



The Green Home Bonus

A case and plan for accelerating UK home decarbonisation



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A word from this report's advisory board

The perceived conflict between climate action and economic pragmatism has persisted despite mounting evidence to the contrary. OVO's research confirms what many economists have long studied: there's an immediate benefit to taking action on home decarbonisation. It's a financial opportunity.

When our research team analysed the data, it showed a clear financial bonus for individuals and the UK for acting on green home upgrades. This bonus grows over time, creating an opportunity for those who start on the green transition now. Early adopters enjoy substantial financial advantages that grow year-on-year, while households that delay – largely due to the upfront cost being the primary barrier – face mounting costs that eventually far exceed the initial investment required.

This isn't merely an environmental imperative; it's sound economic, social, and fiscal policy. As the UK navigates energy market volatility, household financial security increasingly depends on decarbonised homes. The evidence is clear: investing now in green home technology creates protection against future energy price shocks, while delivering immediate benefits in comfort and reduced bills.

The time for widespread home decarbonisation is not tomorrow, but today – not just for our planet, but for our wallets.

Academic reviewers

“Households who have installed low carbon technologies have already been better protected during the gas price crisis. In an increasingly volatile world, as well as being the green and economic thing to do, cleaning up our building energy use is also vital for UK energy security as our reserves of oil and gas become further depleted.”

Dr Richard Lowes, University of Exeter

“Consumers aren't just making economic decisions. They're navigating a maze of fear, complexity, and inertia. To accelerate decarbonisation, we must make green homes not just affordable, but easy, visible, and aspirational. Most people don't resist green upgrades because they dislike them – they resist because the benefits feel distant, while the costs are immediate.”

Dr Maximilian Gerrath, University of Leeds

“These findings supplement a well-established finding in the academic literature that there exists an “energy efficiency gap” – households fail to invest in energy efficient technologies even when doing so is financially beneficial.”

Professor David Comerford, University of Stirling

Executive summary: the cost of delay

The UK stands at a critical crossroads in its journey towards sustainable, affordable home energy. Our comprehensive research, including financial modelling and a nationwide survey of 3,000 households, reveals the significant financial opportunity of acting now when it comes to home decarbonisation.

- **The “Green Home Bonus”:** after just five years, households that invest in green home technologies and energy efficiency measures see cumulative savings of **£17,595**. This means a **net benefit of £2,125**, even after accounting for the average upfront investment of **£15,470**. That benefit continues to grow significantly over time: by year 10, the net benefit reaches nearly **£20,000**, and by year 15, it’s more than **£37,000**. The financial penalty of delaying action is real, measurable, and growing each year.
- **Very strong return on investment:** this means that over a five-year period, the investment yields an Internal Rate of Return (IRR) of **4.45%** – already outperforming many savings accounts or government bonds. By year 10, the IRR jumps to **18.62%**, and by year 15, it rises to **21.53%**. This makes green home upgrades not just environmentally sound, but a strong financial investment that UK households could make today.
- **Clear impact in today’s money:** When adjusted to take into account inflation and borrowing costs (or “Net Present Value”) the “Green Home Bonus” is still significant. It reaches **£12,945** by year 10, and **£23,411** by year 15.
- **Widespread demand, huge barriers:** while **78% of UK households want to decarbonise their homes**, 72% say that upfront costs are the main barrier. This gap between aspiration and action represents a failure that needs urgent action. We must put more homes within reach of these savings.
- **The rental trap:** 81% of UK renters report feeling “trapped” in energy-inefficient homes, highlighting the need for targeted solutions that address the tenant-landlord incentive problem.
- **A lack of knowledge:** despite the clear financial benefits demonstrated by this report, 59% of households remain unaware that technologies like heat pumps could reduce their energy bills over time. This underscores the need for better education from trusted public figures, the government, and suppliers. Many households most trust the advice from engineers in their homes, assessing their heating systems. Ensuring that installers are equipped to discuss both traditional and low-carbon options will be key to bridging this knowledge gap.
- **The regret factor:** the benefits of acting are clear from the “early adopters”. Among those who have installed green home tech, 72% regret not making energy efficiency upgrades sooner, reflecting a growing recognition of the cost of not acting quickly.
- **The low-income challenge:** 92% of households earning under **£30,000** per year report that green home technologies feel “out of reach”, creating a significant risk of a two-tier energy transition that leaves households behind.

These findings underscore the urgent need for comprehensive policy and market solutions to accelerate home decarbonisation.

