



# The Big Retrofit Report

How we retrofitted a home, improving the Energy Performance  
Certificate rating from D to B





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# Introducing The Big Retrofit

Skipton Building Society owns a house opposite our head office in Skipton, North Yorkshire. It's a fairly standard UK house: a mid-size, 1930s detached property. It has three bedrooms, two bathrooms, a separate dining room, kitchen, and lounge. It had an Energy Performance Certificate (EPC) rating of 'D', in line with the UK average<sup>1</sup>. It was a great example of one of the 14.3 million homes that need upgrading in the next decade to meet the government's net zero targets<sup>2</sup>.

Over 12 weeks in Autumn 2024, we decided to explore this challenge for ourselves. Skipton Building Society leads the Skipton Group which is made up of different organisations with shared goals. Working with Group organisations and external industry specialists, we transformed the house to see what impact retrofitting the property would have. We called this project The Big Retrofit.

We collaborated closely with many external specialists, including research partners Leeds Beckett University and the University of Leeds. They performed before and after testing, to measure the difference the retrofit initiatives had on the house's performance.

They also interviewed those involved in the retrofit work, including us as the client, to see what the experience was like.

We wanted to educate ourselves first-hand about retrofitting – and then share what we learned with our members, with policymakers, and with the retrofitting industry. In this report, we share the costs involved, initiatives that worked well, and some things we think the UK Government can change to improve take up of retrofitting.

We hope this report can help our members consider retrofitting for themselves.

For further details and behind the scenes footage of the measures installed, check out our virtual tour of the property by visiting [skipton.co.uk/thebigretrofit](https://skipton.co.uk/thebigretrofit)

1. Office for National Statistics (ONS), released 8 October 2024, ONS website, article, [Energy efficiency of housing in England and Wales: 2024](#)

2. House of Parliament (House of Commons Library) (2025), Energy efficiency of UK homes. Available at: [commonslibrary.parliament.uk/research-briefings/cbp-9889/](https://commonslibrary.parliament.uk/research-briefings/cbp-9889/) (Accessed June 2025).





# What we did

Throughout the house, we tried out as many initiatives as possible to glean maximum learnings. This included:

- How we heat and power the home (Energy)
- How we keep the heat in the property (Insulation)
- How we keep adequate air circulation (Ventilation)

Over the next few pages, we outline some of these key measures, the costs, and their impact.

Note that the costs we paid do not include any grant funding which others may be eligible for. All costs noted in the tables below were also VAT exempt under the government's energy-saving materials and heating equipment VAT notice.

## Energy

Measure	Cost (measure + installation)	How it works	Potential benefits
12 solar panels and 5.2kWh battery	£17,500 (Price range for this can vary by property and requirements from £10,000 to £18,000)*	Renewable electricity generated from the sun with the capacity to store excess electricity.	<ul style="list-style-type: none"><li>• Battery storage and energy tariff optimisation, can lead to a reduction in electricity bills.</li><li>• Ability to power some of the property's energy using renewable electricity.</li><li>• Significant boost to EPC score.</li></ul>
Air source heat pump (including mains gas disconnection, new hot water cylinder, pipework insulation, new radiators throughout, concrete plinth, and external heat pump unit)	£19,400 (Price range for this can vary by property and requirements from £10,000 to £20,000)*	An electrified heating solution which extracts heat energy from the air to heat water for the heating system.	<ul style="list-style-type: none"><li>• Removes the reliance on gas to heat the property.</li><li>• Option to run on renewable energy (if using solar or renewable energy tariff).</li><li>• Depending on model, power and performance, can add moderate boost to an EPC score.</li></ul>

\* Indicative price ranges for standard installs at other properties derive from averages provided by project collaborators, Vibrant Energy Matters, Digital Buildings and ING Consulting



