

Research Briefing

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By Paul Bolton

# Energy efficiency of UK homes



## Summary

- 1 Importance of energy efficiency
- 2 How is energy efficiency measured?
- 3 Energy efficiency ratings across the UK
- 4 Levels of insulation across the UK
- 5 Government schemes to improve energy efficiency
- 6 Further reading

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# Contents

<b>Summary</b>	<b>4</b>
<b>1 Importance of energy efficiency</b>	<b>7</b>
1.1 Energy use in UK homes	8
<b>2 How is energy efficiency measured?</b>	<b>9</b>
2.1 Standard Assessment Procedure (SAP) ratings	9
2.2 How are properties at the top and bottom of the energy efficiency scale different?	10
<b>3 Energy efficiency ratings across the UK</b>	<b>12</b>
3.1 Patterns of energy efficiency in England	17
<b>4 Levels of insulation across the UK</b>	<b>23</b>
4.1 Great Britain	23
4.2 Northern Ireland	24
4.3 Detailed estimates and patterns by type of property/household	24
<b>5 Government schemes to improve energy efficiency</b>	<b>26</b>
5.1 Government-mandated schemes	26
5.2 Government-funded schemes	28
5.3 Energy efficiency measures installed under government schemes	31
<b>6 Further reading</b>	<b>40</b>

## Summary

The average energy efficiency of UK homes has steadily improved over time, but the rate of improvement has slowed since 2014. The latest comparable data shows that homes in Northern Ireland had the highest average energy efficiency rating, followed by Scotland and England, with the lowest average rating in Wales.

This briefing looks at data on energy efficiency levels across the nations of the UK, variations by different types of properties and households, insulation measures and government funded/mandated energy efficiency schemes.

## Progress on energy efficiency in the UK

There has been faster progress on the percentage of homes with an energy efficiency rating of band C or higher. In England the share at this level increased from 12% in 2010 to almost 48% in 2021. The latest data shows higher rates in Northern Ireland and Scotland and a lower rate in Wales.

The Government has a target that all fuel-poor homes should be at least band C by 2030 and an aspiration for as many as possible homes across the country to be at least band C by 2035.

## Factors affecting energy efficiency

The factors linked most strongly to energy efficiency are a property's age and type. Newer homes have much higher ratings, as do purpose-built flats, while older homes, converted flats and bungalows have the lowest average ratings.

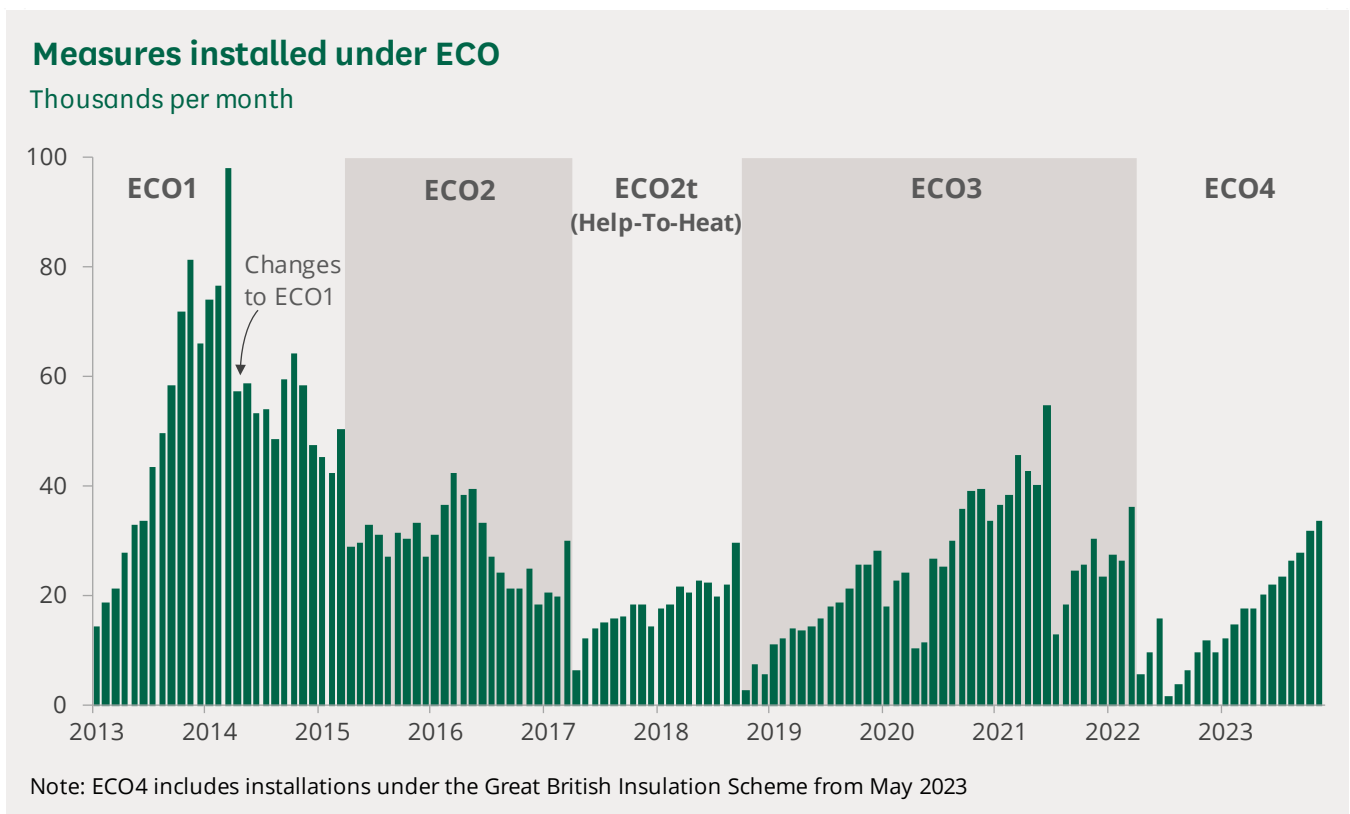
## Levels of insulation

An estimated 6.1 million properties in Great Britain with cavity walls have no cavity wall insulation; 29% of the total. Around 8.5 million homes with lofts (33%) have less than 125mm of loft insulation and 7.7 million homes with solid walls (91% of the total) do not have solid wall insulation.

## Energy efficiency schemes

There are a wide range of different schemes across the UK to help improve the energy efficiency of homes. Most of these are targeted at lower income households living in less energy efficient properties. Some schemes are taxpayer funded, others are delivered by energy suppliers and funded through a levy on energy bills.

The Energy Efficiency Obligation (ECO) has been the main energy efficiency scheme over the last decade. It is funded by a levy on household energy bills, but the Government sets the overall scheme targets and rules. The number of number of measures under ECO fell during the second half of the 2010s from more than 80,000 per month in early 2014 to less than 20,000 per month (on average) from mid-2016 to mid-2020.



There was, according to the regulator Ofgem, a “significant drop” in April 2014 when the Government reduced part of the target for suppliers in order to help reduce energy bills.

Longer term data on shows a sharp drop in both loft and cavity wall installations carried out under government schemes in 2013 when ECO and the short-lived Green Deal replaced existing energy efficiency schemes. There was a small increase in 2014 (before the changes to ECO), but further falls afterwards and no sign of a clear increase in any of these types of insulation up to the end of 2022.

### Loft and cavity wall insulations fell dramatically in 2013

Millions of insulation measures under Government schemes



# 1 Importance of energy efficiency

Improvements to energy efficiency can help to reduce household bills, cut carbon emissions, and improve energy security – the three elements of the ‘energy trilemma’. They can also help to cut fuel poverty and directly improve conditions in the home, making it easier to keep it warm in winter and reducing problems with damp/condensation and mould.

New properties have much better energy efficiency than older ones. The majority of the existing housing stock is more than 60 years old and around one in five properties are more than 100 years old.<sup>1</sup>

Building new, more efficient homes will increase the average efficiency of the whole housing stock. However, relying on new homes to ‘drag up’ the average would mean slow progress and leave many households living in much less efficient homes which are more expensive to heat. This is why most of the focus of energy efficiency improvements is on ‘retrofitting’ measures to existing older properties. However, making major improvements to energy efficiency can be expensive and disruptive, especially for older properties.

The Government has said it has committed [£6.6 billion to improve energy efficiency in this Parliament](#) and a [further £6 billion in the period 2025-28](#).<sup>2</sup> It also mandates energy suppliers to carry out energy efficiency improvements for households. This is funded through a levy on energy bills.

While the energy efficiency of the housing stock has improved over time, the rate of progress, and government actions, have been criticised. In 2021 the chairman of the Environmental Audit Committee described Government investment to improve energy efficiency as “woefully inadequate”.<sup>3</sup> The Climate Change Committee’s latest progress report to Parliament said:

The number of Government-backed retrofits for fuel-poor households and residents of social housing has been insufficient for some years.

...the newest round of the Energy Company Obligation (ECO4) has started slowly and the totals continue to lag behind our pathway expectations

The energy crisis provided a clear incentive to insulate buildings, but progress in the owner-occupied and private rented sectors remains slow.<sup>4</sup>

<sup>1</sup> DHLUC, [English Housing Survey data on energy performance \(Table DA7101: energy performance – dwellings\)](#)

<sup>2</sup> DESNZ, [Families, business and industry to get energy efficiency support](#) (18 December 2023)

<sup>3</sup> Environmental Audit Committee, [Net Zero impossible unless urgent action taken on energy efficiency this decade](#) (22 March 2021)

<sup>4</sup> Climate Change Committee, [2023 Progress Report to Parliament -chapter5](#) (28 June 2023)

Energy prices increased dramatically in 2022, have remained high in 2023 and there is no prospect of a substantial fall in prices in the near future. This ‘energy crisis’ has highlighted the important role of energy efficiency in helping to reduce fuel poverty and the associated problems of households struggling to keep their homes warm and pay their energy bills.

## 1.1 Energy use in UK homes

Energy used in UK homes made up 26% of final UK energy consumption<sup>5</sup> and caused 17% of UK CO<sub>2</sub> emissions in 2022.<sup>6</sup> Natural gas was the most important single fuel used in homes with 64% of the total, electricity made up 24%, oil 7% and bioenergy, coal and other sources making up the rest.<sup>7</sup> Most energy used in the home is for space heating (62%), followed by water heating (18%), electrical appliances (14%), lighting and cooking (both 3%).<sup>8</sup>

The amount of energy used in UK homes fell by 14% in 2022.<sup>9</sup> This drop was largely driven by the response to the record high energy prices, but it has been falling for much of the previous two decades. The 2022 total was the lowest figure on a series going back to 1970. Energy use per person and per household has fallen even faster, both down by 36% in the past 20 years.<sup>10</sup>

Domestic use of gas and electricity have continued to decrease into 2023. The energy price cap fell in July and again in October 2023, but prices remain just over 50% higher than their winter 2021/22 levels.<sup>11</sup>

Part of the recent fall in energy use will have been from new energy efficiency measures and households responding to price rises by cutting ‘non-essential’ energy where they can. However, it will also be due to some households reducing essential spending on energy in response to these (and other) price rises, with potential negative impacts on their health and well-being.<sup>12</sup>

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<sup>5</sup> DESNZ, [Digest of UK Energy Statistics \(DUKES\): energy](#) (Table 1.1)

<sup>6</sup> DESNZ, [Provisional UK greenhouse gas emissions national statistics 2022](#)

<sup>7</sup> DESNZ, [Digest of UK Energy Statistics \(DUKES\): energy](#) (Table 1.1)

<sup>8</sup> DESNZ, [Energy consumption in the UK 2022](#) (Table U3)

<sup>9</sup> DESNZ, [Digest of UK Energy Statistics \(DUKES\): energy](#) (Table 1.1)

<sup>10</sup> DESNZ, [Energy consumption in the UK 2022](#) (Table I3)

<sup>11</sup> For more information on prices see the Library briefing [Gas and electricity prices under the Energy Price Guarantee and beyond](#)

<sup>12</sup> See, for instance, Ofgem, [Consumer impacts of market conditions survey - wave 4 \(July 2023\)](#), ONS, [Public opinions and social trends, Great Britain: household finances](#) and National Energy Action, [Lived experiences of fuel poverty](#)



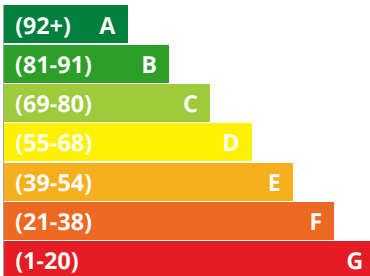
## 2 How is energy efficiency measured?