The remainder of this report quantifies the benefits of early adoption, examines the detailed cost of not acting now, and outlines a practical three-point plan to make green upgrades accessible to every home in the UK.



Methodology

This report draws on economic modelling and nationally representative polling conducted in early 2025 to assess the financial impacts of accelerating home decarbonisation. The modelling calculates the Net Present Value (NPV), Internal Rate of Return (IRR), and long-term savings associated with upgrading UK homes using six technologies such as heat pumps, insulation, and solar panels for the “average household”. It draws on the latest available sources for costs, incentives, and savings. The public opinion research was conducted by Strand Partners, members of the British Polling Council and adherents to the Market Research Society’s Code of Conduct. The nationally representative survey included a sample of 4,000 UK adults and was weighted by age, gender, and Nomenclature of Territorial Units for Statistics level 1 (NUTS1) region to ensure robust and balanced results. The findings provide detailed insight into UK households’ awareness, attitudes, and barriers to adopting green home technologies. All figures in this report are illustrative and based on modelled scenarios using current energy prices, technology costs, and typical household usage patterns. Actual savings and returns may vary depending on individual circumstances. This report does not constitute financial advice or a recommendation for any specific household to invest in particular technologies. Environmental claims are based on the best available evidence and may be subject to change as methodologies evolve.

Calculating the Green Home Bonus

While the transition to greener homes needs significant upfront investment, growing evidence suggests that inaction carries its own escalating financial penalty. This analysis only builds on the evidence.

It seeks to quantify this **Green Home Bonus** – the financial opportunity and accumulated advantages enjoyed by households who invest proactively in decarbonisation upgrades (early adopters), compared with households who can't make those changes. We aim to demonstrate that, particularly when viewed through the lens of recent energy market trends, delaying these upgrades makes things much more expensive in the long term.

Our approach: modelling a greener home

To quantify the Green Home Bonus, we modelled the financial journey of a typical UK household taking out six key green technologies for the first time:

- **Smart meter** – usually the easiest and most common first step, with minimal disruption and no upfront cost.
- **Home insulation** – often the first major upgrade, with immediate comfort and energy-saving benefits.
- **Solar photovoltaic (PV) panels** – a popular next step once insulation is improved, generating renewable electricity and reducing bills.
- **EV home charger** – typically installed when someone switches to an electric vehicle; a mid-level infrastructure upgrade.
- **Electric vehicle (EV) lease switch** – often driven by external factors (like car renewal), but might also follow charger installation.
- **Air source heat pump** – usually the last and most complex step, often requiring insulation beforehand, and possible electrical upgrades.

Our financial model incorporates typical UK costs for these technologies as of April 2025. It factors in widely available government incentives, such as the Boiler Upgrade Scheme (BUS) grant of £7,500¹. To focus on the above six technologies, we've presumed that the household will have double glazing and maintained radiators.

For this analysis, we've assumed a **0% energy price inflation rate for a conservative approach**, based on the perspectives of leading market analysts. This gives us a clearer picture when it comes to the inherent value of these technologies, independent of any energy price increases.

Upfront costs are a big commitment. So to make sure our calculations are robust, we use Net Present Value (NPV) analysis with a discount rate of 4.09%, which serves as a proxy for the cost of capital faced by consumers when upgrading their homes. It's based on a July 2025 review of long-term financing options for green home improvements. This accounts for the principle that money today is worth more than money in the future.



The starting point: investment vs escalating baseline costs

This package of upgrades currently requires an **initial net investment of approximately £15,500** after applying relevant grants. This is a significant sum, and while it represents an investment in long-term savings and home improvement, the government needs to take urgent steps to decrease this cost and introduce more incentives.

Summary table: costs and savings

Based on the best available sources for an “average household” in the UK, the below table summarises the costs, incentives, costs after incentives (net costs), and potential annual savings. Costs, incentives, and savings that aren’t available to an average household were excluded in this analysis.

Technology	Gross cost (£)	Incentives (£)	Net cost (£)	Annual savings (£) (yr 1 base)	Lifespan (yrs)/term
Heat pump (air source)	£10,900	£7,500 (BUS grant)	£3,400	£440	20
Home insulation (cavity and loft)	£3,530	£0	£3,530	£470	40
Solar panels (4kWp)	£7,540	£0	£7,540	£1,030	25
Electric vehicle (lease switch)	£0	£0	£0	£1,160	3 (lease term)
EV home charger (7kW)	£1,000	£0	£1,000	£0 (enabler)	10
Smart meter	£0	£0	£0	£49 (potential)	15
TOTAL	£22,970	£7,500	£15,470	£3,149 (yr 1 combined)	

Green home technologies: unlocking energy bill savings

The immediate financial penalty for delaying these upgrades comes from missing out on substantial year-on-year operational savings. These savings stem from multiple sources. For example, insulation and a heat pump can reduce gas and electricity consumption. Solar panels generate free electricity and can earn people export payments (Smart Export Guarantee). An EV costs much less to run compared to a petrol car (e.g. fuel, maintenance). We also factor in the benefit of avoiding future boiler replacement costs by annualising this saving (£370/year).