# Insulation

Measure	Cost (measure + installation)	How it works	Potential benefits
Cavity wall insulation	£2,800	Insulation (thermal polybeads) was injected into the wall cavity.	<ul style="list-style-type: none"> <li>Improved comfort levels. Heat loss from the in The Big Retrofit house was reduced by 67%.**</li> <li>Moderate boost to EPC score.</li> </ul>
Loft insulation with new loft hatch, ladder, and partial boarding	£4,400	Insulates between the joists in the loft to reduce heat loss.	<ul style="list-style-type: none"> <li>Improved comfort levels. Heat loss from the ceilings in The Big Retrofit house was reduced by 77%.**</li> <li>Small boost to EPC score.</li> </ul>
Underfloor insulation (strip out, insulation, membrane, underfloor vents, and finishes)	£4,000	Insulates under the ground floor floorboards to reduce heat loss.	<ul style="list-style-type: none"> <li>Heat loss from under floors in The Big Retrofit house was reduced by 80%.**</li> <li>Improved comfort underfoot.</li> </ul>
Triple glazing and replacement sliding door (double glazed)	£15,200 (Price range for this can vary by property and requirements from £15,000 to £20,000)*	Creates an extra air gap through a third pane of glass, which creates an extra thermal layer.	<ul style="list-style-type: none"> <li>Heat loss through the windows in The Big Retrofit house was reduced by 45%.**</li> <li>External noise reduction.</li> </ul>

\* Indicative price ranges for standard installs at other properties derive from averages provided by project collaborators, Vibrant Energy Matters, Digital Buildings and ING Consulting

\*\* Heat loss reduction results from testing performed by the Leeds Beckett University. Full results are available on our website.





# Ventilation

Measure	Cost (measure + installation)	How it works	Potential benefits
Trickle vents	See triple glazing	Small window frame vents that allows fresh air to flow in.	<ul style="list-style-type: none"> <li>To improve air quality.</li> <li>No impact on EPC rating.</li> </ul>
Door undercuts	£500	Widens the gap between bottom of the door and flooring.	<ul style="list-style-type: none"> <li>To improve air flow between rooms.</li> <li>No impact on EPC rating.</li> </ul>
Telescopic vents	See underfloor insulation	Provide subfloor air flow without risking damp around insulation and joists.	<ul style="list-style-type: none"> <li>To reduce the risk of damp and mould issues in subfloor voids.</li> <li>No impact on EPC.</li> </ul>
Decentralised mechanical extract ventilation (d-MEV)	£1,100	Create a continuous flow of old air out of, and fresh air into, the property.	<ul style="list-style-type: none"> <li>To improve air quality (e.g. removes excess moisture from bathrooms).</li> <li>No impact on EPC.</li> </ul>

## Are you looking to fund retrofit home improvements?

Find out about our Green Additional Borrowing, which could support you if you're a Skipton mortgage customer and you're looking to improve your home's energy efficiency and reduce your carbon footprint. Visit: [www.skipton.co.uk/mortgages/existing-customers/additional-borrowing](http://www.skipton.co.uk/mortgages/existing-customers/additional-borrowing)

Additional borrowing is subject to criteria, including affordability and conduct of your account. You could lose your home if you don't keep up your mortgage repayments.



# What we learned

The learnings from this project have been rich and varied. Details of the building's before and after fabric performance (how it retains and loses heat, and air tightness) can be seen in the [Regent Road Retrofit Final Report](#) by Leeds Beckett University and the University of Leeds.

We also picked up lots of insights into the planning and delivery of retrofit, drawing on the expertise of professionals who supported our project. We have grouped these into several key themes. Full details of project learnings can be seen in the above report.

Let's take you through our four key learnings.

## 1. For most homes, retrofitting requires a sequenced plan of work

To learn as quickly as possible, we chose to retrofit the house to include as many measures as we deemed reasonable. But the reality is this wouldn't work for most homes. The cost, disruption, and ability to access trusted and professional specialists/supply chains are key barriers for many.

However, we learned that many of the measures taken could be tackled on a room by room, or measure by measure, basis. It can help to have a plan, which an EPC can provide a starting point for. But then think about how you might want to sequence or plan for works over a period of time, as well as fitting retrofit

measures in with any wider renovation plans you might have, such as a re-roof or laying new flooring.

## How can we help?

Eligible homeownership members of Skipton Building Society can get a free EPC Plus home energy report from Vibrant Energy Matters Ltd to understand their home's starting position and see which measures could help with their home's energy efficiency.

