Statistical Digest of Rural England:

8 - Energy

November 2024

OGL

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Cover photos

		Ward 2011	Rural-Urban Classification
TL	Helmsley marketplace	Helmsley	Rural Village and Dispersed in a sparse setting
TC	Horton-in-Ribblesdale train station with Penyghent behind	Penyghent	Rural Village and Dispersed in a sparse setting
TR	St Giles Church, Skelton	Rural West York	Rural Town and Fringe
CL	Fishing Boat, Marske-by-the-Sea with Hunt cliff in the distance	St Germain's; Saltburn	Rural Town and Fringe
CR	Thornton Force Waterfall, Ingleton Waterfalls Trail	Ingleton and Clapham	Rural Village and Dispersed in a sparse setting
BL	Farmer working the fields in Knapton	Rural West York	Rural Town and Fringe
BC	Remote pub at Ribblehead viaduct	Ingleton and Clapham	Rural Village and Dispersed in a sparse setting
BR	Glamping pod in the North York Moors	Pickering East	Rural Town and Fringe in a sparse setting

All cover photos provided by Martin Fowell.

Contents

About the Statistical Digest of Rural England

The Statistical Digest of Rural England (hereafter the Digest) is a collection of statistics on a range of social and economic topics and provides broad comparisons between Rural and Urban areas by settlement type. For more information on our classifications, including maps and diagrams explaining the classification, see Appendix 2: Defining Rural areas.

The Digest has been restructured into thematic reports and incorporates the previously separate publication the Rural Economic Bulletin.

The Digest consists of the following thematic reports:

1. Population
2. Housing
3. Health and Wellbeing
4. Communities and Households
5. Connectivity and Accessibility
6. Education, Qualifications and Training
7. Rural Economic Bulletin
8. Energy

In March 2024 the content relating to energy that was previously split across the Housing and Communities and Households chapters has been consolidated into a new Energy report. Appendix 1, shows the sub-themes within each of the 8 Digest reports. Thematic reports will be updated individually and not every report with be updated every month. The most recent updates for this theme are shown in Table 1.

Please note: Energy Performance Certificates and Energy Cost and Consumption were initially published as single sections, and they were split when the new Energy report was created. CO_2 emissions was added as a new section in November 2024.

Table 1: Update monitor for Energy subsections
where " ✔ " indicates the topic has been updated, "✘" indicates the topic has not been updated, and "New" indicates a new topic with analysis not previously included within the Digest.

Section	August 2023	February 2024	May 2024	November 2024
Fuel poverty	✘	✘	✔	✘
Energy Performance Certificates: average Energy Efficiency Score	✘	✔	✘	✘
Energy Performance Certificates: achieving energy efficiency category C	✘	✔	✘	✘
Energy costs	New	✘	✘	✘
Energy consumption	New	✘	✘	✔
CO_2 emissions				New

Official Statistics

These statistics have been produced to the high professional standards set out in the Code of Practice for Official Statistics, which sets out eight principles including meeting user needs, impartiality and objectivity, integrity, sound methods and assured quality, frankness and accessibility.

More information on the Official Statistics Code of Practice can be found at: Code of Practice for Statistics.

This publication has been compiled by the Rural Statistics Team within the Rural and Place Team in Defra:

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There is a 2011 Census version of the Digest which looks at the data from the 2011 Census and where possible makes comparisons to the 2001 Census results.

This can be found at https://www.gov.uk/government/statistics/2011-census-results-for-rural-england

Analysis of the 2021 Census will follow the release of a 2021-based Rural-Urban Classification.

Energy

This part of the Statistical Digest of Rural England focuses on Housing, and covers the following:

- fuel poverty (Section A)

- average Energy Efficiency Scores from Energy Performance Certificates (Section B)

- properties achieving energy efficiency category C (Section C)

- energy costs (Section D)

- energy consumption (Section E)

- CO_2 emissions (Section F)

The key findings from this chapter are summarised with the following set of headline clouds:

Fuel poverty - key findings

590 thousand Rural households were in fuel poverty in 2023

Fuel poverty in rural areas is above average in Cumbria, Yorkshire, Durham, Lincolnshire, coastal areas of East Anglia, along the England / Wales border and in north-west Devon

Fuel poor Rural households would need an additional household annual income of £568 to bring them out of fuel poverty

More than one in ten Rural homes is heated with oil, in Urban areas it is four in every thousand

In Rural areas one in four properties (1.4m) are off the gas grid

The more rural the area the greater the proportion of domestic properties heated by oil.

Proportionally more off-grid households are in fuel poverty than on-grid households and the depth of their fuel poverty is greater

In Eden and Mid-Suffolk more than half of the properties are off the gas grid

Energy Performance Certificates: average Energy Efficiency Score - key findings

Older Rural homes are typically 3 energy efficiency bands lower that modern homes

Rural homes built in the last decade are just as efficient as Urban homes built over the same period

Owner occupied Rural homes were the least energy efficient, - it is the social rent sector that offered the most energy efficient homes

There is little difference between the average energy efficiency of detached and semi-detached properties

Energy Performance Certificates: achieving energy efficiency category C - key findings

Proportionally fewer homes over 10 years old reach an EPC rating of C or better in Rural areas than in Urban areas.

The proportion of Rural homes rated EPC band C or better increased by 3 percentage points between 2021 and 2022.

90% of pre-1930 Rural properties have an Energy Efficiency Rating low enough to put a lower income occupant at possible risk of descending into fuel poverty

The more Rural the area the lower the proportion of properties with an EPC rating of C and above.

Just under 7 in 10 flats in Rural areas had an EPC rating of C or better for detached properties it 4 in 10

For all tenancy statuses, proportionally fewer properties had an EPC rating of C and above in rural areas.

Energy costs - key findings

The modelled average energy cost is £95 more per year for a Rural home than an Urban home

New Rural homes have a modelled average energy cost less than half that of existing rural housing stock

The modelled energy cost for Owner-occupied homes is more than for rented homes in both Rural and Urban areas.

Energy consumption - key findings

In 2022 average domestic Rural electricity consumption was 800 kWh lower than it was in 2015

In 2020 there was an upward spike in domestic electricity consumption accompanied by a downward spike in non-domestic consumption in response to COVID-19 lockdowns

Rural areas account for a quarter of total non-domestic electricity consumption

Rural areas account for just under 20% of total domestic gas consumption

Between 2020 and 2022 average rural domestic gas consumption fell by 21.2% in response to energy price rises

Estimated Carbon dioxide (CO_2) emissions from domestic properties - key findings

An existing home in either Rural or Urban areas, on average, emits 2.7 times the CO_2 of a new home

For existing homes in Rural areas the average CO_2 emissions were 15% higher than in Urban areas

A Detached home in Rural areas emits 2.4 times the CO_2 of a Flat or maisonette in Rural areas

Kensington and Chelsea was the Local Authority with the highest estimated CO_2 emissions for Detached homes (19 tonnes/year)

Eden was the Rural Local Authority with the highest estimated CO_2 emissions for Detached homes (7 tonnes/year)

The 10 Local Authorities with the highest estimated CO_2 emissions for Detached homes were in London

An Owner-occupied home in Rural areas emits 1.7 times the CO_2 of a Social rent home

A. Fuel poverty

There is a higher proportion of fuel poor households in Rural areas than in Urban areas and the depth of the fuel poverty for these Rural households is greater, especially if their homes are off the gas grid.

Summary

Households in fuel poverty are those living in a property with a Fuel Poverty Energy Efficiency Rating of band D or below in a home that cannot be kept warm at reasonable cost without bringing their residual income below the poverty threshold. There are 3 key elements (drivers) in determining whether a household is fuel poor: (1) household income; (2) household energy efficiency; and (3) fuel prices. The fuel poverty gap (£) is an estimate of the depth of fuel poverty, and it can be either the reduction in fuel costs or the increase in household income needed for a household to not be in fuel poverty.

In 2023, the proportion of fuel poor households was higher in Rural areas (13.9%) than in Urban areas (12.8%). This corresponds to 590,000 households in Rural areas. In Rural areas the proportion of fuel poor households in 2023 is 2.3 percentage points higher than in 2019 (the first year under the current methodology). By contrast in Urban areas the proportion of fuel poor households was 1.1 percentage points lower in 2023 than it was in 2019. So, over the last 5 years, levels of fuel poverty have risen in Rural areas, but they have fallen in Urban areas.

Households in Rural areas had an average fuel poverty gap of £568 in 2023 - this is £186 more than the average fuel poverty gap of £382 in Urban areas. Over the last 5 years, the average fuel poverty gap for Rural households has increased from £413 (in 2019) to £568 (in 2023), which is an increase of £155 (or 38%). For the 62,000 fuel poor Rural households living in the least energy efficient houses, the average fuel poverty gap was more than £1,800, whereas in 2019, the average fuel poverty gap for those households living in these houses with the poorest energy efficiency rating was £1,200.

The most common way of heating a home is through mains gas central heating. In Predominantly Rural areas only 72% used mains gas in 2023 compared to 83% in Predominantly Urban areas. Oil played a greater part in the heating fuel picture in Predominantly Rural areas (10% of homes) than in Predominantly Urban areas (0.4% of homes).

In Predominantly Rural areas one in four properties (24.5%) were off the gas grid in 2022 compared to 11.5% in Predominantly Urban areas. Around a quarter of Predominantly Rural Local Authorities have at least 35% of domestic properties off the gas grid. In absolute terms, 1.4 million properties in Predominantly Rural areas are off the gas grid and this value has been stable over the 2015 to 2021 period. Overall, there is a greater proportion of off-grid households in fuel poverty than on-grid households and over the last decade more progress has been made in moving on-grid households out of fuel poverty than for off-grid households. The depth of the fuel poverty for those who are fuel poor is also greater when the household is off-grid rather than on it. In 2023 the average fuel poverty gap for off-grid households was around £800 compared to around £320 for on-grid households.

Defining fuel poverty

Fuel poverty or being fuel poor is where a household is living in a property with a Fuel Poverty Energy Efficiency Rating (FPEER) of band D or below in a home that cannot be kept warm at reasonable cost without bringing their residual income below the poverty threshold. As explained in Note A-5., there are therefore three key elements (drivers) in determining whether a household is fuel poor: (1) household income; (2) household energy efficiency; and (3) fuel prices. The 2014 fuel poverty target for England set an objective to ensure that as many fuel poor households as reasonably practicable achieved a minimum energy efficiency rating of band C by 2030 (Note A-1)

Low Income High Costs (LIHC) was the preferred metric for measuring fuel poor households from 2011 to 2018. Note A-2 explains how LIHC was defined. For data representative of 2019 onwards (Note A-3) the Department for Energy Security and Net Zero (DESNZ) uses Low Income Low Energy Efficiency (LILEE) as the preferred metric. Estimates for both metrics were produced for 2019 to allow a comparison.

Based on household income and the energy efficiency of their home, all households can be divided into 4 groups (Figure A-1). If their property FPEER is of band D (Note A-4) or below (under the solid horizontal line on Figure A-1) they are defined as Low Energy Efficiency (LEE) and if the FPEER is C or above they are defined as High Energy Efficiency (HEE). When assessing fuel poverty, the income used in the assessment is the income available after housing costs, tax and national insurance. The income threshold for fuel poverty is shown as a "best fit" sloped dashed line on Figure A-1. The line is sloped because the less energy efficient the home the greater the impact of fuel costs on available income. Households to the left of the sloped line are defined Low Income (LI) and those to the right of the line are defined as High Income (HI). The lower left group therefore becomes Low Income Low Energy Efficiency (LILEE), these are the fuel poor households. In 2023 13.0% of households in England were defined as fuel poor. Note A-5 provides more details on the LILEE methodology.

The **fuel poverty gap** is an estimate of the depth of fuel poverty. The fuel poverty gap is the reduction in fuel costs needed for a household to not be in fuel poverty. As shown in Figure A-2 a household can escape fuel poverty by increasing the energy efficiency of their home to a FPEER of at least Band C or by crossing the income threshold. Crossing the income threshold could be achieved by increasing the absolute household income through things like gaining employment or increasing their salary by getting a better paid job or government intervention.

Using the two example households in Figure A-2, one household is in a home that is very energy inefficient, but their household income is close to the income threshold. For this type of household reducing fuel costs or increasing income brings them out of fuel poverty more easily than by increasing the efficiency of their home. The second illustrative household has very Low Income but a more efficient home than the first example. For this household improving energy efficiency would move them out of fuel poverty.

As shown in the Statistical Digest of Rural England:2 – Housing, housing in Rural areas is more likely to be detached and much less likely to be flats than in Urban areas. There is also a higher proportion of Rural housing that is more than 100 years old (Note A-6). In 2019 the Energy Savings Trust stated that nearly 20% of homes in rural areas are in the very energy inefficient F and G categories, compared to just 2.4% in urban areas (Note A-7). Figures from the DESNZ / BEIS 2022 Fuel Poverty Statistics suggest that this 20% is an overestimate. These 2023 figures show that 6.8% of Rural households are living in properties that are rated F or G compared to 1.4% of

households in Urban areas. More information on the energy efficiency of homes can be found in the Energy Performance Certificates sections of this report (Section B and C).

In Predominantly Rural areas there is also a greater reliance on heating oil than in Predominantly Urban areas - see the "Fuel types used for central heating" section. Unlike domestic gas prices, there is no cap on domestic oil prices, so there is the potential for it to be more expensive to heat a home with heating oil than gas.

Figure A-1: A schematic diagram to show how fuel poor households were defined in 2023
The numbers in percentages are the proportion of households in 2023 in each of the 4 groups. This diagram is based on Figure 2.2 in the **Annual fuel poverty statistics report: 2024** publication. FPEER on the Y-axes is Fuel Poverty Energy Efficiency Rating. LI and HI are High and Low Income respectively. HEE and LEE are High and Low Energy Efficiency respectively.

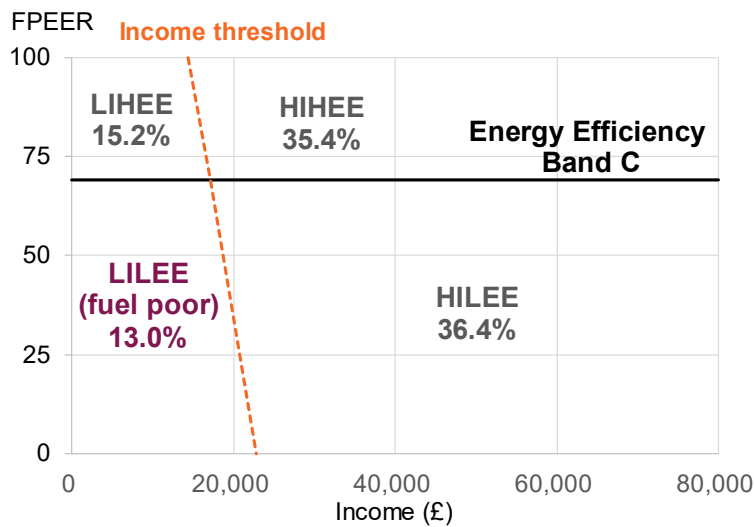**Figure A-2: A schematic diagram representing the fuel poverty gap**
The hatched area represents those households in fuel poverty and the arrows represent the property energy efficiency or household income gains that 2 households (represented by the small circles) would need to make to exit fuel poverty. This diagram is based on Figure 1 in the **Annual fuel poverty statistics report: 2023** publication.
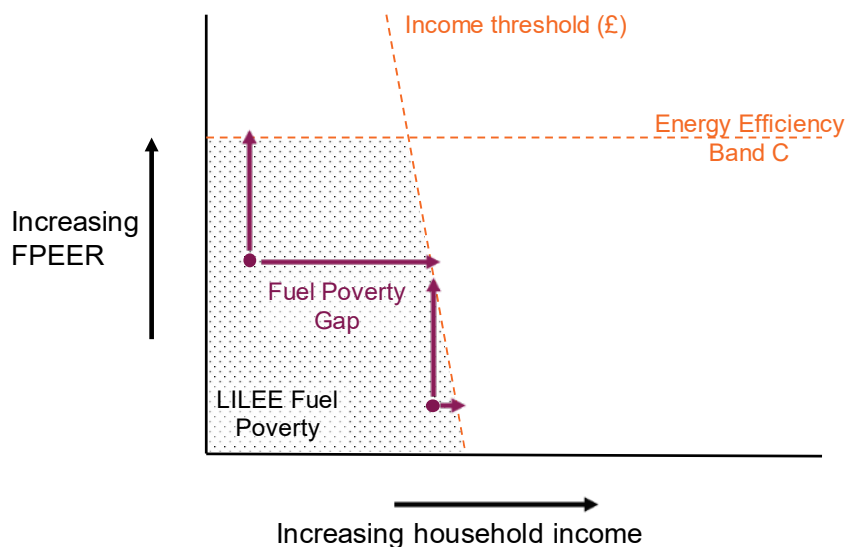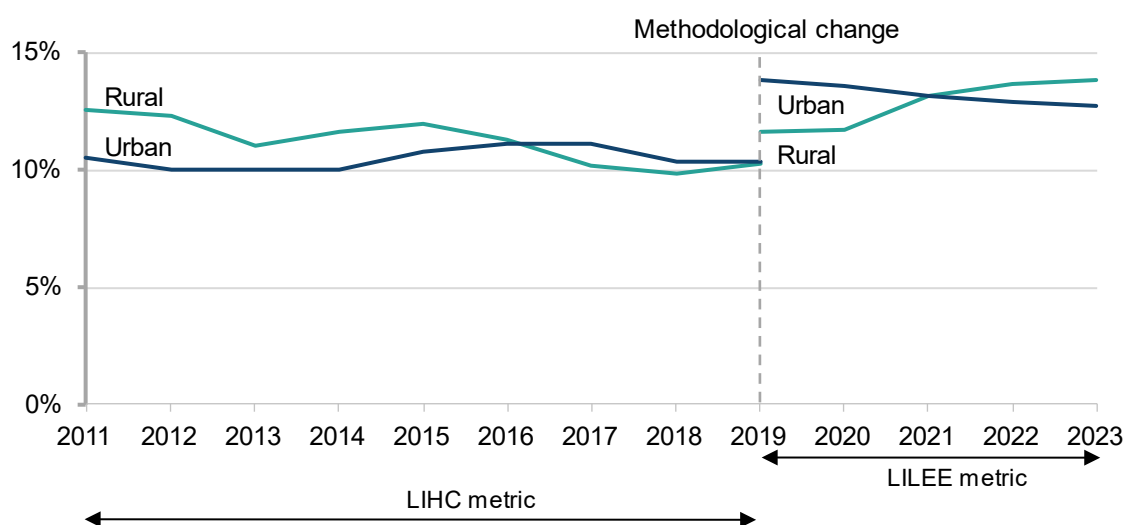
Fuel poor households

There were 3.2 million fuel poor households in England in 2023 (see Figure A-1 for a definition of fuel poor). In Rural areas there was 590 thousand fuel poor households and in Urban areas there was 2.6 million fuel poor households. As Figure A-3 shows, historically between 2011 and 2015 fuel poverty was proportionately more prevalent in Rural areas than in Urban areas under the old LIHC metric. In 2017 and 2018 fuel poverty was marginally more prevalent in Urban areas than in Rural. In 2019 under LIHC there was 10% of households in fuel poverty in both Rural and Urban areas.

The change of in methodology from LIHC to LILEE as the preferred metric resulted in increases of 1.3 percentage points in fuel poor Rural households and 3.4 percentage points in fuel poor Urban households (Figure A-3). Unlike some other variables a consistent time series under the LILEE is not included within the long-term fuel poverty trend tables that are updated annually as part of the Fuel Poverty Statistics publication (Note A-8).

Figure A-3: Line chart showing the proportion of fuel poor households (%) in Rural and Urban areas (2011 to 2023).
Low Income High Costs (LIHC) was the preferred metric from 2011 to 2018 (Note A-2). From 2019 onwards Low Income Low Energy Efficiency (LILEE) became the preferred metric (Note A-5). The series break for the change in methodology is shown by a dashed vertical line.

Under LILEE fuel poverty was more prevalent in Urban areas than in Rural in 2019 and 2020. In 2021 the proportion of Rural households in fuel poverty rose while falling in Urban areas and the proportion of fuel poor households was 13.1% in both Rural and Urban areas. In both 2022 and 2023 the proportion of fuel poor households was higher in Rural areas than in Urban areas. In 2023 13.9% of Rural households were fuel poor compared to 12.8% of Urban households. This means that in 2023 there were 590,000 fuel poor households in Rural areas.

Comparing 2023 to 2019 (the first year under LILEE), we see that the proportion of fuel poor households in Rural areas in 2023 is 2.3 percentage points higher than in 2019. By contrast in Urban areas the proportion of fuel poor households was 1.1 percentage points lower in 2023 than it was in 2019. In other words, over the last 5 years, levels of fuel poverty have fallen in Urban areas, but they have risen in Rural areas. Note that over the last 12 months the proportion of fuel poor in Rural areas has gone up by 0.2 percentage points, while it has gone down by 0.2 percentage points in Urban areas.

DESNZ produces sub-regional fuel poverty data as Experimental Statistics (Note A-15). Estimates at the sub-regional level are modelled using proxy indicators available for low level geographies and should only be used to look at general trends and identify areas of particularly high or low fuel poverty. They should not be used to identify detailed trends over time. In 2013, BEIS undertook an internal review of the methodology used to produce sub-regional estimates of fuel poverty, in conjunction with Office for National Statistics (ONS) Methodology Advisory Service. This review found that estimates of fuel poverty were robust at Local Authority level, but not robust at lower levels of geography. We are therefore introducing Rural and Urban maps of the proportion of households in fuel poverty at Local Authority level (Figure A-4 and Figure A-5) to the Digest, but will not be producing them at more detailed levels of geography. At the time of producing this update DESNZ has not released any more recent sub-regional fuel poverty data, therefore Figure A-4 and Figure A-5 have not been revised.

Within Rural areas (Figure A-4) the proportion of households classified as fuel poor is highest in the Local Authorities along the England and Wales border. Local Authority boundaries changed in April 2023 in both North Yorkshire and Cumbria. This has reduced the number of Local Authorities in the North (Note A-16). Using these new boundaries, north of the Humber only three Local Authorities have less than 14% of households in fuel poverty. In East Anglia there are proportionally more households in fuel poverty in coastal Local Authorities than in those further inland. Proportionally more households are in fuel poverty in the three Local Authorities making up northern and western Devon than in other Local Authorities in South West England. Within the East Midlands region there is proportionally more fuel poverty in Northern and Eastern Lincolnshire and in much of Derbyshire than in southern parts of this region.

In summary, Figure A-4 shows Rural fuel poverty is above average in in Cumbria, Yorkshire, Durham, Lincolnshire, coastal areas of East Anglia, along the England / Wales border and in north west Devon and below average Rural fuel poverty in the Local Authorities of the South East region.

Figure A-5 shows the proportion of households classified as fuel poor in Urban Local Authorities. In general terms, as for Rural areas, Local Authorities with below average fuel poverty tend to be in the South East and those with above average fuel poverty tend to be in the North or the Midlands. Notable exceptions in the South East are above average fuel poverty in parts of central London. In the North East there is proportionally more fuel poverty on Teesside than in Tyne and Wear. Within Yorkshire and the Humber, York has lower levels of fuel poverty than the Urban authorities of South and West Yorkshire. In general, Local Authorities in the North West have lower levels of fuel poverty than in Yorkshire and the Humber, particularly in the south and centre of the area. However, there are still pockets of higher fuel poverty such as on Merseyside and in northern and eastern parts of the area such as Blackpool and Burnley. Of the six Urban Local Authorities where more than 20% of households are fuel poor, five are in the West Midlands.

Figure A-4: Map of the proportion (%) of households in Rural areas that are fuel poor according to the LILEE definition in 2021

The darker the shading the higher the proportion of households that are fuel poor. White areas on the map and Predominantly Urban or Urban with Significant Rural areas. This map uses Local Authority boundaries applicable from 1 April 2023. At the time of producing this update DESNZ have not released any more recent sub-regional fuel poverty data, therefore this map has not been revised. (Note A-15, Note A-16)
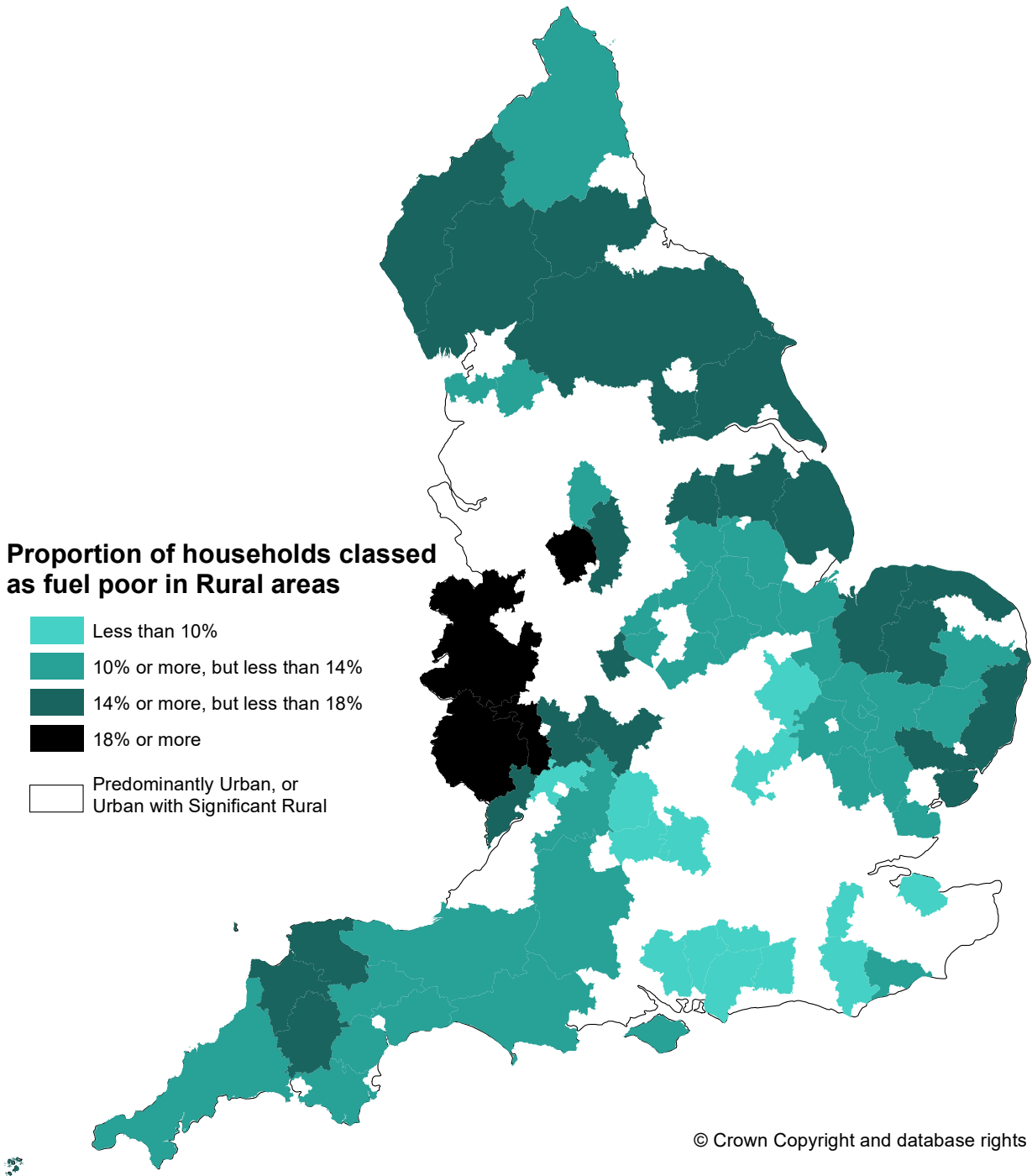

Proportion of households classed as fuel poor in Rural areas

- Less than 10%
- 10% or more, but less than 14%
- 14% or more, but less than 18%
- 18% or more
- Predominantly Urban, or Urban with Significant Rural

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Figure A-5: Map of the proportion (%) of households in Urban areas that are fuel poor according to the LILEE definition in 2021

The darker the shading the higher the proportion of Urban households that are fuel poor. White areas on the map are Predominantly Rural. This map uses Local Authority boundaries applicable from 1 April 2023. At the time of producing this update DESNZ have not released any more recent sub-regional fuel poverty data, therefore this map has not been revised. (Note A-15, Note A-16)

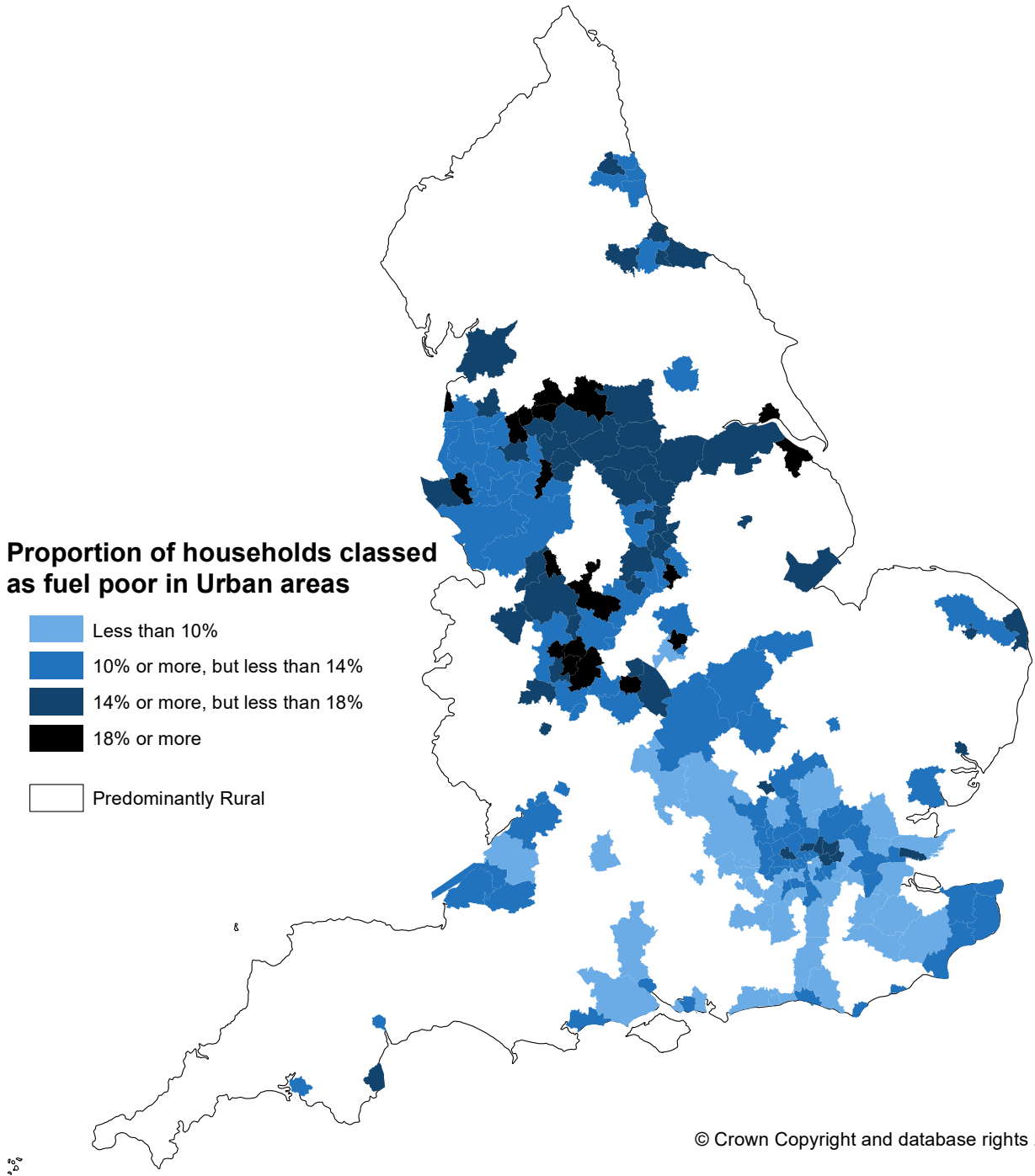**Proportion of households classed as fuel poor in Urban areas**

- Less than 10%
- 10% or more, but less than 14%
- 14% or more, but less than 18%
- 18% or more

Predominantly Rural

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Notes

- DESNZ / BEIS changed their preferred fuel poor metric from Low Income High Costs (LIHC) to Low Income Low Energy Efficiency (LILEE). Note A-5 explains how LILEE is calculated. In 2019 DESNZ / BEIS produced both estimates, so both are shown on Figure A-3. The dashed line represents the change of metric.
- In Sub-regional fuel poverty 2023 (2021 data) published in April 2023 DESNZ published on the basis of the Local Authorities that applied from 1 April 2023 despite the data being representative of 2021. This means that unlike other analysis in the Digest, Figure A-4 and Figure A-5 are on the basis of only 296 Local Authorities rather than the 309 detailed in Appendix 1: Defining Rural areas. At the time of preparing the most recent update 2021 was the most recent sub-regional data available.