The cumulative impact of these savings is illustrated in the table below. Each represents the total saving achieved by that year. For instance, in year 3 a household will have saved £10,557.

Cumulative saving category	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15
Heat pump	£880	£1,320	£1,760	£2,200	£4,400	£6,600
Insulation	£940	£1,410	£1,880	£2,350	£4,700	£7,050
Solar	£2,060	£3,090	£4,120	£5,150	£10,300	£15,450
EV	£2,320	£3,480	£4,640	£5,800	£11,600	£17,400
Charger	£0	£0	£0	£0	£0	£0
Smart meter	£98	£147	£196	£245	£490	£735
Avoided boiler replacement	£740	£1,110	£1,480	£1,850	£3,700	£5,550
Total cumulative saving	£7,038	£10,557	£14,076	£17,595	£35,190	£52,785

Beyond cash savings: property value gains

The financial advantages extend far beyond operational cash flow, and could add value to major assets:

- Property value uplift** – growing evidence suggests that energy efficiency is increasingly valued in the housing market. Buyers are becoming more aware of running costs and environmental impact. And research by the property portal Knight Frank (2022) found that improving a home's Energy Performance Certificate (EPC) rating from a common band D to band C correlated with an **average property value increase of 3%**². Applied to the current average UK resale value, this translates to a potential uplift of **£9,003**. The package of measures modelled here (especially insulation and solar) makes achieving such an EPC improvement realistic for many properties. While this value is typically realised only when the property is sold, and is subject to local market conditions, it represents significant potential to enhance the homeowner's primary asset.

The green mortgage bonus – in addition to resale value, improving EPC ratings can unlock direct financial benefits during ownership. A growing number of green mortgages are entering the market, offering reduced interest rates for energy efficient homes. Properties rated EPC B or above are often eligible for discounted mortgage rates, meaning lower monthly payments and long-term savings for homeowners who invest in energy upgrades³.

The Green Home Bonus: potential financial advantage at years 5, 10 and 15

Every year that households delay green upgrades, they miss out on real, tangible savings. The longer the delay, the higher the cost – not just environmentally, but financially.

To capture the overall impact, we've deducted the cumulative savings from the net costs.

The sum of the financial benefits	Year 5	Year 10	Year 15
Cumulative savings	£17,595	£35,190	£52,785
Post-costs (£15,470 average)	£2,125	£19,720	£37,315

By **year 5**, the typical household has already recouped all of its investment, making a profit of just over £2,000 on the upfront average cost of £15,470. From that point onwards, the savings become pure profit. By **year 10**, households are nearly £20,000 better off. By **year 15**, the savings rise to over **£37,000** – a clear return on investment that grows with time.

The Internal Rates of Return (IRR) based on the projected cumulative savings are:

- **Year 5 IRR:** 4.45%. Positive and comparable to UK government bonds⁴.
- **Year 10 IRR:** 18.62%. Very strong, substantially above typical equity and property returns (~6 to 10%).
- **Year 15 IRR:** 21.53%. Exceptionally strong, above many investment options available to UK households⁵.

This means the investment starts delivering a modest return within five years, already outperforming most savings accounts or government bonds. By year 10, it delivers a strong IRR. By year 15, the IRR rises above 21%, rivalling long-term stock market averages, but with far less volatility.

Accounting for Net Present Value – to rigorously assess the investment over its expected life, we calculate the Net Present Value (NPV). This discounts all future benefits (savings) and costs (maintenance) back to their value in today's money. We used the discount rate of 4.09%, which serves as a proxy for the cost of capital faced by consumers when upgrading their homes. It's based on a July 2025 review of long-term financing options for green home improvements. Using the actual cumulative benefits from our analysis – which already account for all savings, including avoided boiler replacement – the investment shows strong returns across all time horizons.