### 2.1 Standard Assessment Procedure (SAP) ratings

Energy efficiency of a property is measured using the Standard Assessment Procedure (SAP).

#### Energy efficiency rating bands

Most energy efficient - low running costs



Least energy efficient - high running costs

#### Summary of the SAP process

1. Energy consumption is estimated from a survey of the property, its size, construction, age, insulation, type of heating, on-site generation and so on, along with standard assumptions about room temperatures, hot water/lighting needs and dwelling occupancy/usage.
2. Total assessed energy needs are multiplied by the costs of each type of energy or fuel used in the property to give total energy costs. These are then divided by the property's floor area to give an energy cost factor per m<sup>2</sup>.
3. The energy cost factor is converted to a scale where 1 is the least energy efficient and 100 means the property has zero energy needs/costs. This is the energy efficiency or SAP rating. A value of more than 100 is possible if a property is expected to generate more energy than it needs.

This rating can also be converted to one of seven bands, as shown opposite. These go from A (most efficient with a rating of 92 and higher) through to G (least efficient with a rating of between 1 and 20).

SAP energy efficiency ratings are used for Energy Performance Certificates and the SAP process also produces estimates of energy use per unit of floor area, energy costs for the property, emissions of CO<sub>2</sub> and the Environmental Impact Rating (also on a scale from 1 to 100).

#### Criticism of the SAP methodology

The SAP methodology and energy efficiency ratings have been criticised, among others, by the Committee on Climate Change who have said its focus on energy costs rather than 'fabric' energy efficiency<sup>13</sup> makes the term 'energy efficiency rating' potentially misleading.

<sup>13</sup> The energy efficiency of the building fabric; its walls, roof, floors, windows and doors.

Its focus on costs means it does not provide sufficiently strong incentives to improve energy efficiency as a property's rating can often be increased without any improvement to its fabric efficiency. Installing a new gas boiler or fitting solar panels would both cut annual energy costs of a property, and hence increase its SAP rating, without any impact on its fabric efficiency.

In addition, the Committee on Climate Change said the rating's scale from 1 to 100 was said to be opaque as it does not relate to any actual units.<sup>14</sup>

## SAP data in this briefing

Most energy efficiency data in this briefing looks at the average SAP energy efficiency rating of properties. In 2017 the Government set out a target to improve the rating of all fuel-poor homes to band C by 2030, and an aspiration for as many homes as possible to band C by 2035 "...where practical, cost-effective and affordable."<sup>15</sup> Therefore this briefing also includes data on properties in energy efficiency rating bands A to C.

The data in this briefing uses the current version of SAP known as SAP 2012. The SAP methodology changes over time. A new version is expected to be introduced in 2025.<sup>16</sup>

## 2.2

## How are properties at the top and bottom of the energy efficiency scale different?

The set of charts below show differences in some key energy efficiency measures for properties at the top and bottom of the energy efficiency ratings scale.

They highlight some very larger differences, especially in (cavity or solid) wall insulation and in the prevalence of newer, more efficient condensing boilers. The majority (62%) of properties in band G had no boiler, with most of them relying on room heaters or storage radiators.

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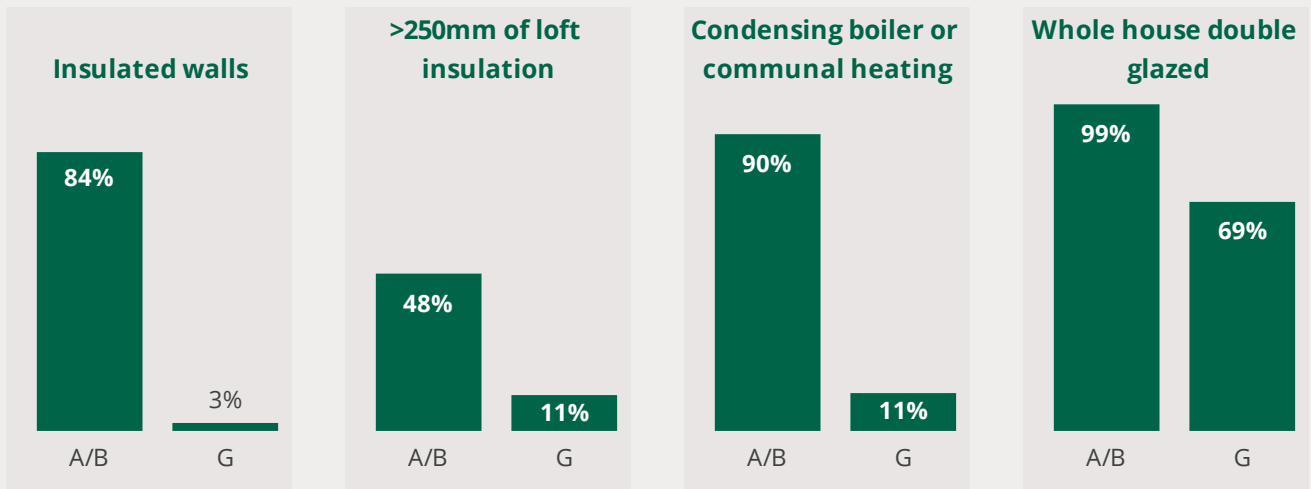
<sup>14</sup> CCC, [Letter: Reform of domestic EPC rating metrics to Patrick Harvie MSP](#) -supporting research (February 2023)

<sup>15</sup> [HM Government, The Clean Growth Strategy Leading the way to a low carbon future](#), October 2017

<sup>16</sup> DESNZ, [Guidance - Standard Assessment Procedure](#) (last updated 20 December 2022)

## Prevalence of energy efficiency measures in band A/B and band G rated dwellings

England, 2020



Notes: Loft insulation measures are as a percentage of properties with lofts

Condensing boilers includes condensing-combination boilers

Source: Ministry of Housing, Communities and Local Government. (2023). [English Housing Survey, 2020: Housing Stock Data](#). [data collection]. UK Data Service. SN: 9058, [DOI:10.5255/UKDA-SN-9058-1](https://doi.org/10.5255/UKDA-SN-9058-1)

## 3 Energy efficiency ratings across the UK

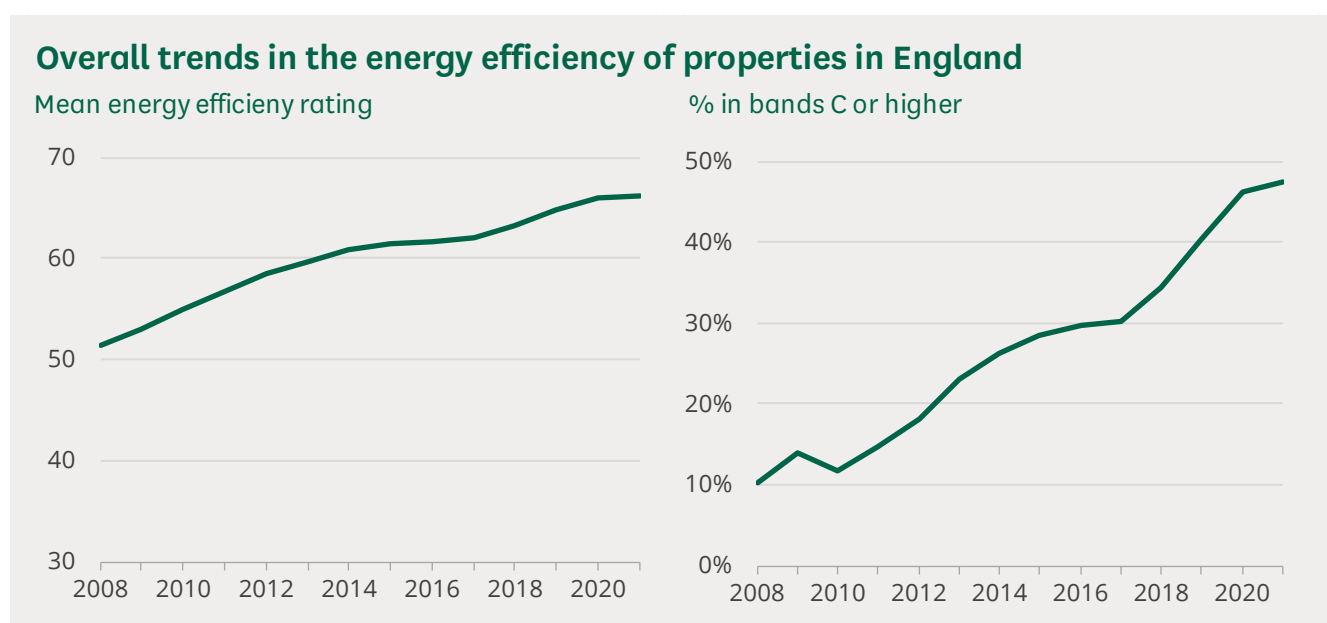
House condition surveys are carried out more frequently in England and Scotland, so results for Wales and Northern Ireland are less up to date. The most recent comparable data shows that the average energy efficiency rating in Northern Ireland in 2016 (65.8) was higher than levels in England (61.7) and Scotland (63.7) at the time or Wales in 2017/18 (61.5).

Northern Ireland also had a greater share of its housing stock in band C or higher at 49% in 2016, compared with 30% in England and 39% in Scotland in 2016 and 28% in Wales in 2017/18.<sup>17</sup>

### England

The latest energy efficiency data is included in the [English Housing Survey 2021 to 2022: energy](#) and the associated [live tables on energy performance](#).

In 2021 the mean average energy efficiency of properties in England was 66.3, and 47.5% were in band C or higher.<sup>18</sup> Trends in both these indicators are shown in the following charts.