Fuel poverty gap

As explained in the "Defining fuel poverty" section, the fuel poverty gap (£) is an estimate of the depth of fuel poverty, and it can be either the reduction in fuel costs or the increase in household income needed for a household to not be in fuel poverty. Figure A-6 shows that over the period 2011 to 2023 the average fuel poverty gap (or depth of the fuel poverty) was greater in Rural areas than in Urban areas in every year over this 13-year period. The change of methodology does not affect this conclusion, but the average difference between the Rural and Urban fuel poverty gaps was bigger for the years covered by LIHC (average difference between Rural and Urban gaps of £278) than for the period from 2019 onwards under LILEE (average difference between Rural and Urban gaps of £174). In England, the average fuel poverty gap for households that were fuel poor in 2023 was £417, this is an increase compared to 2022 when it was £325.

DESNZ have revised their estimates of the fuel poverty gap in 2022 for Rural areas downwards. Their initial estimate published in 2023 showed that households in Rural areas had an average fuel poverty gap of £677 in 2022. In the February 2024 release they showed that households in Rural areas had an average fuel poverty gap of £432 in 2022 – almost £250 less that the initial release. By contrast DESNZ have revised the average fuel poverty gap for households in Urban areas upwards to £302. This means that in 2022 the fuel poverty gap was £130 (or over 40%) deeper in Rural areas than in Urban areas. The fuel poverty gap for fuel poor households in Rural Villages, Hamlets and Isolated Dwellings in 2022 was a large contributor to this revision because it was revised down from £956 to £569. There is a table showing fuel poverty figures by RUC category in Energy data tables.

In 2023 the average fuel poverty gap for households in Rural areas was £568, this is £186 more than the average fuel poverty gap of £382 in Urban areas. So, in 2023 fuel poverty was almost 50% deeper in Rural areas than in Urban areas. The fuel poverty gap for fuel poor households in Rural Villages, Hamlets and Isolated Dwellings in 2023 was £778.

The average fuel poverty gap in 2023 in Rural areas was £136 more than it was in 2022 (32% higher), whereas for Urban areas it was only £80 more than in 2022 (26% higher). When the comparison is made to 2019 (the first year under LILEE) we see that the average fuel poverty gap for Rural households has increased from £413 to £568, which is an increase of £155 (or 38%). By contrast for Urban households the fuel poverty gap has more than doubled, increasing from £180 in 2019 to £382 in 2023.

The increasing depth of fuel poverty is a response to the rising energy costs in recent years. The fact that the depth of the fuel poverty in Rural areas has risen more than in Urban areas over the last 12 months is likely to be as a consequence of houses in Rural areas being typically larger, and often older, than Urban ones (Statistical Digest of Rural England:2 – Housing). These two factors make them less energy efficient (sections B and C) and therefore more costly to heat (Section D). In other words, the more units of energy you use to heat your home the more you are affected by the increased cost of each of those energy units.

Figure A-6: Line chart showing the average fuel poverty gap (£) in Rural and Urban areas (2011 to 2023).

Low Income High Costs (LIHC) was the preferred metric from 2011 to 2018 (Note A-2). From 2019 onwards Low Income Low Energy Efficiency (LILEE) became the preferred metric (Note A-5). The series break for the change in methodology is shown by a dashed vertical line
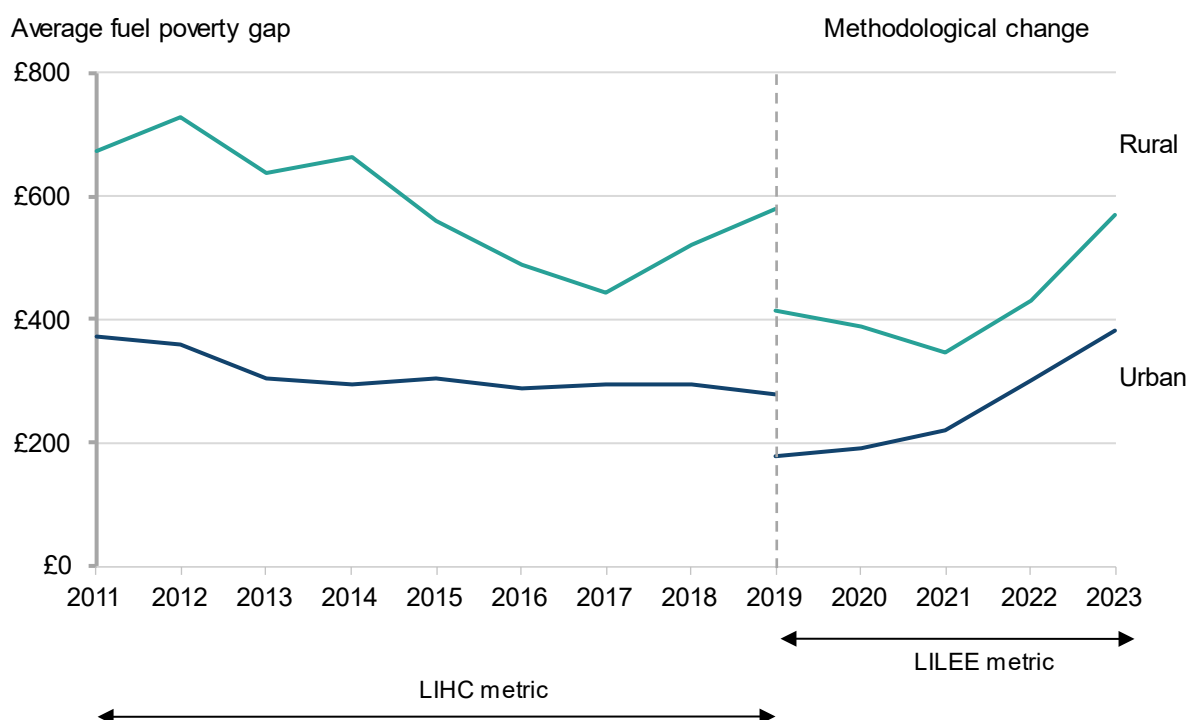
Using the previous LIHC metric the average fuel poverty gap for Urban households decreased between 2011 and 2019, while for Rural households the gap also decreased between 2012 and 2017, but the Rural fuel poverty gap then deepened between 2017 and 2019 (Figure A-6).

The Fuel Poverty Energy Efficiency Rating (FPEER) is a measure of the energy efficiency of a property (Note A-4). As shown on Figure A-7, in 2023 Rural households with the poorest FPEER rating of F or G had an average fuel poverty gap of over £1,800, which is similar to the average fuel poverty gap for Urban households of the same energy rating. In the revised 2022 figures the average fuel poverty gap for those Rural households in homes with the poorest FPEER rating of F or G was £1,300. For further context in 2019, the average fuel poverty gap for those households living in these houses with the poorest energy efficiency rating was £1,200 in Rural areas and £860 in Urban areas. 290,000 Rural households still lived in the least energy efficient homes in 2023; the 62,000 of those who are in fuel poverty have seen the depth of their fuel poverty increase substantially in a very short time period because energy costs have risen rapidly.

In the latest Fuel Poverty Statistics DESNZ consider fuel poverty by property characteristics (Note A-9). DESNZ reported that the fuel poverty gap was largest for converted flats (£597) and

households living in converted flats were more likely to be in fuel poverty than households in any other property type. The average fuel poverty gap for households in detached properties was the only other one that exceeded £500. Comparing an end terrace to a mid-terrace (Fuel poverty detailed tables 2024 (2023 data) - Table 7) shows that 3.3% fewer households in a mid-terrace are in fuel poverty than for households in an end terrace and when the households are fuel poor the average depth of the fuel poverty is £127 less for a mid-terrace than an end terrace. This matters in a rural context because the average urban terrace is 50% longer than the average rural terrace, so there are proportionally fewer mid terraced properties in rural areas (Note A-6).

DESNZ also report that:
- the average depth of fuel poverty is higher for households in properties with solid walls than for those in homes with cavity walls, even if the solid walls have been insulated and the cavity walls have not (Fuel poverty detailed tables 2024 (2023 data) - Table 15);
- the larger the floor area the higher the average fuel poverty gap for fuel poor residents, with the value reaching £554 for households in properties with floor areas over 110m^2 (Fuel poverty detailed tables 2024 (2023 data) - Table 9); and
- the depth of fuel poverty is much higher for households in pre-1919 properties (£575) than for households in properties built after this date, but it is not correct to assume that the newer the property the lower the average fuel poverty gap for any fuel poor residents (Fuel poverty detailed tables 2024 (2023 data) - Table 8).

All 3 of these property characteristics (solid walls, bigger and older properties) are more prevalent in Rural areas than Urban areas. For example, there are over 1 million pre-1919 homes in rural areas and they account for 28% of rural residential properties compared to only 18% of urban residential properties (Note A-6).

Figure A-7: Bar chart showing average fuel poverty gap (£) in Rural and Urban areas in 2023 according to Fuel Poverty Energy Efficiency Rating (FPEER) band
(Note A-2, Note A-4, Note A-5)
The legend is presented in the same order as the clusters of bars.
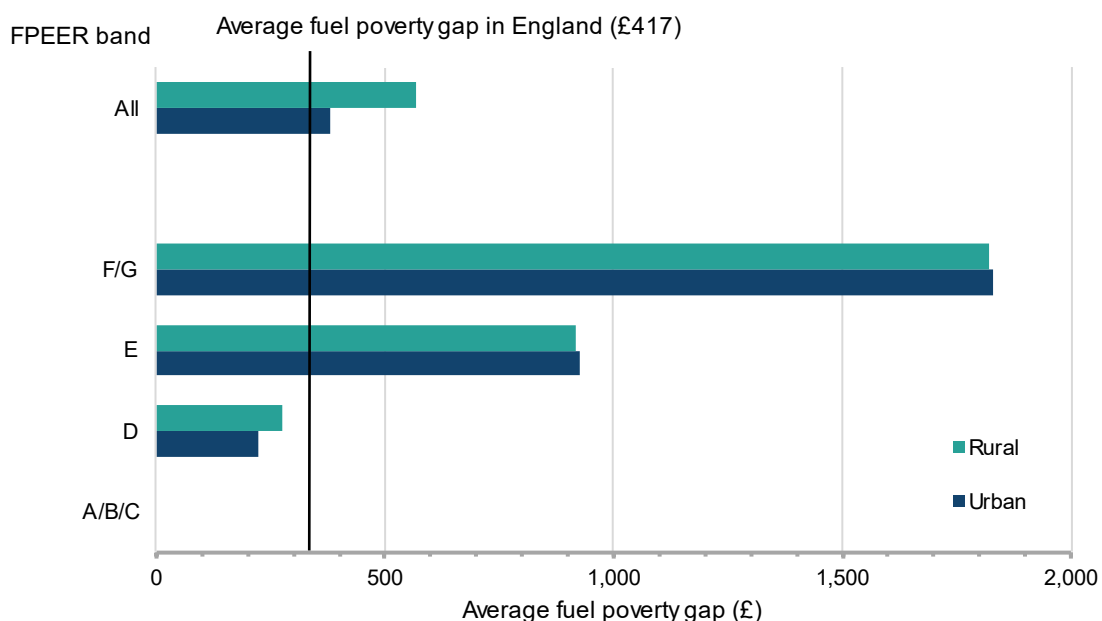
Notes

- DESNZ / BEIS changed their preferred fuel poor metric from Low Income High Costs (LIHC) to Low Income Low Energy Efficiency (LILEE). Note A-5 explains how LILEE is calculated. In 2019 DESNZ / BEIS produced both estimates, so both are shown on Figure A-6. The dashed line represents the change of metric.
- On Figure A-7 the black vertical line represents the average fuel poverty gap for all households in fuel poverty. Only households living in a dwelling with an FPEER of band D-G (Note A-4 and Figure A-1) are categorised as 'Low Energy Efficiency' and are therefore at risk of being in fuel poverty depending on the household income.
- The average fuel poverty gap by Fuel Poverty Energy Efficiency Rating (FPEER) band data published by DESNZ / BEIS combines FPEER band F & G and FPEER bands A, B & C into merged categories as used on Figure A-7. It is not possible to produce a Rural-Urban Classification chart with separate estimates for bands F & G.

Fuel types used for central heating

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let (Note A-11). The ONS use information from EPCs for their Energy Efficiency of Housing publication (Note A-12). There is a March 2023 dataset covering information on the main fuel type or method of heating used in central heating of domestic properties.

Figure A-8 shows that the most common way of heating a home was through mains gas central heating. In Predominantly Urban areas 83% of domestic properties were using mains gas, but in Predominantly Rural areas the proportion of homes using mains gas was only 72%. In both Predominantly Rural and Predominantly Urban areas around 1 in 10 homes (10% in Predominantly Rural and 11% in Predominantly Urban areas) were using electric heating. In the Annual fuel poverty statistics report: 2024, Figure 3.9 showed that households using electricity for their heating had the highest likelihood of fuel poverty (24.5%, compared to 11.7% for households using gas) because of their high fuel expenditure and their lower median household income.

Figure A-8 also shows that community heating schemes were more common in Predominantly Urban areas (5% of homes) than in Predominantly Rural areas (1% of homes). From Figure A-8, it is clear that oil played a greater part in the heating fuel picture in Predominantly Rural areas (10% of homes) than in Predominantly Urban areas (0.4% of homes).

As Figure A-9 shows the more Rural an area the higher the proportion of homes that used oil-based heating systems. In Mainly Rural areas, 12% of homes were heated with oil and in Largely Rural areas 7% of homes were heated with oil. Even in Urban with Significant Rural areas 4% of homes had an oil-based heating system. In an Urban with Significant Rural Local Authority 26% to 49% of the population live in Rural parts of the Authority (including Rural Hub Towns). It is likely to be the homes of these people that contribute to this 4% of homes using oil in Urban with Significant Rural areas.

The most recent Fuel Poverty Statistics showed that there was 166 thousand households using oil that were fuel poor (Fuel poverty detailed tables 2024 (2023 data) - Table 13). These households account for 5.2% of all fuel poor households and their average fuel poverty gap is £597.This is double the average fuel poverty gap for fuel poor households who heat their home with gas.

Worksheet AD in the Energy data tables includes a Local Authority breakdown of the proportion of properties using oil as their main fuel type. Eight Predominantly Rural Local Authorities had more

than 20% of the dwellings use oil as their main fuel type. Five of these eight where in East Anglia; the remaining ones were Eden (which is now part of Westmorland and Furness), Rydale (which is now part of the larger North Yorkshire Local Authority) and Torridge in Devon (Note A-16). These data are not shown in map form because of the strong correlation with the proportion of off-grid properties shown in Figure A-12.

Figure A-8: Bar chart showing the percentage of domestic properties by main fuel type or method of heating used in central heating by Local Authority Rural-Urban Classification, 2023

This analysis is based on Energy Performance Certificate (EPC) information up to March 2023. (Note A-12, Note A-17). The legend is presented in the same order and orientation as the cluster of columns.
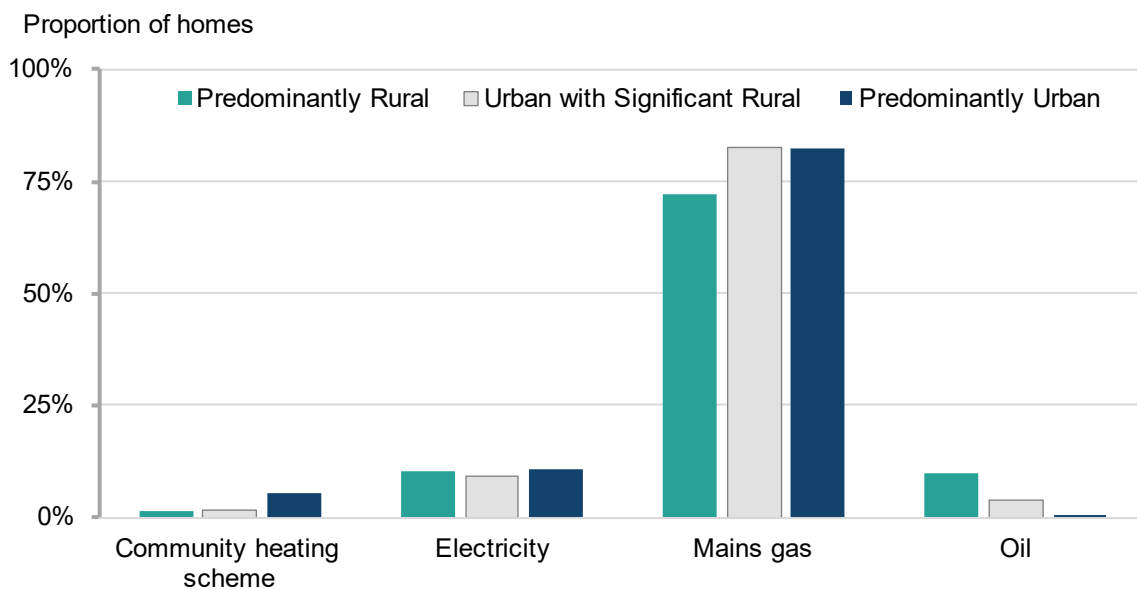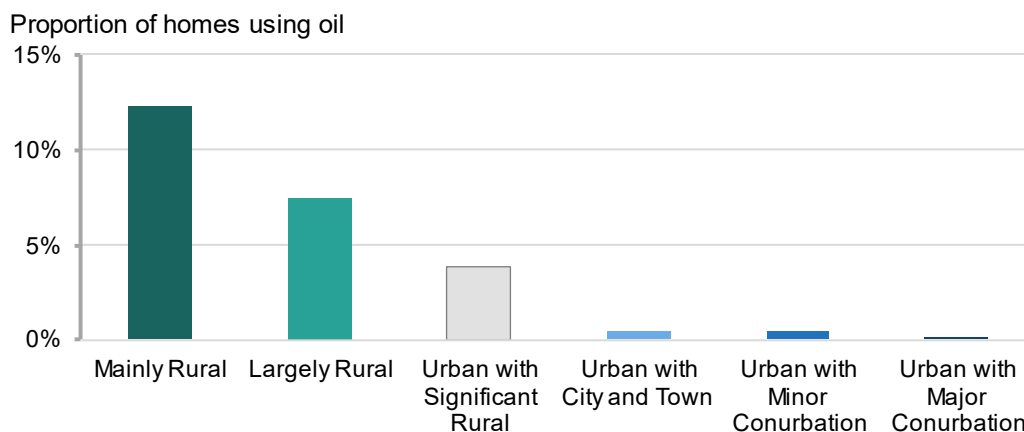

Figure A-9: Bar chart showing the percentage of domestic properties using Oil fuelled central heating by Local Authority Rural-Urban Classification, 2023

This analysis is based on Energy Performance Certificate (EPC) information up to March 2023. (Note A-12, Note A-17).

Off the gas grid properties

As explained in the previously section, not all households heat their home through central heating with a gas boiler. In 2022 an estimated 3.7 million households did not have a gas network connection, which is 15% of the households in England (Note A-13). In Predominantly Rural areas one in four properties (24.5%) were off the gas grid in 2022 (Figure A-10). This compares to 11.5% in Predominantly Urban areas. The proportion of off-grid properties in Predominantly Rural areas had fallen by 2.4 percentage points over the period 2015 to 2022, whilst for Predominantly Urban areas it rose by 1.6 percentage point over the same period. The value for Predominantly Rural changed by less than 0.1 percentage points between 2021 and 2022.

Figure A-10: Line chart showing the percentage of properties without mains gas supply by broad Local Authority Rural-Urban Classification (2015-2022) (Note A-13)
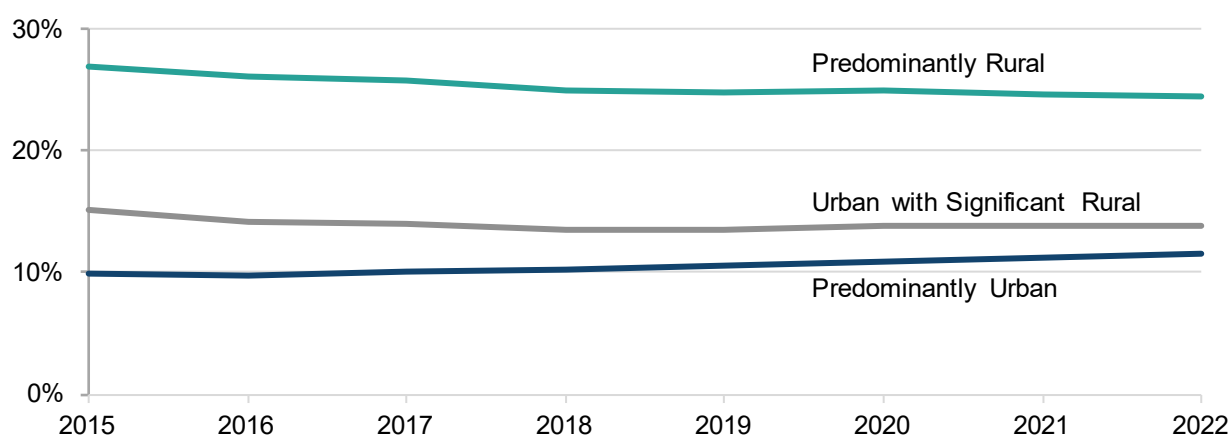
In absolute terms, one in four properties (25%) off the gas grid means that 1.4 million properties in Predominantly Rural areas are off the gas grid. This figure has remained stable over the period 2015 to 2021 (Table A-1). So, the fall in the proportion of off the grid properties in Predominantly Rural areas is probably because the vast majority of new builds are built within the "larger rural settlements" and come with a gas connection as part of the construction process.

Table A-1: Estimated number (in millions) of properties off the gas grid in England (2015 to 2022) by Local Authority Rural-Urban Classification (Note A-13)

	2015	2016	2017	2018	2019	2020	2021	2022
Predominantly Rural	1.43	1.39	1.39	1.36	1.36	1.39	1.38	1.39
Urban with Significant Rural	0.46	0.44	0.44	0.43	0.44	0.45	0.45	0.46
Predominantly Urban	1.50	1.50	1.56	1.59	1.65	1.73	1.79	1.86
England	3.39	3.34	3.39	3.38	3.45	3.57	3.62	3.71

When DESNZ produced the latest subnational estimates of domestic properties not on the gas grid (Note A-13), unfortunately for our purpose, these new data were produced using the 2023 boundaries (Note A-16) and values were recalculated for all years back to 2015. Note A-16 explains the local authorities that were merged to form 'Cumberland', 'Westmorland and Furness' and 'North Yorkshire'. As shown in Figure A-11 these have become three very large geographical areas. The former authorities than compose Westmorland and Furness' and 'North Yorkshire' had quite different proportions of off-grid properties and not all of them were Predominantly Rural. Merging the areas results in a loss of detail as to where off-grid properties are. For example, for the

new 'Westmorland and Furness' area in 2021 the proportion of off-grid properties in Mainly Rural 'Eden' and 'South Lakeland' was 57% and 22% respectively, but in Urban with Significant Rural 'Barrow-in-Furness' it was only 3% average. So, when these areas are merged together as the Largely Rural 'Westmorland and Furness' the proportion of off-grid properties for 2021 became 25%. Given that the proportion of off-grid properties is not likely to change dramatically we have decided to retain (and describe) a full map of 2021 data (Figure A-12) with its extra detail instead of presenting a map for 2022 according to the revised boundaries. However, the 2022 data can be found in the Energy data tables.

Figure A-11: Map of the proportion of properties in Predominantly Rural areas of England that are not on the gas grid in 2022 using the 2023 Local Authority boundaries (Note A-13, Note A-16)

Local Authorities classed as Predominantly Urban or Urban with Significant Rural are shown as white areas on the map. The 3 newly created authorities have been labelled on the map as follows: C = Cumberland; W F = Westmorland and Furness; and N Y = North Yorkshire.
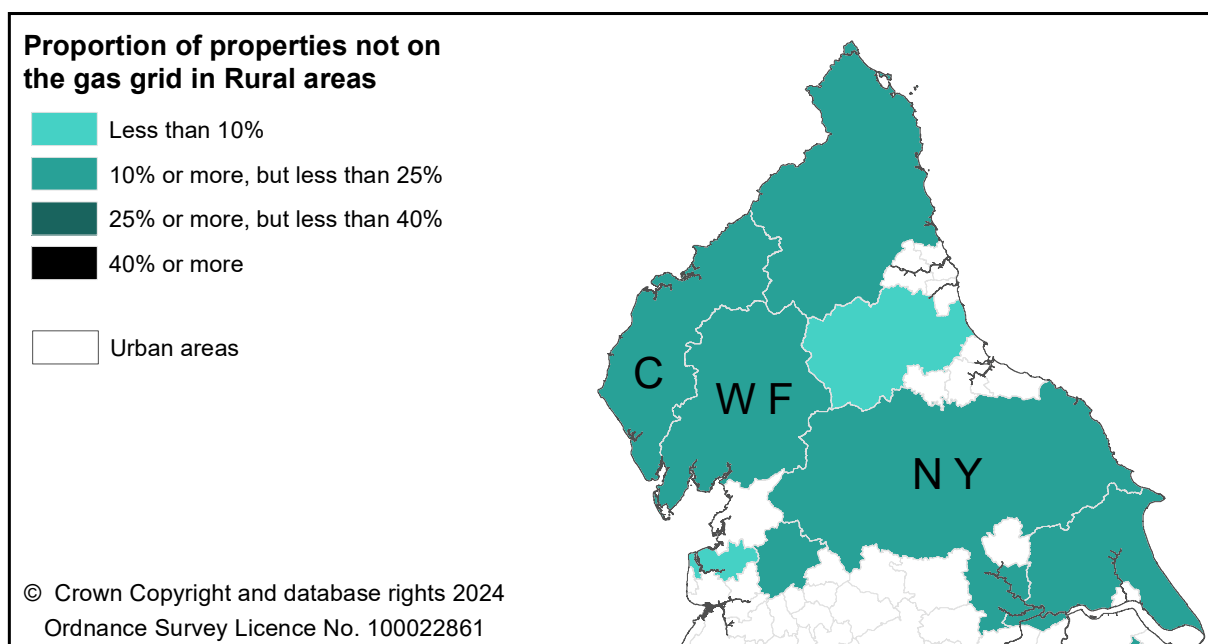
In 2021, there were three Predominantly Rural Local Authorities (Isles of Scilly, Eden, and Mid-Suffolk) where it is estimated that at least half of the domestic properties were not on the gas grid – see Figure A-12. A quarter of Predominantly Rural Local Authorities had at least 35% of domestic properties off the gas grid in 2021. Most of the Local Authorities with a high proportion (greater than 40%) of off the grid properties were located in three clusters: (1) much of Norfolk and parts of Suffolk in the East of England; (2) Devon and Cornwall in the South West; and (3) a band in northern England stretching from Penrith and the North Lakes south eastwards through the Yorkshire Dales National Park and down to the North York Moors National Park (Figure A-12). For comparison, West Berkshire was the only Urban with Significant Rural Local Authority where more than 30% of domestic properties were off the gas grid in 2021.