Time horizon	Year 5	Year 10	Year 15
NPV (at 4.09% discount rate)	£156	£12,945	£23,411

These figures show that the investment breaks even when accounting for NPV within five years, and from that point on, the benefits grow rapidly. By year 10, the net value added reaches nearly £13,000. By year 15, the investment delivers a total net return of over £23,000 – even when future savings are conservatively discounted.

Note: actual rates vary significantly between households, and many consumers are excluded from accessing affordable finance. This is a problem we urgently need to address.

The “unknown unknown”: buffering against volatility

A critical benefit, not fully captured by calculations based on average price growth, is the increased resilience against energy price volatility. Adopters are less exposed to sudden market shocks because:

- Solar power generates free electricity when grid prices might be spiking.
- EVs charged overnight on off-peak tariffs avoid higher electricity costs and any petrol/diesel price increases. EVs are also able to act as storage to discharge electricity back into the home or the grid.
- Well-insulated homes use less energy overall, dampening the impact of any price rises⁶.
- Smart meters send updates to energy suppliers, showing how much electricity a household uses and when. This allows customers to make the most of peak and off-peak pricing, using energy at off-peak times of the day to save money.

Plus, the financial metrics don't include the significant improvements to daily life and wellbeing that these upgrades can provide. These include:

- **Enhanced comfort** – more stable internal temperatures and less cold spots and draughts.
- **Reduced noise** – modern heat pumps and EVs are typically much quieter than older boilers and internal combustion engines.
- **Peace of mind** – reducing energy dependence can lower anxiety around the unpredictable wholesale prices that impact energy bills.
- **Future-proofing** – as energy efficiency standards for sales and rentals tighten, upgrading now helps homes remain compliant, marketable, and legally lettable in the years ahead. It's an investment not just in the present – but in the long-term resilience and value of the home.

Global context: energy uncertainty in 2025 and beyond

The extent of the UK's energy dependence leaves it vulnerable to increases in uncertainty and volatility in global energy markets. Several key factors make improving the efficiency and reducing the energy dependence of UK homes particularly critical.

Geopolitical energy control

The concentrated nature of the global gas supply creates significant price leverage and makes the UK vulnerable to political decisions made far from its shores. The Institute for Energy Economics and Financial Analysis has identified that geopolitics has been the dominant driver of volatility in recent years⁷. The Russia-Ukraine conflict demonstrated how quickly energy markets can be destabilised by geopolitical events, with the average energy bill for UK homes increasing by 54% in April 2022 alone⁸.

Our survey shows that this vulnerability resonates strongly with the public. 83% of UK households believe we should be less dependent on foreign energy sources.

Market volatility

Our modelling assumes energy prices neither rise nor fall. While we don't know which way prices might trend, we know they have become more volatile in recent years. In particular:

- **Supply chain disruptions** – global supply chains remain vulnerable to disruptions, affecting everything from gas distribution to the manufacturing of energy infrastructure components.
- **Transition tensions** – as the world navigates the transition to renewable energy, a mismatch between declining fossil fuel investment and still-growing renewable capacity will create price pressures.
- **Extreme weather events** – climate-change-driven weather extremes will increasingly affect energy demand (by increasing heating and cooling needs) and supply (through impacts on infrastructure).

This volatility has real consequences for household financial security. Our survey reveals that 78% of UK households report being either "extremely" or "fairly" concerned about their energy bills. That figure rises to 89% for households earning under £30,000 per year.

The international decarbonisation race

Other countries have already shown that home decarbonisation can be delivered at scale, with strong consumer outcomes. What were once seen as niche technologies are now commonplace in comparable markets – offering valuable lessons for the UK.

- **Heat pump adoption** – France has installed 10 times more heat pumps than the UK⁹, and Nordic countries have achieved adoption rates of over 40% compared to 1% in the UK¹⁰.
- **Home insulation** – the UK has the oldest and least energy efficient housing stock in Western Europe, with 56% of homes rated EPC band D or below¹¹.
- **Solar adoption** – the Netherlands has installed residential solar panels on almost a third of homes (over 2.8 million) compared to under 10% of homes in the UK (about 1.5 million.)¹²

Our survey indicates that public awareness of how the UK compares internationally is low. Only 35% of respondents knew that the UK lags behind comparable European countries in home decarbonisation. This suggests that better public communication is needed about the UK's home decarbonisation position and the need to do more.

International examples show that the tools for transforming UK homes already exist and are delivering results elsewhere. Those who can act now will see the Green Home Bonus accumulate year on year, and enjoy the benefits consumers are already experiencing across Europe.