Source: DLUHC, [English Housing Survey data on energy performance \(Table DA7101: energy performance – dwellings\)](#)

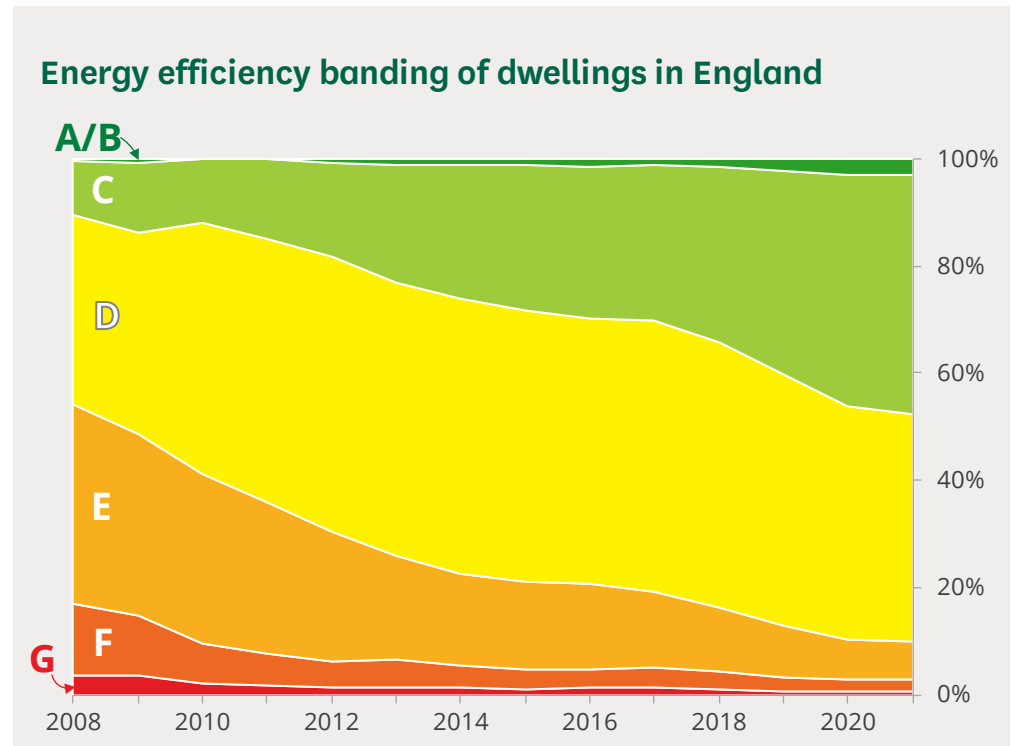
There has been steady improvement in the average rating, from 51.4 in 2008 to 66.3 in 2021. The rate of improvement was slower in the second half of the

<sup>17</sup> Welsh Government, [Welsh Housing Conditions Survey \(energy efficiency of dwellings\): April 2017 to March 2018](#)

<sup>18</sup> DLUHC, [English Housing Survey 2021 to 2022: energy](#)

period covered here. The average rate of growth up to 2014 was around 1.6 points in the scale per year. From 2014 to 2021 it was 0.8 points per year.

The proportion of properties in bands C or higher increased from 10% in 2008 to 47% in 2021. The next chart shows that nearly all these properties are in band C. There has been little growth in the number in bands A or B.<sup>19</sup>



Source: DLUHC, [English Housing Survey data on energy performance \(Table DA7101: energy performance – dwellings\)](#)

Improvements in energy efficiency (large enough to mean a move in bands) have been concentrated in properties with lower efficiency to start with. There was a similar number of properties in band D as in band C in 2021. The increase in properties in band C since 2008 has been broadly mirrored by the fall in those in bands E and F.

The estimated annual average energy needs of homes have fallen from around 390 kWh/m<sup>2</sup> in 2008 to 235 kWh/m<sup>2</sup> in 2021; a fall of 40%.<sup>20</sup>

Within England the average energy efficiency rating in 2021 varied from 68.7 in London to 64.5 in the South West. The proportion of properties in band C or higher was also highest in London at 56.1%; the East Midlands had the lowest rate at 39.4%.<sup>21</sup>

<sup>19</sup> Results for dwellings in bands A and B are combined because there are not enough band A properties to provide robust national estimates for this group on its own from a sample survey.

<sup>20</sup> DHLUC, [English Housing Survey data on energy performance \(Table DA7101: energy performance – dwellings\)](#)

<sup>21</sup> DHLUC, [English Housing Survey data on energy performance \(Table DA7102: energy performance – areas\)](#)

The [live tables on energy performance](#) give annual data back to 2008 which breaks down energy efficiency bands, average energy efficiency rating, estimated energy costs and energy use per m<sup>2</sup> of floor area for different types of properties, households and areas. Some of this data is summarised in [section 4.1](#) of this briefing.

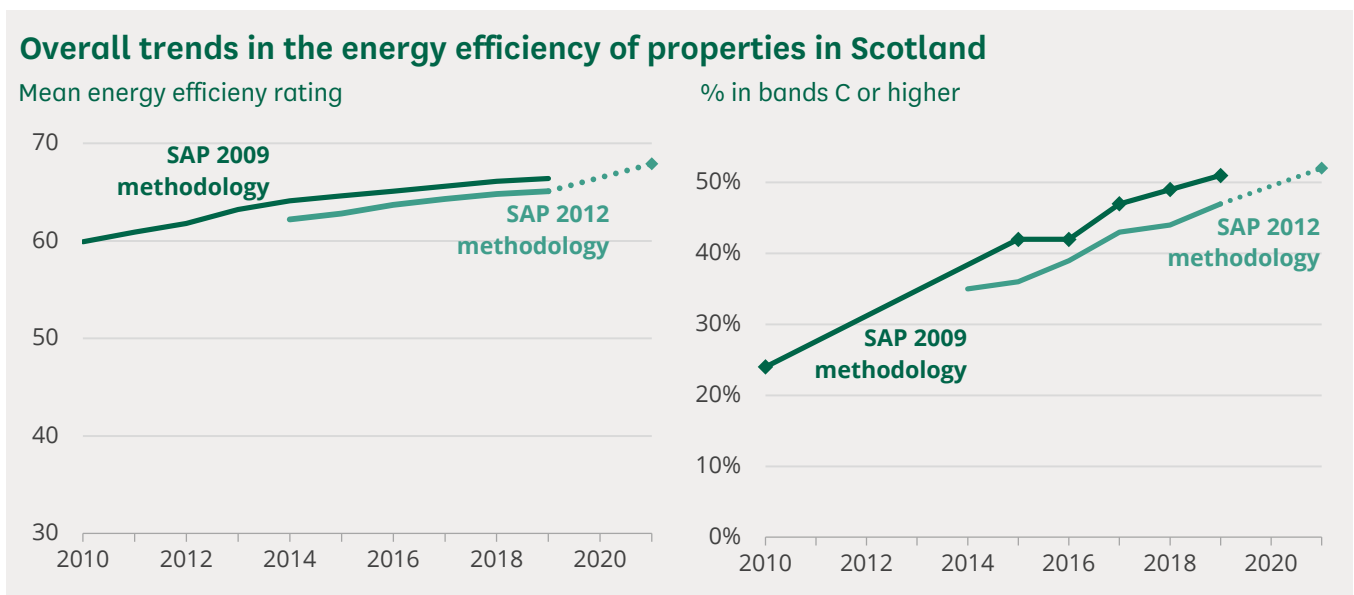
The report [English Housing Survey 2021 to 2022: energy](#) includes a [detailed energy efficiency profile of the English housing stock](#) and a section with [estimated costs of improving a property to band C](#) and the associated savings in energy costs.

## Scotland

The latest energy efficiency data for Scotland was published in chapter 2 of the [Scottish House Condition Survey: 2021 Key Findings](#) and the [linked tables](#).

In 2021 the mean average energy efficiency rating of properties in Scotland was 67.9, and 52% were in band C or higher.<sup>22</sup> The housing stock in Scotland had a higher average energy efficiency than in England, with a greater share in bands C or higher and a smaller share in bands D and E, but slightly more in band F (3% in Scotland, 2% in England).<sup>23</sup>

The following charts show trends in each measure since 2010.



Source: Scottish Government, [Scottish House Condition Survey: 2021 Key Findings -energy efficiency](#) and [Scottish house condition survey: 2019 key findings: Tables and figures](#) (Tables 16-19)

Covid restrictions meant a different approach was used in 2021: the qualified surveyor could only inspect the exterior of the property, and details about the inside of properties obtained from a phone call with the householder. This means that the 2021 findings are not considered directly comparable with

<sup>22</sup> Scottish Government, [Scottish House Condition Survey: 2021 Key Findings -energy efficiency](#)

<sup>23</sup> Scottish Government, [Scottish House Condition Survey: 2021 Key Findings -energy efficiency](#)

results from the previous survey (in 2019) and earlier. As well as the break in the series between 2019 and 2021 the earlier data in the charts, from 2010 to 2019) uses the previous (SAP 2009) methodology.

This data suggests that while average energy efficiency in Scotland is higher than in England, the gap has fallen over the past decade. Progress on the proportion of the housing stock rated in band C or higher has been broadly similar in England and Scotland.<sup>24</sup>

The chapter of the 2021 Scottish Housing Condition Survey on [energy efficiency](#) includes data on insulation measures and breakdowns of energy efficiency levels by types of properties and types of households.

## Wales

The latest data on energy efficiency in Wales was published in [Welsh Housing Conditions Survey \(energy efficiency of dwellings\): April 2017 to March 2018](#) and associated [data tables](#).

In 2017/18 the mean average energy efficiency of the housing stock was 61.5, and 28.3% were in Band C or higher.<sup>25</sup>

The previous house condition survey was carried out in 2008 when the average energy efficiency rating of properties in Wales was 51, and 5% were in bands C or better.

The [energy efficiency report](#) of the Welsh Housing Condition Survey includes an analysis of efficiency bands for different types of properties, details of insulation measures and changes in both since the last survey in 2008. The [data tables include more detailed breakdowns of the 2017/18 results](#) including average efficiency ratings.

## Northern Ireland

The latest energy efficiency data for Northern Ireland is the [2016 Northern Ireland House Condition Survey](#). An update was due in 2021, but this was delayed to 2023 due to the Covid-19 pandemic and associated restrictions.

In 2016 the mean average energy efficiency rating of the housing stock was 65.8, and 49.4% were in bands C or higher. The report does not compare these results to findings from the previous survey in 2011 because that used an earlier version of the SAP methodology.

Chapter 7 of the [2016 Northern Ireland House Condition Survey](#) and the [associated data tables](#) look in detail at energy efficiency ratings by type of property, households characteristics and local area. They also include data

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<sup>24</sup> Scottish Government, [Scottish house condition survey: 2019 key findings: Tables and figures](#) (Tables 18 and 19)

<sup>25</sup> Welsh Government, [Welsh Housing Conditions Survey: results viewer](#)

on trends in insulation measures and how these vary by type of property/household.

## Local energy efficiency data

The data used for energy efficiency estimates comes from surveys of the housing stock/households. These are not large enough to provide robust estimates for local areas. The exception is Northern Ireland which publishes [energy efficiency bands and mean ratings by council area](#).<sup>26</sup>

An alternative source of information, which can give local area results, are the [Energy Performance Certificates \(EPC\) databases for England and Wales](#) and for [Scotland](#).

EPCs give the energy efficiency rating for individual properties alongside detailed data on the insulation and efficiency of all elements of the property, heating methods, estimated energy needs/costs and carbon emissions. EPCs must be produced (at the time) for all properties rented, marketed for sale, newly built or applying for support for some energy efficiency and renewable energy measures.

### Limitations of EPC data

This system has been in place since 2008, so the data from the EPC register does not give an up-to-date snapshot of all properties, but only those rented, marketed, and built since 2008.

Some of the data in EPCs will be many years out of date, some properties will be included more than once, and, most importantly, properties not sold or rented since 2008 will not be included. This data is therefore not a complete record of energy efficiency for all properties.

### Sources of EPC data

The Office for National Statistics (ONS) has published a [series of annual statistical releases](#) for England and Wales using the EPC data. It said that 67% of residential properties in England and Wales had at least one EPC, with rates higher for newer properties, flats and maisonettes.