A Predominantly Urban Local Authority means a Local Authority in which at least 75% of the resident population live in Urban areas. So, it is likely that most of the domestic off the gas grid properties within Predominantly Urban Local Authorities who are using fuels like oil and LPG are within the "rural portion" of these authorities. However, there are also likely to be some properties in Predominantly Urban areas, especially flats and apartments, that are using modern and efficient

electric heating systems and are therefore not on the gas grid. As an example, the Manchester and Salford areas have just over 20% of their properties off the gas grid, but this is because 25% and 29% of their properties respectively are heated by electricity not gas (Table AD2, Energy data tables). Since the off the gas grid estimates are more ambiguous for Predominantly Urban areas, we have opted not to display them on a map.

Figure A-12: Map of the proportion of properties in Predominantly Rural areas that are not on the gas grid in 2021 (Note A-13)

The locations of the 3 Predominantly Rural authorities with highest proportions of off the gas grid properties are shown as annotations. Local Authorities classed as Predominantly Urban or Urban with Significant Rural are shown as white areas on the map. This map uses Local Authorities prior to the reorganisation in April 2023 (Note A-16). This map has not been revised in the 2024 update.

Proportion of properties not on the gas grid in Rural areas

- Less than 10%
- 10% or more, but less than 25%
- 25% or more, but less than 40%
- 40% or more
- Urban areas

Eden 57%

Mid-Suffolk 53%

Isles of Scilly 100%

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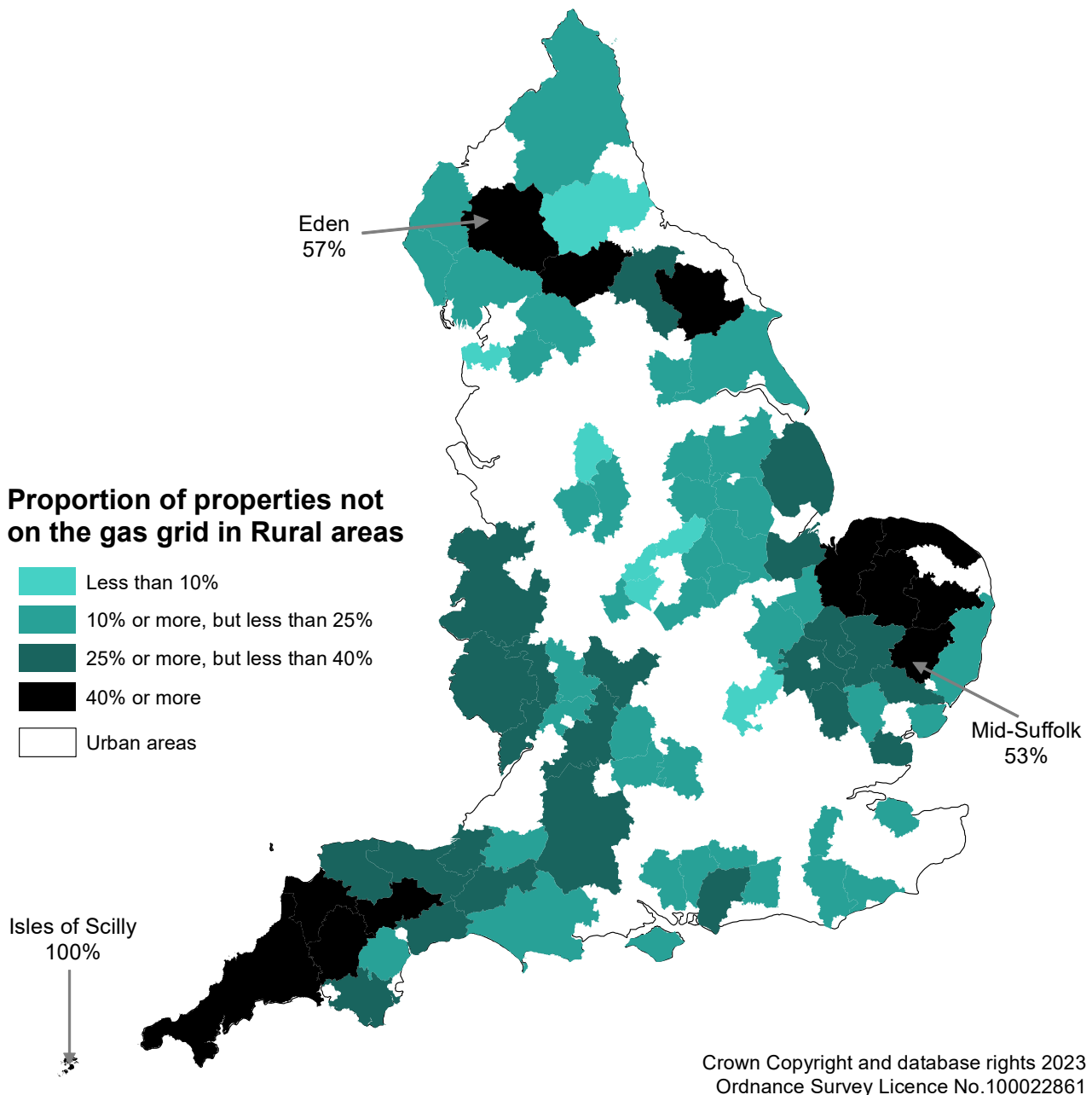
In the DESNZ 2023 Fuel Poverty Statistics publication, there is a set of long-term fuel poverty trend tables. These have been back calculated to 2010 using the LILEE approach (Note A-8). One of these tables considers fuel poverty according to whether or not the property is connected to the gas grid.

Back in 2010 the proportion of fuel poor households was similar for on-grid (22%) and off-grid (23%) properties. As Figure A-12 shows the proportion of on-grid households that are fuel poor has declined at a much faster rate the proportion of off-grid households who are fuel poor. In fact, in recent years the proportion of off-grid households that are fuel poor has been rising after falling to 18% in 2018 and 2019. In 2023, 20% of off-grid households were fuel poor compared to only 12% of on-grid households.

Figure A-13: Line chart showing the proportion of on and off-grid households that are fuel poor (2011 to 2023)
All figures are based on the Low Income Low Energy Efficiency (LILEE) approach (Note A-8).
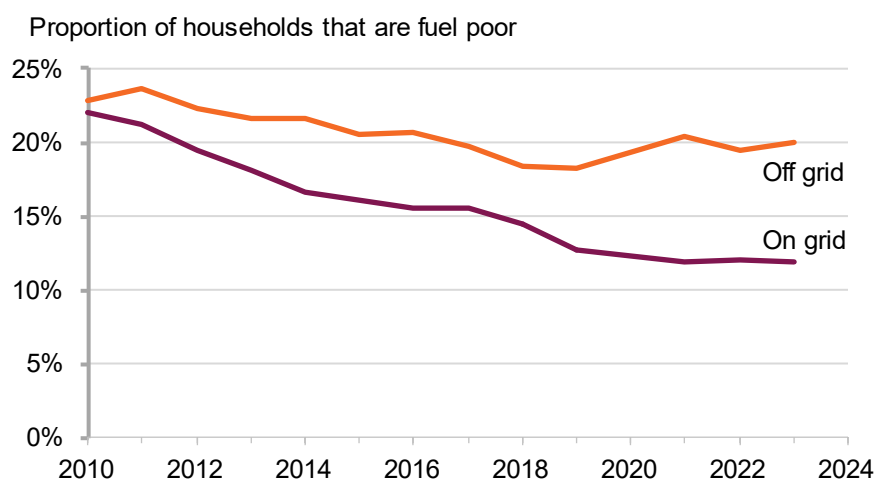
As well as there being a greater proportion of off-grid households who are fuel poor, the depth of the fuel poverty for those who are fuel poor is also greater when the household is off the grid rather than on it (Figure A-14 – left-hand chart). Back in 2010 the average fuel poverty gap in real terms (after accounting for inflation, Note A-8) was £346 for on-grid properties and £598 for off-grid properties. As Figure C 11 (left-hand chart) shows the average fuel poverty gap for on-grid properties dropped year-on-year every year between 2010 and 2020 before rising between 2021 and 2023. By contrast for off-grid properties the average fuel poverty rose during the first part of the 2010s hitting £700 in 2014, before falling to £536 in 2020. In the last 2 years there has been a dramatic increase in the average fuel poverty gap for off-grid households, with the figure rising to £629 in 2022 and then to £801 in in 2023.   For off-grid households the average fuel poverty gap rose by £172 between 2022 and 2023, but for on-grid households the rise in the average fuel poverty gap was only £38.

A fuel poverty depth ratio can be calculated between the average fuel poverty gap for two related categories such as off and on-grid properties. Figure A-14 (right-hand chart) shows that in 2010 the average fuel poverty for those who are fuel poor was 1.7 times deeper for off the grid households than for those on the grid. This disparity has grown since 2010. Even before the 2022/2023 cost of living crisis the depth of fuel poverty amongst off-grid households was 3 times that of on-grid households over the period 2019 to 2021. Currently fuel poverty is 2.5 times deeper for off the grid properties that for those on the grid.

Figure A-14: Line charts showing the average fuel poverty gap for those on and off-grid households that are fuel poor (2011 to 2023) and a comparison of the depth of fuel poverty in on and off-grid areas

The left-hand chart shows the average fuel poverty gap (£) for those on and off-grid households that are fuel poor. This average fuel poverty gap is in 'real terms'. The right-hand chart shows fuel poverty depth ratio by comparing the average fuel poverty gaps from the left-hand chart. All figures are based on the Low Income Low Energy Efficiency (LILEE) approach (Note A-8).
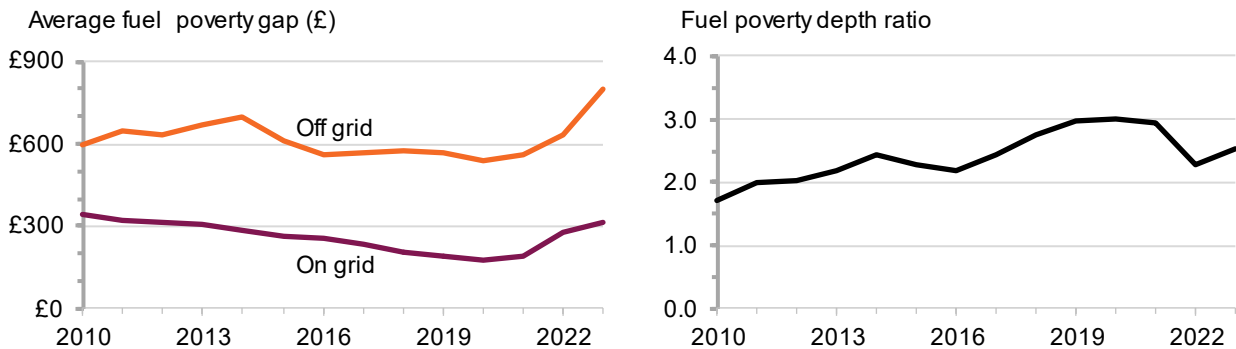
Fuel Poverty explanatory notes

- **Note A-1**

The statutory fuel poverty target was set in December 2014, binding successive Governments to the following:

> The fuel poverty target is to ensure that as many fuel poor homes as is reasonably practicable achieve a minimum energy efficiency rating of Band C, by 2030.

This target was retained in Sustainable Warmth, the updated Fuel Poverty Strategy for England, published in February 2021. This figure taken directly from the latest Fuel Poverty statistics released on 28 February 2023 shows the 2030 target and the intermediate targets.
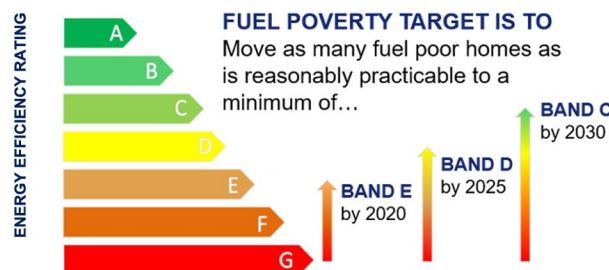
- **Note A-2**

The 'Low Income High Costs' (LIHC) defined a household as fuel poor if: (a) the amount they would need to spend to keep their home at "an adequate standard of warmth" is above the national median level and (b) if they spent that amount, their leftover income would be below the official poverty line. LIHC was the first measure to introduce the concept of the fuel poverty gap. More information on LIHC can be found in the Fuel poverty methodology handbook 2020: Low Income High Costs (LIHC) (originally published by BEIS).

- **Note A-3**

Traditionally there has been a lag in the publication of the Fuel Poverty statics such that the publication came more than a year after the data collection. For example, the data relating to Fuel Poverty in 2019 was published in March 2021.

In the latest Fuel Poverty statistics released on 15 February 2024, DESNZ gave headline figures as projections for 2022. They are designed to represent the period between April 2022 and March 2024 inclusive. This is a significant change made for the 2023 annual report to provide more timely estimates of

fuel poverty in detail. The 2023 projection is considered to be less uncertain than the 2024 projection since it is based more on observed changes to energy efficiency installations, income changes and announced energy prices.

- **Note A-4**

The Fuel Poverty Energy Efficiency Rating (FPEER) uses a modified version of the standard Energy Efficiency Rating which takes into account policies that directly affect the cost of energy. In recent years this has included the rebate provided by Warm Home Discount. The FPEER methodology deducts such rebates from the overall modelled costs produced under the SAP system. The FPEER methodology generates a rating between 1 and 100, which is then translated into an energy efficiency Band from G (lowest) to A (highest) as follows:

Fuel poverty Energy Efficiency Rating	Band
1 to 20	G
21 to 38	F
39 to 54	E
55 to 68	D
69 to 80	C
81 to 91	B
92 +	A

Note that the RPEER methodology rating will be higher than the standard rating if the household receives additional support. The standard rating methodology is used in the Energy Performance Certificates sections of this report (Sections B and C).

- **Note A-5**

Fuel poverty in England is currently measured using the Low Income Low Energy Efficiency (LILEE) methodology. According to this methodology a household is fuel poor if:

- o it is living in a property with an energy efficiency rating of band D, E, F or G as determined by the most up-to-date Fuel Poverty Energy Efficiency Rating (FPEER) Methodology - this is depicted by the horizontal threshold in Figure A-1; and

- o its disposable income (income after housing costs (AHC) and energy costs) would be below the poverty line as depicted by the vertical sloping threshold in Figure A-1.

There are therefore three key elements (drivers) in determining whether a household is fuel poor: (1) household income; (2) household energy efficiency; and (3) fuel prices. Increased energy efficiency, higher incomes and lower energy prices would each have a positive impact on a fuel poor household. The LILEE fuel poverty indicator sets an absolute energy efficiency threshold making it easier to identify the impact of changes in energy efficiency. The relative nature of the income threshold means it is harder to see the impact of changes in income and the contribution of prices since this requires an assessment of how household incomes and fuel costs change relative to the median income.

It is important to note that **LILEE is not based on actual fuel costs**. The Government is interested in the amount of energy households need to consume to have a warm, well-lit home, with hot water for everyday use, and the running of appliances. Fuel poverty is therefore measured based on required fuel costs of the energy efficiency of the home rather than actual spending. An equivalisation factor is applied to reflect the different levels of energy required depending on the number of people living in the property.

The Income element of LILEE is defined as equivalised income after housing costs, tax and National Insurance. Equivalisation reflects that households have different spending requirements depending on the number and age of people living in the property.

Under the LILEE indicator there is no exact point on the income axis, for a given FPEER rating, where the household would be classed as Low Income since this threshold is measured using income minus fuel costs. The sloping dashed line Figure A-1 marks a line of best fit between households classed as Low Income and

High Income and shows the impact of higher fuel costs in Low Energy Efficiency households. The variation in fuel costs for a given FPEER is due to factors including property size, household size, occupancy pattern. The depth of fuel poverty is measured by the fuel poverty gap. The fuel poverty gap is the reduction in fuel costs needed for a household to not be in fuel poverty. This is either the change in required fuel costs associated with increasing the energy efficiency of a fuel poor household to a Fuel Poverty Energy Efficiency Rating (FPEER) of at least 69 (band C threshold) or reducing the costs sufficiently to meet the income threshold.

More information on the Fuel Poverty Energy Efficiency Rating (FPEER) and Low Income Low Energy Efficiency (LILEE) can be found in the Fuel Poverty Methodology Handbook (originally published by BEIS).

- **Note A-6**

An analysis of housing stock by property age and type can be found in Statistical Digest of Rural England:2 – Housing.

This report contains information on the number and proportion of pre-1919 houses in rural and urban areas as well as the number of (mid and end) terraced properties. This analysis is based on the English Housing Survey (EHS) which does not define rurality according to the RUC, it uses a looser definition based on an in-situ assessment (see the Husing report for more details). Therefore, where this data source has been used in this section, we refer to rural and urban instead of Rural and Urban to denote that these are not using the strict RUC definition.

- **Note A-7**

Energy Saving Trust blog March 2019: Why outside the grid does not mean outside of help.

- **Note A-8**

After switching to the LILEE methodology DESNZ / BEIS back calculated fuel poverty figures to 2010 using the LILEE approach to generate a consistent time series for a selection of variables. These long-term fuel poverty trend tables are updated annually as part of the Fuel Poverty Statistics publication. Table 5 of the long-term trends publication contains a breakdown for properties on and off the gas grid. In this document all the estimates of the fuel poverty gap are in 'real terms', which means that they take account of inflation. These estimates were produced by DESNZ using the Gross Domestic Product (GDP) deflators consistent with the Office for Budget Responsibility estimates November 2023.

- **Note A-9**

Annual fuel poverty statistics report 2024 (2022 and 2023 data) sections 3.1.2 to 3.1.5 cover fuel poverty by wall type, dwelling type, floor area and property age.

- **Note A-10**

Fuel poverty source data: DESNZ fuel poverty statistics: www.gov.uk/government/collections/fuel-poverty-statistics

- **Note A-11**

Energy Performance Certificate (EPC) are described in more detail in Section B Energy Performance Certificates: average Energy Efficiency Score and Section C Energy Performance Certificates: achieving energy efficiency category C.

- **Note A-12**

The Office for National Statistics (ONS) publish Energy Efficiency of Housing at Local Authority level on an annual basis for financial years. This section uses data for the financial year ending March 2023.

The source data for this ONS publication is Department for Levelling up, Housing and Communities – Energy Performance Certificate data on Open Data Communities and Valuation Office Agency - Property Attributes data (https://epc.opendatacommunities.org/).

There was 22 Local Authorities where the proportion of properties using oil was supressed in the source data and they were therefore excluded from our analysis. All of them were Predominantly Urban Local Authorities and the Local Authorities excluded can be determined from worksheet AD in the Energy data tables.

- **Note A-13**

DESNZ produce subnational estimates of domestic properties not on the gas grid, Great Britain. In their latest publication the data is for 2015 – 2022 (https://www.gov.uk/government/statistics/sub-national-estimates-of-households-not-connected-to-the-gas-network). Unfortunately, for our purpose, this new data has been produced using the 2023 boundaries (Note A-16) and recalculated for all years back to 2015. This is unfortunate because the areas merged together in Cumbria and North Yorkshire have quite different proportions of off grid properties and merging removes a lot of detail as to where the off-grid properties are.

- **Note A-14**

Tables showing the data behind Figure A-3, Figure A-6 and Figure A-7 are available in the Energy data tables.

- **Note A-15**

DESNZ produce sub-regional fuel poverty data as Experimental Statistics and their latest publication released on 23 April 2023 was for 2021 data and uses the 2023 Local Authority boundaries. It is not possible to update Figure A-4 or Figure A-5 until DESNZ have published newer sub-regional level data. The sub-regional Experimental Statistics complement the National Statistics on fuel poverty, by estimating the number and proportion of fuel poor households at smaller geographical levels, for example, Local Authority (LA) level. However the sub-regional statistics do not report on the average fuel poverty gap. This latest publication is the third year that sub-regional breakdowns have been produced based on the LILEE indicator.

They are Official Statistics, produced in compliance with the Code of Practice for Statistics and will be undergoing an evaluation process prior to being assessed as National Statistics.

- **Note A-16**

New Local Authorities came into operation in April 2023. These changes relate to 3 parts of England: (1) North Yorkshire, (2) Cumbria and (3) Somerset. This reduced the total number of Local Authorities from 309 down to 296.

1. A new unitary authority called North Yorkshire replaced the 7 existing districts of Craven, Hambleton, Harrogate, Richmondshire, Ryedale, Scarborough and Selby. We have provisionally classified this single North Yorkshire UA as Predominantly Rural.

2. The 6 districts within Cumbria were abolished and replaced with 2 new unitary authorities. Allerdale, Carlisle and Copeland have been merged to form Cumberland and Barrow-in-Furness, Eden and South Lakeland have been merged to form Westmorland and Furness. We have provisionally classified Cumberland and Westmorland and Furness as Predominantly Rural.

3. The districts of Mendip, Sedgemoor, Somerset West and Taunton, and South Somerset have been merged to form a new unitary authority known as Somerset. We have provisionally classified this single Somerset UA as Predominantly Rural.

Note that the fuel type analysis based on the Energy Efficiency of Housing publication uses the pre April 2023 boundaries.

- **Note A-17**

There is no mains gas on the Scilly Isles.

B. Energy Performance Certificates: average Energy Efficiency Score

Energy efficiency of homes is improving and whether the property is a house or a flat and the age of the property are far more important factors in determining its energy efficiency than its level of rurality.

Summary

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let; the higher the energy efficiency score the more efficient the building. Low Income Households can only be in fuel poverty if the Fuel Poverty Energy Efficiency Rating of their home is band D or below (an Energy Efficiency Score less than 69).

In 2023 the average Energy Efficiency Score differed little between homes in Predominantly Rural areas (66.8) and homes in Predominantly Urban areas (67.5). Both scores are equivalent to an Energy Efficiency Rating (EER) band D.

On average, older dwellings have a lower average efficiency rating in both Predominantly Rural and Predominantly Urban areas. In 2023, pre-1930 properties in Predominantly Rural areas had an average median Energy Efficiency Score of 54.2, whilst modern homes (2012 onwards) in Predominantly Rural areas had an average Energy Efficiency Score of 83.5. Pre-1930s properties in Predominantly Rural areas have an average Energy Efficiency Rating one band lower than for pre 1930s properties in Predominantly Urban areas.

In 2023 flats and maisonettes had the highest average median energy efficiency score of all domestic property types and scored virtually the same in both Predominantly Rural (73.0) and Predominantly Urban (72.9) areas. Flats and maisonettes had an average Energy Efficiency Rating one band higher than terraced, detached and semi-detached properties. In Predominantly Rural areas on average a new detached property had an Energy Efficiency Score 23 points higher than the average for existing detached properties.

In 2023 in both Predominantly Rural and Predominantly Urban areas, in terms of tenue, the lowest average Energy Efficiency Score was for owner occupied properties and the highest was for social rented properties. The private rental sector had the biggest difference in average Energy Efficiency Scores between Predominantly Rural (63.8) and Predominantly Urban areas (66.2).

Half of the Predominantly Rural Local Authorities had average Energy Efficiency Scores that were within 1 point of the median Energy Efficiency Score of 67. Half of Predominantly Rural Local Authorities had an average Energy Efficiency Score of 55 or less for pre-1930s properties but only 7 of 175 Predominantly Urban Local Authorities (about 5%) had an average Energy Efficiency Score of 55 or less for pre-1930s properties.

Energy Performance Certificates and ratings

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let. The Energy Efficiency Score shows the energy efficiency of a building at the time of its EPC assessment. The higher the score, the more energy efficient a building is. An Energy Efficiency Rating band from A to G can also be used to interpret this score, where A is very energy efficient, and G is very energy inefficient (Table B-1). Households can only be in fuel poverty if the Energy Efficiency Rating of the home, as defined by the latest Fuel Poverty Energy Efficiency methodology, is band D or below (Note B-2, Note B-3). Note B-5 contains more details about EPCs.

Table B-1: Lookup table to aid interpretation of Interpreting energy efficiency scores

Energy Efficiency Score	Energy Efficiency Rating band
More than 91	A
81 to 91	B
69 to 80	C
55 to 68	D
39 to 54	E
21 to 38	F
1 to 20	G

This data does not reflect all dwellings in England, because not every dwelling has an EPC. Table 4a of Median energy efficiency score, England and Wales shows the percentage of dwellings covered by an Energy Performance Certificate since records began, in England and Wales, as at 31 March 2023. Overall, in England around two-thirds of domestic properties are covered by EPCs. In general, the coverage is higher for:

- for newer properties (95% coverage of post 2012 properties) than older ones;
- rented properties than owner occupied; and
- flats and maisonettes (83% coverage) than houses (60% coverage for detached properties).

Average energy efficiency

The ONS publish Energy Efficiency of Housing on an annual basis (see Note B-4 and Note B-5). The most recent edition was published in November 2023.

There is little difference between the average Energy Efficiency Score of homes in Predominantly Rural areas (66.8 in 2023) and homes in Predominantly Urban areas (67.5 in 2023). In both Predominantly Rural and Predominantly Urban areas this average Energy Efficiency Score equates to an Energy Efficiency Rating of D. In both Predominantly Rural and Predominantly Urban areas the average energy efficiency increased marginally year-on-year between 2021 and 2023 (Figure B-1). In Predominantly Rural areas the change has been slightly larger over this 2 year period than in Predominantly Urban areas. The average Energy Efficiency Score has increased by 2.1 (3%) in Predominantly Rural areas and in Predominantly Urban areas it increased by 1.3 (2%).

Homes in Mainly Rural areas have an average Energy Efficiency Rating that is slightly lower than for homes in Largely Rural areas (Figure B-2), so the more rural an area the lower the average Energy Efficiency Rating. The average Energy Efficiency Rating increased year-on-year between

2021 and 2023 in both Mainly Rural and Largely Rural areas. This increase was marginally larger in Largely Rural areas (3.4%) than in Mainly Rural areas (3.1%)

Considering only the average hides information because there are several factors that can influence the Energy Efficiency Rating of homes. Two of them are the housing type and housing age. Subsequent sections examine these two factors.

Figure B-1: Bar chart showing average Energy Efficiency Score by Local Authority Rural-Urban Classification in 2021, 2022 and 2023 (Note B-4)
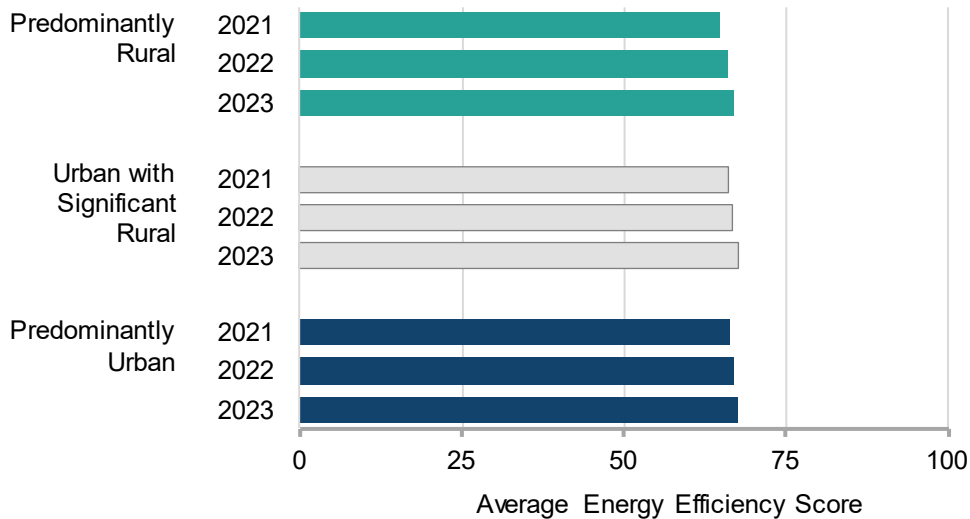
Figure B-2: Bar chart showing average Energy Efficiency Score for Rural areas by Rural-Urban Classification in 2021, 2022 and 2023 (Note B-4)
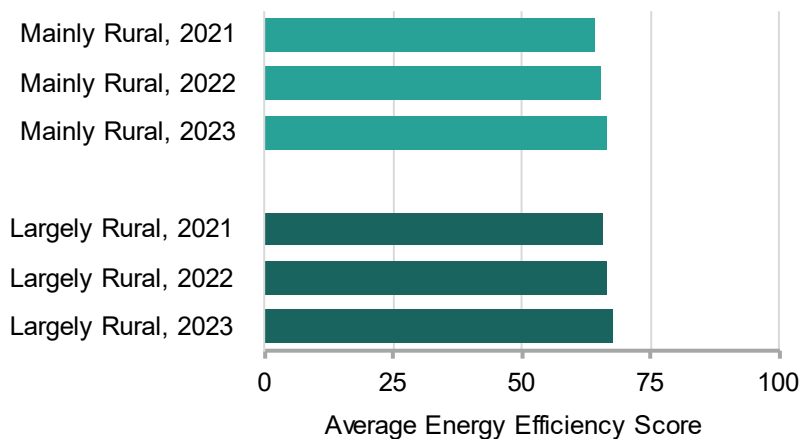
Average energy efficiency by housing age

On average, older dwellings had a lower average efficiency rating in both Predominantly Rural and Predominantly Urban areas (Figure B-3).

