply to put solar panels on a listed building. They may (quite rightly in some cases) receive a refusal on heritage grounds. But what the local authority often does not

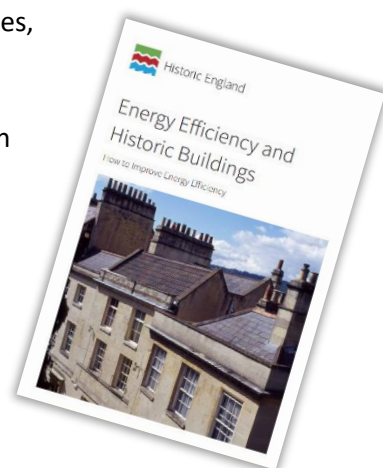
have the capacity (or indeed the skills and knowledge) to do, is to then provide more proactive advice, e.g. *'no, these solar panels are not appropriate, but if you want to reduce the carbon footprint of your home then this alternative collection of measures would achieve the same outcome without the heritage impacts'*

We suggest you contact the Cabinet Member(s) for climate change/planning/heritage at your local authority and ask them what they intend to do about this, and point them to the wealth of useful information already out there which their officers could use to make more nuanced decisions, or indeed, to commission training.



There are numerous free resources online on retrofitting historic, heritage and listed buildings:

- **Love your old home:** A simple householder guide developed by CSE, drawing on both the STBA Wheel and the HEET tool, that helps householders understand the heritage value of their home before thinking about appropriate energy saving measures:
https://www.cse.org.uk/downloads/file/love_your_old_home_workbook_standard.pdf
- **The Sustainable Traditional Buildings Alliance (STBA):** this organisation has produced an incredibly detailed 'Responsible Retrofit Wheel' that aids decision-making on retrofit in older homes.
<http://responsible-retrofit.org/wheel/>
- **Oxford City Council's Heritage Energy Efficiency Tool (HEET):** This excellent tool helps householders make decisions that balance the need to protect heritage with the importance of making older buildings more sustainable.
https://www.oxford.gov.uk/info/20064/conservation/325/heritage_energy_efficiency_tool_heet
- **Historic England:** expert advice to help people care for and protect historic places, including listed buildings. All their advice is free online:
<https://historicengland.org.uk/advice/find/>
Historic England research suite – a range of documents from Historic England on how to do retrofit well: <https://historicengland.org.uk/advice/technical-advice/energy-efficiency-and-historic-buildings/>
- **Warmer Bath:** A householder guide, produced by CSE and the Bath Preservation Trust, it has most relevance to Georgian buildings but many of the principles are useful for all pre-1920's homes.
https://www.cse.org.uk/downloads/reports-and-publications/energy-advice/insulation-and-heating/warmer_bath_june2011.pdf

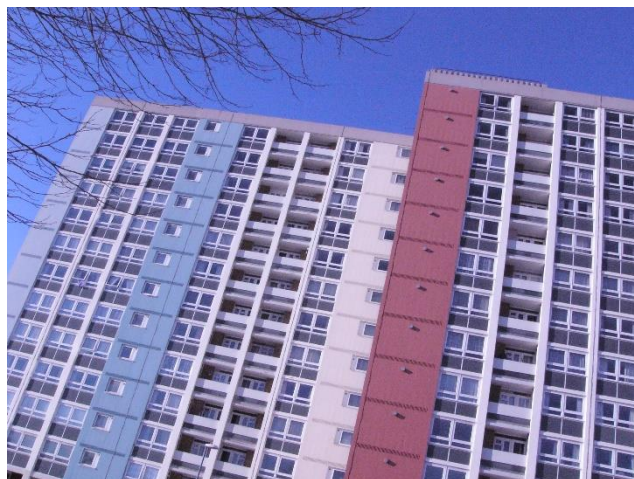


Housing tenure types

Social housing

You may have social housing in your area, either managed by a Local Authority or Housing Association. We appreciate that you may have no control over these buildings, but you probably do know where they are and who manages them. There are some barriers to retrofitting social housing:

- Understanding the stock condition well enough
- Understanding what best achieves desired outcome
- Costs
- Engaging tenants
- Contextualising with other strategic activity – Heat Networks; maintenance