The ONS makes a number of quality checks on the data and removes records which fail them, as well as duplicate records and EPCs over 10 years old. This process removed just over half the records in the database, before carrying out analysis on the remaining ones for the 2023 analysis.<sup>27</sup>

The ONS analysis includes [maps of the median energy efficiency scores](#) for different types of properties in small geographical areas across the country and a range of different [national level datasets](#).

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<sup>26</sup> Northern Ireland Housing Executive, [Northern Ireland House Condition Survey 2016: Main Report](#) (Table 7.2)

<sup>27</sup> ONS, [Energy efficiency of housing in England and Wales: 2023](#)



They have also recently published data on [median energy efficiency ratings and properties in bands C or above by parliamentary constituency](#).

The Welsh Government also publishes an [interactive dashboard using EPC data for Wales](#). The Department for Levelling Up, Housing and Communities (DLUHC) publishes [quarterly data](#) from this source at a national and regional level and their own [dashboard, which includes local authority level data](#).

## 3.1 Patterns of energy efficiency in England

This section looks at data from England on how energy efficiency varies between different types of properties, areas and households. The data for England is the most up to date and detailed.

In addition, the Department for Levelling Up, Housing and Communities makes the underlying micro data available, which means further analyses can be carried out on the English Housing Survey data.

It is highly likely that the broad patterns for England from this data apply to similar properties and types of households in the rest of the UK. Links to the most recent detailed data for the rest of the UK are given below:

- [Scotland \(2021\)](#)
- [Wales \(2017/18\)](#)
- [Northern Ireland \(2016\)](#)

### Variation in energy efficiency ratings

The following chart shows how the average rating and proportion of properties in bands C or higher varied in 2021 according to its characteristics, location, and the demographic characteristics of the occupants.

In general, there was much more variation in the proportions in bands C or higher than in the average rating. Relatively small differences between two groups in average energy efficiency can be translated into larger differences in the proportion above a particular threshold, here the band C/D boundary.

The largest difference in energy efficiency is by age of property. Those built before 1919 had an average rating of 58.8 compared with 73.4 for those built after 1990. Only 18% of pre-1919 properties were in bands C or higher, less than a quarter of the rate among those built after 1990 (81%).

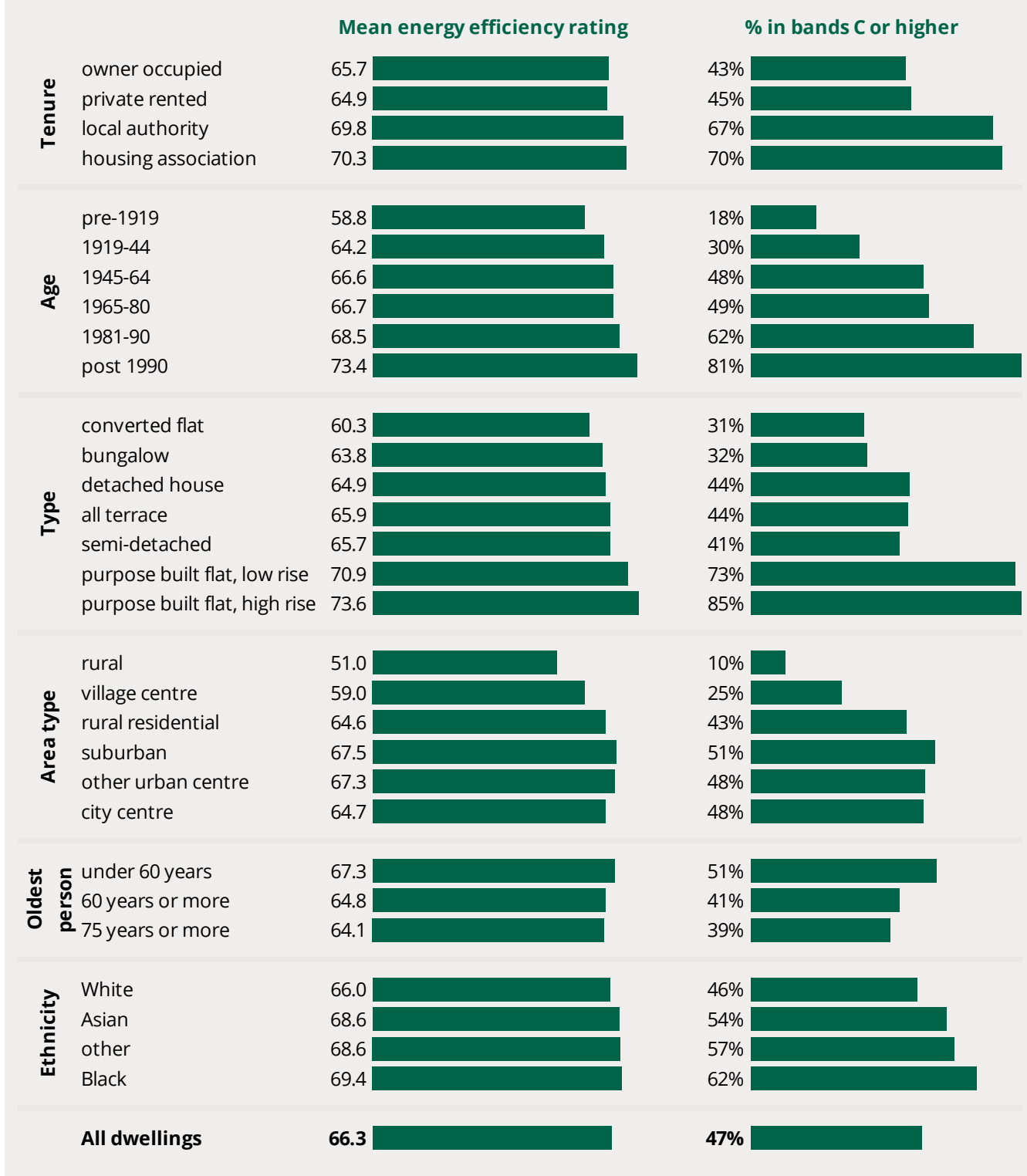
There were also substantial differences between different property types. Less than one in three converted flats and bungalows were in bands C or higher compared with 73% of purpose-built low-rise and 85% of high-rise flats. The ratings of terrace, semi-detached and detached houses varied to a much lesser extent: all were close to the overall average.

The variations within the other groups shown in the chart are related in large part to their age and type. Social housing (local authority or housing association) properties were less likely to be older, detached or converted flats than private sector properties and much more likely to be purpose-built flats. Substantially higher percentages of social housing were in bands C or higher.

Homes in smaller remote rural areas are much more likely to be older, detached/a bungalow and privately owned than average. Only one in ten of properties in these areas was in band C or higher.

There was relatively little variation in energy efficiency by household income, disability or employment.

## Variations in the energy efficiency rating and banding for selected types of dwellings, areas and households, England 2021



Source: DLUHC, [English Housing Survey data on energy performance \(Tables DA7101: dwellings and DA7102 - areas\)](#)

The full breakdown of energy efficiency data by type of property, area and households characteristics can be found in [DLUHC's English Housing Survey data tables](#): DA7101, DA7102 and DA7103 respectively.

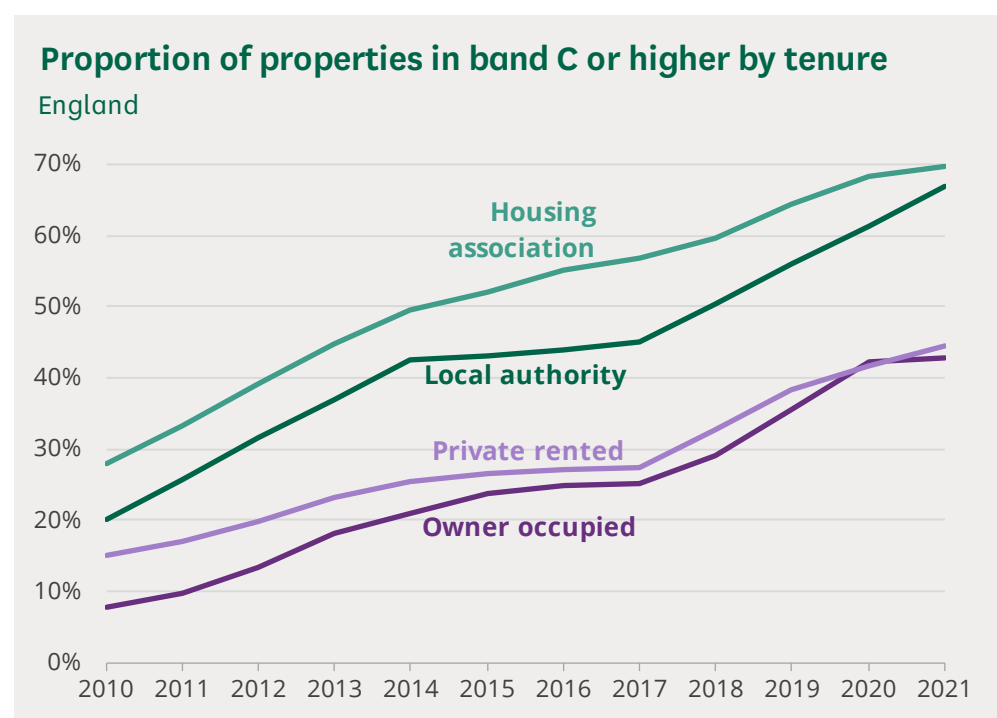
The next sections look in more detail at the energy efficiency of properties by tenure and of new homes. Both areas where government policy can have a large impact.

## Variation and trends by tenure

Government policy can directly influence the energy efficiency of some types of tenure: for instance, through regulations of social landlords, such as the [Decent Homes Standard](#), minimum energy efficiency ratings for the private rented sector<sup>28</sup> and [funding to improve the energy efficiency of social housing](#).

The following chart shows the proportion of each tenure type rated as band C or higher. Housing association and local authority properties were more likely to be in these bands than private rented properties for all the years covered. The gap between local authority and private rented properties was quite small in 2010, at five percentage points. It grew to 17 percentage points in 2014, remained at this level for five years and increased again in the most recent two years.

Energy efficiency improvements, on this measure, were more consistent for housing association properties than all the other tenure types, which stalled in the mid-2010s.



Source: Source: DLUHC, [English Housing Survey data on energy performance \(Table DA7101: energy performance - dwellings\)](#)

<sup>28</sup> The 2018 'Minimum Level of Energy Efficiency' standard is EPC band E unless the landlord has a valid exemption. The Government had planned to increase this to band C from 2025 for new tenancies and 2028 for all tenancies. However, the Prime Minister announced in a [speech on 20 September 2023](#) that this policy would be scrapped.