For pre-1930 properties in Predominantly Rural areas the average median Energy Efficiency Score in 2023 was 54.2, which equates to an average Energy Efficiency Rating of E. For properties in Predominantly Rural areas built between 1930 and 1982 the average Energy Efficiency Score equated to a rating of D. For 2023 the average Energy Efficiency Score for homes built between 1983 and 2011 was just within the band for an average Energy Efficiency Rating of C and for

modern homes (2012 onwards) the average Energy Efficiency Score of 83.5 in Predominantly Rural areas equated to a rating of B. In the March 2021 dataset the ONS used different property age bands and it was possible to distinguish between pre-1900 and 1900 to 1929 homes. For pre-1900 homes in Predominantly Rural areas the 2021 median Energy Efficiency Rating was only 47.6 (and this compares to 55.6 in Predominantly Urban areas).

Figure B-3: Bar chart showing average Energy Efficiency Score by property age band and Local Authority Rural Urban Classification in 2023 (Note B-4)
The legend is presented in the same order and orientation as the cluster of columns.
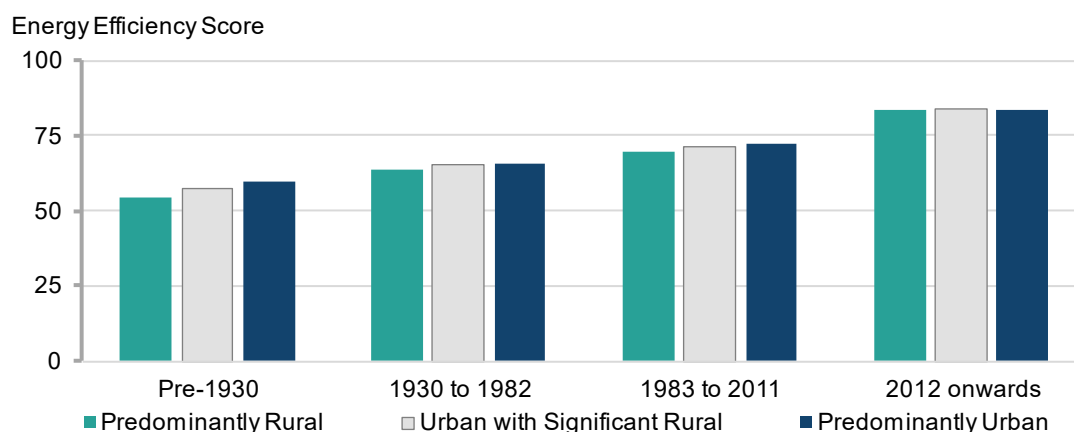
The Rural-Urban Energy Efficiency Rating Gap (Rural-Urban EER Gap) is shown in Table B-2 and it is the difference between the average Energy Efficiency Ratings in Predominantly Urban and Predominantly Rural areas - effectively the difference in the column heights on Figure B-3. For properties built in the last 10 years the Rural-Urban EER Gap was only 0.1 indicating that there was very little difference in the median Energy Efficiency Score for modern buildings in Predominantly Rural and Predominantly Urban areas. For pre-1930 properties the Rural-Urban EER Gap was 5.7 energy efficiency points. This figure is big enough to make the average Energy Efficiency Rating in old homes in Predominantly Urban areas (rating D) one band higher than the average for old homes in Predominantly Rural areas (rating E).

For properties of all ages the average Energy Efficiency Score increased between 2022 and 2023 in both Predominantly Rural and Predominantly Urban areas, but the Rural-Urban EER Gap changed little from 2022.

Table B-2: The Energy Efficiency Rating (EER) in Rural and Urban areas (including London) and the Rural-Urban Energy Efficiency Rating Gap (EER Gap) by property age band in 2023 (Note B-4)
Rural-Urban (including London) EER Gap is the difference between the average EER in Predominantly Urban (including London) and Predominantly Rural areas.

Property age	Pre-1930	1930 to 1982	1983 to 2011	2012 onwards
Predominantly Rural EER	54.2	63.8	69.9	83.5
Predominantly Urban (including London) EER	59.9	65.7	72.5	83.6
Rural-Urban (including London) EER Gap	5.7	1.9	2.6	0.1

For all property age bands, the average Energy Efficiency Score was higher in London than in Predominantly Urban (excluding London) and this difference was biggest for pre-1930 and 1983 to 2011 properties (See Table GA2b in the supplementary tables - Note B-1). The impact of this is that the is Rural-Urban (excluding London) EER Gap (Table B-3) was smaller than the Rural-Urban (including London) EER Gap for all property age bands.

Table B-3: The Energy Efficiency Rating (EER) in Rural and Urban areas (excluding London) and the Rural-Urban Energy Efficiency Rating Gap (EER Gap) by property age band in 2023 (Note B-4)

Rural-Urban (excluding London) EER Gap is the difference between the average EER in Predominantly Urban areas outside of London and Predominantly Rural areas.

Property age	Pre-1930	1930 to 1982	1983 to 2011	2012 onwards
Predominantly Rural EER	54.2	63.8	69.9	83.5
Predominantly Urban (excluding London) EER	59.2	65.5	71.8	83.4
Rural-Urban (excluding London) EER Gap	5.0	1.8	1.9	-0.1

To simplify the picture, we can split properties into new dwellings and existing dwellings. Any property that has undergone a conversion to change its use is considered to be a new property from an EPC perspective (Note B-6). As expected, new dwellings had a higher Energy Efficiency Score than existing dwellings (Figure B-4) and there was no difference between the scores for Predominantly Rural and Predominantly Urban areas (both had an average score of 83.5). The average Energy Efficiency Score for existing buildings was 64.2 in Predominantly Rural areas and 65.9 in Predominantly Urban areas.

Figure B-4: Bar chart showing average Energy Efficiency Score for existing dwellings and new dwellings by property age band and Local Authority Rural Urban Classification in 2023 (Note B-4)

The legend is presented in the same order and orientation as the cluster of columns.
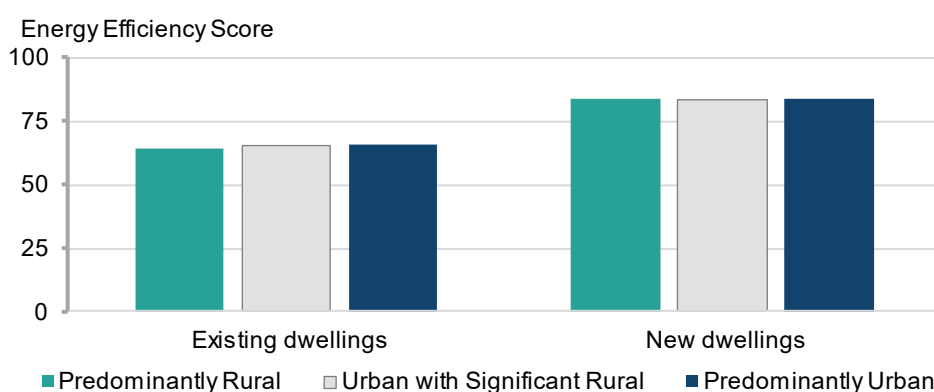
Average energy efficiency by housing type

Flats and maisonettes had the highest average median Energy Efficiency Score (Figure B-4) of all domestic property types and score virtually the same in both Predominantly Rural (73.0) and Predominantly Urban (72.9) areas. This equated to an Energy Efficiency Rating of C. Terraced housing had the second highest average median Energy Efficiency Score in both Predominantly

Rural and Predominantly Urban areas, but their overall average Energy Efficiency Rating was still D, as it was for Detached and Semi-detached premises.

Figure B-5: Bar chart showing average Energy Efficiency Score by property type and Local Authority Rural-Urban Classification in 2023 (Note B-4, Note B-7)
The legend is presented in the same order and orientation as the cluster of columns.
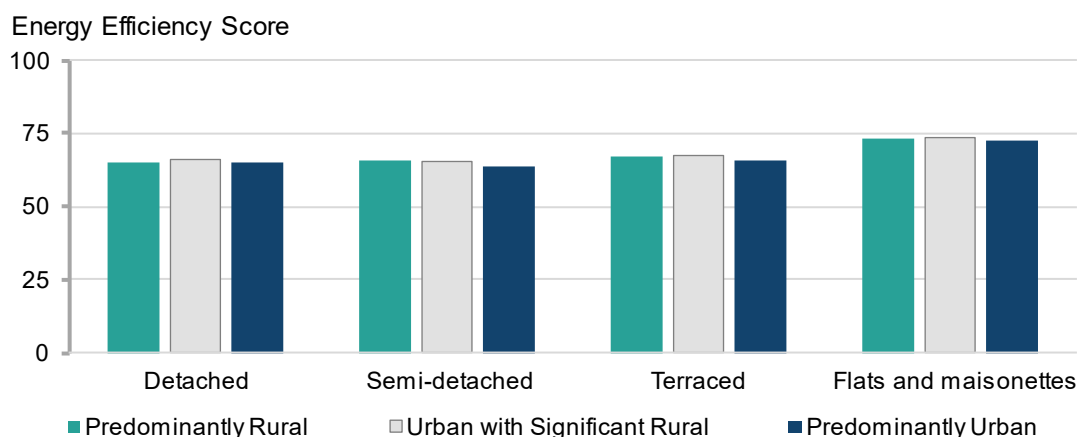
The Rural-Urban EER Gap by property type is shown in Table B-4. The Rural-Urban EER Gap is negative for all property types except detached indicating that on average the Energy Efficiency Score of homes in Predominantly Rural areas is only lower than in Predominantly Urban areas for detached properties. For all property types in both Predominantly Rural and Predominantly Urban areas the average Energy Efficiency Score increased between 2021 and 2022. The largest increase was for detached properties which increased by 1.4 points in Predominantly Rural areas and 1.0 points in Predominantly Urban areas. By contrast the improvement for Terraced houses and Flats and maisonettes was only 0.6 points

Table B-4: The Energy Efficiency Rating (EER) in Rural and Urban areas (including London) and the Rural-Urban Energy Efficiency Rating Gap (EER Gap) by property type in 2022 (Note B-4, Note B-7)
Rural-Urban (including London) EER Gap is the difference between the average EER in Predominantly Urban (including London) and Predominantly Rural areas.

Property type	Detached	Semi-detached	Terraced	Flats and maisonettes
Predominantly Rural (EER)	64.9	65.8	67.3	73.0
Predominantly Urban (including London) EER	65.1	64.0	65.5	72.9
Rural-Urban (including London) EER Gap	0.2	-1.7	-1.8	-0.2

The average energy efficiency rating in Local Authorities in London was lower than the average Energy Efficiency Rating in Predominantly Urban Local Authorities outside of London across all property types (See Table GA3b in the supplementary tables - Note B-1). The difference was largest for Detached and Semi-detached properties. So, the Rural-Urban (excluding London) EER Gap was smaller for Semi-detached and Terraced properties, but larger for Detached properties (Table B-5).

It is possible to consider new and existing dwellings (Note B-6) by property type separately. For new properties the average Energy Efficiency Score was over 80 (rating band B) for all property types in both Predominantly Rural and Predominantly Urban areas (Figure B-6 – top chart). The average scores for Predominantly Rural and Predominantly Urban areas differed by, at most, 0.7 points.

Table B-5: The Energy Efficiency Rating (EER) in Rural and Urban areas (excluding London) and the Rural-Urban Energy Efficiency Rating Gap (EER Gap) by property type in 2023 (Note B-4, Note B-7)

Rural-Urban (excluding London) EER Gap is the difference between the average EER in Predominantly Urban areas outside of London and Predominantly Rural areas.

Property type	Detached	Semi-detached	Terraced	Flats and maisonettes
Predominantly Rural EER	64.9	65.8	67.3	73.0
Predominantly Urban (excluding London) EER	66.2	65.0	65.9	72.9
Rural-Urban (excluding London) EER Gap	1.3	-0.7	-1.4	-0.1

Figure B-6: Bar chart showing average Energy Efficiency Score for new (top chart) and existing (bottom chart) properties by property type and Local Authority Rural-Urban Classification in 2023 (Note B-4, Note B-6, Note B-7)

The legend is presented in the same order and orientation as the cluster of columns.
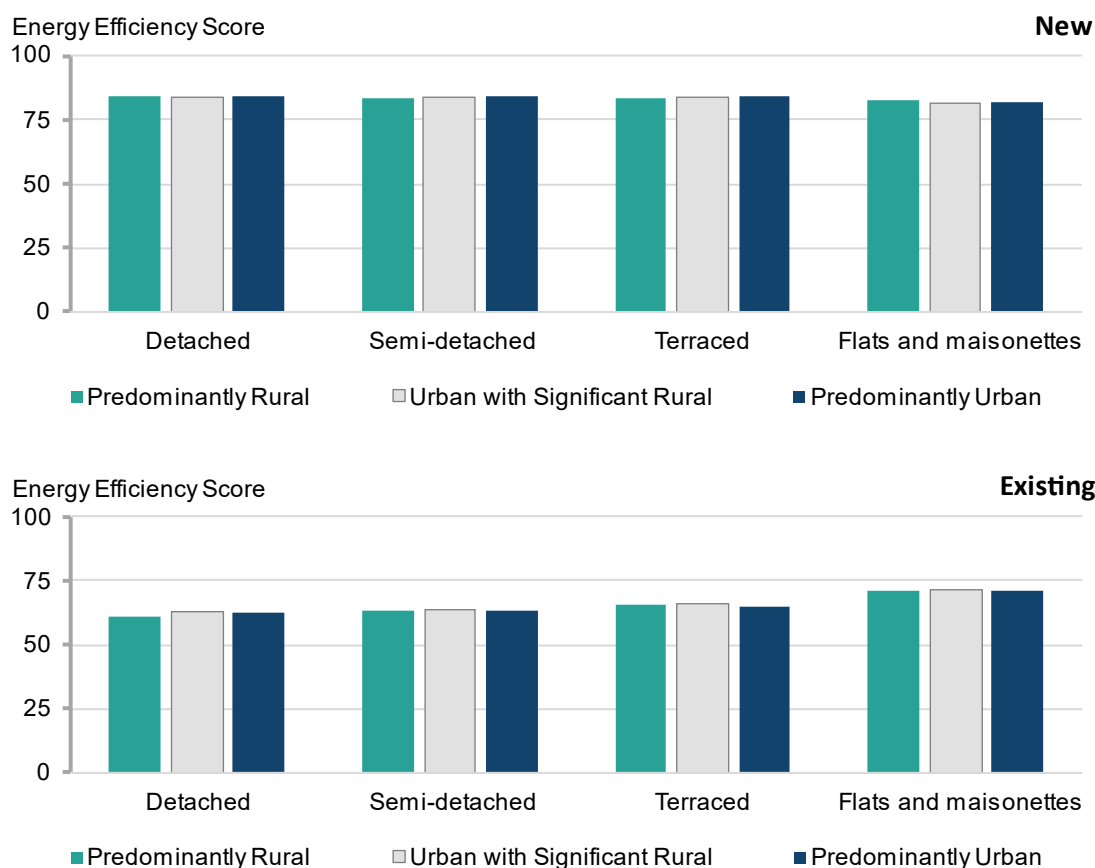
For existing properties (Figure B-6 – bottom chart), Flats and maisonettes had the highest Energy Efficiency Score in both Predominantly Rural and Predominantly Urban areas (both were 71.2). The lowest average energy efficiency scores were for existing Detached properties at 61.3 in Predominantly Rural areas and 62.7 in Predominantly Urban areas. This Rural-Urban EER gap of 1.4 was the largest amongst the four property types. For existing semi-detached and terraced properties, the average energy efficiency score was marginally higher in Predominantly Rural areas than Predominantly Urban areas.

As seen in Figure B-6, rurality is a much less important factor in the average Energy Efficiency Score than whether or not the building is new or existing (Note B-6). As Table B-6 shows in Predominantly Rural areas on average a new detached property had an Energy Efficiency Score 23 points higher than the average for an existing property. In rating terms this is a difference of a D rating to a B rating. The same rating difference was also seen for Semi-detached and Terraced properties, but the absolute change in the average energy efficiency score was smaller. The greater average Energy Efficiency Scores for Flats and maisonettes means that there is a smaller difference (C rating to a B rating) with an 11 points higher rating score for new properties compared to existing properties.

Table B-6: The difference in the average Energy Efficiency Scores for new and existing properties by property type and Local Authority Rural-Urban Classification in 2023 (Note B-4, Note B-6, Note B-7)

Rural-Urban Classification	Detached	Semi-detached	Terraced	Flats and maisonettes
Predominantly Rural	22.6	20.2	18.2	11.2
Urban with Significant Rural	21.0	19.9	18.0	9.7
Predominantly Urban	21.4	21.2	19.6	10.6

Average energy efficiency by tenure

The ONS dataset also includes Energy Efficiency Ratings for Owner Occupied and rented properties. In all areas, Owner Occupied properties tend to have the lowest average Energy Efficiency Score and Social Rented properties tend to have the highest Energy Efficiency Rating (Figure B-7). For Social Rented properties the average Energy Efficiency Score equates to a C rating in both Predominantly Urban and Predominantly Rural areas, whilst for Owner Occupied and Private Rented the average score equates to a D rating. The scores for all 3 tenure types were marginally higher in 2023 than they were in 2022, but the year-on-year improvement was greater for Owner Occupied and Private Rented properties than for Social Rented properties.

The Rural-Urban EER Gap for the private rented sector is more than double the size of the Rural-Urban EER Gap for owner occupied or socially rented houses (Figure B-8). For Private rented properties the average Energy Efficiency Score is 63.8 in Predominantly Rural areas and 66.2 in Predominantly Urban areas; leading to a Rural-Urban EER Gap of 2.5. For comparison with Owner-Occupied properties the Rural-Urban EER Gap is 1.2.

Figure B-7: Bar chart showing average Energy Efficiency Score by property tenure and Local Authority Rural Urban Classification in 2023 (Note B-4, Note B-8)
The clusters of columns are ordered as follows for each RUC category: Owner Occupied (O-O), Private Rent (PR) and Social Rent (SR)

Energy Efficiency Score

O-O = Owner Occupied   PR = Private Rent   SR = Social Rent
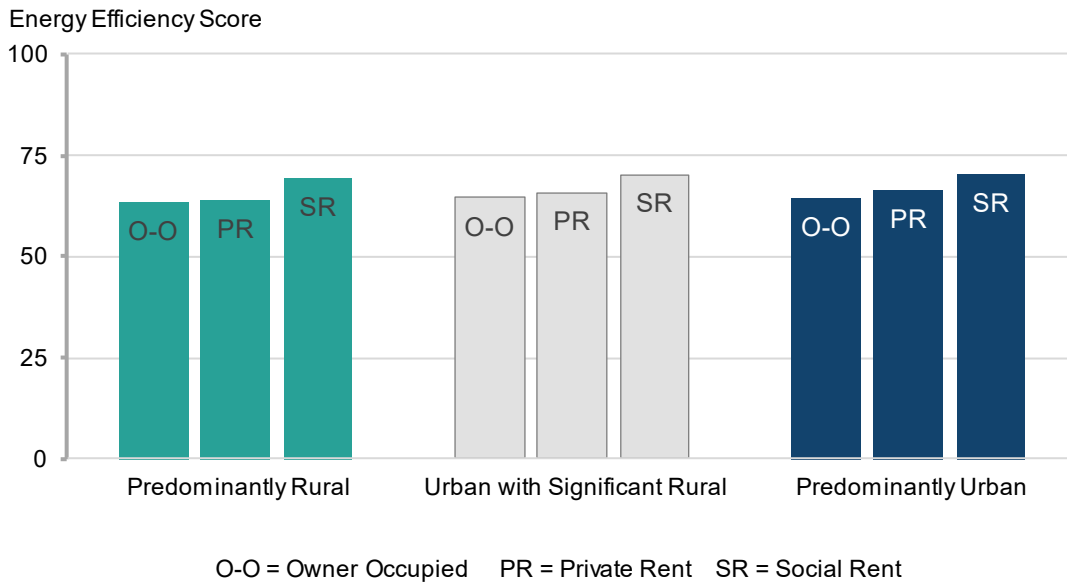
Figure B-8: Bar chart showing the Rural-Urban Energy Efficiency Rating Gap (EERG) by tenure in 2023 (Note B-4, Note B-8)

Rural-Urban Energy Efficiency gap
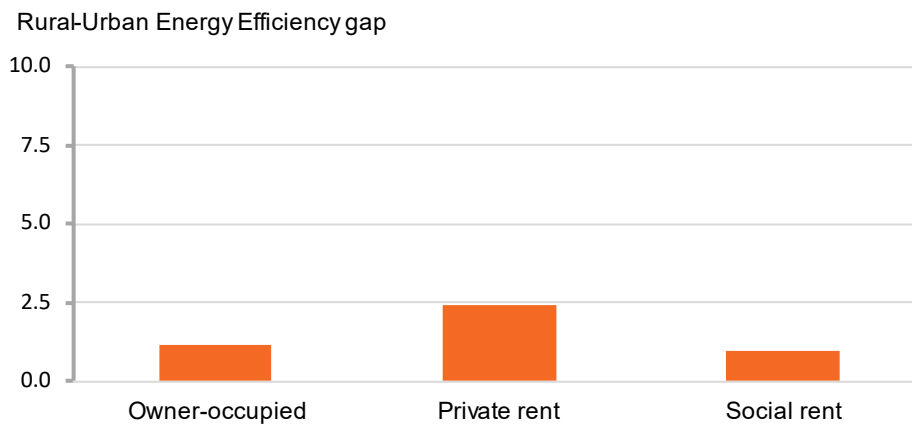
Average energy efficiency distributions

Considering just the averages across Predominantly Rural and Predominantly Urban masks the detail and prevents the identification of Local Authorities where the average Energy Efficiency score is particularly low or particularly high. Considering Predominantly Rural areas first, the data showed that for all dwellings the lower quartile Energy Efficiency Score was 65.8 and the upper quartile Energy Efficiency Score was 68. In other words, for half of the Predominantly Rural Local Authorities the difference in the average Energy Efficiency Score is small and they were clustered within 1 point of the median Energy Efficiency Score of 67. The Isles of Scilly appeared as a clear outlier as the Predominantly Rural Local Authority with the lowest average Energy Efficiency Score (Table B-7). Potentially this is an artefact of a small sample size because a property will only get an EPC when it is traded or constructed. The next lowest scores were for Eden and North Norfolk

followed by another 5 Local Authorities that scored 64. It is worth noting that Eden is the Predominantly Rural Local Authority on the English mainland with the highest proportion of off-grid properties (Figure A-11). At the other end of the scale (Table B-8) West Oxfordshire and the Vale of White Horse had the highest average Energy Efficiency Scores in Predominantly Rural areas (71) followed by a cluster of 8 Local Authorities that all scored 70.

In Predominantly Urban areas there was a marginally greater spread either side of the median (67) with a lower quartile score of 66 and an upper quartile score of 69. The Predominantly Urban Local Authority with the highest score was Tower Hamlets (78). Having the regenerated London Docklands area and a high proportion of flats within the Local Authority probably contributed to this high score. Overall, there was 30 Predominantly Urban areas with an average Energy Efficiency Score of at least 70. At the other end of the scale the lowest scoring Predominantly Urban area was Pendle with 61.

Table B-7: The 3 Predominantly Rural areas with the lowest average Energy Efficiency Scores (EES) in 2023 (Note B-4)

Predominantly Rural area	Average EES
Isles of Scilly	47
North Norfolk	63
Eden	63

Table B-8: The 2 Predominantly Rural areas with the highest average Energy Efficiency Scores (EES) in 2023 (Note B-4)

Predominantly Rural area	Average EES
West Oxfordshire	71
Vale of White Horse	71

Previous sections determined that average Energy Efficiency was lowest for old properties and for detached properties therefore the distributions for these two subgroups were analysed. Considering first the pre-1930s houses, in Predominantly Rural areas the average energy efficiency score was less than 50 in 5 Local Authorities (Table B-9) and only 2 Local Authorities achieved a score of at least 60 (Table B-10). This means that even for the Local Authorities with the highest scores the average energy efficiency rating is still a D for pre-1930s properties. Half of Predominantly Rural Local Authorities had an average Energy Efficiency Score of 55 or less but only 8 of 175 Predominantly Urban Local Authorities (about 5%) had an average Energy Efficiency Score of 55 or less and minimum score in Predominantly Urban areas was 54 (Table B-11).

Table B-9: The 5 Predominantly Rural areas with average Energy Efficiency Scores (EES) less than 50 for Pre-1930s properties in 2023 (Note B-4)

Predominantly Rural area	Average EES
Isles of Scilly	36
Richmondshire	46
Eden	46
Ryedale	49
Herefordshire	49

Table B-10: The 2 Predominantly Rural areas with average Energy Efficiency Scores (EES) of at least 60 for Pre-1930s properties in 2023 (Note B-4)

Predominantly Rural area	Average EES
High Peak	60
County Durham	60

For pre-1930s properties in Predominantly Urban areas the median Energy Efficiency Score was 60 – the same as the highest score in Predominantly Rural areas. 92 of the 175 Predominantly Urban Local Authorities (53%) had an average Energy Efficiency Score for its pre 1930s properties of at least 60. The top 4 Predominantly Urban areas (all within London) on average scored at least 66 for pre-1930s properties (Table B-12).

Table B-11: The 2 Predominantly Urban areas with average Energy Efficiency Scores (EES) less than 55 for Pre-1930s properties in 2023 (Note B-4)

Predominantly Urban area	Average EES
Bradford	54
Redditch	54

Table B-12: The 4 Predominantly Urban areas with average Energy Efficiency Scores (EES) of at least 66 for Pre-1930s properties in 2023 (Note B-4)

Predominantly Urban area	Average EES
Camden	66
Kensington and Chelsea	66
Westminster	67
City of London	69

For Detached properties in Predominantly Rural areas the average Energy Efficiency Scores were largely between 60 (Eden, West Devon) and 70 (7 different areas), with the Scilly Isles a clear outlier with a score of 40 (Table B-13). The range of average Energy Efficiency Scores for detached properties is wider in Predominantly Urban areas than it was for Predominantly Rural areas and stretches from 55 (Lambeth, Lewisham) to 79 (Newcastle upon Tyne). Overall, 17 Predominantly Urban areas scored less than 60 for the average Energy Efficiency of Detached properties, and all bar one of these (Southend) was a London Borough. So, there are 17 Predominantly Urban areas where on average Detached properties were less energy efficient than in the least energy efficient Predominantly Rural area on mainland England. The 10 Predominantly Urban areas with lowest scores are in Table B-14.   At the other end of the spectrum there were 13 Predominantly Urban areas where the average Energy Efficiency Score was at least 70, and 7 of these 13 were in the North East with a further 3 in the North West.

Overall, looking at these distributions for selected characteristics has shown that the characteristics of the property are more important for determining its energy efficiency than where it is geographically. For example, in Predominantly Rural areas the lowest scoring areas for the energy efficiency of flats still score as high as the highest scoring Predominantly Rural areas for Detached and Semi-detached properties. Similarly, the lowest scoring Predominantly Rural areas overall still score higher than the highest scoring areas for pre-1930s properties.

Table B-13: The 8 Predominantly Rural areas with the lowest average Energy Efficiency Scores (EES) for Detached properties in 2023 (Note B-4)

Predominantly Rural area	Average EES
Isles of Scilly	40
Eden	60
West Devon	60
Richmondshire	61
North Norfolk	61
Herefordshire	61
Cornwall	61
East Lindsey	61

Table B-14: The 10 Predominantly Urban areas with lowest average Energy Efficiency Scores (EES) for Detached properties in 2023 (Note B-4)

Predominantly Urban area	Average EES
Lewisham	55
Lambeth	55
Westminster	57
Waltham Forest	58
Brent	58
Richmond upon Thames	58
Camden	58
Ealing	58
Kingston upon Thames	58
Kensington and Chelsea	58

EPCs: average Energy Efficiency Score explanatory notes

- **Note B-1**

Tables showing the data in Section B are available in the [Energy data tables](#).

- **Note B-2**

Fuel poverty or being fuel poor is where a household is living in a property with a Fuel Poverty Energy Efficiency Rating (FPEER) of band D or below in a home that cannot be kept warm at reasonable cost without bringing their residual income (after housing and energy costs) below the poverty threshold. As explained in Section A Fuel poverty, Fuel Poverty in England is defined using the Low Income Low Energy Efficiency approach.
Figure 2.2 in the [Annual fuel poverty statistics report: 2023](#) graphically displays how fuel poor households are defined.

- **Note B-3**

The FPEER uses a modified version of the standard Energy Efficiency Rating which considers policies that directly affect the cost of energy. In recent years this has included the rebate provided by Warm Home Discount. The FPEER methodology deducts such rebates from the overall modelled costs produced under the Standard Assessment Procedure (SAP) system. This gives an energy efficiency rating (again from 1-100), which will be higher than the standard rating if the household receives additional support. This modified rating is also translated to a band (A to G) on the same bases as the original system displayed in Table G-1. The document [Fuel poverty methodology handbook 2023: Low Income Low Energy Efficiency (LILEE)](#) gives further details.

- **Note B-4**

The Office for National Statistics (ONS) publish [Energy Efficiency of Housing](#) at Local Authority level on an annual basis for financial years. This section primarily uses the Median energy efficiency score, England and Wales dataset for the financial year ending [March 2023](#). Where 2021 or 2022 data has been used it is available from the dataset called [Energy efficiency of Housing, England and Wales, local authority districts](#). The source data for this ONS publication is Department for Levelling up, Housing and Communities – Energy Performance Certificate data on Open Data Communities and Valuation Office Agency - Property Attributes data (https://epc.opendatacommunities.org/).

- **Note B-5**

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let and it is valid for 10 years. There can be multiple EPC lodgements for the same dwelling, but only the latest lodgement is analysed to avoid double counting dwellings. Analysis includes the latest EPC lodgements for a 10 year period, from Q2 2013 to Q1 2023. So this data does not reflect all dwellings in England, because not every dwelling has an EPC.
EPCs are based on data about a building's energy features (like the building materials used, heating systems and insulation, for example), which are collected by an accredited energy assessor and are entered into a government-approved software to generate the EPC.
The median energy efficiency scores are calculated based on the energy efficiency scores at the time the EPC lodgement was assessed. This means that these statistics do not necessarily reflect energy efficiency improvements as the majority of alterations don't require a new EPC to be generated.