There are some solutions for overcoming the above barriers:

- **Housing stock assessment:** the first step in setting up a programme of energy efficiency building improvements is to carry out a housing stock assessment. This means that planned improvements can better address the energy efficiency of the stock and be carried out more cost effectively. Can you engage with local housing providers and ask them what their plans are for this?
- **Trained housing officers:** Good housing associations will also have trained their housing officers and tenant support staff to be able to support residents with problems like damp and condensation, by identifying signs of fuel poverty, providing basic support with heating and hot water systems, and smoothing the rollout of other technologies that are being installed (e.g. solar PV). Find out if your housing association is doing this, and propose that they upskill their staff if they are not.
- **Ensuring tenants can access support and know their rights:** You could play a role in making sure that tenants know their rights around things like getting broken door and window frames fixed. Can you promote the work of your local Citizen's Advice bureau?
- **Joined up activity of district and local councils on energy saving approaches:** One way of overcoming costs is to combine improvements with other planned maintenance work. Housing associations or housing departments don't always join up with other departments in the council, or in two tier councils this could be managed by district and local councils who don't work together on integrating different energy saving approaches. So see if you can join things up.

Private rented sector

The private rented sector often contains the worst performing properties of any tenure. There are significant barriers to retrofitting private rental sector homes:

- Many landlords provide poor accommodation and won't engage with energy efficiency
- Tenants may feel unable to make improvements themselves to reduce their energy use

There are ways to overcome these barriers:

- **Raise awareness about Minimum Energy Efficiency Standards (MEES):** From April 2020 there is a legal requirement for all properties to be a band E or above if the landlord wants to rent it out – this is called the Minimum Energy Efficiency Standards (MEES). Landlords can lodge an exemption if they can't improve the energy efficiency to an E for the £3500 spending limit. If not the property is

rented illegally. **This is something parish councils could work on with local landlords and tenants to make people aware.**

- **There are also free and low cost options for tenants, which you can make them aware of using your website and newsletters:** www.cse.org.uk/advice/energy-saving-tips/what-can-tenants-do

Private Owner-Occupiers

Most of the buildings that will need to be retrofitted are privately owned. There are lots of barriers and reasons why homeowners are not all making low carbon improvements:

- Costs can be high – but people find the money for new kitchens, bathrooms, conservatories, loft conversions and so on – often similar or more expensive than low carbon improvements. Reframing energy efficiency retrofit as home improvement that will increase the value of the home is a useful avenue here.
- Permissions can be off-putting for heritage buildings, so the Town or Parish council working closely with the planning authority to promote clear and comprehensive advice on appropriate measures is useful in breaking down this barrier.
- People don't know what to do or where to start
- It's confusing – people find it easier to do nothing

Some proposals for what you can do to help overcome these barriers are detailed below on what you can do as a local council. In summary, the key actions for local councils to get involved in are:

We need to develop initiatives to increase home-owner demand and the building-trade supply. It's not easy to find an installer to give you a quote, or one you can trust to give you the best advice about a product or service they stand to make money from. Sometimes this just leads to inertia. **A really big part of the solution is to stimulate demand and also support the supply chain.**

Sometimes 'seeing is believing' and peer-to-peer learning can be one of the best ways to get people to try new things and overcome inertia. Learning from actual local examples can help to encourage people to make big changes and not be put off by confusing information. **We need to showcase improvements and provide trusted and digestible information to people:**

Applying for the appropriate consents can be off-putting or demoralising. Whilst many councils have declared climate emergencies, this has not necessarily trickled down to conservation officers. Conservation teams have a statutory duty to protect and enhance heritage, and their work is complex and to some degree each building must be considered on a case by case basis. But without a good understanding of responsible retrofit, council conservation teams are likely to give advice and issue decisions that do not reflect best practice at a national level. **Start having conversations with your local authority and conservation officers to get an agreed line, and make sure that what they are offering takes into account the best practice work of people like the STBA, Oxford City Council, and Historic England, as described above.**

What local councils can do to stimulate local retrofit

Having explored the background of UK emissions from buildings and what needs to be done to reduce energy use and increase energy efficiency in our buildings, this section considers in more detail what you can do as a local council to drive this agenda forward.

