

Article

Energy efficiency of housing in England and Wales: 2024

Insights on the energy efficiency and central heating main fuel type for new and existing homes by property type, tenure, and property age for national and subnational geographies.

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1 . Main points

- Homes in England had a median Energy Performance Certificate (EPC) score of 68 and homes in Wales had a median EPC score of 67, according to records from the 10 years up to March 2024; both scores are in band D.
- London had the highest median score in the English regions, with a score of 70 (band C), while West Midlands and Yorkshire and The Humber both had the lowest score of 67 (band D).
- In England, median scores for Middle-layer Super Output Areas ranged from 85 (band B) to 47 (band E); in Wales, median scores ranged from 83 (band B) to 45 (band E).
- New dwellings are becoming more efficient, regardless of property or tenure type; new dwellings in both England and Wales had a median EPC score of 84 (band B) in the five years to 2024, compared with 82 in England and 81 in Wales (band B) in the five years to 2013.
- In London, 73% of new dwellings created in the five years to 2024 had community heating schemes as their main fuel type, compared with 45% of new dwellings created in the five years to 2013.

2 . Overview of energy efficiency of dwellings

Energy Performance Certificates (EPCs) indicate the energy efficiency of dwellings. They are based on data about a building's energy features, like the building materials used, the heating systems, and the insulation. These data are collected by an accredited energy assessor and are used to generate an EPC score, typically ranging from 1 to 100.

Domestic EPCs are banded from A to G, where A is the most energy efficient. The scores associated with each energy efficiency band are:

- band A – 92 plus (most efficient)
- band B – 81 to 91
- band C – 69 to 80
- band D – 55 to 68
- band E – 39 to 54
- band F – 21 to 38
- band G – 1 to 20 (least efficient)

This article contains analysis of EPC data for England and Wales, from the Ministry of Housing, Communities and Local Government's (MHCLG's) [Open Data Communities webpage](#).

Our analysis does not cover all homes in England and Wales, because not every dwelling has an EPC. This is because they are only required when a dwelling is constructed, converted, sold, or let. So, these statistics are not a full representation of the entire dwelling stock. These data are based on one record per dwelling, using records from April 2014 to March 2024. For more information, see [Section 6: Coverage and Representativeness](#) and our [Energy efficiency of housing in England and Wales Quality and Methodology Information \(QMI\)](#). See [Section 10: Related links](#) for other sources of data on energy efficiency.

We found that for records in the ten years up to March 2024, the median EPC score for England was 68 and the median EPC score for Wales was 67. London had the highest median score in the English regions (70), while West Midlands and Yorkshire and The Humber had the lowest median score (67).

Just over 40% of local authorities (131 out of 318) had more than half of their housing in band C or higher (an EPC score of 69 or above). Tower Hamlets in London stands out as the local authority with the highest percentage of housing in band C or above, with 81% of dwellings with a valid EPC registering a score of 69 or above. Knowsley in the North West was the second highest, with 68% of dwellings in band C or above.

Across England and Wales, flats and maisonettes were the most energy efficient property type, with a median score of 73. Social rented homes had the highest median energy efficiency score of different tenure types (70 in England, 72 in Wales), compared with private rented homes (67 in England, 65 in Wales) and owner-occupied homes (65 in England, 63 in Wales).

Properties built after 2012 had a higher EPC score (84) than homes built before 2012. The age of property also made a difference in carbon dioxide (CO₂) emissions. New dwellings emitted less CO₂ (1.3 tonnes/year in England, 1.4 tonnes/year in Wales) than existing homes (3.3 tonne/year in England, 3.6 tonnes/year in Wales).

These findings are broadly unchanged from our previous article. This is in part because we use all valid EPCs for our analysis, which last for a ten-year period. All data for this article can be found in our [accompanying datasets](#). More detailed commentary on these trends can be found in our previous [Energy efficiency of housing in England and Wales: 2023 article](#).

3 . Energy efficiency in your local area

Looking at smaller geographical areas provides a local picture of energy efficiency. There is much more variation in scores at the local authority and Middle-layer Super Output Area (MSOA, also referred to as “local area”) levels than at the regional level.

In England, the highest median energy efficiency score for local areas (MSOAs) was 85. There were seven areas found with this score: Gascoigne Estate and Roding Riverside in Barking and Dagenham, Stonebridge in Brent, Wembley Park in Brent, Broughton and Wychnor in Preston, Woolwich Arsenal in Greenwich, Greenwich Peninsula West in Greenwich, and Trumpington in Cambridge. The lowest score was 47 in Shrewsbury Greenfields in Shropshire, and in the Isles of Scilly.