- **Note B-6**

Statistics for **new properties** were generated using data from new dwelling EPC records, which include new builds, conversions and change of use. Statistics for **existing properties** were generated using the latest EPC lodgement available for a property, within the existing dwellings records. An existing dwelling may have undergone several EPC assessments for different reasons (for example, due to a marketed sale, for a green deal assessment, or following the implementation of the changes suggested in a green deal assessment). New and existing dwellings are assessed using slightly different methodologies.

- **Note B-7**

ONS break down houses (including bungalows and park homes) into Detached, Semi-detached and Terraced property types and group flats and maisonettes together as the final property type.

- **Note B-8**

Tenure is more likely to change over time in comparison to other housing variables. The tenure is that given at the time of the EPC assessment. It is less likely to have tenure data for newly-built dwellings because they have just been constructed and do not yet have a tenure.

- **Note B-8**

C. Energy Performance Certificates: achieving energy efficiency category C

For all pre-2012 properties proportionally fewer reach an Energy Performance Certificate (EPC) rating of C or better in Predominantly Rural areas than in Predominantly Urban areas.

Summary

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let; the higher the Energy Efficiency Score the more efficient the building. Low Income Households can only be in fuel poverty if the Fuel Poverty Energy Efficiency Rating of their home is band D or below.

In 2023 in Predominantly Rural areas, 44.8% of the domestic properties had an EPC rating of C or better, whilst in Predominantly Urban areas it was 46.3% of properties. The corresponding values in 2021 were 38.9% and 42.1%. The gap has therefore narrowed between properties in Predominantly Rural and Predominantly Urban areas over this two-year period. The Vale of White Horse was the Predominantly Rural area with the highest proportion of properties with an EPC rating of at least C, 58.9%, and at the other end of the scale the Staffordshire Moorlands (27.5%) was the Predominantly Rural area with lowest proportion of category C and above domestic properties on the English mainland.

With the exception of the post-2011 properties, there is a smaller proportion of properties in Predominantly Rural areas with an EPC rating of at least C than in Predominantly Urban areas. For pre-1930 properties in Predominantly Rural areas only 10.4% of them had an EPC rating of C or better compared to 16.5% of pre-1930 properties in Predominantly Urban areas. There were only 6 Predominantly Rural areas where more than 15% of the pre-1930 properties were at least category C for their energy efficiency, whereas in Predominantly Urban areas there were six areas where more than 35% of the pre-1930 properties were at least category C for their energy efficiency.

In 2023, 68% of Flats and maisonettes in Predominantly Rural areas had an EPC rating of C or better compared to 40% of Detached of Semi-detached properties. The values for Predominantly Urban areas were similar for Detached and Flats and maisonettes, but eight percentage points lower for Semi-detached and Terraced properties. In terms of tenure, in 2023 the Social rented sector offered the highest proportion of domestic properties with an Energy Efficiency Rating of at least category C in both Predominantly Rural (56%) and Predominantly Urban areas (62%). The Owner-occupied sector offered the lowest proportion of domestic properties.

Minimum energy efficiency of Category C and the link to fuel poverty

Fuel Poverty is discussed in detail in A Fuel poverty including a full explanation of how fuel poverty is defined alongside statistics showing the proportion of fuel poor households and the depth of their fuel poverty (known as the fuel poverty gap). The key thing is that there are two aspects that define whether a household can be fuel poor: (1) the household income and (2) the energy efficiency of their home.

Low Income Households can only be in fuel poverty if the Fuel Poverty Energy Efficiency Rating (FPEER) of their home is band D or below (Note C-1). Section B explains how Energy Efficiency Scores map to Energy Efficiency Ratings using Table B-1.

The 2014 fuel poverty target for England set an objective to ensure that as many fuel poor households as reasonably practicable achieved a minimum Fuel Poverty Energy Efficiency Rating (FPEER) of band C by 2030 (Note C-2). It is therefore useful to consider what proportion of homes already have an Energy Efficiency Rating of at least 69 (the minimum for Category C) and whether there is any difference in the proportions between Rural and Urban areas. In other words, the properties that have energy efficiencies high enough that fuel poverty cannot be a consideration for the people living in them and therefore are people not requiring any additional policy interventions (Note C-3).

Section C primarily uses the Energy Performance Certificate (EPC) Band C or above, England and Wales dataset for the financial year ending March 2023 (Note C-4). As was explained in Energy Performance Certificates and ratings this dataset does not offer coverage of all English dwellings.

Progress towards achieving all homes having a minimum energy efficiency of Category C

In 2023 in Predominantly Rural areas 44.8% of the domestic properties had an EPC rating of C or better, whilst in Predominantly Urban areas it was 46.3% of properties (Figure C-1). These values have increased from 38.9% and 42.1% respectively in 2021. In addition to year-on-year improvements, the proportion of domestic properties with an EPC rating of C or better has risen faster in Predominantly Rural areas than in Predominantly Urban areas. The gap between Predominantly Rural and Predominantly Urban areas was 3.2 percentage in 2021 and in 2023 it was down to 1.5 percentage points; but there are still more domestic properties that are below an EPC rating of C than are above it in both Predominantly Rural and Predominantly Urban areas.

The Vale of White Horse was the Predominantly Rural area with the highest proportion of properties with an EPC rating of at least C, 58.9%, and there were ten Predominantly Rural Local Authorities with at least 55% of their domestic properties at category C or above (Note C-5). At the other end of the scale four Predominantly Rural areas had less than 35% of their domestic properties at category C or above. The Staffordshire Moorlands (27.5%) was the Predominantly Rural area with lowest proportion of domestic properties in category C and above (of all authorities excluding the Isles of Scilly). For comparison there were ten Predominantly Urban areas where less than 35% of the domestic properties were at least category C and the lowest was Pendle (24.5%). At the upper end of the distribution, the ten Predominantly Urban areas with the highest proportion of category C and above properties all had at least 61.2% of their properties at category C or above.

Figure C-1: A horizontal bar chart showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C or better by Local Authority Rural-Urban Classification in 2021, 2022 and 2023 (Note C-4)
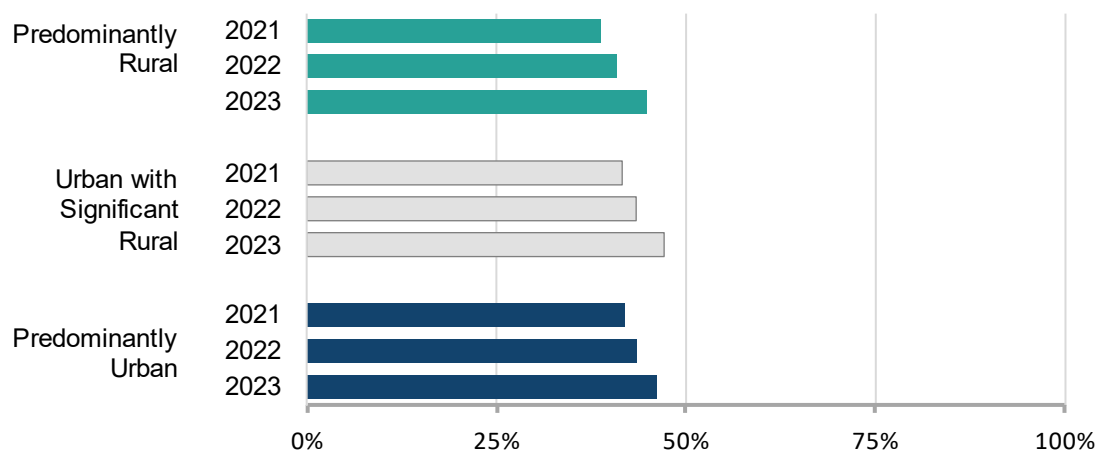
Worksheet HB in the energy supplementary data tables contains tables showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C or better for every Local Authority.

## Proportion of Category C properties by property age

In Section C it was shown that the average Energy Efficiency Score was lower for older properties, and therefore it should be expected that the newer the property the higher the proportion of homes with an EPC rating of at least C. This is demonstrated on Figure C-2. With the exception of newer properties (2012 onwards), there was a smaller proportion of domestic properties in Predominantly Rural areas with an EPC rating of at least C than in Predominantly Urban areas in 2023 (Figure C-2, left-hand side). The gap between the estimates was biggest for properties built between1983 to 2011 (where the difference was 12 percentage points).

For pre-1930 properties in Predominantly Rural areas only 10.4% had an EPC rating of at least C in 2023 compared to 16.5% in Predominantly Urban areas. There are over a million pre-1930 domestic properties in Predominantly Rural areas (Table A-3, Statistical Digest of Rural England - Housing). The Energy Efficiency Rating of 90% of the pre-1930 homes in Predominantly Rural areas is low enough that any lower income occupants could be at risk of descending into fuel poverty due to rising fuel costs or significant changes in household circumstances that further reduce their household income. For domestic properties built between 1930 and 1982, 29.1% of them in Predominantly Rural areas had an EPC rating of C or better in 2023 compared to 36.4% in Predominantly Urban areas. Predominantly Rural areas lagged behind Predominantly Urban areas for 1983 to 2011 homes with 58% of them having an EPC rating of C and above compared to 70.4% of those in Predominantly Urban areas.

Within Rural areas, the more Rural the area the lower the proportion of domestic properties with an EPC rating of C and above. For properties built prior to 2012, the proportion of properties that are at least category C was three to four percentage points lower in Mainly Rural areas than in Largely Rural areas (Figure C-2, right-hand side). Overall, 46.2% of domestic properties in Largely Rural areas had an EPC rating of at least C compared to 43.5% in Mainly Rural areas. In both cases this is an increase on six percentage points on 2021 when 40.0% of properties in Largely Rural areas had an EPC rating of C and above compared to 37.9% in Mainly Rural areas.

Figure C-2: Horizontal bar charts showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C or better by property age and Rural-Urban Classification in 2023 (Note C-4)

The left-hand chart shows the comparison between Rural and Urban areas and the right-hand chart shows the comparison within Rural areas. On both charts, the legend is presented in the same order and orientation as the cluster of bars.
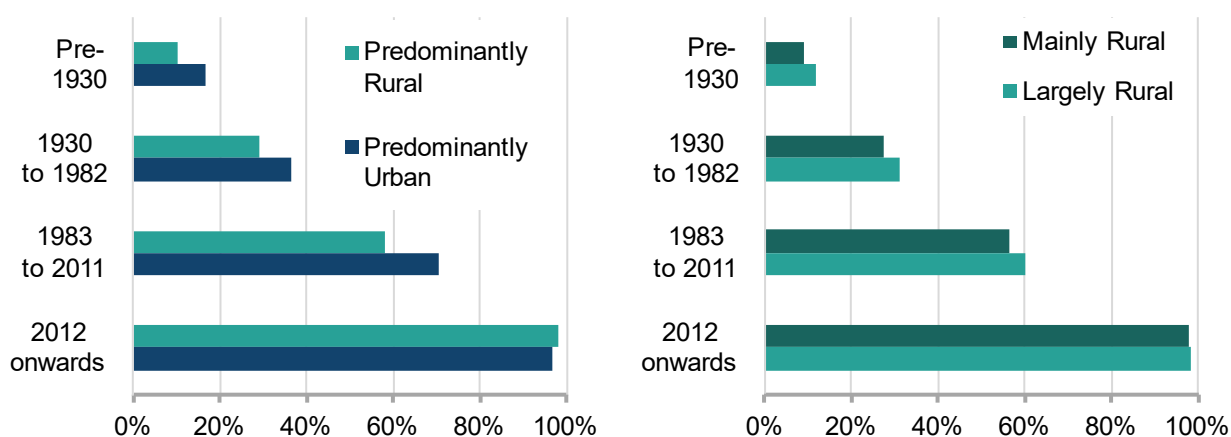
Splitting domestic properties into new dwellings and existing dwellings simplifies the picture (Figure C-3). Any property that has undergone a conversion to change its use is considered to be a new property from an EPC perspective (Note C-6). Almost all new dwellings are energy efficiency category C or better, including on average 97.5% in Predominantly Rural areas in 2023. This is slightly higher than the 95.2% for Predominantly Urban areas. The reverse was true for existing dwellings. For Predominantly Rural areas 33.7% of existing dwellings had an Energy Efficiency Rating of at least category C compared to 39.1% of existing dwellings in Predominantly Urban areas – a difference of five percentage points.

Figure C-3: A horizontal bar chart showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C for new and existing dwellings by Rural-Urban Classification in 2023 (Note C-4, Note C-6)

The legend is presented in the same order and orientation as the cluster of bars.
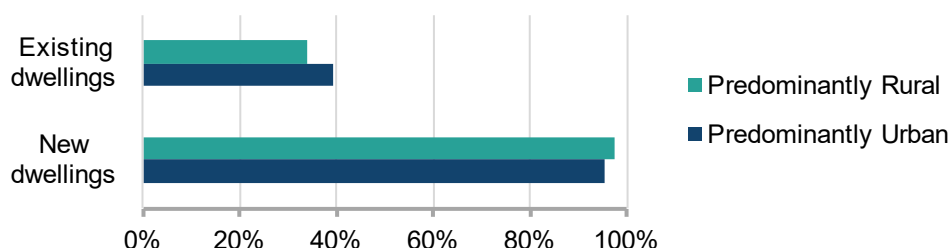
In three-quarters of Predominantly Rural areas less than 11.7% of the of the pre-1930 domestic properties had an Energy Efficiency Rating of at least category C. By contrast in three-quarters Predominantly Urban areas more than 11.8% of the pre-1930 domestic properties had an Energy Efficiency Rating of at least category C. In Predominantly Rural areas there were five areas where less than 6.5% of the pre-1930 properties were at least category C for their energy efficiency (Table C-1). At the other end of the spectrum for Predominantly Rural areas there were six areas where more than 15% of the pre-1930 properties were at least category C for their energy efficiency (Table C-2). In Predominantly Urban areas there were three areas where less than 6.5%

of the pre-1930 properties were at least category C for their energy efficiency (Table C-3). Bradford had only 6% of its pre-1930 properties with an Energy Efficiency Rating of at least C – the lowest of any Local Authority. At the upper end of the Predominantly Urban distribution, there were six areas where more than 35% of the pre-1930 properties were at least category C for their energy efficiency (Table C-4). All six of these areas were London boroughs. The only area outside of London which had more that 30% of its pre-1930 properties with an energy efficiency of at least category C was Newcastle upon Tyne (30.2%). County Durham had the highest proportion of category C and above pre-1930 domestic properties amongst Predominantly Rural areas (17.3%) but there were 61 Predominantly Urban Local Authorities whose proportion of pre-1930 properties with an energy efficiency of at least category C was more than 17.3%.

Table C-1: The 6 Predominantly Rural areas with the lowest proportion of pre-1930 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Rural area	%
Cotswold	6.2
Eden	6.2
Maldon	6.3
Mid Suffolk	6.5
King's Lynn and West Norfolk	6.5
North Kesteven	6.7

Table C-2: The 6 Predominantly Rural areas with the highest proportion of pre-1930 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Rural area	%
Teignbridge	15.1
East Suffolk	15.4
Northumberland	15.7
Rother	15.7
High Peak	16.7
County Durham	17.3

Table C-3: The 6 Predominantly Urban areas with the lowest proportion of pre-1930 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Urban area	%
Bradford	6.0
Redditch	6.2
Hartlepool	6.4
Calderdale	6.8
Castle Point	7.0
Milton Keynes	7.7

Table C-4: The 6 Predominantly Urban areas with the highest proportion of pre-1930 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Urban area	%
Hammersmith and Fulham	35.5
Islington	35.5
Camden	37.9
Kensington and Chelsea	38.6
Westminster	42.0
City of London	50.5

Moving on to the 1930 to 1982 domestic properties, a quarter of Predominantly Rural areas had less than 26% of properties from this period with an energy efficiency of at least category C. Only a quarter of Predominantly Rural areas had more than 33% of 1930 to 1982 properties with an energy efficiency of at least category C. There were six Predominantly Rural areas where less than 19.5% of the 1930 to 1982 domestic properties had an energy efficiency of at least category C (Table C-5). The only Predominantly Rural area where more than 40% of the 1930 to 1982 properties was at least category C for energy efficiency was Winchester, and the top six all had at least 36% of 1930 to 1982 domestic properties with an energy efficiency of at least category C (Table C-6).

Half of the Predominantly Urban areas had at least 35.5% of the 1930 to 1982 domestic properties with an energy efficiency of at least category C. The only Predominantly Urban area where less

than 20% of the 1930 to 1982 properties had an energy efficiency of at least category C was Castle Point (Table C-7). Salford was the only Predominantly Urban areas where at least 55% of the 1930 to 1982 properties had an energy efficiency of at least category C outside of London (Table C-8). Only 11 Predominantly Rural areas had at least 35% of the 1930 to 1982 domestic properties at category C or above; whereas in Predominantly Urban areas 84 local authorities had at least 35% of the 1930 to 1982 properties at category C or above.

Table C-5: The 6 Predominantly Rural areas with the lowest proportion of 1930 to 1982 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Rural area	%
Isles of Scilly	15.5
South Holland	18.0
Ryedale	18.6
Staffordshire Moorlands	19.2
North Norfolk	19.4
Maldon	19.5

Table C-6: The 6 Predominantly Rural areas with the highest proportion of 1930 to 1982 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Rural area	%
Northumberland	36.0
Stratford-on-Avon	36.5
East Hampshire	36.7
County Durham	37.4
South Somerset	37.9
Winchester	40.2

Table C-7: The 6 Predominantly Urban areas with the lowest proportion of 1930 to 1982 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Urban area	%
Castle Point	16.8
Rochford	20.4
Fylde	21.1
Blackpool	22.8
Blaby	24.0
Havering	24.2

Table C-8: The 6 Predominantly Urban areas with the highest proportion of 1930 to 1982 properties with an Energy Efficiency Rating of at least C in 2023 (Note C-4)

Predominantly Urban area	%
Tower Hamlets	55.9
Hackney	55.9
Salford	56.2
Wandsworth	56.2
Newham	59.0
Westminster	59.1

There is only one Predominantly Urban area (Blaby, 49.9%) where less than half of the 1983 to 2011 domestic properties were at least category C for energy efficiency. However, in Predominantly Rural areas, the six areas with the lowest proportion of 1983 to 2011 properties with an Energy Efficiency Rating of at least C all had less than 49%. At the other end of the scale there were 11 (of 84) Predominantly Rural areas where more than 65% of the 1983 to 2011 properties had an energy efficiency of at least category C. Most of these areas were in the South. By contrast 121 (of 175) Predominantly Urban areas had more than 65% of their 1983 to 2011 domestic properties with an energy efficiency of at least category C. In other words, 13% of Predominantly Rural areas had almost two-thirds of their 1983 to 2011 domestic properties at energy efficiency category C and above, compared to 70% of Predominantly Urban areas having almost two thirds of their 1983 to 2011 domestic properties at energy efficiency category C and above.

Worksheet HB in the energy supplementary data tables contains tables showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C or better for every Local Authority.
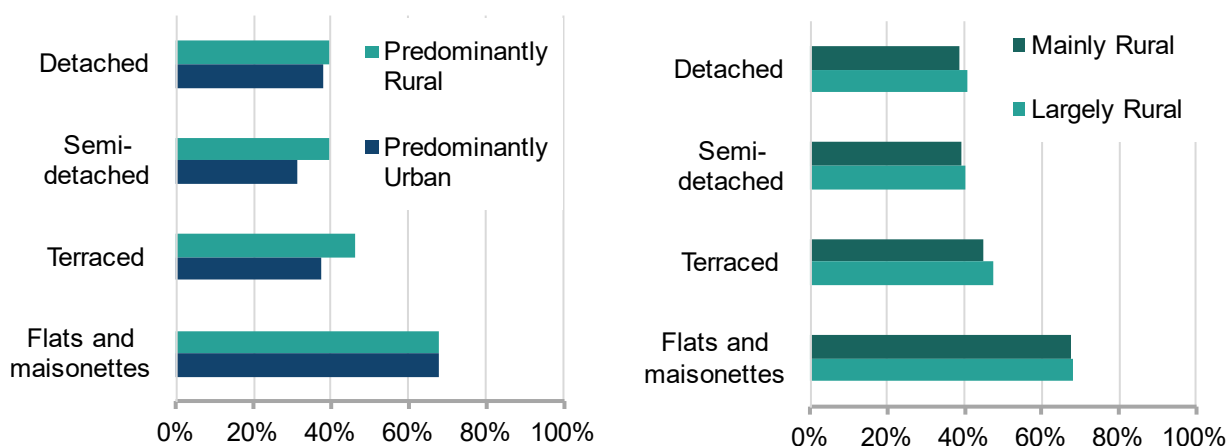
Proportion of category C properties by property type and tenure

Section C showed that, on average, flats and maisonettes had a higher average Energy Efficiency Score and consequently in 2023 there were proportionally more Flats and maisonettes with an EPC rating of at least C than for any other domestic property type (Figure C-4, left-hand chart). For Semi-detached and Terraced properties, the proportion of properties that are at least category C is higher in Predominantly Rural areas than in Predominantly Urban areas by eight percentage points. While for the other two property types the proportions were similar. In Predominantly Rural areas the proportion of properties with an Energy Efficiency Rating of at least category C by property type is as follows: Detached, 40%; Semi-detached, 40%; Terraced, 46%; and Flats and maisonettes, 68%.

For Detached and Terraced properties, the proportion of properties with an EPC rating of at least C is two to three percentage points greater in Largely Rural areas than in Mainly Rural areas (Figure C-4, right-hand chart). For Flats and Semi-detached there is little difference in the proportion of properties with an EPC rating of at least C.

Figure C-4: Horizontal bar charts showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C or better by property type and Rural-Urban Classification in 2023 (Note C-4, Note C-7)
The left-hand chart shows the comparison between Rural and Urban areas and the right-hand chart shows the comparison within Rural areas. On both charts, the legend is presented in the same order and orientation as the cluster of bars.


In terms of tenure, in 2023 the Social rented sector offered the highest proportion of domestic properties with an Energy Efficiency Rating of at least category C in both Predominantly Rural and Predominantly Urban areas (Figure C-5, left-hand chart). In Predominantly Rural areas, more than half of the Social rented sector properties had an EPC rating of at least C. Whereas for Owner-occupied properties just under a third (32.4%) had an Energy Efficiency Rating of at least category C in 2023. For both the Private and the Social rented sectors there was a lower proportion of properties with an EPC rating of at least C in Predominantly Rural areas than in Predominantly Urban areas (Figure C-5, left-hand chart). For both rental categories the proportion of properties with an EPC rating of at least C is six to seven percentage points lower in Predominantly Rural areas. For owner occupied properties, the proportion with an EPC rating of at least C is also lower in Predominantly Rural areas than in Predominantly Urban areas but the difference (two percentage points) is smaller than for the rental sector. Within Rural areas there was a lower

proportion of properties with an EPC rating of at least C in Mainly Rural areas than in Largely Rural areas for both the rented sector and owner-occupied properties (Figure C-5, right-hand chart).

Worksheet HB in the housing supplementary data tables contains tables showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C or better by property type and by tenure for every Local Authority.

Figure C-5: Horizontal bar chart showing the percentage of domestic properties with Energy Performance Certificate (EPC) ratings of C or better by tenure and Rural Urban Classification in 2023 (Note C-4)

The left-hand chart shows the comparison between Rural and Urban areas and the right-hand chart shows the comparison within Rural areas. On both charts, the legend is presented in the same order and orientation as the cluster of bars.
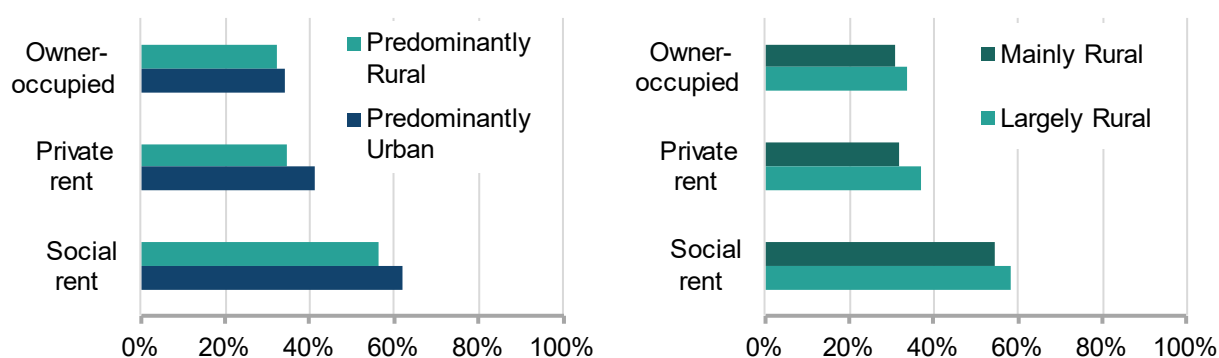
EPCs: achieving energy efficiency Category C explanatory notes

- **Note C-1**

Fuel poverty or being fuel poor is where a household is living in a property with a Fuel Poverty Energy Efficiency Rating (FPEER) of band D or below in a home that cannot be kept warm at reasonable cost without bringing their residual income (after housing and energy costs) below the poverty threshold. As explained in Section A Fuel poverty, Fuel poverty in England is defined using the Low Income Low Energy Efficiency approach.
Figure 2.2 in the Annual fuel poverty statistics report: 2023 graphically displays how fuel poor households are defined.

- **Note C-2**

The statutory fuel poverty target was set in December 2014, binding successive Governments to the following:
The fuel poverty target is to ensure that as many fuel poor homes as is reasonably practicable achieve a minimum Energy Efficiency Rating of Band C, by 2030.
This target was retained in Sustainable Warmth, the updated Fuel Poverty Strategy for England, published in February 2021. There is also an interim "target" in relation to band D and 2025.

- **Note C-3**

The FPEER uses a modified version of the standard Energy Efficiency Rating which considers policies that directly affect the cost of energy. In recent years this has included the rebate provided by Warm Home Discount. The FPEER methodology deducts such rebates from the overall modelled costs produced under the SAP system. This gives an Energy Efficiency Rating (again from 1-100), which will be higher than the standard rating if the household receives additional support. This modified rating is also translated to a band (A to G) on the same bases as the original system displayed in Table B-1. The document Fuel poverty methodology handbook 2023: Low Income Low Energy Efficiency (LILEE) gives further details.

- **Note C-4**

The Office for National Statistics (ONS) publish Energy Efficiency of Housing at Local Authority level on an annual basis for financial years. This section primarily uses the Energy Performance Certificate (EPC) Band C or above, England and Wales dataset for the financial year ending March 2023. Where 2021 or 2022 data has been used it is available from the dataset called Energy efficiency of Housing, England and Wales, local authority districts.

The source data for this ONS publication is Department for Levelling up, Housing and Communities – Energy Performance Certificate data on Open Data Communities and Valuation Office Agency - Property Attributes data (https://epc.opendatacommunities.org/).

- **Note C-5**

Tables showing the data in Section C are available in the energy supplementary tables.

- **Note C-6**

Statistics for **new properties** were generated using data from new dwelling EPC records, which include new builds, conversions and change of use. Statistics for **existing properties** were generated using the latest EPC lodgement available for a property, within the existing dwellings records. An existing dwelling may have undergone several EPC assessments for different reasons (for example, due to a marketed sale, for a green deal assessment, or following the implementation of the changes suggested in a green deal assessment). New and existing dwellings are assessed using slightly different methodologies.

- **Note C-7**

ONS break down houses (including bungalows and park homes) into Detached, Semi-detached and Terraced property types and group flats and maisonettes together as the final property type.

D. Energy Costs

The lower energy efficiency of older and / or detached houses means that their modelled energy costs are higher than new properties or flats in both Rural and Urban areas.

Summary

Since 2007, an Energy Performance Certificate (EPC) is required when a building is constructed, sold, or let. Standardised costs are generated as part of the EPC process. **This analysis uses these standardised cost and not actual real world costs data from energy suppliers. Data presented here are for 2021 and does not reflect subsequent changes in energy costs.**

In 2021 dwellings in Predominantly Rural areas were estimated to have an average median energy cost of £815 per year. This was £95 per year more than the £725 for dwellings in Predominantly Urban areas. In Predominantly Rural areas, the estimated average median energy cost was £430 per year for new properties and more than double that for existing properties (£900 per year).

Flats and maisonettes had the lowest modelled energy costs in both Predominantly Rural (£470 per year) and Predominantly Urban (£480 per year) areas. Detached housing had the highest estimated energy costs at £1,085 per year in Predominantly Rural areas and £1,100 per year in Predominantly Urban areas.

For Owner-occupied and private rented properties, the average median energy cost was £110 per week higher in Predominantly Rural areas than in Predominantly Urban areas in 2021. In Predominantly Rural areas an Owner-occupied home was modelled to cost £975 per year compared to £865 in a Predominantly Urban area. For Social rented properties the cost was £615 per year in Predominantly Rural areas and £570 in Predominantly Rural areas – a difference of only £45 per year.

Theoretical rather than actual energy costs

Since 2007, an Energy Performance Certificate (EPC) is required when a building is constructed, sold or let (Note D-1). The ONS use information from EPCs for their Energy Efficiency of Housing publication (Note D-2). In the March 2021 dataset, the ONS also included information on the median estimated energy cost for domestic properties.

As part of the EPC data the estimated energy cost (sum of estimated lighting, heating and hot water costs) are generated. These are based on standardised assumptions about how residents will use the property (such as number of occupants, heating patterns and lighting and hot water usage). This is to make properties directly comparable to each other for prospective buyers or tenants, so it does not reflect how residents actually use the property.