Although this resource has focused primarily on existing buildings, we do know that to achieve our carbon reduction targets in the most cost-effective manner, new housing built today must be built to zero carbon standards as soon as possible. Local councils can influence this through neighbourhood plans and lobbying their LPA to set policies in their Local Plan and the government to change national building regulations and planning guidance.

Local councils can also use their voice to influence planning policies around retrofit of existing buildings, and as mentioned earlier in this resource, to have conversations with their LPA and conservation departments on how they can encourage responsible retrofit of heritage and historic homes.

Other key things that local councils can do when it comes to reducing energy use and improving the energy efficiency of our existing buildings include:

Retrofitting your own buildings

As a local council, you can improve the buildings under your direct control. Many of these buildings are likely to be old, draughty and energy inefficient. You can make improvements such as:

- Insulate your walls, floors and loft/roof
- Install renewable heating system such as air source heat pumps and solar thermal
- Generate your own renewable electricity through solar panels
- Install efficient appliances and low energy lighting
- Install better heating and lighting controls
- Draught proof
- Install double glazed doors and windows

Making improvements will not only help you reduce your council's emissions but it will also help you save money on bills, which you can put towards other parish council activities – specifically, climate emergency related activities!

There is an opportunity here to showcase any improvements you've made as a council to members of your community. By sharing the process and results with them, you can enable discussions on the benefits of energy efficient measures and the processes needed and encourage them to make some improvements in their own homes.

To get started you can start by doing an energy audit of your building or buildings. CSE have a simple energy audit template that you could use: <https://www.cse.org.uk/local-energy/download/an-energy-survey-pro-forma-76>. The audit helps you identify the most effective options for energy efficiency improvements. This resource is only useful for small to medium buildings, if you are a larger council and have several buildings or a large estate, we would recommend getting a consultant to do a survey for you.

Engage your community

As a local council, you have a voice to engage your community to make their own individual and collective changes.

Community buildings

You can encourage community building owners to make changes: Some community buildings may already have a budget allocated for improvements or maintenance - you could carry out an energy audit and make recommendations or you could highlight CSE's energy audit tool to them and get them to do it themselves. We've seen this used successfully by a lot of community groups to bring about changes: either by engaging with the building manager to help prioritise the way that money already allocated to building maintenance is spent; or by using the audit as part of a funding application to secure money to pay for energy saving improvements.

You can highlight existing funding streams to community buildings: Some community buildings like village halls, churches and leisure facilities are not actually owned by the parish. These types of buildings may be eligible for a number of grant funding schemes to make energy efficiency improvements. Funding can come from a number of sources – sometimes Renewable Energy companies will offer funding for energy efficiency improvements for community buildings in areas close to their renewable energy sites (Eg – Thrive – image in slide), sometimes District Network Operators will run their own funding schemes for improvements to buildings in their area (Eg – UKPN Power Partners Fund).

Case study:

Gamblesby Village Hall in a small farming community near Penrith in Cumbria was in desperate need of renovation. The Village Hall Committee were able to secure funding from a number of different sources (including their District council, Shell, Northern Rock Foundation, local fundraising initiatives...) to install low-energy lighting, locally sources sheep wool insulation in the walls and roof and a ground source heat pump (*For more information:*

https://www.cse.org.uk/pdf/cafe_case_study_gamblesby.pdf)



Gamblesby Village Hall, Penrith

These are just examples of funding sources, amongst many! It is worth checking our funding page to get an idea of what's available and highlighting this to the community groups in your parish:

<https://www.cse.org.uk/local-energy/funding-your-project>

You can run your own funding scheme: A parish or town council can also encourage energy efficient improvements to community buildings through running their own funds.