In Wales, the median energy efficiency score ranged from 83 in Pen-dre, Litchard, and Coity in Bridgend, and Langstone and Llan-wern in Newport, to 45 in Abersoch and Aberdaron in Gwynedd.

In England, all local areas in Cambridge and the City of London had a median energy efficiency score in bands C or above. There were nine local authorities where no MSOAs had a median energy efficiency score in band C or above. These were Blackpool, Burnley, Castle Point, Hyndburn, Isles of Scilly, North Warwickshire, Pendle, Rossendale, and Staffordshire Moorlands.

In Wales, 67% of local areas in the Vale of Glamorgan had a median energy efficiency score in band C or above, which was the highest proportion. Neither Conway or Denbighshire had any MSOAs with a median energy score in band C or above.

Of all local authorities, 36% (114 out of 318) had at least half of their MSOAs with a median energy efficiency score in band C or above. This suggests that there are a variety of scores even within the same local authority, with different areas facing different challenges for improvement.

Data can be found in our [Median energy efficiency score, England and Wales dataset](#).

Figure 1: Energy efficiency of homes in your local area

Median energy efficiency score for new and existing houses and flats/maisonettes, Middle super output areas (MSOAs), England and Wales, up to March 2024

4 . New dwellings have become more energy efficient

Age is closely associated with how energy efficient a home is. In our [2022 article](#), we reported that age of the property is the biggest single factor in energy efficiency of homes. The introduction of new building regulatory standards in both [England](#) and [Wales](#) may also be a contributing factor in how energy efficient a home is.

This means that [new dwellings](#) are usually more energy efficient than [existing dwellings](#), regardless of tenure or housing type. Median Energy Performance Certificate (EPC) scores range from 64 in England and 61 in Wales for existing detached houses, and from 71 in England and 72 in Wales for existing flats and maisonettes. In comparison, the median EPC score was 84 for almost all types of new dwellings. When looking at tenure type, the range was from 64 in England and 63 in Wales for existing owner-occupied homes, and from 70 in England and 72 in Wales for existing social rented homes. In new dwellings, the median EPC score was between 79 and 84, regardless of tenure type.

This finding is also true of housing in Northern Ireland. The Northern Ireland Department for Communities published energy ratings for the first time this July, in their [Energy rating of housing in Northern Ireland up to March 2023 report](#).

Figure 2: Median energy efficiency scores for new dwellings were higher than existing dwellings

Median energy efficiency score for new and existing dwellings by property type and tenure, England and Wales, up to March 2024

New dwellings are becoming increasingly energy efficient. Using EPC records grouped into five-year blocks allows us to compare discrete results. Average scores increase by two points in England and three points in Wales when we compare EPC results for new dwellings from 2008 to 2013 with the most recent five years from 2019 to 2024.

Figure 3: New dwellings are becoming increasingly energy efficient

Median energy efficiency scores for new dwellings 2008 to 2013 and new dwellings 2019 to 2024, England and Wales

Data can be found in our [Energy efficiency of housing England and Wales Five rolling years dataset](#).

This trend continues in the latest quarter of data. The Ministry of Housing, Communities, and Local Government (MHCLG) found that 87% of new properties were given an A or B rating in England from Quarter 2 (Apr to June) 2024. This is an increase from 86% in the same quarter in 2023. For more information, see MHCLG's [Energy Performance of Buildings Certificates Statistical Release: April to June 2024 England and Wales](#).

5 . Heating in new dwellings

Heating is a large proportion of energy consumption in housing, as described in the Department for Energy Security and Net Zero's [Energy consumption in the UK 2024 statistical release](#). Gas remains the main fuel type in new dwellings across England and Wales.

In all regions except London, increasing proportions of new dwellings have gas as their main fuel type when we compare main fuel types from 2008 to 2013 with the most recent five years from 2019 to 2024. However, the increase in gas may reflect better recording of fuel types, rather than an actual change, given that the "other and unknown" category has decreased across same the period. In London, there is a strong move away from gas towards [community heating schemes](#) in the most recent new builds.

Data can be found in our [Main fuel type England and Wales dataset](#).