This analysis is therefore based upon these standardised costs not actual real world costs data from energy suppliers. The source data used for this analysis precedes increased energy costs that started to take effect in late 2021.

Energy cost: New versus existing properties

The ONS data includes energy cost estimates for new and existing properties. Statistics for new properties were generated using data from new dwelling EPC records, which include new builds, conversions and change of use. Statistics for existing properties were generated using the latest EPC lodgement available for a property, within the existing dwellings records.

Dwellings in Predominantly Rural Local Authorities were estimated to have an average median energy cost of £815 per year (Table D-1). This was £95 per year more than the estimated average median energy cost for dwellings in Predominantly Urban Local Authorities.

Table D-1: Estimated average median energy cost (£ per year) for dwellings in England split by the Local Authority Rural-Urban Classification as of March 2021 (Note D-6)
Based on standardised assumptions about how residents will use the property rather than actual usage costs.
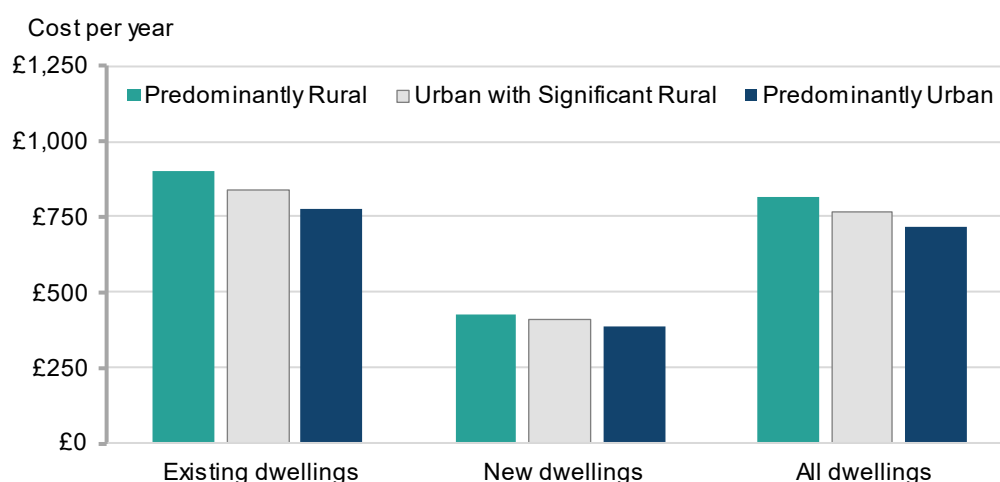
	2021
Predominantly Rural	£815
Urban with Significant Rural	£765
Predominantly Urban	£720
England	**£750**

Newer properties are typically more energy efficient than older ones (Figure B-5). Therefore, the estimated average median energy cost for new dwellings was much lower than for existing properties (Figure D-1). This was the case in both Rural and Urban areas. In Predominantly Rural areas, the estimated average median energy cost for new properties was less than half of the cost for existing properties.

The estimated average median energy cost was higher in Predominantly Rural areas than in Predominantly Urban areas for both new properties and existing properties. For new properties the estimated average median energy cost in Predominantly Rural areas was £430 per year and for existing properties it was £900 per year. This makes the estimated average median energy cost in Predominantly Rural areas 11% more than in Predominantly Urban areas for new properties and 16% more for existing properties.

Figure D-1: Bar chart showing the estimated average median energy cost (£ per year) for new, existing and all dwellings in England split by broad Local Authority Rural-Urban Classification as of March 2021 (Note D-1, Note D-2, Note D-3)

The legend is presented in the same order as the clusters of columns.

Energy cost: Housing type

Flats and maisonettes are typically more energy efficient than other property types (Table B-4); so, they end up with the lowest modelled energy costs across the four main dwelling types (Figure D-2). In 2021 the estimated energy cost for Flats and maisonettes varied little between Predominantly Rural (£470 per year) and Predominantly Urban (£480 per year) areas. Detached housing has the highest estimated energy costs. The estimated cost was marginally lower in Predominantly Rural areas (£1,085 per year) than in Predominantly Urban areas (£1,100 per year). The higher energy cost for Detached properties was a reflection of these properties often being bigger and typically having more occupants, rather than Detached houses being less energy efficient. Energy costs for Semi-detached and Terraced houses in Predominantly Rural areas were estimated to be £100 per year and £75 per year cheaper than Semi-detached and Terraced houses (respectively) in Predominantly Urban areas.

It might seem counter intuitive that estimated average energy costs were lower in Predominantly Rural areas for each of the four housing types and yet the average energy costs across all dwellings were higher in Predominantly Rural areas. However in 2020, Flats made up only 7% of the Rural housing stock compared to 26% of the Urban housing stock; whilst Detached properties made up 49% of the Rural housing stock compared to only 16% of the Urban housing stock (Statistical Digest of Rural England: 2 –Housing).

In generating the overall Rural and Urban estimates in Table D-1, this analysis used source data that was the median energy cost for properties within each Local Authority. The median is the middle value when the dataset is ordered sequentially. When this is done for an Urban area, the cost is likely to be representative of the cost associated with a Terraced house since Flats and Terraced homes combined account for more than 50% of the Urban housing stock and a typical Terraced property has a higher theoretical energy cost than a typical Flat. Whereas in a Rural area, where around three in four properties were Detached or Semi-detached in 2020 (Statistical Digest of Rural England: 2 –Housing), this median value is more likely to be representative of the cost associated with a Semi-detached house. Thus, when looking at England level average median

energy cost estimates for Rural and Urban areas the average cost was higher overall for Rural areas despite the energy costs in Rural areas being lower for each of the housing types when analysed separately.

Figure D-2: Bar chart showing the estimated average median energy cost (£ per year) for different property types split by broad Local Authority Rural-Urban Classification as of March 2021 (Note D-1, Note D-2, Note D-4)
The legend is presented in the same order as the clusters of columns.

cost per year
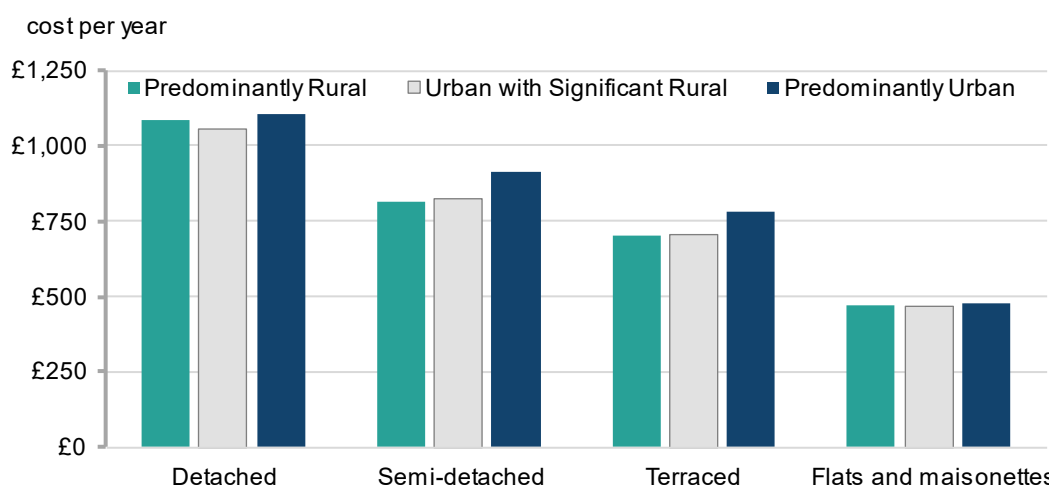
Energy cost: Housing tenure

Irrespective of whether the property was Owner-occupied or rented the average median energy cost was higher in Predominantly Rural areas than in Predominantly Urban areas in 2021 (Figure D-3). For both Owner-occupied and Privately rented properties the average median energy cost was £110 per year more in Predominantly Rural areas than in Predominantly Urban areas. For Social rented properties the gap was much smaller, the average median energy cost for a social rent property was only £45 per year more in a Predominantly Rural area than in a Predominantly Urban area.

In all 3 broad Rural-Urban categories, Social rented properties had the lowest average median energy cost and Owner-occupied had the highest in 2021 (Figure D-3). In Predominantly Rural areas the average median energy cost for Owner-occupied properties was £360 more than for Social rent properties. When analysed in Statistical Digest of Rural England: 2 –Housing, Social rent properties had a higher average energy efficiency rating than other property types and are often smaller than Owner-occupied properties; so, they end up with the lowest modelled energy costs. A rental agreement will have a minimum term, which can be as little as 6 months. Some but not all agreements will be extended beyond this initial period. This means that the turnover of occupants can be greater in rental properties than in owner occupied properties. Thus, a Private rental property is likely to have had more EPC assessments than an Owner-occupied property meaning that home improvements have more chance of being captured within the EPC data. These then reduce the projected energy costs for the improved properties.

Figure D-3: Bar chart showing the estimated average median energy cost (£ per year) for property tenures split by broad Local Authority Rural-Urban Classification as of March 2021 (Note D-1, Note D-2)

The legend is presented in the same order as the clusters of columns.
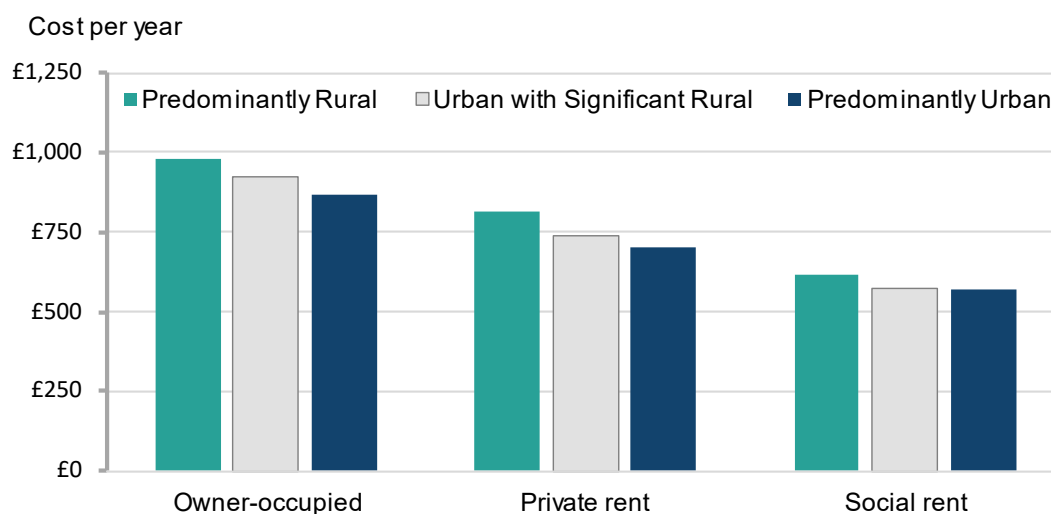
Energy Costs explanatory notes

- **Note D-1**

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let and it is valid for 10 years. There can be multiple EPC lodgements for the same dwelling, but only the latest lodgement is analysed to avoid double counting dwellings.

EPCs are based on data about a building's energy features (for example the building materials used, heating systems and insulation), which are collected by an accredited energy assessor and are entered into a government-approved software to generate the EPC.

The median energy efficiency scores are calculated based on the energy efficiency scores at the time the EPC lodgement was assessed. This means that these statistics do not necessarily reflect energy efficiency improvements as the majority of alterations don't require a new EPC to be generated. Energy costs will therefore also be reflective of the point at which the EPC assessment was made.

Energy Performance Certificate (EPC) are described in more detail in Energy Performance Certificates and ratings within section B.

- **Note D-2**

The source data for this ONS publication is Department for Levelling up, Housing and Communities – Energy Performance Certificate data on Open Data Communities and Valuation Office Agency - Property Attributes data (https://epc.opendatacommunities.org/).

- **Note D-3**

The category "New dwellings" includes: new builds, conversions and change of use properties.

- **Note D-4**

ONS break down houses (including bungalows and park homes) into Detached, Semi-detached, and Terraced property types, and group Flats and maisonettes together as the final property type.

- **Note D-5**

An analysis of housing stock by property age and type can be found in Statistical Digest of Rural England: 2 –Housing.

- **Note D-6**

All monetary figures presented in the section have been rounded to the nearest £5.

- **Note D-7**

Tables showing additional data and the data behind the figures in this section are available in the Communities and Households data tables.

E. Energy Consumption

Average domestic electricity consumption is higher in Predominantly Rural areas than Predominantly Urban areas, but the reverse is true for domestic gas consumption.

Summary

Energy consumption will be affected by a number of factors including differences in the sizes and types of properties and premises in rural and urban areas.

Rural domestic electricity consumption is higher than Urban domestic consumption. In 2022, the average median domestic electricity consumption was 2,700 kWh per meter in Predominantly Rural areas and 2,500 kWh per meter in Predominantly Urban areas. When compared to consumption in 2015, the 2022 average median domestic electricity consumption was 800 kWh per meter (23%) lower in Predominantly Rural areas and 700 kWh per meter (21%) lower in Predominantly Urban areas.

In 2022, the average median non-domestic electricity consumption was lower in Predominantly Rural areas than in Predominantly Urban areas and stood at 7,000 kWh per meter in Predominantly Rural areas and 7,300 kWh per meter in Predominantly Urban areas. When compared to consumption in 2015, the 2022 average median non-domestic electricity consumption was 2,100 kWh per meter (23%) lower in Predominantly Rural areas and 2,600 kWh per meter (26%) lower in Predominantly Urban areas.

Domestic gas consumption was changed little in both Predominantly Rural and Predominantly Urban areas between 2015 and 2020 at around 12,000 kWh per meter, but has dropped markedly since 2020. In 2022 in Predominantly Rural areas average median domestic gas consumption was 9,500 kWh per meter, a drop of 2,500 kWh per meter (21.2%) from 2020. In Predominantly Urban areas it was 9,800 kWh per meter, a drop of 2,400 kWh per meter (19.9%) from 2020. Since 2017 domestic gas consumption has been lower in Predominantly Rural areas than in Predominantly Urban areas.

Average median gas consumption for non-domestic premises in 2022 stood at 143,000 kWh per non-domestic meter in Predominantly Rural areas and 152,000 kWh per non-domestic meter in Predominantly Urban areas. These values correspond to an increase in average median gas consumption for non-domestic premises since 2020 of 3.4% in in Predominantly Rural areas and 1.3% in Predominantly Urban areas.

The Department for Energy Security and Net Zero produce local authority level gas and energy consumption data based on meter level data. A third party collects and aggregates the data from gas and electricity suppliers. Note that the gas data is weather corrected to allow for comparisons over time.

Energy consumption data

The Department for Energy Security & Net Zero (DESNZ) produce National Statistics on gas and electricity consumption annually.

Sub-national electricity consumption data is available for all of the Local Authorities in Great Britain for the period 2005 to 2022 in their most recent publication from January 2024. The electricity figures are based on meter level electricity consumption data provided by data aggregators (who compile this data on behalf of electricity suppliers).

Sub-national gas consumption data is available for all of the Local Authorities in Great Britain for the period 2005 to 2022 in their most recent publication from January 2024. These figures are based on meter level gas consumption data provided by Xoserve (who compile meter level data from gas shippers, who in turn receive the data from gas suppliers). Xoserve provide annualised estimates of consumption for all gas meters. These estimates are weather-corrected to enable better comparisons over time (Note E-5).

In the January 2024 publication DESNZ switched to using the Local Authority boundaries that came into effect from April 2023. Note E-10 describes these boundary changes. In this report we have recalculated figures for the period 2015 to 2021 so that we can present a consistent time-series comparable with the data for 2022. The data for the period 2015 to 2021 will therefore differ from those previously published.
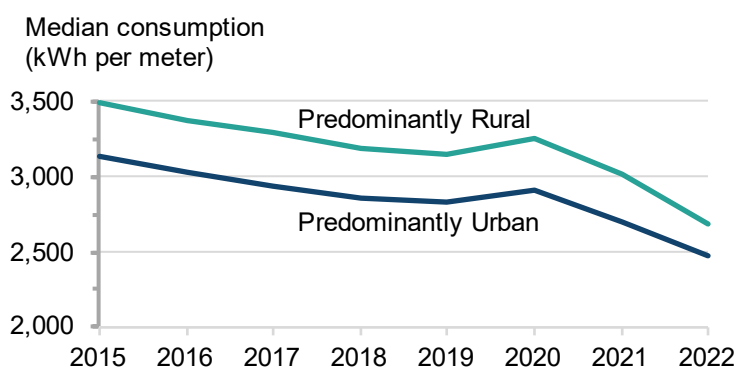
Electricity consumption: Domestic

Electricity data is divided between domestic and non-domestic categories according to the meter's profile class (Note E-4). This section addresses domestic consumption.

The proportion of total domestic electricity consumption assigned to Predominantly Rural Local Authorities remained at 25% across the period 2015 to 2022 (Note E-1). Figure E-1 is a line chart showing that the average median domestic electricity consumption in Predominantly Rural areas is higher than in Predominantly Urban areas and that the general trend over the period 2015 to 2022 was one of falling consumption. This reflects the larger properties and greater proportion of older and detached properties in Predominantly Rural areas.

Figure E-1: Line chart showing the estimated average median domestic electricity consumption (kWh per meter) by broad Local Authority Rural-Urban Classification 2015 to 2022 (Note E-2)
Note that the scale on the y-axis differs between this chart and Figure E-2.

Over the period from 2015 to 2019 electricity consumption declined year-on-year in both Predominantly Rural and Urban areas. In 2020 when COVID-19 pandemic hit the UK and people were forced to stay at home, median electricity consumption went up in both Predominantly Rural and Predominantly Urban areas. For Predominantly Rural areas the average median domestic electricity consumption went up by 110 kWh per meter, whilst for Predominantly Urban areas the absolute increase was smaller (90 kWh per meter). In percentage terms this is a 3% increase in domestic electricity consumption in both Predominantly Rural and Predominantly Urban areas. With the stay-at-home restrictions largely removed the average median domestic electricity consumption reduced again in 2021 by 8% (250 kWh per meter) in Predominantly Rural areas and 7% (210 kWh per meter) in Predominantly Urban areas.

In 2022, the average median domestic electricity consumption was 2,690 kWh per meter in Predominantly Rural areas and 2,470 kWh per meter in Predominantly Urban areas. This difference in average median domestic consumption between Predominantly Rural and Predominantly Urban areas of 220 kWh per meter was the smallest difference recorded over the period 2015 to 2022. In Predominantly Rural areas this is a fall of 320 kWh per meter (or 11%) compared to 2021 whilst in Predominantly Urban areas the fall over the same period was smaller at 230 kWh per meter (or 9%). In both cases these are probably reflecting a consumer response to energy prices, their energy usage and ways to save energy.

Domestic electricity consumption has reduced by slightly more in Predominantly Rural areas than in Predominantly Urban area. When compared to consumption in 2015, the 2022 average median domestic electricity consumption was 810 kWh per meter lower in Predominantly Rural areas and 670 kWh per meter lower in Predominantly Urban areas. This equates to a reduction in consumption over the period 2015 to 2022 of 23% in Predominantly Rural areas and a 21% reduction in Predominantly Urban areas.

Electricity consumption: Non-Domestic

Electricity data is divided between domestic and non-domestic categories according to the meter's profile class (Note E-4). This section addresses non-domestic consumption.

Figure E-2 is a line chart showing that average median non-domestic electricity consumption was lower in Predominantly Rural areas than in Predominantly Urban areas for every year between 2015 and 2022 except for 2020 when COVID-19 disrupted typical consumption patterns.
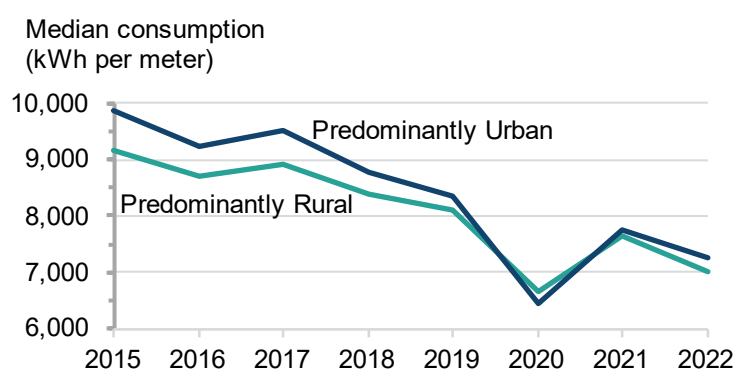
In 2015, the average median non-domestic electricity consumption was 9,150 kWh per meter in Predominantly Rural areas and 9,860 kWh per meter in Predominantly Urban areas. With the exception of 2017, when there was a modest rise, the average median non-domestic electricity consumption fell year on year between 2015 and 2019 in both Predominantly Rural and Predominantly Urban areas, but it fell at a faster rate in Predominantly Urban areas. In 2019, the average median non-domestic electricity consumption was 8,090 kWh per meter in Predominantly Rural areas and 8,370 kWh per meter in Predominantly Urban areas. Average median non-domestic electricity consumption was 12% lower in Predominantly Rural areas in 2019 than in 2015, whilst in Predominantly Urban areas it was 15% lower in 2019 than in 2015.

In 2020, when stay-at-home orders led to the closure of many non-domestic premises for a period of time to combat the spread of COVID-19, the average median non-domestic electricity consumption fell by 1,440 kWh per meter in Predominantly Rural areas and by 1,940 kWh per

meter in Predominantly Urban areas. In percentage terms this was a fall in consumption of 18% in Predominantly Rural areas and a fall of 23% in Predominantly Urban areas relative to 2019 average median consumption levels. This sharper fall in Predominantly Urban areas led to a higher average median non-domestic electricity consumption in Predominantly Rural areas (6,650 kWh per meter) than in Predominantly Urban areas (6,430 kWh per meter). Whilst average median non-domestic electricity consumption rose again in 2021, it only rose by 1,010 kWh per meter to 7,650 kWh per meter in Predominantly Rural areas and by 1,320 kWh to 7,750 kWh per meter in Predominantly Urban areas. This 2021 average median non-domestic consumption was therefore 440 kWh per meter (5%) lower than the 2019 pre-Covid-19 average median non-domestic consumption in Predominantly Rural areas; whilst in Predominantly Urban areas the 2021 consumption was 620 kWh per meter (7%) lower.

Figure E-2: Line chart showing the estimated average median non-domestic electricity consumption (kWh per meter) by broad Local Authority Rural-Urban Classification 2015 to 2022 (Note E-2)
Note that the scale on the y-axis differs between this chart and Figure E-1.

In 2022 average median non-domestic electricity consumption in Predominantly Rural areas fell by 640 kWh per meter (8%) compared the 2021 consumption levels. The fall was larger than the one seen for average median non-domestic electricity consumption in Predominantly Urban areas which fell by 490 kWh per meter (6%).

In 2022, the total non-domestic electricity consumption in Predominantly Rural Local Authorities was 29,800 GWh (Note E-2), which is 3,500 GWh (10%) lower than in 2015 (Table E-1). In Predominantly Urban Local Authorities the total non-domestic electricity consumption fell by 13,400 GWh (14%) over the same period and stood at 83,600 GWh in 2022. In 2015 Predominantly Rural Local Authority areas accounted for 22.2% of total non-domestic electricity consumption; in 2022 their share had risen to 22.8%. Overall, Predominantly Rural Local Authority areas made up a smaller proportion of non-domestic electricity consumption than they did of domestic electricity consumption.

Table E-1: Total non-domestic electricity consumption (GWh) in England split by the Local Authority Rural-Urban Classification (2015 to 2022)

	2015	2016	2017	2018	2019	2020	2021	2022
Predominantly Rural	33,300	31,800	32,800	32,700	31,800	28,600	30,100	29,800
Predominantly Urban	97,000	92,800	94,100	94,000	91,600	79,200	83,100	83,600

Gas consumption: Domestic

Gas data is divided between domestic and non-domestic categories according to the gas consumption relative to an industry standard cut-off value, thereby risking some small non-domestic premises being miss-classified (Note E-8).

Figure E-3 is a line chart that shows that Predominantly Rural Local Authority areas account for a larger proportion of non-domestic gas consumption than they do for domestic gas consumption. This is the reverse of the situation seen for electricity. The reason for this difference is likely to be because there are many more domestic properties in Predominantly Rural areas that are off the gas grid than properties that do not have mains electricity and rely on solutions like stand-alone generators. The proportion of total domestic gas consumption assigned to Predominantly Rural Local Authorities remained between 19.2% and 19.5% across the period 2015 to 2022 as shown on Figure E-3.

Figure E-3: Line chart showing the proportion of total Gas consumption in both the domestic and non-domestic markets accounted for by Predominantly Rural Local Authorities, 2015 to 2022 (Note E-2)

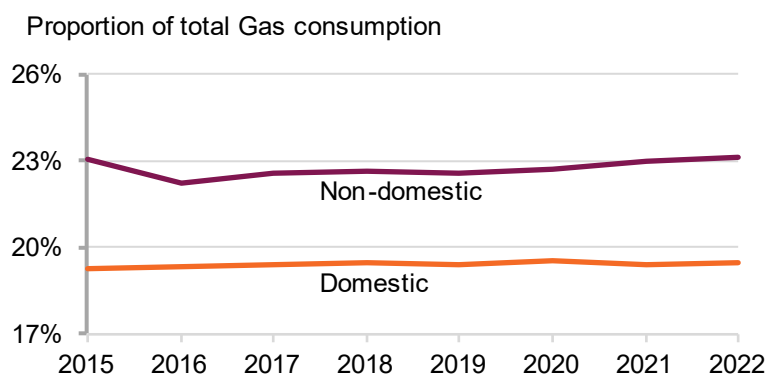Proportion of total Gas consumption

Figure E-4 is a line chart showing the average median domestic gas consumption over the period 2015 to 2022, it shows that gas consumption remained around 12,000 kWh per meter in both Predominantly Rural and Predominantly Urban areas over the period 2015 to 2020. Consumption then fell sharply over the period 2020 to 2022 in both Predominantly Rural and Predominantly Urban areas.

The following bullets describe the information presented in Figure E-4 in more detail.

- In 2015 and 2016 the average median domestic gas consumption was around 11,900 kWh per meter and the consumption was marginally higher in Predominantly Rural areas than in Predominantly Urban areas.

- In 2017 the average median domestic gas consumption increased to 12,100 kWh per meter and was very similar in Predominantly Rural and Predominantly Urban areas.

- From 2018 onwards the average median domestic gas consumption was lower in Predominantly Rural areas than in Predominantly Urban areas. Over the period 2018 to 2020 the gap between the average median domestic gas consumption in Predominantly Rural and Predominantly Urban areas widened as consumption grew less in Predominantly Rural areas that in Predominantly Urban areas. Over this 3-year period the average median domestic gas consumption in Predominantly Rural areas increased from 11,800 kWh per

meter to 12,000 kWh per meter, whilst in Predominantly Urban areas the increase was from 11,900 kWh per meter to 12,200 kWh per meter.

- Between 2019 and 2020 this average median gas consumption rose by 170 kWh per meter in Predominantly Rural areas and by 200 kWh per meter in Predominantly Urban areas. The stay-at-home measures in spring 2020 used to combat the spread of COVID-19 will have contributed to this increased consumption. However, with households often starting to reduce the amount they use their central heating as spring progresses, a larger contribution to this increase probably came from the second wave of restrictions in November and December 2020.

- Average median domestic gas consumption fell dramatically in 2021 and in 2022 in both Predominantly Rural and Predominantly Urban areas. In Predominantly Rural areas it fell by 900 kWh per meter in 2021 and by a further 1,600 kWh per meter in 2022. Overall, this is a drop in consumption across the two years of 2,500 kWh per meter (21.2%). By comparison, in Predominantly Urban areas the drop was slightly smaller in 2021 and slightly larger in 2022 leading to an overall drop of in consumption in Predominantly Urban areas of 2,400 kWh per meter (19.9%).

- These drops over the period 2020 to 2022 left average median domestic gas consumption at less than 10,000 kWh per meter, it was 9,500 kWh per meter in Predominantly Rural areas and 9,800 kWh per meter in Predominantly Urban areas. This decline in consumption reflects a customer reaction to rising energy prices and being more cautious about when to use their central heating because of the rising cost of doing so.

Figure E-4: Line chart showing the estimated average median domestic gas consumption (kWh per meter) by broad Local Authority Rural-Urban Classification 2015 to 2022 (Note E-2, Note E-6)
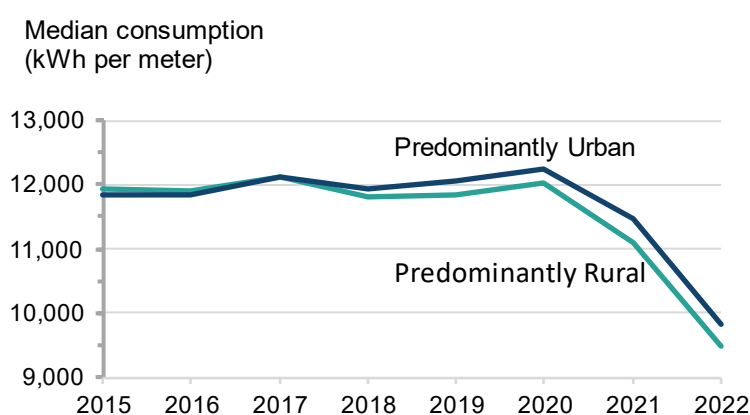Note that the scale on the y-axis differs between this chart and Figure E-5.

Figure E-5 is a pair of bar charts showing the total domestic gas consumption on the left-hand chart and the total number of gas meters contributing to this consumption on the right-hand chart.

The left-hand chart of Figure E-5 shows that in Predominantly Rural areas the total domestic gas consumption fell from 55,900 GWh across the 75 Predominantly Rural Local Authorities in 2020 to 46,300 GWh in 2022. This is a fall of 17% in the total consumption across this 2-year period. Total consumption also fell by 17% across the 175 Predominantly Urban Local Authorities and stood at 159,500 GWh in 2022.