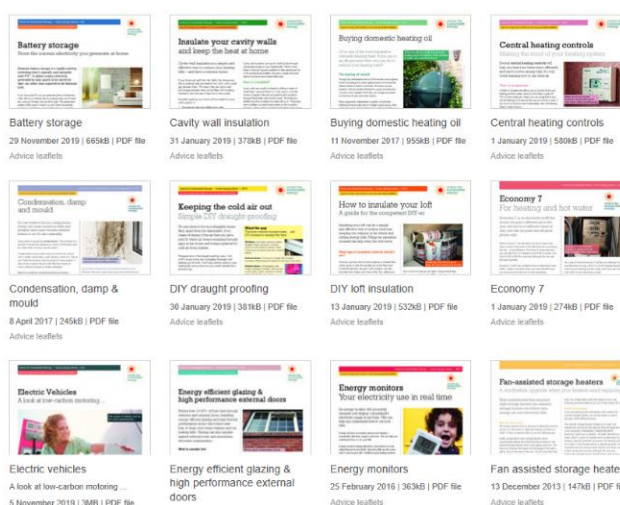
Case study:

Kirkburton Parish Council in Yorkshire, as part of its Environment Plan, provided funds for the installation of renewable technology and energy efficiency measures in community buildings. They were rewarded when they won the Best Region Award at the British Renewable Energy Awards in 2008. *(For more information: <https://www.nalc.gov.uk/library/publications/power-to-the-people/809-section-1/file>)*

Householders

As a leading voice in your community you can make residents in your local area aware of the need for improving the energy efficiency of their homes and support them on their journey.

Although government launched the Green Homes Grants in 2020, there have been major problems with the delivery of this scheme. Government was warned that the short timetable and certification procedures made the scheme largely unworkable, but pressed on regardless, and announced in early 2021 that the scheme would be cut back. Local Councils should speak up loudly about this, and lobby government not only to reintroduce the full budget, but to greatly extend the timetable over 3-5 years as a minimum, to help build the confidence of the industry.



However, even in the absence of grant schemes, it's still possible to promote retrofit to more affluent householders, and stimulate your local market this way. One way to do this is to target people who see themselves as 'early adopters' (these are the sort of people who tend to buy into things because they are new or innovative), or encourage people who are already doing things to their homes (for example changing a bedroom into a nursery, putting in a new kitchen or bathroom, or adding an extension) since the research shows that if you are already going through something disruptive you are more likely to 'go for broke' and make other changes at the same time.

Provide information: Where not understanding a technology is a barrier to even considering it then providing easily understandable and digestible information about things like air source heat pumps, heating controls and so on is a big step in the right direction. There is a huge amount of information for householders on CSE's energy advice site, including more than 50 downloadable, printable, emailable, embeddable, advice sheets on everything to do with home energy use. Feel free to use them: <https://www.cse.org.uk/resources/category:advice-leaflets>

(Be aware that our advice line services, detailed on our leaflets, only operate in Bristol, Bath, Somerset, Wiltshire and Dorset. We cannot offer phone-based advice to residents from other parts of England as we do not have funding to support this work. But you are welcome to use the text from our leaflets to make local versions for yourself. Please credit CSE if you do so).

Publicise existing schemes and subsidies: you may be lucky enough to live in an area where there is a local authority led scheme providing subsidies for home insulation. Or there is the Energy Company Obligation, which is a government incentive to help vulnerable customers (on qualifying benefits) to make improvements to their homes: www.ofgem.gov.uk/environmental-programmes/eco

Run an awareness raising campaign: As we've seen, many improvements at home and in community buildings can be made at very low or zero cost and could be the target of an awareness raising campaign.

It's important to note that some advice you give may not be relevant to some fuel poor houses who are low users anyway but also may not be able to afford some of the works needed to improve their homes. You should be able to signpost people to local energy advice agencies who will be able to provide them specialist advice on what funding and financial support there is out there. They may be eligible for a grant.

Green Open Homes

One way of engaging your community to take on energy efficiency retrofit in their homes, especially the higher cost measures, is by organising and supporting a **Green Open Homes** event in your area. This is a great way to target those "early adopters" mentioned earlier.



A Green Open Homes event is an opportunity for residents to visit their neighbours' homes and ask about an energy saving improvement that they've made, and see if it might work for them. It's both a great way to get the community together and start a conversation around energy efficiency and Housing Retrofit! On an event day, people who have made energy saving improvements open up their homes to share their experiences. Visiting a home is a great way to find out about the reality of getting solar panels, insulation, triple glazing, or new heating options without talking to a salesman. The events are characterised by a welcoming and friendly atmosphere, candid discussions about home improvements and a sharing of experiences and advice. The best of them come with a generous helping of community spirit and – on occasions – tea and cake.

As a parish you can convene households who are interested, help set up the event, provide resources and materials and help promote the event in the community!