Figure 4: Almost three quarters of new dwellings created in London from 2019 to 2024 had community heating scheme as their main method of heating

Percentage of new dwellings by main fuel type or method of heating used in central heating by Wales and region, England and Wales, Quarter 2 (Apr to June) 2008 to Quarter 1 (Jan to Mar) 2013 and Quarter 2 2019 to Quarter 1 2024

6 . Coverage and representativeness

Our analysis does not cover all dwellings in England and Wales because not every dwelling has an Energy Performance Certificate (EPC). These are only required when a dwelling is constructed, converted, sold, or let. So, these statistics cannot be viewed as a full representation of the entire dwelling stock. Analysis is based on one record per dwelling, and most of the analysis uses records from April 2014 to March 2024 because EPCs are only valid for 10 years. Where we compare results over time, we group records together in two five-year periods (from 2008 to 2013, and the most recent five years, from 2019 to 2024) so that we have two non-overlapping periods.

To analyse the representativeness of dwellings covered by EPCs, we compared them with the addresses available in the Valuation Office Agency's (VOA's) Property Attributes data. Just over 69% of all residential dwellings in England, and 66% in Wales, had at least one EPC registration since records began in 2007, as of March 2024. There was a similar proportion across all regions in England, but London had the highest coverage at 72%.

Generally, newer properties have higher coverage of EPCs. This reflects the need for energy efficiency certification of new build homes. In England, the coverage of properties built before 1930 was 60%, while the coverage of those built since 2012 was 93%. Similarly in Wales, a much smaller proportion of dwellings built before 1930 were covered by an EPC (57%), compared with dwellings built since 2012 (89%).

Data can be found in our [Percentage of dwellings covered by an EPC dataset](#).

7 . Data on energy efficiency

[Energy efficiency of housing, England and Wales, five rolling years](#)

Dataset | Released 8 October 2024

Energy efficiency of dwellings, estimated CO2 emissions and main fuel type of central heating in England and Wales for five-year groups, by property type, tenure and whether new or existing.

[Median energy efficiency score, England and Wales](#)

Dataset | Released 8 October 2024

Median energy efficiency score of dwellings in England and Wales, by property type, tenure, property age and whether new or existing.

[Energy Performance Certificate \(EPC\) Band C or above, England and Wales](#)

Dataset | Released 8 October 2024

Dwellings with EPC Band C or above in England and Wales, by property type, tenure, property age and whether new or existing.

[Individual Energy Performance Certificate \(EPC\) Bands, England and Wales](#)

Dataset | Released 8 October 2024

EPC Bands of dwellings in England and Wales, by property type, tenure, property age and whether new or existing.

[Main fuel type or method of heating used in central heating, England and Wales](#)

Dataset | Released 8 October 2024

Main fuel type of central heating of dwellings in England and Wales, by property type, tenure, property age and whether new or existing.

[Median estimated carbon dioxide \(CO2\) emissions, England and Wales](#)

Dataset | Released 8 October 2024

Carbon dioxide (CO2) emissions of dwellings in England and Wales, by property type, tenure, property age and whether new or existing.

[Percentage of dwellings covered by an Energy Performance Certificate, England and Wales](#)

Dataset | Released 8 October 2024

Percentage of dwellings covered by an Energy Performance Certificate since records began in 2007.

8 . Glossary

Community heating scheme

A community heating scheme is a distribution system of insulated pipes that takes heat from a central source, usually in the form of hot water or steam, and delivers it to different buildings, or dwellings within the same building.

Dwelling

A dwelling is an address containing a unit of accommodation that can comprise one or more household spaces.

Energy efficiency

Energy efficiency relates to the concept of efficient energy use, which means using less energy to provide a given amount of heating or lighting. Using less energy reduces emissions of carbon dioxide.

Energy efficiency score

The energy efficiency score (Standard Assessment Procedure (SAP) score or Reduced data SAP (RdSAP)) is a measure of the overall efficiency of a building. This score is based on the performance of the building and its fixed services, such as heating and lighting. The higher the score, the more energy efficient the home. The score is produced during an Energy Performance Certificate assessment and is based on standardised assumptions for occupancy and behaviour. This enables a like-for-like comparison of a dwelling's energy efficiency performance.

Energy Performance Certificate

Energy Performance Certificates (EPCs) are required for all domestic and non-domestic buildings, when constructed, sold, or let. There are some exemptions, like for buildings used as places of worship. EPCs are valid for 10 years. The EPC records how energy efficient a property is as a building. The EPC uses an A-to-G rating scale, where A is the most efficient and G is the least efficient. The certificate also lists the potential rating of the building if all the cost-effective measures are installed.