**83% of UK households
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Breaking down barriers

While the financial case for decarbonising our homes is compelling, significant barriers prevent UK households from doing so. These obstacles are creating a growing gap between those who can access the benefits of using green technology to power their homes, and those who can't. This report summarises five key barriers that stop households from adopting low-carbon technologies, putting the "green home bonus" described above out of reach for too many UK households.

The upfront cost barrier

Despite the long-term savings and clear return on investment, the initial cost of home upgrades remains the single greatest obstacle to adoption.

- 72% of households in our survey cited upfront costs as their main reason for delaying green technology adoption.
- The Climate Change Committee estimates that retrofitting an average UK home with energy efficiency measures and low-carbon heating costs between £10,000 to £15,000¹³.
- 92% of households with an annual income of less than £30,000 in our survey said green home technologies feel "out of reach" financially.

This creates a growing green divide between those who can afford to invest in decarbonisation and those who can't. According to a 2024 study by University College London, this "energy transition gap" is impacting lower-income households in older homes the most¹⁴.

The rental trap

For the 19% of UK households in private rented accommodation¹⁵, the split incentive between landlords and tenants creates a particularly stubborn barrier:

- 81% of renters in our survey say they feel "trapped" in energy inefficient homes.
- According to the English Housing Survey, 55% of privately rented homes are rated EPC D or below¹⁶.
- Comparative research on housing stocks in the US found that landlords are 73% less likely to invest in energy efficiency measures compared to owner-occupiers¹⁷.
- 77% of renters in our survey said they're interested in green technologies but feel powerless to implement them.

81% of renters in our survey say they feel "trapped" in energy inefficient homes

This disconnect between landlords and tenants means that those often paying the highest proportion of their income on energy bills have the least ability to reduce them through decarbonisation.

The information and trust deficit

Many households lack the knowledge and confidence to navigate the complexity of decarbonising:

- 59% of households in our survey were unaware that heat pumps could reduce their energy bills over time.
- A 2024 Citizens Advice study found that lacking the information needed to make informed decisions about home energy improvements is one of the biggest barriers to households making home energy improvements.
- Research from the Energy Saving Trust shows that information about the technologies and their benefits is the second most cited reason for inaction, after cost¹⁸.
- 64% of respondents in our survey said they felt confused about which technologies would be most suitable for their home.

59% of households in our survey are unaware that heat pumps could reduce their energy bills over time

This information gap is compounded by a trust deficit:

- Only 28% of respondents in our survey trust energy companies to provide impartial advice.
- 72% of our survey respondents trust consumer groups and independent experts for energy advice instead, matching similar results from the Social Market Foundation¹⁹.

The property suitability challenge

The UK's diverse and ageing housing stock throws up challenges for some technologies:

- Research from the Building Research Establishment shows that approximately 21% of UK housing was built before 1919, making retrofitting these homes more challenging²⁰.
- A 2024 study from Imperial College London found that technical constraints can make standard heat pump installation difficult in some properties without additional building work²¹.

These physical constraints in many properties call for tailored solutions that might increase costs or complexity, as documented in the National Infrastructure Commission's 2023 Heat Decarbonisation and Hydrogen Heating Report²².

The behavioural barriers

Beyond practical obstacles, psychological factors influence household decision-making:

- 67% of respondents in our survey need to prioritise immediate financial needs over long-term savings.
- Research from the Behavioural Insights Team shows that "present bias" (meaning valuing immediate outcomes over future benefits) strongly affects home energy decisions²³.
- A study from the National Bureau of Economic Research that homeowners tend to apply discount rates of 25 to 35% to future energy savings, far higher than market interest rates²⁴.
- 63% of our survey respondents have delayed green upgrades due to uncertainty about future incentives and regulations.

The Committee on Climate Change has highlighted that addressing these behavioural barriers is essential for accelerating home decarbonisation²⁵.

Overcoming these barriers requires a coordinated approach from industry, government, and local communities. The three-point plan outlined in the conclusion of this report provides a framework for action that would help all UK households participate in the transition to cleaner, more affordable home energy.



72% of households in our survey cited upfront costs

as their main reason for delaying
green technology adoption

Conclusion: OVO's three-point plan

As this report outlines, delaying the effective decarbonisation of our homes will lead to rising costs for households across the UK. After five years, a typical household without green energy technologies will spend more on energy than one that installs them.

OVO is supporting households to move towards home decarbonisation – helping customers install insulation, solar panels, and heat pumps – but we can't deliver this transformation alone.