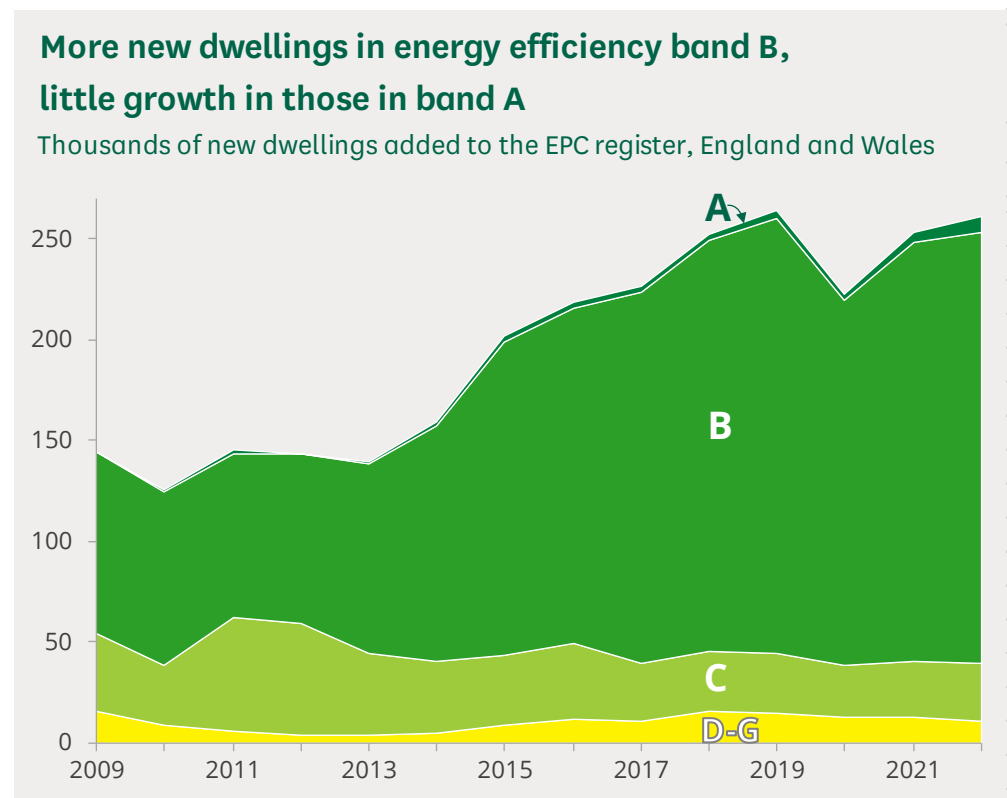
## Energy efficiency of new homes

The data above, from DLUHC's English Housing Survey, shows that property age is more closely linked to energy efficiency than any other indicator.

The data uses the published breakdown of ages, where the newest properties are those built after 1990. The underlying data from the 2020 survey has slightly more detail on ages and shows continued progress with energy efficiency of new buildings. Those built after 2002 had an average rating of 76.3, compared to 70.0 for those built between 1991 and 2002 and 66.1 for all properties. 73% of properties built since 2002 were in bands A or B,<sup>29</sup> and 93% were in band C or higher.<sup>30</sup>

Analysis by the ONS of the EPC database shows that there has been relatively little improvement in the energy efficiency of new properties since the register started (in 2008).<sup>31</sup> They pool five years of data together, which shows the median rating for new properties in England improved by just two points, from 82 to 84 between the 2008-2013 data and 2018-2023 data.<sup>32</sup>

The DLUHC [EPC dashboard](#) can be used to look at the energy efficiency band of new properties. The chart below shows trends in rating bands.



<sup>29</sup> This source does not distinguish between the two categories.

<sup>30</sup> Ministry of Housing, Communities and Local Government. (2023). *English Housing Survey, 2020: Housing Stock Data*. [data collection]. UK Data Service. SN: 9058, DOI: [10.5255/UKDA-SN-9058-1](https://doi.org/10.5255/UKDA-SN-9058-1)

<sup>31</sup> The EPC register defines new dwellings as either those newly built, created by conversion or has undergone a change of use.

<sup>32</sup> ONS, [Energy efficiency of housing, England and Wales, five years rolling](#)

Source: DLUHC [EPC dashboard](#) (accessed 28 November 2023)

There has been an improvement in energy efficiency ratings for new buildings since 2009, with a clear increase in the proportion in band B or higher from 63% in 2009 to 84% in recent years. The proportion in band A has also increased but was still only 4% in the first three quarters of 2023.

In the year to 30 September 2023 just over 9,000 new properties had energy efficiency ratings in band D or below; 3.7% of all new properties. The new properties category includes conversions and buildings changed to residential use as well as new builds.

The Library briefing [Zero Carbon Homes](#) looks at proposals for cutting carbon emissions from new housing. These originated in 2006, were accepted by the Coalition Government, but were cancelled by the new Government in summer 2015.x

## 4 Levels of insulation across the UK

### 4.1 Great Britain

The government has estimated levels of insulation across Great Britain at December 2022. These show:<sup>33</sup>

- 14.8 million homes had cavity wall insulation; 71% of those with cavity walls.
- 260,000 homes had solid wall insulation; 9% of those with solid walls.
- 17.0 million homes had 125mm or more loft insulation; 67% of homes with a loft.

The following table gives a breakdown of these rates by nation. Scotland had the highest rates of all three types of insulation. Levels in England and Wales were fairly similar, with slightly higher levels of cavity wall insulation in Wales and slightly more solid wall insulation in England.

Estimated proportion of homes with different forms of insulation			
% of homes with that feature, end of December 2022			
	Cavity wall insulation	Solid wall insulation	Loft insulation ≥125mm
England	69%	9%	65%
Scotland	80%	22%	86%
Wales	76%	7%	65%
<b>Great Britain</b>	<b>71%</b>	<b>9%</b>	<b>67%</b>

Source: DESNZ, [Household Energy Efficiency Statistics, detailed report 2022](#)

### Uninsulated homes in Great Britain

The government estimates that there were 5.1 million homes with uninsulated cavity walls at the end of December 2022; 3.8 million of these were thought to be ‘easy to treat’ and 1.3 million ‘hard to treat’<sup>34, 35</sup>

<sup>33</sup> DESNZ, [Household Energy Efficiency Statistics, detailed report 2022](#)

<sup>34</sup> These are more difficult or more expensive to fill than standard cavities. This includes properties with a narrow cavity and properties of either concrete or metal frame construction.

<sup>35</sup> DESNZ, [Household Energy Efficiency Statistics, detailed report 2022](#)

There were 7.7 million properties with solid walls which were not insulated. An undefined number of these are thought unlikely ever to be insulated, including those in conservation areas and those too costly to treat.

An estimated 7.9 million homes have lofts with less than 125 mm of insulation. 2.3 million of these are thought to be 'hard to treat'.<sup>36</sup>

Between March 2013 and December 2022 the number of properties with cavity wall insulation increased by 2.8 million (23%) and loft insulation (of 125 mm or thicker) by 2.2 million (15%). Both totals increased steadily over this period and include new homes built as well as retrofitting of existing properties. The number of homes with solid wall insulation increased by around 260,000 (49%). This number only includes retrofitting.<sup>37</sup>

These estimates are calculated using 2013 house condition survey results, updated for new homes built (meeting building regulations) and measures installed under government funded and government mandated energy efficiency schemes. The largest of these, the Energy Company Obligation, started in 2023, hence that year was used as a baseline for the survey data.

The estimates of cavity wall and loft insulation are subject to a substantial degree of uncertainty. Around 1 million properties may or may not have cavity wall insulation and 0.5 million may or may not have 125 mm or more of loft insulation. These households are not included in the total properties with insulation given in the table above.

## 4.2 Northern Ireland

The 2016 House Condition Survey found that 65% of properties had full cavity wall insulation, 15% had either partial cavity wall, internal/external solid wall, or dry lining insulation, and 20% had no wall insulation. 54% of homes with the potential for loft insulation had more than 150 mm of insulation.<sup>38</sup>

## 4.3 Detailed estimates and patterns by type of property/household

House condition surveys in the nations of the UK all collect data on insulation of walls and lofts, extent of double glazing, types of boilers, and so on. This is presented as trend data and analysed by different types of properties, areas and households. The latest data can be accessed at the following links:

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<sup>36</sup> There are hard, impossible or too costly to insulate. Includes properties with flat roofs, a room in their loft, a very shallow roof pitch or external features which make access difficult. DESNZ, [Household Energy Efficiency Statistics, detailed report 2022](#)

<sup>37</sup> DESNZ, [Household Energy Efficiency Statistics, detailed report 2022](#) (Table T8.1)

<sup>38</sup> Northern Ireland Housing Executive, [Northern Ireland House Condition Survey 2016: Main Report](#)



- [England \(2021\)](#)
- [Scotland \(2021\)](#)
- [Wales \(2017/18\)](#)
- [Northern Ireland \(2016\)](#)

Within England the patterns of cavity wall insulation were similar to patterns of overall energy efficiency. The lowest levels were found in the private rented sector, older properties, terraced houses and in the smallest rural villages.<sup>39</sup>

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<sup>39</sup> [DLUHC, English Housing Survey data on energy performance \(Tables DA6201: dwellings, DA6202 – areas and DA6203 – households\)](#)

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## 5 Government schemes to improve energy efficiency

### 5.1 Government-mandated schemes

#### The Energy Company Obligation (ECO)

The Energy Company Obligation (ECO) started in 2013 and replaced the [Carbon Emissions Reduction Target](#) and [Community Energy Saving Programme](#). ECO places an obligation on medium and large energy suppliers to promote measures that improve the ability of low income/fuel poor households in Great Britain to heat their homes. This includes insulation, new boilers, new heating controls, solar panels and so on.<sup>40</sup> The Government sets the overall target and rules for each ECO period.

Each supplier is set a proportion of the overall target based on their number of customers and the amount of energy they supply to households. Their costs are funded through a levy on domestic energy bills. It is not a government funded scheme. Costs of the current ECO (ECO4) add around £37 to the energy price cap for typical levels of gas and electricity consumption in 2023/24.<sup>41</sup>

ECO is currently in its fourth iteration. ECO4 started in April 2022 and will run to March 2026. It is expected to cost suppliers £4 billion over this four year period and provide energy efficiency measures for 450,000 households on the lowest incomes living in properties in EPC bands D to G (or D to E for social housing and private rented accommodation).<sup>42</sup>

When ECO first started it had three different obligation elements:

- Home Heating Cost Reduction Obligation ('Affordable Warmth') -this set suppliers a target to cut the energy bills of low income and vulnerable customers through energy efficiency measures
- Carbon Emissions Reduction Obligation -set suppliers a target to reduce carbon emissions across all customers
- Carbon Saving Community Obligation -set suppliers a target to cut carbon emissions in low income areas with a sub-obligation for rural areas

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<sup>40</sup> Ofgem, [Energy Company Obligation \(ECO\)](#)

<sup>41</sup> Ofgem, [Energy price cap \(default tariff\): 1 October to 31 December 2023](#): Annex 4 – Policy cost allowance methodology v1.17. Calculation uses the post October 2023 lower assumptions about typical annual domestic consumption of gas and electricity.

<sup>42</sup> DESNZ, [Design of the Energy Company Obligation ECO4: 2022-2026 -Final Stage Impact Assessment](#)

Part way through the ECO1 period the Government cut the target for the Carbon Emissions Reduction Obligation.<sup>43</sup> This lower carbon saving target was rolled through to ECO2. Both the carbon reduction obligations were removed for ECO3 and ECO4. This meant that from December 2018 ECO has only set suppliers a target to reduce household energy bills.

Between 2013 and November 2023 ECO has delivered 3.8 million measures in 2.4 million homes across Great Britain. 28% of these measures were cavity wall insulation, 23% new boilers, 19% loft insulation, 19% other heating measures (mainly new heating controls), 6% solid wall insulation and 4% other insulation.<sup>44</sup>

Monthly statistics on measures installed under ECO are included in the DESNZ publication [Household Energy Efficiency Statistics](#). Trends in ECO measures and those under earlier schemes are analysed in [section 5.3 of this briefing](#).

## ECO+/Great British Insulation Scheme

The [Great British Insulation Scheme](#), originally called ECO+, is an additional obligation on suppliers, which is funded by a levy on energy bills in the same way as ECO4. It will run from April 2023 to March 2026, is expected to cost £1 billion and help around 300,000 households.<sup>45</sup>

Its target group of households is wider than ECO4. As well as those on the lowest incomes it will also extend eligibility to households in lower council tax band properties (bands A to D in England and A to E in Scotland and Wales) so long as their energy efficiency rating is band D or lower.