Existing dwelling

Existing dwellings are those that are required to undergo an energy performance assessment because they are either being sold or let. They are not newly constructed or converted. Statistics for existing dwellings were created using data from the latest EPC record available for existing dwellings in a financial year.

Heat pump

A heat pump is a device that absorbs heat from one environment and transports it into another using electricity. For example, an air-source heat pump extracts heat from the air outside and transfers it into the home. This heat can then be used to warm radiators and underfloor heating systems.

New dwelling

A new dwelling is any dwelling that has been newly constructed, created by conversion (for example, a house being converted into flats), or has undergone a change of use (for example, a pub being converted into flats), and is now required to have an energy performance assessment. Statistics for new dwellings are generated using data from new dwelling EPC records.

9 . Data sources and quality

This article contains analysis of the Energy Performance Certificate (EPC) data for England and Wales from the Ministry of Housing, Communities and Local Government's (MHCLG's) [Open Data Communities webpage](#).

Further energy efficiency statistics are published in MHCLG's [Energy Performance of Building Certificates Statistical Release: April to June 2024 England and Wales](#), the Welsh Government's [Energy efficiency of homes report](#), the Scottish Government's [Scottish House Condition Survey: 2021 Key Findings report](#), and Northern Ireland's [Energy rating of housing in Northern Ireland up to March 2023 report](#). The [English Housing Survey](#) also provides insight into energy efficiency in housing in England.

How we used the property attributes data

To quality check the EPC records used for analysis, we link EPC data to Valuation Office Agency (VOA) property attributes data at the address level. This enables us to check that a dwelling with an EPC record still exists, and that there is consistent property information (property type and age of property band) across both data sources. We exclude records that have a direct contradiction between data sources on these property variables from the analysis. After we applied these quality assurance checks, 42.6% of the original EPC dataset remained. These records became the basis for most of our analysis.

The following is an overview of the data parsing process. This includes the number of records removed as a percentage of the original 26,143,827 records and the type of remaining record:

- EPC records for properties that no longer exist are filtered out of the dataset (4.7% of original records)
- records with implausible values on important variables are filtered out (less than 0.1%)
- EPC records where there is direct contradiction between the property types provided in the EPC and VOA property attributes, where both have property type information available, are removed (6.9%)
- EPC records where there is direct contradiction between the age of property band provided in EPC and the VOA property attributes, where both have age of property information available, are removed (12.4%)
- duplicated EPC records based on multiple variables including Unique Property Reference Number and inspection date are removed (0.2%)
- EPC records that have been superseded by a later record for the same dwelling are removed (23.4%)
- EPC records that are older than 10 years are removed (18.4%)
- 11,150,054 EPC records are retained and used for analysis (42.6%)

Interpreting these statistics

EPCs are valid for 10 years, so do not reflect energy efficiency improvements made after certification. Dwellings can have more than one record, but we keep only the latest record for our analysis, so dwellings are not double counted in any time period that we analysed.

Some dwellings included in our statistics may have changed tenure since the date of their latest EPC. For instance, dwellings that had an EPC for reasons other than being let may have since entered the private or social rented sector.

For more information about the strengths and limitations of the data, methods used, and data uses and users, see our [Energy efficiency of housing in England and Wales Quality and Methodology Information \(QMI\)](#).

10 . Related links

[National Energy Efficiency Data-Framework \(NEED\)](#)

Dataset | Last updated 25 July 2024

The data framework matches gas and electricity consumption data, collected for Department for Energy Security and Net Zero (DESNZ) subnational energy consumption statistics, with information on energy efficiency measures installed in homes, from government schemes like the Energy Company Obligation (ECO) and the Green Homes Grant. It also includes data about property attributes and household characteristics, from a range of sources.

[Energy Performance Certificates \(EPCs\) for homes in Wales: interactive dashboard](#)

Statistics Dashboard | Published 26 May 2023

The Welsh Government produces this interactive dashboard containing data and insights on EPCs in Wales. The dashboard is based on MHCLG's Open Data Communities EPC data.

[Scottish EPC register](#)

Database | updated quarterly

Data extracts for domestic EPC data, published by The Scottish Government. The dataset includes all valid EPC records from the start of 2013 to the most recent year quarter. A publication note is included describing the data elements present.

11 . Cite this article

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