Figure E-5: Bar charts showing the estimated total domestic gas consumption (GWh) and the number of domestic gas meters in Predominantly Rural and Predominantly Urban areas in 2020, 2021 and 2022 (Note E-2, Note E-6)

The legend is presented in the same order as the clusters of columns. The left-hand chart shows total consumption, and the right-hand chart shows number of meters. Note that the scale is different on the two charts.
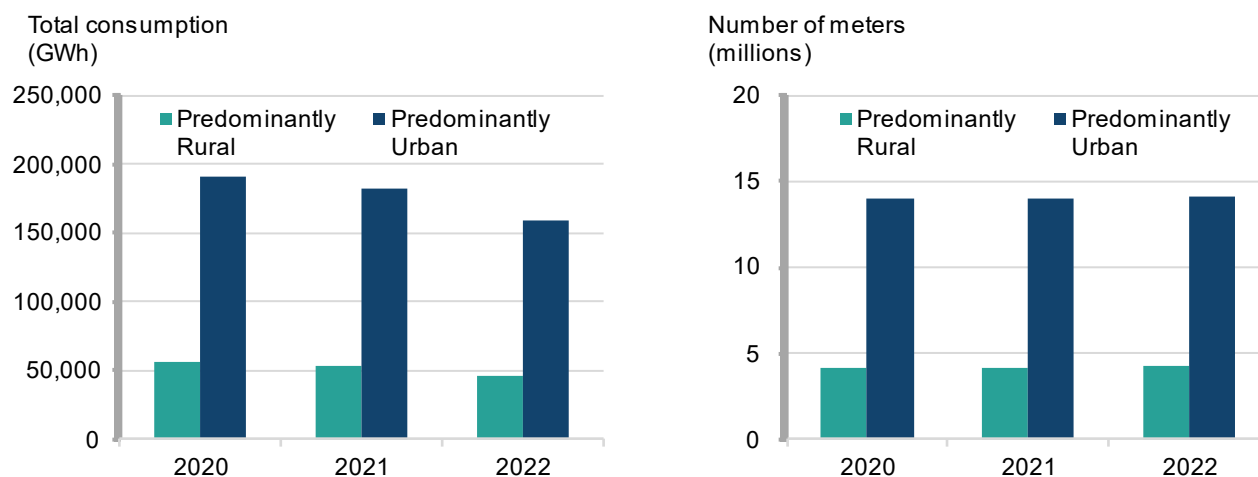
The right-hand chart of Figure E-5 shows that there are around 4 million domestic gas meters in Predominantly Rural areas and 14 million domestic gas meters in Predominantly Urban areas. The numbers of gas meters in Predominantly Rural areas rose by 3% (111,500 meters) over the period 2020 to 2022 and in Predominantly Urban areas the number of domestic gas meters increased by 1% (124,300 meters).

In every Local Authority (Note E-3) the total domestic gas consumption decreased between 2020 and 2022. With the exception of three London Local Authorities (Kensington and Chelsea, City of London and Westminster), the total domestic gas consumption decreased by at least 10% between 2020 and 2022.There were nine Local Authorities where the total consumption fell by at least 20%, only one of these Local Authorities was in a Predominantly Rural area (Staffordshire Moorlands).

Gas consumption: Non-domestic

Gas data is divided between domestic and non-domestic categories according to the gas consumption relative to an industry standard cut-off value, thereby risking some small non-domestic premises being miss-classified (Note E-8).

Figure E-3 is a line chart that also showed the proportion of total non-domestic gas consumption assigned to Predominantly Rural Local Authorities over the 2015 to 2022 period. Predominantly Rural Local Authority areas accounted for 23.1% of consumption in 2015 and then the proportion fell to 22.2% in 2016. For the next 4 years the proportion of non-domestic consumption accounted for by Predominantly Rural Local Authority areas averaged 22.6%, but since 2020 this proportion has climbed and in 2022 stood at 23.2%.

Figure E-6 is a line chart showing that average median non-domestic gas consumption over the period 2015 to 2022 was lower in Predominantly Rural areas than in Predominantly Urban areas. It also shows that the general trend was for falling average median non-domestic gas consumption between 2015 and 2020 followed by rising consumption after 2020.

The following bullets describe the information presented in Figure E-4 in more detail.

- In 2015 the average median non-domestic gas consumption was 145,800 kWh per meter in Predominantly Rural areas and 158,300 in Predominantly Urban areas.

- Between 2015 and 2020 the average median non-domestic gas consumption in Predominantly Rural areas fell by 6,300 kWh per meter (4.3%). Over the same period the average median non-domestic gas consumption in Predominantly Urban areas fell by 8,400 kWh per meter (5.3%). This left the average median non-domestic gas consumption in 2020 at 138,500 kWh per meter in Predominantly Rural areas and 149,900 in Predominantly Urban areas.

- Between 2020 and 2022 the average median non-domestic gas consumption in Predominantly Rural areas increased by 4,800 kWh per meter (3.4%). Over the same period the average median non-domestic gas consumption in Predominantly Urban areas increased by 2,000 kWh per meter (1.3%). This left the average median non-domestic gas consumption in 2022 at 143,300 kWh per meter in Predominantly Rural areas and 151,900 in Predominantly Urban areas.

- The larger increase in average median non-domestic gas consumption in Predominantly Rural areas than in Predominantly Urban areas means that in Predominantly Rural areas the average median non-domestic gas consumption in 2022 was just 1.0% (1,500 kWh per meter) lower than in 2015. Whereas in Predominantly Urban areas the average median non-domestic gas consumption in 2022 was 4.1% (6,400 kWh per meter) lower than in 2015.

Figure E-6: Line chart showing the estimated average median non-domestic gas consumption (kWh per meter) by broad Local Authority Rural-Urban Classification 2015 to 2022 (Note E-2, Note E-6)
Note that the scale on the y-axis differs between this chart and Figure E-4.
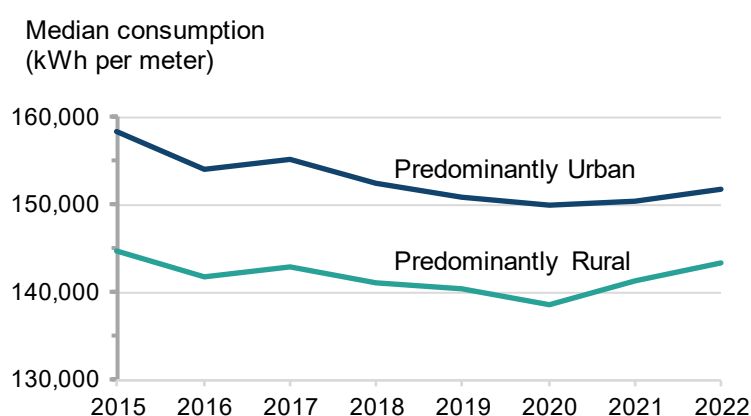
This increase in average median non-domestic gas consumption comes despite the increase in the cost of gas over the 2020 to 2022 period. However, the total non-domestic gas consumption across all 75 Predominantly Rural Local Authorities fell from 34,200 GWh in 2015 to 33,000 GWh in 2022, a fall of 3.6%. Similarly total non-domestic gas consumption across all 75 Predominantly Rural Local Authorities was 3.1% lower in 2022 than it was in 2020.

Energy Consumption explanatory notes

- **Note E-1**

Tables showing additional data and the data behind the figures in this section are available in the [Energy data tables](#).

- **Note E-2**

The figures for median electricity or gas consumption per meter point are presented in kilowatt hours (kWh). The figures for total gas consumption are presented in gigawatt hours (GWh). 1GWh = 1 million kWh. Median electricity consumption figures in the commentary have been rounded to the nearest 10 kWh per meter. Annual median gas consumption figures have been rounded to 100 kWh per meter, while year to year changes in gas consumption have been rounded to the nearest 10 kWh per meter.

- **Note E-3**

There is no mains gas on the Scilly Isles.

- **Note E-4**

Electricity consumption figures are based on meter level electricity consumption data provided by data aggregators (who compile this data behalf of electricity suppliers).
Electricity data is divided between domestic and non-domestic categories according to the meter's profile class. Domestic consumption is based on Non-Half Hourly (NHH) meters with profiles 1 and 2 (these are the standard domestic and economy 7 tariffs respectively). Non-domestic consumption is based on NHH meters with profiles 3 to 8 and all Half Hourly meters. In addition, profile 1 and 2 meters are re-allocated to the non-domestic sector if their annual consumption is greater than 100,000 kWh; or if their annual consumption is greater than 50,000 kWh and the address information for meter suggests that it is non-domestic.
The electricity consumption years used in these statistics cover two slightly different periods. Half-hourly data (higher-consuming non-domestic meters) covers consumption over the calendar year (January to December). For non-half hourly data (domestic and the vast majority non-domestic meters) the electricity years cover the months February to January (for example the 2022 electricity year was February 2022 to January 2023).
For more information about these electricity consumption statistics, see Section 3 of the BEIS / DESNZ guidance note: [Sub-national methodology and guidance 2024](#)

- **Note E-5**

These estimates used in this analysis are weather-corrected. This means that the effect of differences in weather conditions between years has been removed to provide more like for like comparisons over time. A non-weather corrected version of these statistics is also published for the years 2015 and 2022 and can be found at: [Regional and local authority gas consumption statistics](#)

- **Note E-6**

The gas consumption years used in this analysis are as follows:

Year	Gas Year
2015	October 2014 – September 2015
2016	mid-July 2016 – mid-July 2017
2017	mid-June 2017 – mid-June 2018
2018	mid-May 2018 – mid-May 2019
2019	mid-May 2019 – mid-May 2020
2020	mid-May 2020 – mid-May 2021
2021	mid-May 2021 – mid-May 2022
2022	mid-May 2022 – mid-May 2023

- **Note E-7**

BEIS / DESNZ built a new processing system for producing the 2021 subnational gas consumption statistics and for producing the 2022 subnational electricity consumption statistics. They therefore revised their gas consumption statistics for the years 2015 to 2020 in 2021 and the electricity consumption statistics for the years 2015 to 2021 in 2022. We therefore use data from 2015 onwards to ensure we are using consistent data. For this latest analysis have recalculated all of the Predominantly Rural and Predominantly Urban figures from 2015 onwards to account for the boundary changed discussed in Note E-10.

- **Note E-8**

BEIS / DESNZ gas consumption figures are based on meter level gas consumption data provided by Xoserve (who compile meter level data from gas shippers, who in turn receive the data from gas suppliers). Xoserve provide annualised estimates of consumption (AQs) for all gas meters. Xoserve provide the AQs on a weather corrected basis by a process which accounts for regional temperatures and wind speed and incorporates trends.

The gas meters are classified as being domestic or non-domestic according to their (weather-corrected) gas consumption. Those with an annual consumption less than the industry cut-off of 73,200 are classified as domestic and the rest are classified as non-domestic. This means that some small industrial and commercial consumers will be classified as domestic.

For more information about these gas consumption statistics, see Section 2 of the BEIS / DESNZ guidance note: Sub-national methodology and guidance 2024.

- **Note E-9**

Where a Local Authority area contains one or more major power station or other large industrial consumer the consumption of these sites has not been included in the meter level gas consumption data due to complexities in their billing arrangements.

- **Note E-10**

New Local Authorities came into operation in April 2023. These changes relate to 3 parts of England: (1) North Yorkshire, (2) Cumbria and (3) Somerset. This reduced the total number of Local Authorities from 309 down to 296.

4. A new unitary authority called North Yorkshire replaced the 7 existing districts of Craven, Hambleton, Harrogate, Richmondshire, Ryedale, Scarborough and Selby. We have provisionally classified this single North Yorkshire UA as Predominantly Rural.

5. The 6 districts within Cumbria were abolished and replaced with 2 new unitary authorities. Allerdale, Carlisle and Copeland have been merged to form Cumberland and Barrow-in-Furness, Eden and South Lakeland have been merged to form Westmorland and Furness. We have provisionally classified Cumberland and Westmorland and Furness as Predominantly Rural.

6. The districts of Mendip, Sedgemoor, Somerset West and Taunton, and South Somerset have been merged to form a new unitary authority known as Somerset. We have provisionally classified this single Somerset UA as Predominantly Rural.

F. Estimated Carbon dioxide (CO_2) emissions from domestic properties

Factors such as whether a home is a flat or a house, whether it is Owner-occupied or Socially rented and whether or not it is a new house are far more important to determining the CO_2 emissions from the property than whether it is in a Predominantly Rural or Predominantly Urban area.

Summary

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let. As part of the EPC process an estimate of CO_2 emissions from the property is made based on standardised assumptions about how residents will use the property.

Across all homes the estimated average median CO_2 emissions as at March 2023 was 3.4 tonnes/year in Predominantly Rural areas and 3.1 tonnes/year in Predominantly Urban areas. In both Predominantly Rural and Predominantly Urban areas, on average new homes emit at least 2 tonnes/year less CO_2 than existing homes. An existing dwelling in either Predominantly Rural or Predominantly Urban areas, on average, emits 2.7 times the CO_2 of a new dwelling. Average median CO_2 emissions were higher for homes in Predominantly Rural areas than for those in Predominantly Urban areas for both Existing dwellings (15% higher) and New dwellings (16% higher), in part reflecting differences in the types of dwellings and the age of dwellings found in Predominantly Rural and Predominantly Urban areas. Within Predominantly Rural areas, the more Rural the area the higher the CO_2 emissions for existing dwellings.

In both Predominantly Rural and Predominantly Urban areas CO_2 emissions were highest from Detached properties followed by Semi-detached, then Terraced and finally Flats and maisonettes. For Flats and maisonettes, the average median CO_2 emissions were similar in Predominantly Rural and Predominantly Urban areas at 2 tonnes/year. Whereas for all 3 house types, the average median CO_2 emissions were between 4% and 15% lower in Predominantly Rural areas than in Predominantly Urban areas. The 10 Local Authorities with the highest median CO_2 emissions for Detached and Semi-detached properties were in London. These Local Authorities with high median CO_2 emissions help make the average median emissions in Predominantly Rural areas lower than Predominantly Urban area for Detached and Semi-detached homes. Once London Authorities are removed, the average median CO_2 emissions for Detached properties are 6% higher in Predominantly Rural areas than for Detached properties in Predominantly Urban areas outside of London. In Predominantly Rural areas, on average, a Detached home emits 1.5 times the CO_2 of a Terraced home.

For all 3 types of tenure, median CO_2 emissions were higher in Predominantly Rural areas than in Predominantly Urban areas. There was a hierarchy for each area type such that median CO_2 emissions were highest for Owner-occupied homes followed by Private rented homes and then Social rented homes had the lowest CO_2 emissions. For Social rented homes the median emissions were 0.2 tonnes/year more in Predominantly Rural areas than in Predominantly Urban areas, but for Owner-occupied and Private rented homes this emissions difference was bigger at 0.5 tonnes/year.

Approach for estimating Carbon dioxide (CO₂) emissions from domestic properties

The ONS publish [Energy Efficiency of Housing](#) on an annual basis (see Note F-2 and Note F-3). The most recent edition was published in November 2023. An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let. As part of the EPC process an estimate of CO_2 emissions from the property is made. These estimated **CO_2 emissions are based on standardised assumptions about how residents will use the property.** These assumptions include things such as the number of occupants, heating and lighting patterns and hot water usage. They are done this way to make properties directly comparable to each other for prospective buyers or tenants. These estimates therefore do not reflect how residents actually use the property.

This emissions data does not reflect all dwellings in England, because not every dwelling has an EPC. Table 4a of [Median energy efficiency score, England and Wales](#) shows the percentage of dwellings covered by an Energy Performance Certificate since records began, in England and Wales, as at 31 March 2023. Overall, in England around two-thirds of domestic properties are covered by EPCs. In general, the coverage is higher for:

- newer properties (95% coverage of post 2012 properties) than older ones;
- rented properties than Owner-occupied; and
- flats and maisonettes (83% coverage) than houses (60% coverage for detached properties).

The source data tables offer a median CO_2 emissions for each Local Authority for the given property characteristic being analysed. For example, a median CO_2 emissions value for all of the Detached properties in each Local Authority. When producing the overall estimates for Predominantly Rural and Predominantly Urban areas we take the mean as a simple unweighted average of these median values. **So strictly speaking when these overall estimates are presented, they are average median CO_2 emissions; although to simplify the commentary they will often be referred to as just median CO_2 emissions or average CO_2 emissions**.

## Median Carbon Dioxide (CO₂) emissions for New and Existing homes

As discussed in Energy Performance Certificates: average Energy Efficiency Score, the average energy efficiency of homes in Predominantly Rural areas was marginally lower than for homes in Predominantly Urban areas (66.8 compared to 67.5). This leads to estimated median CO_2 emissions as at March 2023 of 3.4 tonnes/year in Predominantly Rural areas and 3.1 tonnes/year in Predominantly Urban areas (Figure F-1). So, the median emissions were 0.4 tonnes/year (or 11%) more in Predominantly Rural areas than in Predominantly Urban areas. Given that Section B showed that the Energy Efficiency Rating is quite different for New dwellings (Note F-4) compared to Existing dwellings it is interesting to see how this translates through to CO_2 emissions.

Figure F-1 is a bar chart that shows the median CO_2 emissions for New dwellings, Existing dwellings and All dwellings by Local Authority Rural-Urban Classification in 2023. Figure F-1 shows that median CO_2 emissions are higher for homes in Predominantly Rural areas than for those in Predominantly Urban areas for both Existing dwellings and New Dwellings. It also shows that estimated emissions are much lower for New Dwellings and, when measured in absolute terms,

the difference between the average emissions in Predominantly Rural and Predominantly Urban areas is smaller for new homes than for existing homes. Average emissions for homes in Urban with Significant Rural regions are between those for Predominantly Rural and Predominantly Urban areas.

Figure F-1: Bar chart showing median CO_2 emissions for New, Existing and All dwellings by Local Authority Rural-Urban Classification in 2023 (Note F-2, Note F-3, Note F-4)
The legend is presented in the same order and orientation as the cluster of columns.
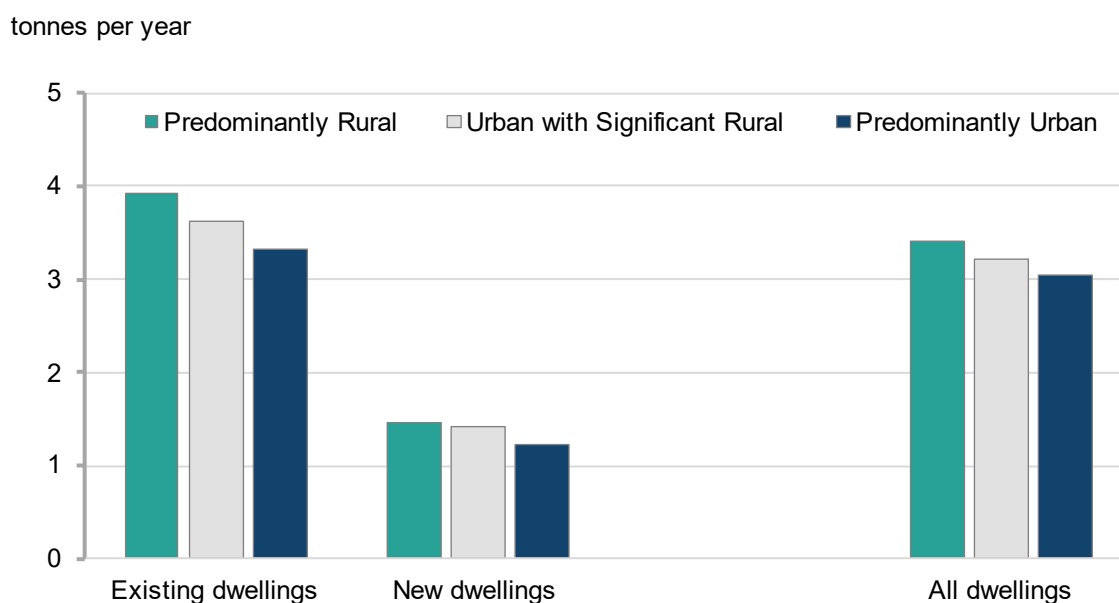
The following set of bullets provide more detailed findings from Figure F-1.

- For new homes, the estimated median CO_2 emissions as at March 2023 was 1.5 tonnes/year in Predominantly Rural areas and 1.2 tonnes/year in Predominantly Urban areas. So, the median emissions were 0.2 tonnes/year (or 16%) more in Predominantly Rural areas than in Predominantly Urban areas.

- For existing homes, the estimated median CO_2 emissions as at March 2023 was 3.9 tonnes/year in Predominantly Rural areas and 3.3 tonnes/year in Predominantly Urban areas. So, the median emissions were 0.6 tonnes/year (or 15%) more in Predominantly Rural areas than in Predominantly Urban areas.

- In both Predominantly Rural and Predominantly Urban areas, on average, new homes emit at least 2 tonnes/year less CO_2 than existing homes. An existing dwelling in either Predominantly Rural or Predominantly Urban areas, on average, emits 2.7 times the CO_2 of a new dwelling.

Figure F-2 is a bar chart that shows the median CO_2 emissions for New dwellings, Existing dwellings and All dwellings in Mainly Rural and Largely Rural areas. It shows that the more rural the area the higher the CO_2 emissions for both New dwellings and existing dwellings. In the most rural areas (Mainly Rural) the median CO_2 emissions were 4.1 tonnes/year for existing homes and 1.5 tonnes/year for new homes. These emissions were 0.4 tonnes/year more than the 3.7 tonnes/year that was estimated for existing homes in Largely Rural areas. An existing dwelling in Mainly Rural areas, on average, emits 2.8 times the CO_2 of a new dwelling in these areas.

Figure F-2: Bar chart showing median CO$_2$ emissions for New, Existing and All dwellings in Mainly Rural and Largely Rural Local Authorities in 2023 (Note F-2, Note F-3, Note F-4)
The legend is presented in the same order and orientation as the cluster of columns.
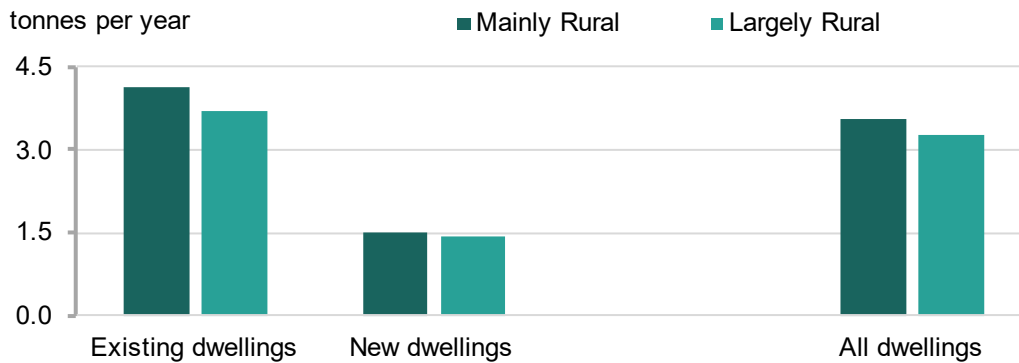

Figure F-3 is a bar chart showing indexed median CO$_2$ emissions for New dwellings, Existing dwellings and All dwellings by Local Authority Rural-Urban Classification in 2023. Overall homes in Predominantly Rural areas had average CO$_2$ emissions that were above the England average but in Predominantly Urban areas homes had average CO$_2$ emissions that were below the England average. The CO$_2$ emissions for New Dwellings were well below the England average (index = 0 on Figure F-3) with index values of less than -0.5 for all settlement types. This means that New dwellings had less than half of the average emissions in England. This was the case in both Predominantly Rural and Predominantly Urban areas. For the existing homes in Predominantly Rural areas the index value was 0.2, so their average CO$_2$ emissions were 20% higher than the England average CO$_2$ emissions. By contrast in Predominantly Urban areas the average CO$_2$ emissions from existing homes was just 5% higher than the England average CO$_2$ emissions.

Figure F-3: Bar chart showing indexed median CO$_2$ emissions for New dwellings, Existing dwellings and All dwellings by Local Authority Rural-Urban Classification in 2023 (Note F-2, Note F-3, Note F-4)
The legend is presented in the same order and orientation as the cluster of columns. Data has been indexed against the overall England average emissions such that bars below the horizontal axis represent below average emissions and bars above the horizontal axis represent above average emissions.
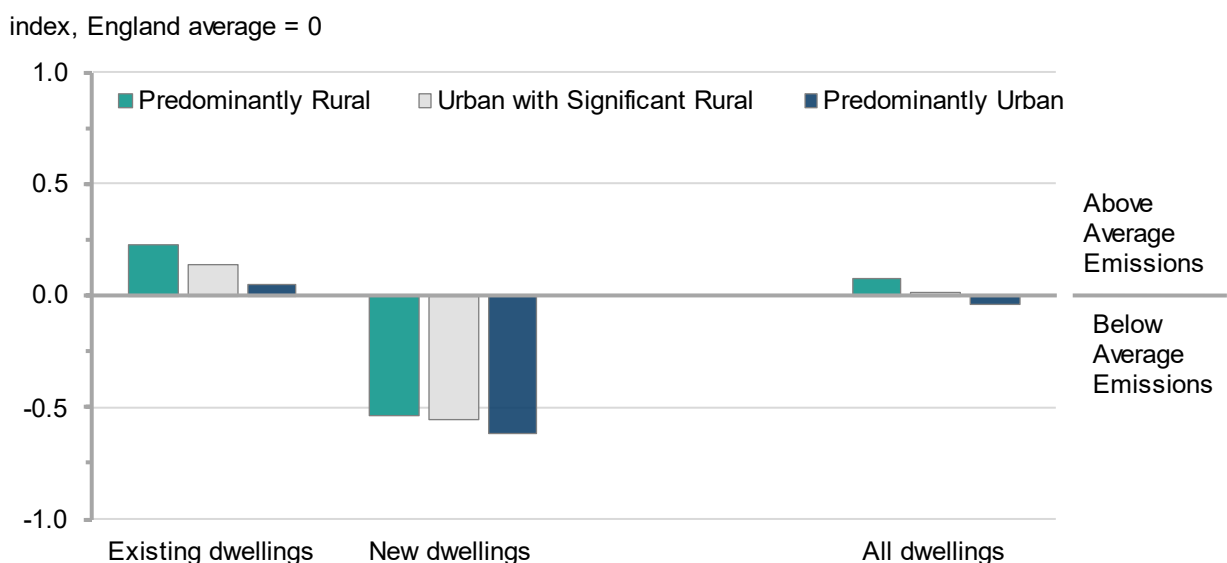
Median Carbon Dioxide (CO₂) emissions by housing type

As discussed in Energy Performance Certificates: average Energy Efficiency Score, Flats and maisonettes had a much higher average energy efficiency score than any other housing type. This led to estimated median CO_2 emissions as at March 2023 that were lower for Flats and maisonettes than for either Detached, Semi-detached or Terraced housing within all area types of the Broad Rural Urban Classification (Figure F-4).

Figure F-4 is a bar chart that shows the median CO_2 emissions by housing type and Local Authority Rural-Urban Classification in 2023. Figure F-4 shows a hierarchy such that CO_2 emissions were highest from Detached properties followed by Semi-detached, then Terraced and finally Flats and maisonettes. This pattern holds for Predominantly Rural, Predominantly Urban and Urban with Significant Rural areas. For Flats and maisonettes, the average CO_2 emissions were similar in all 3 area types. Whereas for all 3 house types, the average CO_2 emissions were lower in Predominantly Rural areas than in Predominantly Urban areas. The set of bullets below the chart provide more detailed findings.

Figure F-4: Bar chart showing median CO_2 emissions by housing type and Local Authority Rural-Urban Classification in 2023 (Note F-2, Note F-3, Note F-5)
The legend is presented in the same order and orientation as the cluster of columns
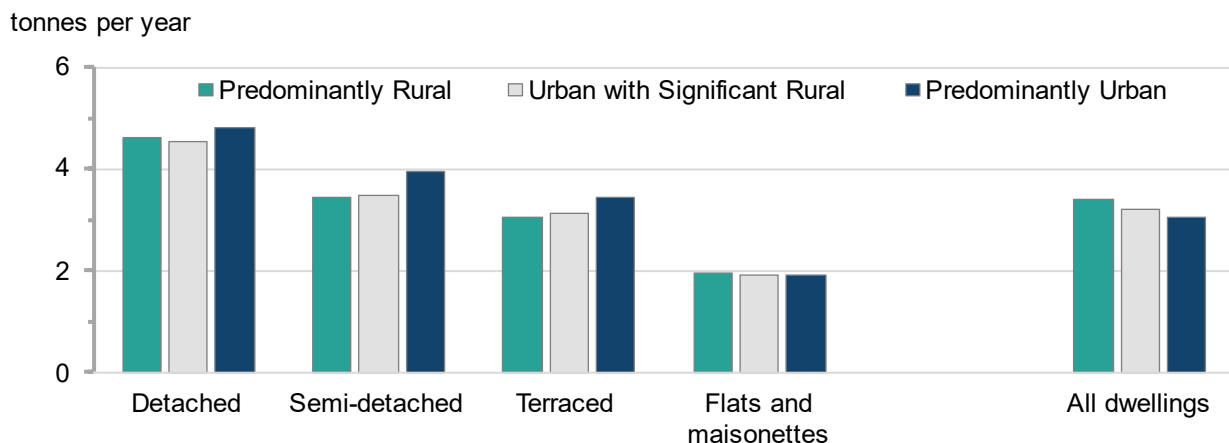
- For Detached homes, the estimated median CO_2 emissions as at March 2023 was 4.6 tonnes/year in Predominantly Rural areas and 4.8 tonnes/year in Predominantly Urban areas. So, the median emissions were 0.2 tonnes/year (or 4%) less in Predominantly Rural areas than in Predominantly Urban areas.