The Government expects that the Great British Insulation Scheme will add £5 to a typical annual dual fuel bill in 2023/24 and £17 in each of the following two years.<sup>46</sup> The government-funded Energy Price Guarantee reduced bills in the first quarter of 2023/24 to below price cap levels. This meant the taxpayer made a small indirect contribution to the cost of this and other levy-funded schemes in 2023/24 in the same way that it reduced all energy bill costs from October 2022 to June 2023.<sup>47</sup>

The [first data on measures installed under this scheme](#) was published in December 2023.

## Northern Ireland Sustainable Energy Programme

The Northern Ireland Sustainable Energy Programme is a levy-funded energy efficiency programme that operates in Northern Ireland.

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<sup>43</sup> DECC, [Government action on energy bills](#) (2 December 2013)

<sup>44</sup> DESNZ, [Household Energy Efficiency Statistics, headline release January 2024](#)

<sup>45</sup> DESNZ, [Great British Insulation Scheme](#) (30 March 2023)

<sup>46</sup> DESNZ, [GB Insulation Scheme \(formerly ECO+\): final Impact Assessment](#)

<sup>47</sup> For more background on the Energy Price guarantee see the briefing [Gas and electricity prices under the Energy Price Guarantee and beyond](#).

In 2020/21 it was worth around £8 million, 96% of which was spent on ‘priority’ schemes which are targeted at lower-income or vulnerable households.<sup>48</sup>

The Northern Ireland Utility Regulator publishes and [annual list of individual schemes](#) funded by the programme.

## 5.2 Government-funded schemes

### England

The publicly funded Warm Front scheme ran from 200 to 2013 and helped vulnerable/fuel poor households with energy efficiency measures. Funding for Warm Front was cut by around 70% in 2011/12 and spending fell by a further 50% in the final year of the scheme (2012/13).<sup>49</sup> Warm Front was replaced in 2013 with the short-lived Green Deal.<sup>50</sup> There were no publicly funded energy efficiency schemes in England from the ending of Warm Front until 2020.

The Government has said that £6.6 billion would be spent on energy efficiency in the 2019 Parliament (to 2024).<sup>51</sup> It has set out plans to spend a further £6 billion between 2025/26 and 2027/28.<sup>52</sup> This funding includes schemes which cover non-domestic as well as domestic buildings.

A brief description of the current major schemes is given below, along with funding/expenditure totals, activity data and links to further information.

#### Green Homes Grant: Local Authority Delivery

This £500 million scheme was launched in August 2020 with the aim of upgrading 50,000 homes of low-income households.

Funding is paid to local authorities. £74 million was awarded to 55 successful projects in [Phase 1A](#) covering over 100 local authorities. £126 million was awarded to 81 local authorities in [Phase 1B](#). £300 million was allocated to five Local Net Zero Hubs (which work with local authorities in their region) in [Phase 2](#).

Delivery under these phases of the scheme was largely complete by September 2022. The [latest data on the scheme](#) shows that 50,900 measures

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<sup>48</sup> Utility Regulator, [NISEP 2020-21 Annual Report](#)

<sup>49</sup> DBEIS, [Warm Front close out report](#) - Overall profile for Warm Front Scheme (June 2014)

<sup>50</sup> This scheme was not publicly funded. Energy customers across Great Britain could take out loans to make energy efficiency improvements with the repayments attached to the electricity bill of a property. [The scheme was closed in 2015](#) due to “...low take-up and concerns about industry standards”

<sup>51</sup> HM Treasury, [Autumn Statement 2022](#) (paragraph 5.6)

<sup>52</sup> DESNZ, [Families, business and industry to get energy efficiency support](#) (18 December 2023)

had been installed in 39,200 households.<sup>53</sup> Total spending on these phases of the scheme was £509 million.<sup>54</sup>

A separate Phase 3 Local Authority Delivery scheme supported local authority-led in 2022 and 2023. This was combined with funding from the Home Upgrade Grant Phase 1 and is detailed below.

### Homes Upgrade Grants

The Conservative Party General Election 2019 manifesto committed to spend £2.5 billion on the Home Upgrade Grants scheme over a five-year period from 2020/21.<sup>55</sup> This scheme provides energy efficiency upgrades and low carbon heating to low income households in properties which are off the gas grid and in energy efficiency bands D to G.

Phase 1 of this scheme allocated £218 million to improve energy efficiency in low-income homes off the gas grid. This was combined with £280 million for on-grid homes from Phase 3 of the Local Authority Delivery scheme (see above) under the '[Sustainable Warmth](#)' banner. Delivery of the scheme started in January 2022 and was planned to finish in September 2023. [This funding was also paid to local authorities.](#)

The latest expenditure totals are £1 million for Home Upgrade Grants Phase 1 and £287 million for Local Authority Delivery Phase 3. Up to September 2023 a total of 30,900 measures had been installed under both schemes in almost 22,000 homes.<sup>56</sup>

[Phase 2 of the Home Upgrade Grant is worth up to £630 million](#) in total for [successful local authorities](#) in 2023/24 and 2024/25. This is for low-income households who live in off-grid properties with poor energy efficiency (bands D to G).

### Social Housing Decarbonisation Fund

The Conservative Party's 2019 election manifesto committed to spend £3.8 billion on the Social Housing Decarbonisation Fund over a ten-year period from 2020/21.<sup>57</sup> Its aim is to upgrade 'significant' amounts of social housing stock to EPC band C or higher.

The Demonstrator round of the scheme allocated £61 million and [Wave 1](#) offered £179 million to [69 successful projects](#). [Wave 2.1](#) will provide up to £800

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<sup>53</sup> DESNZ, [Green Homes Grant Local Authority Delivery \(LAD\) and Home Upgrade Grant \(HUG\) release, November 2023](#)

<sup>54</sup> [Infrastructure and Projects Authority Annual Report 2022-23](#) -GMPP Government Major Projects Portfolio AR Data March 2023

<sup>55</sup> [The Conservative and Unionist Party Manifesto 2019 -Costings Document](#) (PDF)

<sup>56</sup> DESNZ, [Green Homes Grant Local Authority Delivery \(LAD\) and Home Upgrade Grant \(HUG\) release, November 2023](#)

<sup>57</sup> [The Conservative and Unionist Party Manifesto 2019 -Costings Document](#) (PDF)

million in funding over the years 2022/23 to 2024/25. [Wave 2.2](#) will provide £80 million of funding in 2024/25.

The [Government has announced that this scheme will receive a further £1.25 billion](#) in the three years from 2025/26 to 2027/28.<sup>58</sup>

The latest statistics on the scheme are for Wave 1 only. Up to September 2023 18,100 measures had been installed in 10,000 homes.<sup>59</sup>

### Other schemes

Other publicly funded schemes funding for energy efficiency and low carbon heating include the [Green Homes Grant voucher scheme](#) (which ended early<sup>60</sup>) and the [Boiler Upgrade Scheme](#) (England and Wales), which is worth £450 million over the years 2022 to 2025.

The Boiler Upgrade scheme paid 18,000 grants worth £95 million between May 2022 and November 2023.<sup>61</sup> It has been extended to 2028, the maximum value has been increased<sup>62</sup> and will receive £1.545 billion in these three additional years. [Details of each scheme funded out of the £6 billion pledged](#) for energy efficiency and low carbon heating between 2025/26 and 2027/28 were published by the Government in December 2023.<sup>63</sup>

The Government has also committed to spend £2.9 billion over the five years to 2024-25 on the [Public Sector Decarbonisation Scheme and an additional £1.17 billion over the following three years](#).<sup>64</sup> This scheme provides grants to public sector bodies for energy efficiency and low carbon heating in public sector buildings, not domestic properties.

## Scotland

Scottish Government funds a range of domestic energy efficiency schemes. Details can be found on the Scottish Government's [Home energy and fuel poverty](#) page and the [Home Energy Scotland](#) website. Current schemes include:<sup>65</sup>

- Area Based Schemes support local authorities to design and deliver energy efficiency programmes in fuel-poor areas. £64 million had been approved for the 2023/24 financial year by October 2023.
- Warmer Homes Scotland aims to reduce fuel poverty by providing home energy efficiency measures to households who are in or at risk of fuel poverty. This programme has a maximum value of £728 million over seven years.

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<sup>58</sup> DESNZ, [Families, business and industry to get energy efficiency support](#) (18 December 2023)

<sup>59</sup> DESNZ, [Social Housing Decarbonisation Fund statistics: November 2023](#)

<sup>60</sup> See the NAO report [Green Homes Grant Voucher Scheme](#) (September 2021) for more details

<sup>61</sup> Ofgem, [BUS Monthly Scheme Update](#) (8 December 2023)

<sup>62</sup> DESNZ press release, [Heat pump grants increased by 50%](#) (23 October 2023)

<sup>63</sup> DESNZ, [Families, business and industry to get energy efficiency support](#) (18 December 2023)

<sup>64</sup> [The Conservative and Unionist Party Manifesto 2019 - Costings Document](#) (PDF). DESNZ, [Families, business and industry to get energy efficiency support](#) (18 December 2023)

<sup>65</sup> Scottish Government, [Heat in Buildings: progress report 2023](#)

- Home Energy Scotland Grant and Loan was launched in December 2022 and consists of grant funding plus optional interest free loans for low-carbon heating and energy efficiency improvements. It had a budget of £42 million in 2022/23.
- Social Housing Net Zero Heat Fund supports the social housing sector to provide low carbon heating and energy efficiency upgrades. It has a £200 million budget from 2020 to 2026.

## Wales

In 2022/23 the Welsh Government invested £26.9 million in the energy efficiency of the housing stock through the [Warm Home Nest](#) scheme. This scheme is focused on low-income households and those living in areas of deprivation.