The offer is not available on properties constructed within the last 10 years. Full terms and conditions apply. To find out more and view the terms and conditions, visit: [www.skipton.co.uk/member-benefits/epc-plus](http://www.skipton.co.uk/member-benefits/epc-plus)

The EPC Plus offer may be withdrawn without notice. Notification of withdrawal will be posted on [skipton.co.uk](http://skipton.co.uk). EPC Plus is provided by Vibrant Energy Matters Ltd, a Connells Group company. Connells Group is part of Skipton Building Society. EPC Plus is not regulated by the Financial Conduct Authority.





# What we learned

## 2. Getting the basics right first is a crucial part of retrofitting

Specialists calculated how much heat energy was needed to keep the house warm. Experts then modelled this to see the impact from the addition of improved insulation measures. By modelling the improved insulation, we were able to size the heating system that would be required correctly, so the house wasn't under- or over-heated.

That's why we installed insulation measures as a first step, before we introduced the heat pump heating system (including more efficient radiators). You might hear of this being called a 'fabric first' approach. Whilst heat pumps can work successfully in homes without the need to change the 'fabric', it can make sense to tackle the low hanging fruit (namely, improving insulation) first.

### How can we help?

We have prepared policy recommendations (see page 10). As one of the UK's largest mortgage lenders, we aim to use our influence to share our recommendations with the government.

## 3. Investigate grants, discounts and VAT exemptions to potentially save money

We learned during the project that so many of the measures and works completed for the retrofit were VAT exempt and potentially grant-eligible under certain

circumstances. VAT exemptions are currently only available until April 2027. As a result of this, we saved approximately £9,000 worth of VAT from the measures we installed. Ask your contractor or installer to detail VAT exemptions in their invoicing, and don't be afraid to ask your contractor for further clarity on this if you're able to.

There is also grant funding available for eligible people. As a business, we chose not to claim any government grants or discounts (we would have been eligible for the Boiler Upgrade Scheme, for instance), leaving more of this funding available for the public.

We recognised that sometimes it could be complicated to identify if you'd be eligible for a grant/discount in the first place. It's also not always clear how to apply the grant to works done, or even how to claim it, especially if you're undertaking multiple measures at once, potentially alongside other 'cosmetic' renovations too.

### How can we help?

Through our member benefit from Vibrant Energy Matters, we offer all eligible homeowners a free EPC Plus. As part of this Vibrant can help check grant and funding eligibility, as well as provide advice as to how the grants and funding could apply to various works.





# What we learned

Our policy recommendations also call on government to enhance visibility and consistency around grant applications.

For more details on what we learned around individual measures, visit [skipton.co.uk/thebigretrofit](https://skipton.co.uk/thebigretrofit) for further resources.

## 4. Without changes to electricity price premiums, retrofitting can't guarantee lower bills, but can deliver lower energy consumption, improved comfort and air quality

Retrofitting your home can make it more energy efficient and reduce its energy use, but gas-free heating alone won't necessarily impact the cost of the energy itself (energy bills are affected by tariffs and the overall energy market pricing). Whilst electricity prices remain higher than gas, it can mean that gas-free heating may not bring your bills down. Whilst bills can be high, there are potential savings if installations can be optimised with a suitable 'smart' or 'flexi' time of use energy tariff, alongside insulation measures, solar panels, and battery storage.

That said, we saw this project can deliver clear enhancements to occupant wellbeing (for example, not being affected by draughts) as well as a much more comfortable overall living experience. This is something that's very hard to put a price on.

## How can we help?

See our policy recommendations on page 10, where we call on government to give clarity to homeowners on sequenced planning of work.