The **Green Open Homes network website** aims to support low-carbon open homes events across the country through free resources and advice. Organisers can use the micro site to promote their events: <http://www.greenopenhomes.net/>

Stimulate the market

We've spoken about the demand side and ways of encouraging people to make changes to their homes. It's important to also consider the supply side and understand that although stimulating demand for energy efficiency improvements is crucial, we also need to be engaging with builders to be able to provide the changes needed. This is trickier, but it's essential.

Many builders are busy doing improvement works already, what they're not doing are the energy efficiency measures at the same time. Or if they are fitting them, they are doing this in a somewhat ad hoc manner, and possibly without understanding the need to 'balance' measures to keep the house and its occupants healthy. Or they might be using inappropriate materials for the property in question because they don't know there are other materials or where they can get them (all the main builders merchants stock a very small selection of products). There is a new training framework available, with significant government funding (as at early 2021) to encourage installers and builders to increase their skills and knowledge in retrofit. The qualification is known as PAS2035, and there are a range of providers for this, many of whom are currently able to offer subsidised training. Could you promote these courses to the building trade in your area? Could you even provide top-up funding for local SME's to send people on this training, combining existing subsidy with your local subsidy to make it free?

As a local council, here are a few other examples of what you could do to stimulate the market:

Build a network of local "green" builders and help connect people to them – you could do some research online, or by speaking to people in your area who've had energy efficiency improvements done to their home, to build a list of local "green" installers which you could share with your community. Here are a few websites you can check out to find local installers:

- www.greenbooklive.com
- www.aecb.net
- www.passivhaustrust.org.uk
- www.mcscertified.com
- www.nia-uk.org
- www.heatpumps.org.uk

Hold a "meet the builder" event/demonstration events – this is a good way to get people together in a social setting to find out more about the local installers and what they can offer. This could be run as a separate event or as part of an existing event (such as a local fete or fair).

Point local builders to specialist training opportunities – are there any training opportunities you could share with local enterprises to upskill them in low carbon retrofitting? You can discover training opportunities here: www.greenregister.org.uk. You may also want to look into fundraising to support these businesses to pay for training, especially if they are small enterprises.

Bulk Purchasing Projects

This is an example of a project that both stimulates demand and supply. Many communities in rural off-gas areas will be familiar with bulk domestic oil buying clubs – this is where groups of households join up to negotiate a better price for domestic oil through bulk purchasing.

Bulk purchasing can also work for energy efficiency measures and domestic renewable energy technologies! The costs of installing solar PV, or other renewable technologies such as heat pumps, should be much lower if done in bulk, street by street, or area by area. Bulk purchases of energy audits or energy insulation is also possible. A town or parish council can bring together local homeowners and businesses to develop such a scheme.

Through running a bulk purchasing scheme, you are also stimulating the market as local tradespeople can get more work and build up a reputation in the area.

To find out more about how to start a bulk purchasing project, check out this video:

<https://www.youtube.com/embed/RQfnTxR9hKI?autoplay=1&rel=0&>

Case study – Frome Town Council's Solar Streets Project:

In 2019, Frome Town Council, together with local community energy group Frome Renewable Energy Co-op, teamed up with local renewable energy installer IDDEA to offer discounted solar panels to Frome households. The discounted amount households paid included a £50 donation to a local community solar project or EV project run by Frome Renewable Energy Co-op. *To find out more: <https://www.frometowncouncil.gov.uk/your-community/resilience/solar-streets/>.*

Summary of key points

- We cannot meet our climate objectives without a major improvement in UK housing.
- We will not meet our targets for emissions reduction without near complete decarbonisation of the housing stock.
- Improving our housing stock will also help tackle a health crisis and save costs to the NHS
- Most of the housing in 2050 already exists now – retrofitting existing buildings is crucial
- There are a number of measures from zero cost to high cost that can be done to reduce energy use and increase the energy efficiency of our buildings, the order in which these are installed matters.
- As well as influencing new developments and retrofit policies through planning and lobbying their LPAs and national government, local councils can: 1) improve the buildings in their direct control, 2) Encourage others to make improvements to their homes and other buildings in the community, 3) help stimulate the market for low carbon retrofit.