In 2022/23 it provided home energy improvement packages to almost 4,400 households and advice to 22,000 households.<sup>66</sup>

## Northern Ireland

The Northern Ireland Housing Executive funds the [Affordable Warmth](#) scheme, which provides support to low-income households for energy efficiency improvements. It is currently planned to run to 2026 and is worth £14 million in 2023/24.<sup>67</sup>

# 5.3 Energy efficiency measures installed under government schemes

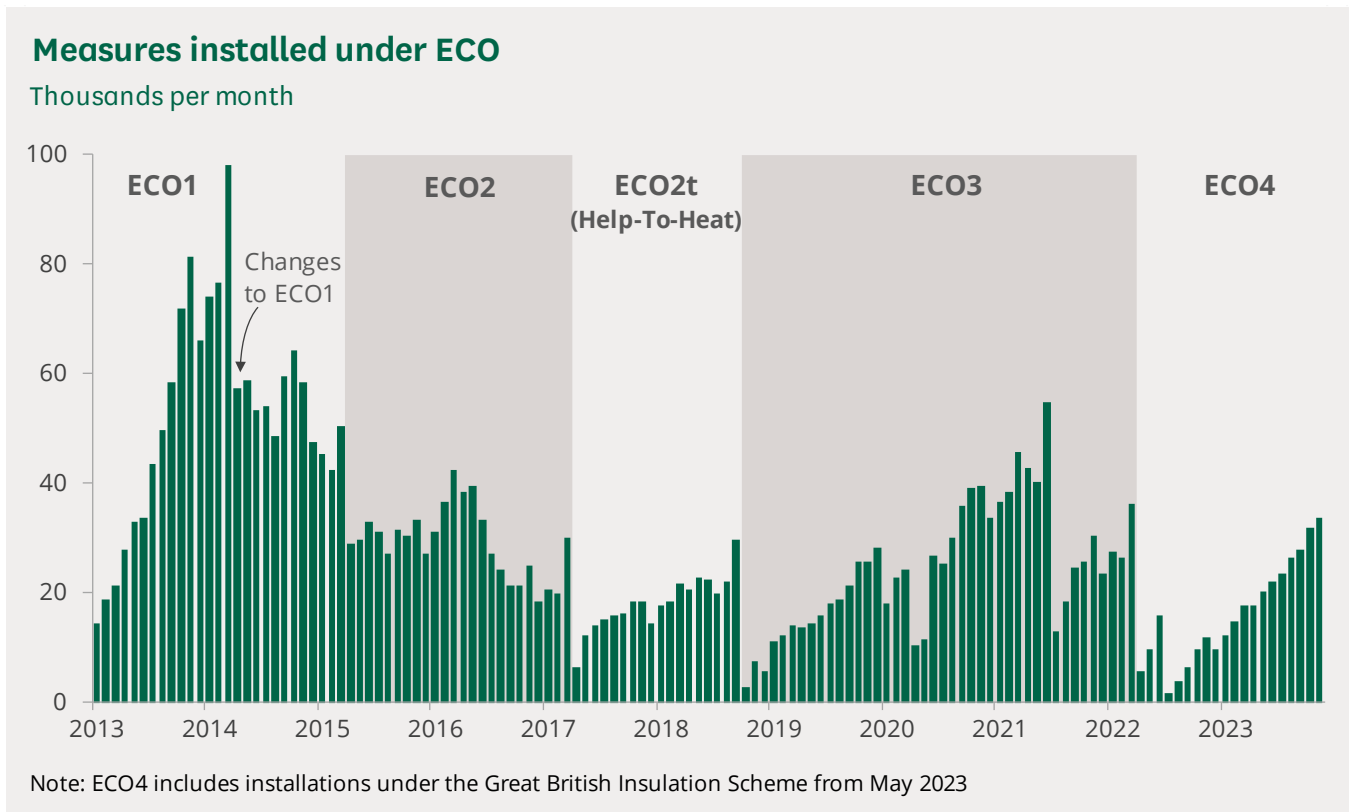
## All ECO measures

The most detailed data on energy efficiency measures are on the ECO schemes from January 2013 onwards. Trends in the number of installations in each month under the different iterations of ECO are shown below.

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<sup>66</sup> Welsh Government, [Warm Homes Nest scheme: annual report 2022 to 2023](#)

<sup>67</sup> Department for Communities, [Changes to the Affordable Warmth Scheme](#) (8 September 2023)



Source: DESNZ, [Household Energy Efficiency Statistics, headline release January 2024](#)

Overall there was a very clear reduction in the number of measures installed during the second half of the 2010s from more than 80,000 per month in early 2014 to less than 20,000 per month (on average) from mid-2016 to mid-2020.

There was a clear dip in installations under ECO3 at the start of the pandemic and in July 2021 when new quality standards for installers were introduced. Within each iteration of ECO the number of installations has tended to increase rapidly in the first year or more of the scheme after a slow start. This makes it difficult to compare installations under ECO4 to earlier numbers.

Suppliers have, in aggregate, exceeded all their obligation targets up to the end of ECO3.<sup>68</sup>

#### Impact of changes to ECO1 in 2014

In December 2013 the Government announced a number of measures to reduce energy bills including changes to ECO1.<sup>69</sup> One part of the changes to ECO1 was to cut the target for a carbon savings component<sup>70</sup> by 33%. The number of ECO measures fell 41% in April 2014 after these changes were introduced. The chart above shows the number of installations did not return to their earlier levels after this change.

<sup>68</sup> Ofgem, [Energy Company Obligation \(ECO\)](#)

<sup>69</sup> DECC, [Government action on energy bills](#) (2 December 2013)

<sup>70</sup> The Carbon Emissions Reduction Obligation which mainly focussed on insulation in hard-to-treat properties

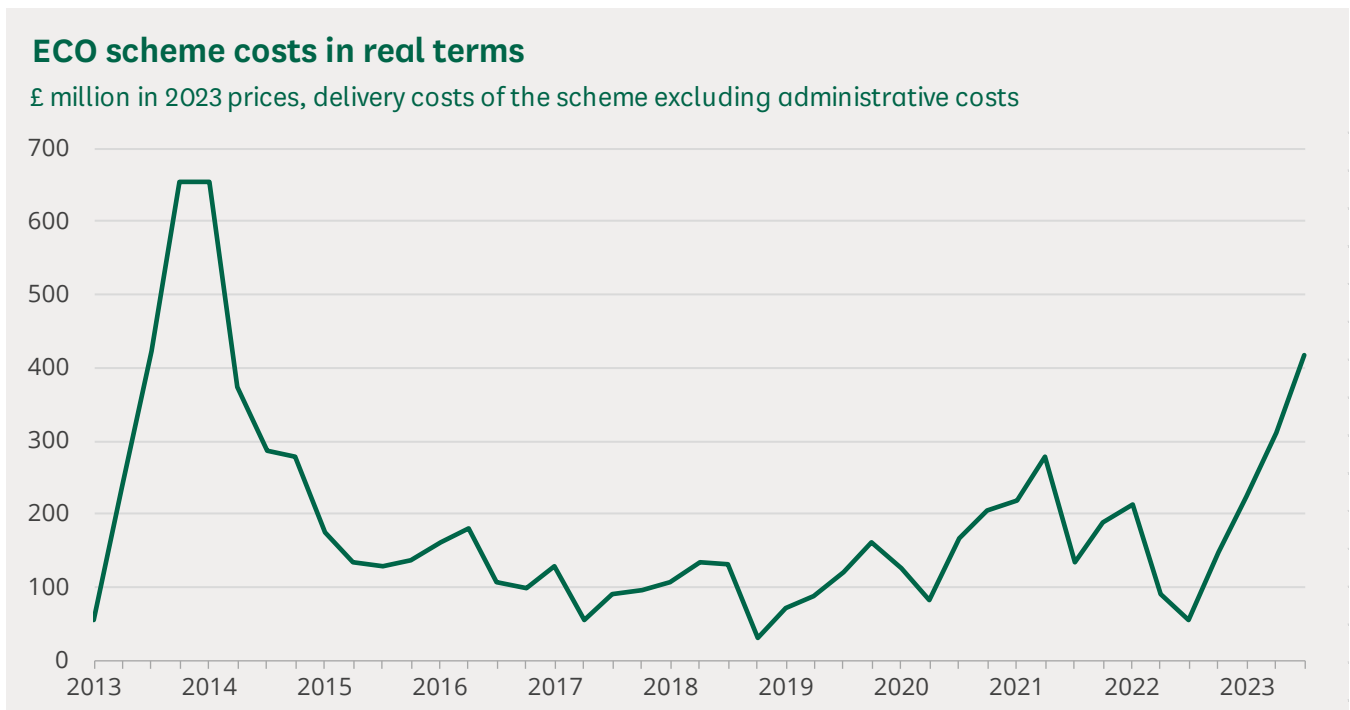


Ofgem said there was a “significant drop” in installations under this element of ECO from April 2014.<sup>71</sup> At the time the Government estimated this change would cut the number of cavity wall installations by 265,000, loft insulations by 35,000 and solid wall insulations by 23,000.<sup>72</sup> These figures were for the final year of ECO1 only, but the lower targets under this element of ECO were rolled forward to ECO2.

## Suppliers’ spending on ECO measures

Trends in spending on measures installed under ECO is a way of looking at the ‘effort’ of suppliers to improve energy efficiency under the scheme. There are no spending targets or obligations in ECO. This is intended to give suppliers an incentive to meet their obligations under the scheme -to reduce energy bills and, in the past, cut carbon emissions- in the most cost effective way.

The following chart looks at real level of spending on ‘delivery’. This is not just the installation costs, but also includes costs of marketing by delivery partners, searching for eligible properties, assessment, and technical monitoring.<sup>73</sup> Total delivery costs to September 2023 were £6.9 billion or £8.2 billion in 2023 prices.<sup>74</sup>



Source: DESNZ, [Household Energy Efficiency Statistics, headline release December 2023](#) (Table 6.1)

The fall in delivery costs from April 2014 was even sharper than the fall in measures installed. They peaked at £655 million (2023 prices) in Q1 2024 and

<sup>71</sup> Ofgem, [Energy Companies Obligation \(ECO1\) Final Report](#), (p7), September 2015

<sup>72</sup> DECC, [The Future of the Energy Company Obligation -Impact Assessment](#) (Table 4), March 2014

<sup>73</sup> DECC, [Energy Company Obligation \(ECO\) delivery costs](#), October 2013

<sup>74</sup> Cash prices converted to 2023 values using quarterly GDP deflators published in the [QBR's Economic and Fiscal Outlook November 2023](#) (Supplementary economy table 1.7)

were 73% lower in Q1 2015 at £176 million (2023 prices). Supplier spending on delivery costs fell further to around £100 million (2023 prices) per quarter in 2017, 2018 and 2019. There was an increase in 2021, a fall in mid-2022 during the gap between ECO3 closing and ECO4 starting and a sharp increase under ECO4 in late 2022 and 2023. The real level of delivery costs in Q3 2023 were the highest since Q1 2014.

## Individual ECO measures

These data treat each individual energy efficiency measure as if they were the same, while they can have very different costs and benefits. The make up of measures has changed over time as shown in the following table.

Types of measures installed under ECO								
Thousands, average number per year								
	Insulation				Heating			Total
	Cavity		Solid		Boiler	Other	Other	
	Wall	Loft	Wall	Other				
ECO1	238.5	168.0	37.3	4.9	133.6	42.5	1.1	<b>626.0</b>
ECO2	102.1	66.9	30.5	1.3	87.8	60.7	1.5	<b>350.8</b>
ECO2t	82.9	41.3	19.9	1.6	37.7	33.7	0.6	<b>217.7</b>
ECO3	43.7	27.6	9.7	38.4	79.8	96.4	0.5	<b>296.0</b>
ECO4								
(to Sep '23)	14.0	23.9	10.6	2.2	19.0	78.4	13.8	<b>162.0</b>

Source: DESNZ, [Household Energy Efficiency Statistics, headline release December 2023](#)

Between ECO1 and ECO3 the share of installations which were cavity wall, loft or solid wall insulations fell. The number which were 'other' insulation (mainly under floor) or 'other' heating (nearly all heating controls) increased. Under ECO3 and ECO4 (to date) there has been an increase in 'other' heating measures installed. They made up 7% of all measures in ECO1, 33% in ECO3 and 48% in ECO4 (to date). These are nearly all heating controls and have the lowest estimated lifetime bill savings of any measure.<sup>75</sup>

The overall number of installations under the four years of ECO4 are expected to be around 200,000 per year; around one-third fewer than under ECO3 and almost 70% fewer than ECO1. Modelled estimates of the type of installations under ECO4 suggest it will see an increase in the annual number of heat pumps, solar PV and solid wall insulation and a fall in the number of new or replacement boilers and heating controls. Its annual delivery costs are also expected to be around 70% higher in real terms than those for ECO3.<sup>76</sup>

<sup>75</sup> Ofgem, [Energy Company Obligation \(ECO3\) Final Determination Report](#) (figure 2.5)