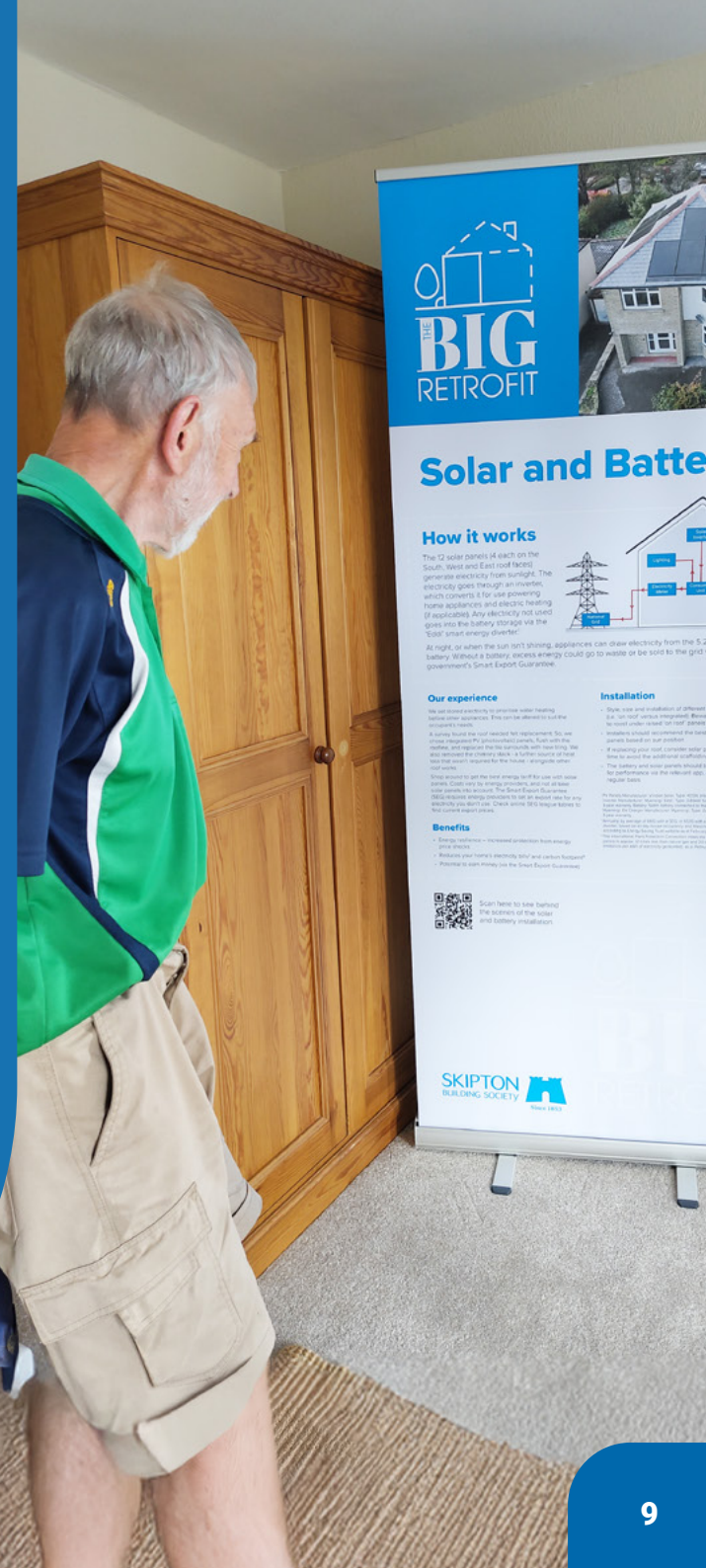


*Skipton Building Society is to be congratulated on this initiative because it successfully demonstrates the various ways of providing and conserving home energy. It also provides information on costs and efficiency based on detailed research, which is extremely valuable.*

*I was impressed by the fact that replacing double glazing with triple glazing can reduce heat loss by almost 50%. I will certainly give this serious consideration. In addition, I intend to have a storage battery installed so that I can make full use all the electricity generated by my solar panels.*



Skipton Building Society member, after taking a tour of the property, May 2025.





# Our policy recommendations

From our learnings we have identified some key areas where we think government policymakers could support our members in undertaking a retrofit. We will share these with the UK Government in light of the Warm Homes Plan, in the hope that the government's strategy can reflect these requests.

## 1) Reaffirmation of the government's commitment to the UK achieving net zero by 2050

We want our members to feel confident that any investment they make in improving their homes is aligned to the government's commitment to achieving net zero by 2050. Reaffirmation of this commitment could act as a catalyst for greater industry and homeowner action.