Government, finance, and industry all have crucial roles to play. To keep bills down and deliver net zero cost-effectively, we must accelerate progress now.

We propose that the government take the following three steps to help us to cut bills, cut carbon, and build warmer homes for everyone.

1. Cut the upfront cost of green upgrades

The biggest barrier to home decarbonisation is cost. Government should expand grants, subsidies or low-cost loans to help all households – especially low-income ones – afford insulation and low-carbon heating. A successor to the ECO4 scheme must support energy suppliers to upgrade more homes, while local authorities and social housing providers need funding via Warm Home Grants.

3. Introduce a fair social tariff

The current Warm Home Discount is a step in the right direction, but doesn't go far enough. A new, targeted social tariff is needed to protect low-income households from unaffordable bills – now and throughout the energy transition. This will help cut fuel poverty and ensure everyone can access the benefits of cheaper, cleaner energy.

2. Make green tech cheaper to run

Currently, electricity remains around four times more expensive than gas, making efficient heat pumps costly to use. That must change. Government should remove policy costs from electricity bills – either shifting them to gas or funding them through taxation. As a start, households with heat pumps should be exempt from policy costs to reward early adoption. This reform is essential to unlock financial incentives for switching from fossil fuels.

The longer we wait, the more households pay the price. OVO calls on the government to help us lower bills, protect the vulnerable, and make net zero a win for everyone.



- ¹ <https://www.find-government-grants.service.gov.uk/grants/boiler-upgrade-scheme-1>
- ² <https://www.knightfrank.com/research/article/2022-10-11-improving-your-epc-rating-could-increase-your-homes-value-by-up-to-20>
- ³ <https://www.thisismoney.co.uk/money/mortgageshome/article-14472453/Half-mortgage-lenders-offer-cheaper-rates-properties-eco-credentials.html>
- ⁴ <https://www.hl.co.uk/funds/research-and-news/bond-funds-review-volatility-continues-but-whats-next-for-bonds-in-2025>
- ⁵ <https://www.investeurope.eu/news/newsroom/european-buy-outs-growth-venture-capital-infrastructure-performance-maintains-lead-over-public-market-returns/>
- ⁶ <https://eciu.net/media/press-releases/2025/analysis-poor-quality-homes-still-550-worse-off-even-with-energy-price-drop>
- ⁷ <https://ieefa.org/resources/conflict-exposes-natural-gas-price-volatility>
- ⁸ <https://commonslibrary.parliament.uk/research-briefings/cbp-9491/>
- ⁹ <https://mcsfoundation.org.uk/wp-content/uploads/2023/10/MCSCF-HeatPumpReport2023.pdf>
- ¹⁰ <https://www.heatpumps.london/blog/everything-you-need-to-know-about-heat-pumps>
- ¹¹ <https://www.eurocell.co.uk/blog/englands-worst-areas-for-efficiency-unveiled>
- ¹² <https://solarquarter.com/2025/04/17/western-europes-solar-surge-netherlands-leads-the-charge-with-one-in-three-homes-solar-powered>
- ¹³ <https://www.eurocell.co.uk/blog/englands-worst-areas-for-efficiency-unveiled>
- ¹⁴ <https://serl.ac.uk/key-documents/reports/>
- ¹⁵ <https://www.gov.uk/government/statistics/english-private-landlord-survey-2024-main-report/english-private-landlord-survey-2024-main-report>
- ¹⁶ <https://theindependentlandlord.com/ehs-prs-england/>
- ¹⁷ <https://www.sciencedirect.com/science/article/abs/pii/S0301421518301381>
- ¹⁸ <https://www.energy-uk.org.uk/publications/energy-efficiency-week-2024-polling-report/>
- ¹⁹ <https://mcsfoundation.org.uk/news/nearly-half-48-think-net-zero-transition-is-happening-to-them-not-with-them-polling-finds/>
- ²⁰ <https://historicengland.org.uk/whats-new/research/back-issues/filling-in-the-retrofit-gaps/>
- ²¹ <https://post.parliament.uk/research-briefings/post-pn-0699/>
- ²² National Infrastructure Commission (2023), Technical Annex: Hydrogen Heating
- ²³ <https://www.gov.uk/government/publications/behaviour-change-and-energy-use-behavioural-insights-team-paper>
- ²⁴ https://www.nber.org/system/files/working_papers/w20969/w20969.pdf
- ²⁵ <https://www.theccc.org.uk/publication/behaviour-change-public-engagement-and-net-zero-imperial-college-london/>