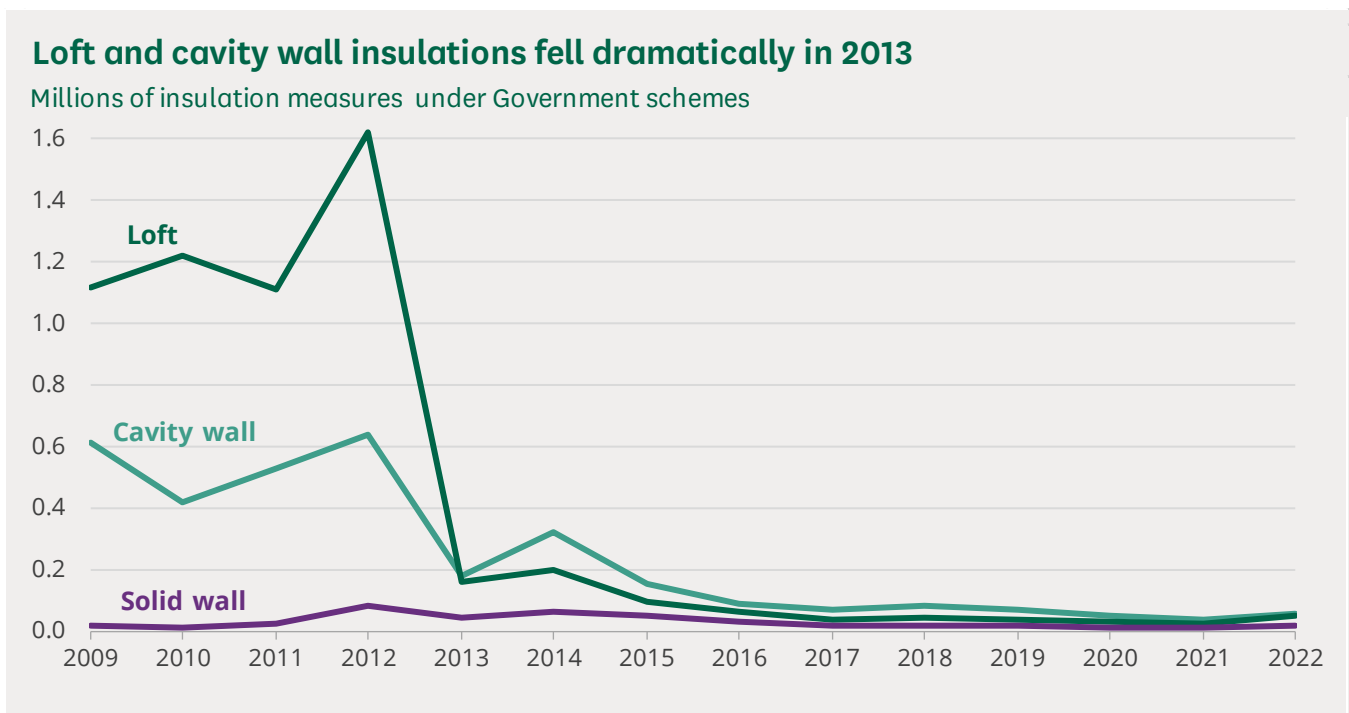
<sup>76</sup> BEIS, [Design of the Energy Company Obligation ECO4: 2022-2026 -Final stage Impact Assessment](#) (April 2022) and DESNZ, [Household Energy Efficiency Statistics, headline release December 2023](#).

## Longer term trends in energy efficiency measures under Government schemes

The range of measures delivered under the schemes which preceded ECO were different to those under ECO. The Carbon Emissions Reduction Target (2008 to 2012) funded hundreds of millions of free or discounted energy saving lightbulbs, discounts on millions of energy efficient appliances as well as DIY loft insulation and hot water jackets.<sup>77</sup> This means it is not meaningful to look at trends in the total number of supported from before the introduction of ECO in 2013.

One way to look at trends over time is to focus on specific types of measure rather than the total of all types. The Government has produced estimates going back to April 2008 on the number of loft, cavity wall and solid wall installations under ECO, its predecessor schemes,<sup>78</sup> the Green Deal plus the Government funded schemes in England which were introduced in 2020.<sup>79</sup> Trends in delivery of each type of insulation are given in the following chart.

There was a very clear drop in the number of both loft and cavity wall installations carried out in 2013. There was a small increase in 2014 (before the changes to ECO1), but further falls afterwards and no sign of a clear increase in any of these types of insulation up to the end of 2022.



Source: DESNZ, [Household Energy Efficiency Statistics, detailed report 2022](#), and earlier editions (Table 8.3)

<sup>77</sup> Ofgem, [The final report of the Carbon Emissions Reduction Target \(CERT\) 2008-2012](#) (May 2013)

<sup>78</sup> The Carbon Emissions Reduction Target, Community Energy Savings Programme and Warm Front (in England)

<sup>79</sup> Social Housing Decarbonisation Fund, Homes Upgrade Grants and the Green Homes Grant: Local Authority Delivery scheme

This sharp drop in the number of installation measures pre-dates the ECO data shown at the start of this section. Before ECO and the Green Deal were introduced in 2013 the earlier Government schemes were providing around 1.7 million loft, cavity wall and solid insulation measures (combined) per year.<sup>80</sup> The peak annual number of ECO measures (of all kinds) was in 2014 at 0.75 million and was 0.23 million in the latest year.<sup>81 82</sup>

When the proportion of properties with loft and wall insulation increases to high levels, we would expect the smaller remaining number of uninsulated properties to be harder to treat and for the number of insulations carried out to fall. However, there is no evidence that the UK is near this point. The estimates in [section 4.1](#) of this briefing show that there are still around 5 million properties with uninsulated cavity walls and 8 million with less than 125mm of loft insulation, the majority of both are thought to be easy to treat. 91% of the 8.5 million properties with solid walls do not have solid wall insulation.

These data cover measures on government mandated and government funded schemes only. They exclude measures which are privately funded. They also exclude schemes which specifically support micro generation or low carbon heating such as [Feed-In Tariffs](#) (2010 -2019), the [Domestic Renewable Heat Incentive](#) (2014-2022) and the Boiler Upgrade Scheme (2022-).

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<sup>80</sup> Average for 2009-2011 which excludes the peak in 2012 before these schemes ended.

<sup>81</sup> All ECO measures, not just insulation. Latest number is the year to October 2023 and includes the Great British Insulation Scheme.

<sup>82</sup> DESNZ, [Household Energy Efficiency Statistics, headline release December 2023](#) and [Great British Insulation Scheme statistics: December 2023](#)

## 6

# Constituency data dashboard: Energy efficiency

The House of Commons Library data dashboard, [Constituency data: Energy efficiency](#), includes headline energy efficiency data from Energy Performance Certificates (EPC) in England and Wales and Energy Company Obligations (ECO) measures in Great Britain.

To demonstrate what data is available on this dashboard, the following pages show two screenshots from the dashboard for the selected constituency 'Aberavon'.

- The first shows the percentage of properties with an energy efficiency rated in their EPC of C or above and the median rating for each constituency in England and Wales.
- The second shows the number of ECO measures and the number of households in receipt of ECO measures for each constituency in Great Britain.

**Energy Performance Certificate (EPC) Ratings**

**Energy Company Obligation (ECO) Measures**

**Energy Efficiency (EPC) ratings by constituency, up to March 2023**

Select a constituency - use 🔍 to search

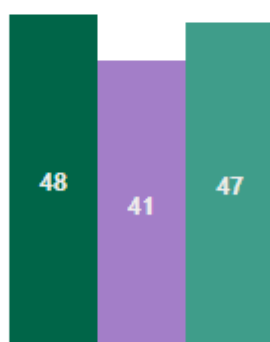
**Aberavon** ✓

Region / nation

**Wales**

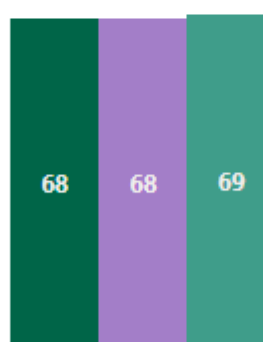
**% EPC rated C or above**

● Constituency ● Region/Nation ● England



**Median EPC rating**

● Constituency ● Region/Nation ● England



**% EPC rated C or above**

	Constituency	Region/Nation	England
<b>Age</b>			
Pre 1930	16%	14%	17%
1930 to 1982	54%	37%	35%
1983 to 2011	74%	67%	67%
2012 onwards	97%	98%	98%
<b>Property Type</b>			
Detached	68%	66%	68%
Flats and maisonettes	79%	73%	73%
Semi-detached	68%	68%	67%
Terraced	63%	66%	67%
<b>Tenure</b>			
Owner-occupied	62%	65%	66%
Private rent	64%	66%	68%
Social rent	83%	72%	71%

A higher median EPC rating is better than a lower rating.

EPC data is not a complete record of energy efficiency for all properties. The EPC system has been in place since 2008, therefore only properties rented, marketed, and built since 2008 will be included.

EPC ratings data is available for England and Wales, but not Scotland or Northern Ireland.

**Median EPC rating**

	Constituency	Region/Nation	England
<b>Property Type</b>			
Detached	68	66	68
Flats and maisonettes	74	73	73
Semi-detached	68	68	67
Terraced	63	66	67
<b>Tenure</b>			
Owner-occupied	62	65	66
Private rent	64	66	68
Social rent	73	72	71

**Energy Performance Certificate (EPC) Ratings**

**Energy Company Obligation (ECO) Measures**

ECO measures by constituency, January 2013 to November 2023

Select a constituency - use 🔍 to search

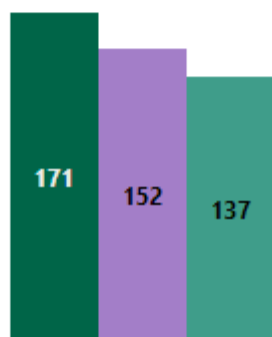
**Aberavon** ▼

Region / nation

**Wales**

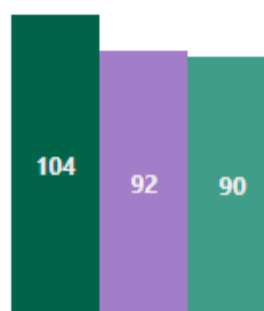
ECO measures per 1,000 population

● Constituency ● Region/Nation ● Great Britain



Households in receipt of ECO measures per 1,000 households

● Constituency ● Region/Nation ● Great Britain



**Number of ECO measures**

**4,881**

Constituency

**205,895**

Region/Nation

**3,715,550**

Great Britain

**Number of households in receipt of ECO measures**

**2,981**

Constituency

**125,105**

Region/Nation

**2,444,935**

Great Britain

There have been three ECO Obligations since the scheme has started: Carbon Saving Target, Carbon Savings Community and Affordable Warmth.

In Aberavon constituency, 847 ECO measure were for the Carbon Saving Target, 874 for the Carbon Savings Community (both of these ended in September 2018) and 3,160 for Affordable Warmth.

ECO measures data is available for England, Wales and Scotland, but not Northern Ireland.

## 7

## Further reading

The following Library briefings include information on the broader subject area and on some current and past energy efficiency schemes:

- [Gas and electricity prices under the Energy Price Guarantee and beyond](#)
- [Fuel poverty in the UK](#)
- [Help with energy efficiency, heating and renewable energy in homes](#)
- [Green Homes Grant](#)
- [Energy Company Obligation \(ECO\)](#)
- [Zero Carbon Homes](#)
- [Carbon Emissions Reduction Target \(CERT\)](#)
- [Community Energy Savings Programme \(CESP\)](#)
- [Warm Front Scheme](#)




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