## 2) Set out clearer expectations of requirements for homeowners

The government has targeted that all homes living with fuel poverty (where 10% or more of household income is spent on heating) should aim to be at least EPC Band 'C' by 2030, and as many homes as possible by 2035<sup>2</sup>. We believe further clarity is required for homeowners, to help bring vague concepts to life and allow people to plan and budget more meaningfully for any required changes. This should also include clearer guidance on the sequencing of retrofit work.

## 3) Extend 0% VAT on energy savings measures for longer, and make grant funding options more accessible for the general public

The 0% VAT notice is due to end in April 2027, at which point the cost of retrofitting could significantly increase. We ask the government to extend the availability of 0% VAT beyond April 2027, to make retrofit more affordable. We also ask them to communicate availability of grant funding schemes more clearly, including a more consistent approach to claiming the grants (currently it could be via installers, energy companies and local authorities) to help homeowners plan their budgets.

## 4) Reduce the cost of electricity as a way to incentivise the transition to electrified heating

Electricity prices in the UK are artificially high which can make lower carbon heating (like heat pumps) less appealing for homeowners than gas boilers, biomass or oil heating. We support the recommendations outlined by the Climate Change Committee's seventh carbon budget review<sup>3</sup>. This includes the call to rebalance energy policy levies, to ensure reduce the cost of electricity versus gas for consumers and improve demand for energy efficiency measures.

Further details on each of these recommendations can be found in our Policy Recommendations report. Visit [www.skipton.co.uk/thebigretrofit](https://www.skipton.co.uk/thebigretrofit)

2. House of Parliament (House of Commons Library) (2025), Energy efficiency of UK homes. Available at: [commonslibrary.parliament.uk/research-briefings/cbp-9889/](https://commonslibrary.parliament.uk/research-briefings/cbp-9889/) (Accessed June 2025).

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3. Climate Change Committee (2024) Seventh Carbon Budget Report. Available at: [www.theccc.org.uk/publication/](https://www.theccc.org.uk/publication/) (Accessed June 2025).



# Hear from the experts

We asked some of our project collaborators to share their thoughts on retrofit with our members

*"While the more expensive measures may have long payback times, most things we buy do not pay you back either. Like comfortable shoes, smartphones, and new cars. The reasons for retrofit are not always to save money. They are to provide comfort, keep warm in winter and cool in summer, remove damp, condensation, and mould risk, and to improve indoor air quality."*

Dr Kate Morland, Leeds Beckett University



*"Generally, the most cost-effective combination of measures to achieve an improved EPC and a reduced reliance on grid energy are: installing cavity wall insulation (where appropriate); adding loft insulation (where required); installing solar panels with a battery (to make use of time of use energy tariffs) and considering an air source heat pump where suitable."*

David Sanders, Head of Energy Efficiency and Onsite Services, Vibrant Energy Matters



*"Spend time to find a local reputable installer, and then establish what it is exactly that you are being offered. Don't rush, and if you can carry out some research, ask someone for a second opinion."*

*"With heat pumps there is still some learning going on about what works and what doesn't, but good installers will engage with you about what is the most suitable system for your home."*

Jim Wild, Director and Senior Engineer, LEDA



*"If you are not sure what is best for you or your home, or where to start, then it is worth seeking independent advice. This approach helps ensure you don't harm your property, and you accomplish what you set out to achieve. Digital Buildings recommends a physical assessment of your home, so all aspects are considered, for example, ventilation, insulation, renewable heat and generation."*

Katharine Harrison, VP Platform Services, Digital Buildings



*"Good ventilation not only controls moisture, it helps maintain healthy indoor air by removing harmful substances like volatile organic compounds from paints, finishes, and everyday products. It also plays a significant role in keeping homes cooler during summer, reducing the need for energy-intensive cooling. Effective ventilation safeguards occupant health, protects the building, and ensures the retrofit truly enhances the home's comfort and efficiency."*

Maria Buenaventura, Senior Associate, ECD Architects



## Our Partners





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