- For Semi-detached homes, the estimated median CO_2 emissions as at March 2023 was 3.4 tonnes/year in Predominantly Rural areas and 3.9 tonnes/year in Predominantly Urban areas. So, the median emissions were 0.5 tonnes/year (or 15%) less in Predominantly Rural areas than in Predominantly Urban areas.

- For Terraced homes, the estimated median CO_2 emissions as at March 2023 was 3.1 tonnes/year in Predominantly Rural areas and 3.5 tonnes/year in Predominantly Urban areas. So, the median emissions were 0.4 tonnes/year (or 13%) less in Predominantly Rural areas than in Predominantly Urban areas.

- For Flats and maisonettes, the estimated median CO_2 emissions as at March 2023 was 2.0 tonnes/year in Predominantly Rural areas and 1.9 tonnes/year in Predominantly Urban areas.

So, the median emissions were less than 0.1 tonnes/year (or 1%) more in Predominantly Rural areas than in Predominantly Urban areas.

- The difference between the estimated median CO_2 emissions for a Detached home and a Flat or maisonette was slightly smaller in Predominantly Rural areas (2.7 tonnes/year) than in Predominantly Urban areas (2.9 tonnes/year). A Detached home in Predominantly Rural areas, on average, emits 2.4 times the CO_2 of a Flat or maisonette. In Predominantly Urban areas this ratio is 2.5 times the CO_2 emitted.

- When all dwellings are considered the estimated median CO_2 emissions were higher in Predominantly Rural areas than in Predominantly Urban areas despite them being lower for all 3 types of house and similar for Flats and maisonettes. This can be explained by considering the composition of the housing stock in Predominantly Rural and Predominantly Urban areas. Predominantly Rural areas have a much higher proportion of Detached homes and a lower proportion of Flats and maisonettes than Predominantly Urban areas. The higher median CO_2 emissions for these Detached properties therefore raises the estimated median CO_2 emissions in Predominantly Rural areas relative to Predominantly Urban areas when all properties are considered.

Figure F-5 is a bar chart that shows the median CO_2 emissions by property type in Mainly Rural and Largely Rural areas. It shows that the more rural the area the higher the CO_2 emissions for all 3 house types, but the average emissions for Flats and maisonettes are similar in Mainly Rural and Largely Rural areas. In the most rural areas (Mainly Rural) the median CO_2 emissions were 4.8 tonnes/year for Detached homes, 3.5 tonnes/year for Semi-detached and 3.2 tonnes per year for Terraced homes. When compared to homes in Largely Rural areas, these emissions were 0.4 tonnes/year more for Detached homes and 0.2 tonnes/year more for both Semi-detached and Terraced homes. In Predominantly Rural areas, on average, a Detached home emits 1.5 times the CO_2 of a Terraced home.

Figure F-5: Bar chart showing median CO_2 emissions by property type in Mainly Rural and Largely Rural Local Authorities in 2023 (Note F-2, Note F-3, Note F-5)
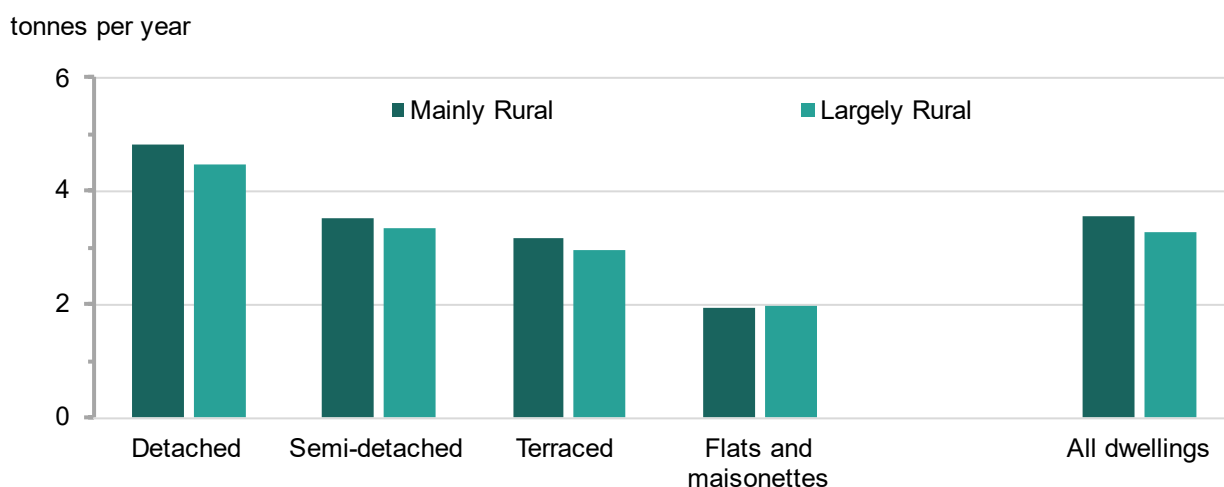The legend is presented in the same order and orientation as the cluster of columns.

tonnes per year

Figure F-6 is a bar chart showing indexed median CO_2 emissions by property type and Local Authority Rural-Urban Classification in 2023. It shows that median CO_2 emissions are well above average for Detached and well below average for Flats and maisonettes. Detached homes in both Predominantly Rural and Predominantly Urban areas had average CO_2 emissions that were

around 50% higher than the England average (their index value on Figure F-6 is around 0.5). Flats and maisonettes in all three broad RUC areas had average CO_2 emissions that were equivalent to 60% of the England average CO_2 emissions (their index value on Figure F-6 is -0.4). Terraced homes and Semi-detached homes in Predominantly Rural areas had average CO_2 emissions that were within 10% of the England average, but Semi-detached homes in Predominantly Urban areas had average CO_2 emissions that were 25% higher than the England average.

Figure F-6: Bar chart showing indexed median CO_2 emissions by property type and Local Authority Rural-Urban Classification in 2023 (Note F-2, Note F-3, Note F-5)
The legend is presented in the same order and orientation as the cluster of columns. Data has been indexed against the overall England average emissions such that bars below the horizontal axis represent below average emissions and bars above the horizontal axis represent above average emissions.
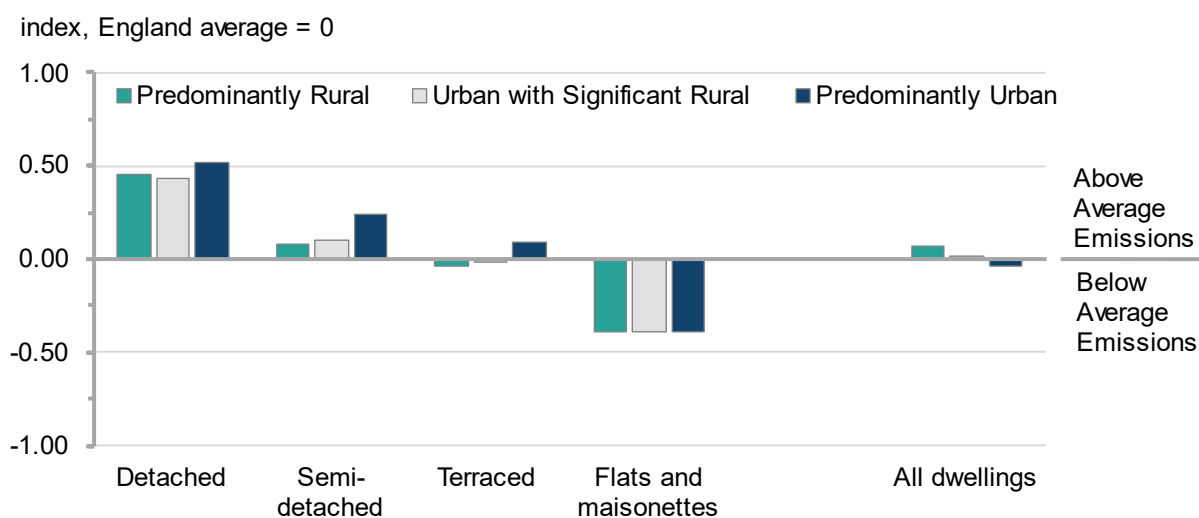
Lower CO_2 emissions from all 3 house types in Predominantly Rural areas than in Predominantly Urban areas was contrary to expectations and therefore required further investigation to understand this finding. This additional analysis (Note F-8) showed that there was a smaller spread between the Local Authority with the lowest median CO_2 emissions and the one with the highest median CO_2 emissions in Predominantly Rural areas than in Predominantly Urban areas for all property types. Some Predominantly Urban Local Authorities had much higher median CO_2 emissions and this raises the overall Predominantly Urban average emissions for each of the 3 house types. As an example of this effect, the median CO_2 emissions for "Kensington and Chelsea" were 19.0 tonnes per year for Detached properties, almost 4 times the median CO_2 emissions for Detached properties in Predominantly Urban areas. The large size of the properties in "Kensington and Chelsea" is a large contributing factor to these high emissions.

"Eden" with 6.7 tonnes/year had the highest median CO_2 emissions in Predominantly Rural areas for Detached properties. As mentioned in Fuel types used for central heating, Eden is one of 8 Predominantly Rural Local Authorities where more than 20% of the dwellings used oil as their main fuel type. A higher proportions of properties using oil for heating can, but does not automatically, lead to higher average CO_2 emissions. For example, Mid Suffolk has a higher proportion of homes using oil than Eden but lower median CO_2 emissions. So, oil use is just one of the factors that has the potential to increase CO_2 emissions, along with size of the property, number of occupants, the energy efficiency of the property and so on.

Given the high CO_2 emission values for London Local Authorities, the estimated emissions by property type were recalculated after separating London out from the other Predominantly Urban areas and are presented as a bar chart in Figure F-8. The hierarchy previously seen where CO_2 emissions were highest from Detached properties followed by Semi-detached, then Terraced and finally Flats and maisonettes remains. For Flats and maisonettes, the average CO_2 emissions were similar in all 4 area types. Whereas for all 3 house types, the average CO_2 emissions were much higher in London than in the other area types. Outside of London average CO_2 emissions showed little variation and differed by 0.3 tonnes per year or less between area types.

When all home types are considered the more rural the area the higher the median CO_2 emissions. This situation occurs because the proportion of Detached homes is bigger, and the proportion of flats is smaller in Predominantly Rural areas than in Predominantly Urban areas and particularly in London (Note F-7). Therefore, the point at which the median value in the full distribution is reached in Predominantly Rural areas is more likely to be representative of the emissions of a Detached home.

Figure F-7: Bar chart showing median CO_2 emissions by housing type and Local Authority Rural-Urban Classification, with London separated from other Predominantly Urban areas, in 2023 ((Note F-2, Note F-3, Note F-5)
The legend is presented in the same order and orientation as the cluster of columns
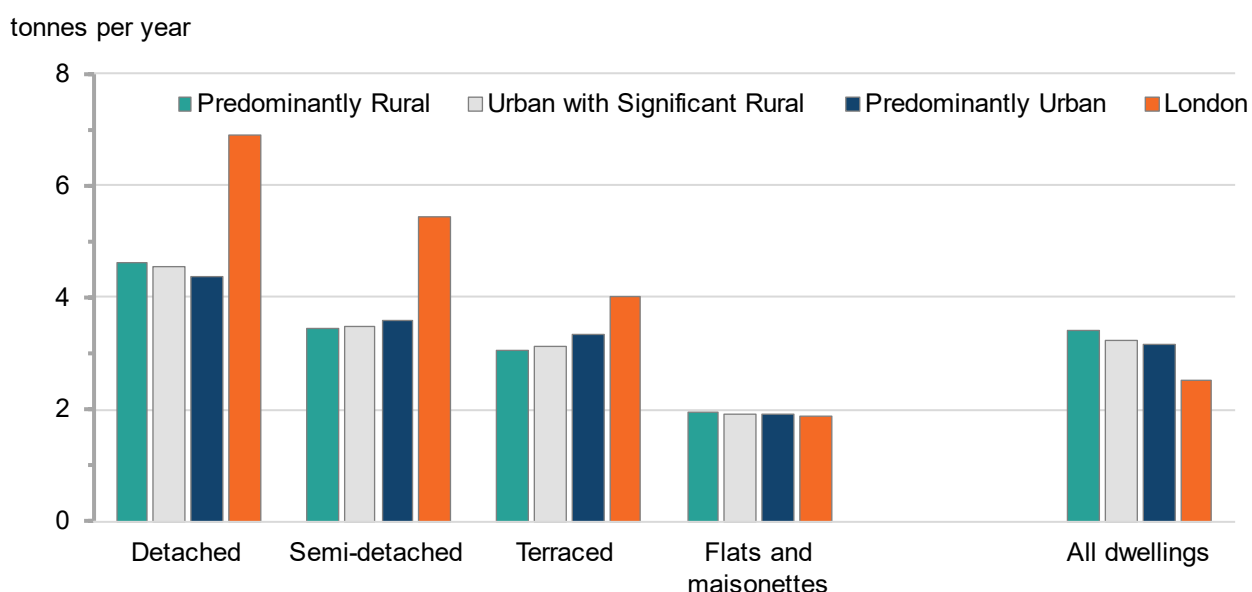
The following set of bullets below the chart provide more detailed findings.

- For Detached homes, the estimated median CO_2 emissions as at March 2023 was 4.6 tonnes/year in Predominantly Rural areas and 4.4 tonnes/year in Predominantly Urban areas outside of London. So, the median emissions were 0.3 tonnes/year (or 6%) more in Predominantly Rural areas than in Predominantly Urban areas outside of London.

- For Semi-detached homes, the estimated median CO_2 emissions as at March 2023 was 3.4 tonnes/year in Predominantly Rural areas and 3.6 tonnes/year in Predominantly Urban areas outside of London. So, the median emissions were 0.1 tonnes/year (or 4%) less in Predominantly Rural areas than in Predominantly Urban areas outside of London.

- For Terraced homes, the estimated median CO_2 emissions as at March 2023 was 3.1 tonnes/year in Predominantly Rural areas and 3.3 tonnes/year in Predominantly Urban areas outside of London. So, the median emissions were 0.3 tonnes/year (or 9%) less in Predominantly Rural areas than in Predominantly Urban areas outside of London.

- For Flats and maisonettes, the estimated median CO_2 emissions as at March 2023 was 2.0 tonnes/year in Predominantly Rural areas and 1.9 tonnes/year in Predominantly Urban areas outside of London. So, the median emissions were less than 0.1 tonnes/year (or 1%) more in Predominantly Rural areas than in Predominantly Urban areas outside of London.

- For houses, the difference between the estimated median CO_2 emissions in Predominantly Rural areas and London increased from London being 1 tonne per year more for Terraced, to 2 tonnes per year more for Semi-detached and to 2.3 tonnes per year more for Detached homes.

- For all homes the estimated median CO_2 emissions as at March 2023 was 3.4 tonnes/year in Predominantly Rural areas, 3.2 tonnes/year in Predominantly Urban areas outside of London and 2.5 tonnes/year in London. So, the median emissions were 0.2 tonnes/year (or 7%) more in Predominantly Rural areas than in Predominantly Urban areas outside of London and 0.9 tonnes/year (or 26%) more than in London.

Median Carbon Dioxide (CO_2) emissions by home tenure

As discussed in Energy Performance Certificates: average Energy Efficiency Score the average energy efficiency of homes in the Social rent sector is higher than for either Owner-occupied or Private rented homes. For Social rented properties the average Energy Efficiency Score equates to a C rating in both Predominantly Urban and Predominantly Rural areas, whilst for Owner-occupied and Private rented the average score equates to a D rating. This leads to an estimated median CO_2 emissions as at March 2023 that is lower for Social rent properties than for either Owner-occupied or Private rented homes for all 3 area types within the Broad Rural Urban Classification (Figure F-4).

Figure F-9 is a bar chart showing median CO_2 emissions by tenure and Local Authority Rural-Urban Classification in 2023 and it shows that for all 3 types of tenure, median CO_2 emissions were higher in Predominantly Rural areas than in Predominantly Urban areas and that the value for Urban with Significant Rural areas slotted in between these values. The chart also shows that there was a hierarchy for each area type such that median CO_2 emissions were highest for Owned-occupied homes followed by Private rented homes and then Social rented homes had the lowest CO_2 emissions. The difference between median emissions in Predominantly Rural areas and Predominantly Urban areas was smaller for the Social rent sector than the private sector.

The following set of bullets provide more detailed findings.

- For Social rent homes, the estimated median CO_2 emissions as at March 2023 was 2.6 tonnes/year in Predominantly Rural areas and 2.4 tonnes/year in Predominantly Urban areas. So, the median emissions were 0.2 tonnes/year (or 7%) more in Predominantly Rural areas than in Predominantly Urban areas.

- For Private rent homes, the estimated median CO_2 emissions as at March 2023 was 3.6 tonnes/year in Predominantly Rural areas and 3.0 tonnes/year in Predominantly Urban areas.

So, the median emissions were 0.5 tonnes/year (or 15%) more in Predominantly Rural areas than in Predominantly Urban areas.

- For Owner-occupied homes, the estimated median CO_2 emissions as at March 2023 was 4.3 tonnes/year in Predominantly Rural areas and 3.7 tonnes/year in Predominantly Urban areas. So, the median emissions were 0.5 tonnes/year (or 13%) more in Predominantly Rural areas than in Predominantly Urban areas.

- The difference between the estimated median CO_2 emissions for a Private rented home and a Social rented home was bigger in Predominantly Rural areas (1.0 tonnes/year) than in Predominantly Urban areas (0.6 tonnes/year).

- The difference between the estimated median CO_2 emissions for an Owner-occupied home and a Social rented home was bigger in Predominantly Rural areas (1.7 tonnes/year) than in Predominantly Urban areas (1.3 tonnes/year). An Owner-occupied home in Predominantly Rural areas, on average, emits 1.7 times the CO_2 of a Social rent home. In Predominantly Urban areas this ratio is 1.6 times the CO_2.

Figure F-8: Bar chart showing median CO_2 emissions by tenure and Local Authority Rural-Urban Classification in 2023 (Note F-2, Note F-3, Note F-6)
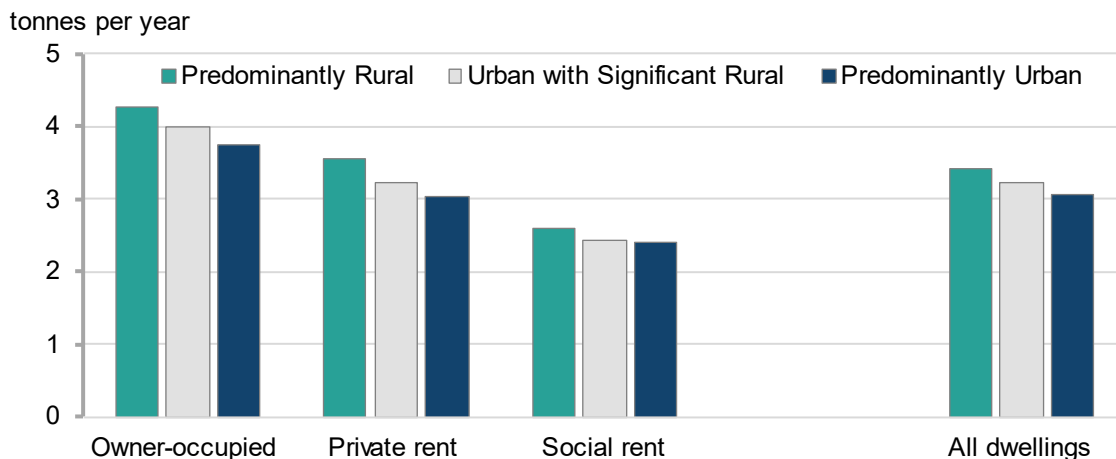The legend is presented in the same order and orientation as the cluster of columns.

Figure F-5 is a bar chart that shows the median CO_2 emissions by home tenure in Mainly Rural and Largely Rural areas. It shows that the more rural the area the higher the CO_2 emissions for all tenure types. In the most rural areas (Mainly Rural) the median CO_2 emissions were 4.5 tonnes/year for Owner-occupied homes compared to 2.7 tonnes/year for Social rent homes. This is a difference of 1.8 tonnes/year. Whilst in Largely Rural areas, the median CO_2 emissions were 4.1 tonnes/year for Owner-occupied homes compared to 2.5 tonnes/year for Social rent homes – a difference of 1.6 tonnes/year. The difference in median CO_2 emissions between homes in Mainly Rural and Largely Rural is smaller for Social rent homes (0.1 tonnes/year) than for those homes in the private sector (0.4 tonnes/year for Owner-occupied and 0.5 tonnes/year for Private rented).

Figure F-9: Bar chart showing median CO_2 emissions by tenure in Mainly Rural and Largely Rural Local Authorities in 2023 (Note F-2, Note F-3, Note F-6)

The legend is presented in the same order and orientation as the cluster of columns.

tonnes per year

Energy efficiency of Rural homes explanatory notes

- **Note F-1**

Tables showing the data in Section F are available in the Energy data tables.

- **Note F-2**

The Office for National Statistics (ONS) publish Energy Efficiency of Housing at Local Authority level on an annual basis for financial years. This section primarily uses the Median estimated carbon dioxide (CO_2) emissions, England and Wales dataset for the financial year ending March 2023. Data has been used at Local Authority level from tables 2b, 2c and 2d.

The source data for this ONS publication is Department for Levelling up, Housing and Communities – Energy Performance Certificate data on Open Data Communities and Valuation Office Agency - Property Attributes data (https://epc.opendatacommunities.org/).

- **Note F-3**

An Energy Performance Certificate (EPC) provides information on the energy efficiency of a building. Since 2007, an EPC is required when a building is constructed, sold or let and it is valid for 10 years. There can be multiple EPC lodgements for the same dwelling, but only the latest lodgement is analysed to avoid double counting dwellings. Analysis includes the latest EPC lodgements for a 10 year period, from Q2 2013 to Q1 2023. So this data does not reflect all dwellings in England, because not every dwelling has an EPC.

EPCs are based on data about a building's energy features (like the building materials used, heating systems and insulation, for example), which are collected by an accredited energy assessor and are entered into a government-approved software to generate the EPC.

The median CO_2 emissions are calculated at the time the EPC lodgement was assessed. This means that these statistics do not necessarily reflect energy efficiency improvements as the majority of alterations don't require a new EPC to be generated.

- **Note F-4**

Statistics for **new properties** were generated using data from new dwelling EPC records, which include new builds, conversions and change of use. Statistics for **existing properties** were generated using the latest EPC lodgement available for a property, within the existing dwellings records. An existing dwelling may have undergone several EPC assessments for different reasons (for example, due to a marketed sale, for a green deal assessment, or following the implementation of the changes suggested in a green deal assessment). New and existing dwellings are assessed using slightly different methodologies.

- **Note F-5**

ONS break down houses (including bungalows and park homes) into Detached, Semi-detached and Terraced property types and group Flats and maisonettes together as the final property type.

- **Note F-6**

Tenure is more likely to change over time in comparison to other housing variables. The tenure is that given at the time of the EPC assessment. It is less likely to have tenure data for newly-built dwellings because they have just been constructed and do not yet have a tenure.

- **Note F-7**

Section A of the Statistical Digest of Rural England: 2 - Housing contains information on the stock of housing by house type and how it varies between Rural and Urban areas. Census 2011 data revealed that the majority of dwellings in both Rural Villages and Rural Hamlets and Isolated Dwellings were 'detached' properties and that the proportion of dwellings which were 'flats' decreases as the settlement becomes more rural, falling from 32% in Urban Conurbations to only 4% in both Rural Villages and Rural Hamlets and Isolated Dwellings.

- **Note F-8**

Tables showing distribution summary statistics for CO_2 emissions by property type at Local Authority level are available in the Energy data tables

Appendix 1: The 8 thematic reports that make up the Statistical Digest of Rural England (and the topics included within them)

1. Population

A. Population level and change
B. Population age profile
C. Ethnicity
D. Internal migration
E. Local Authority population data

2. Housing

A. Housing stock: age and type
B. Housing stock: additions
C. House prices
D. Housing stock: affordable housing
E. Second and empty homes
F. Homelessness
G. Land use change for housing

3. Health and Wellbeing

A. Life expectancy
B. Wellbeing
C. NHS Dentistry provision
D. General Practices
E. Childcare provision
F. Loneliness
G. Volunteering and charity

4. Communities and Households

A. Deprivation
B. Poverty due to low income
C. Household expenditure
D. Police recorded crime and outcomes
E. Crime surveys: local police and businesses
F. Feelings about the local neighbourhood

5. Connectivity and Accessibility

A. Broadband
B. Travel behaviours
C. Access to personal transport
D. Access to services
E. Home working

6. Education, Qualifications and Training

A. Secondary education attainment
B. School inspections
C. Free school meals
D. Alternative and specialist education provision
E. Progression to higher education
F. Apprenticeships and on-the-job training
G. Workforce education level

7. Rural Economic Bulletin

A. Employment
B. Earnings
C. Redundancies
D. Claimant count - Jobseeker's Allowance
E. Output and productivity measured by Gross Value Added (GVA)
F. Businesses - status, structure and composition
G. Innovation and investment

8. Energy

A. Fuel poverty
B. Energy Performance Certificates: average Energy Efficiency Score
C. Energy Performance Certificates: achieving energy efficiency category C
D. Energy costs
E. Energy consumption
F. CO_2 emissions

Each of the 8 themes also has their own set of supplementary data tables that include the larger source data that could not be included in the presented document. The chapter headings above are hyperlinked to the home page for that specific digest theme. The supplementary tables can be accessed from these home pages.

There is a further document including the individual Local Authority data tables, which have been separated for ease of use.

Appendix 2: Defining Rural areas

Wherever possible, the Rural-Urban Classification is used to distinguish Rural and Urban areas. The Classification defines areas as Rural if they fall outside of settlements with more than 10,000 resident population.

Census Output Areas are the smallest areas for which data are available from Censuses. These Census Output Areas are assigned to one of four Urban or six Rural categories (Figure X-1) based on dwelling densities. Those described as "in a sparse setting" reflect where the wider area is sparsely populated (again based on dwelling densities). From Census Output Areas, other small area geographies can be classified based on how they map to Census Output Areas (such as Lower Super Output Areas (LSOAs), Wards, and postcodes – Note 1).

Figure X-1: Classifying Rural and Urban areas for small geographical areas
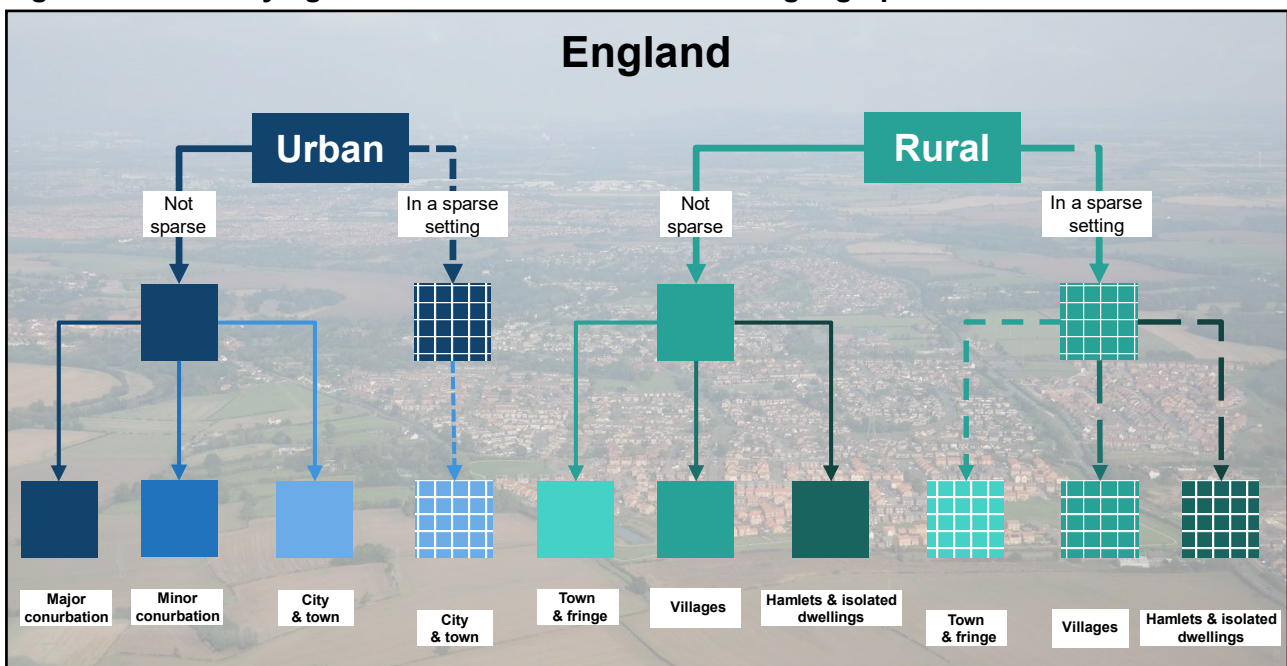
A map showing the distribution of the Rural and Urban Census Output Areas is shown in Figure X-2.

When data are not available at a small geographical scale, it may be possible to apply the Rural-Urban Local Authority Classification or a similar classification for other larger geographies. This classification categorises districts and unitary authorities on a six-point scale from Rural to Urban. It is underpinned by Rural and Urban populations as defined by the Census Output Area Classification. A map of the geographical distribution of the Rural and Urban Local Authorities is shown in Figure X-3.

However, the Local Authority Classification also considers some Urban areas as Hub Towns (with populations of between 10,000 and 30,000). These Hub Towns have met statistical criteria (based on dwelling and business premise densities) to be considered hubs for services and businesses for a wider rural hinterland and their populations are therefore classified as effectively Rural for the purposes of determining the classification of the authority.

Figure X-2: Map of the 2011 Rural-Urban Classification for Census Output Areas in England
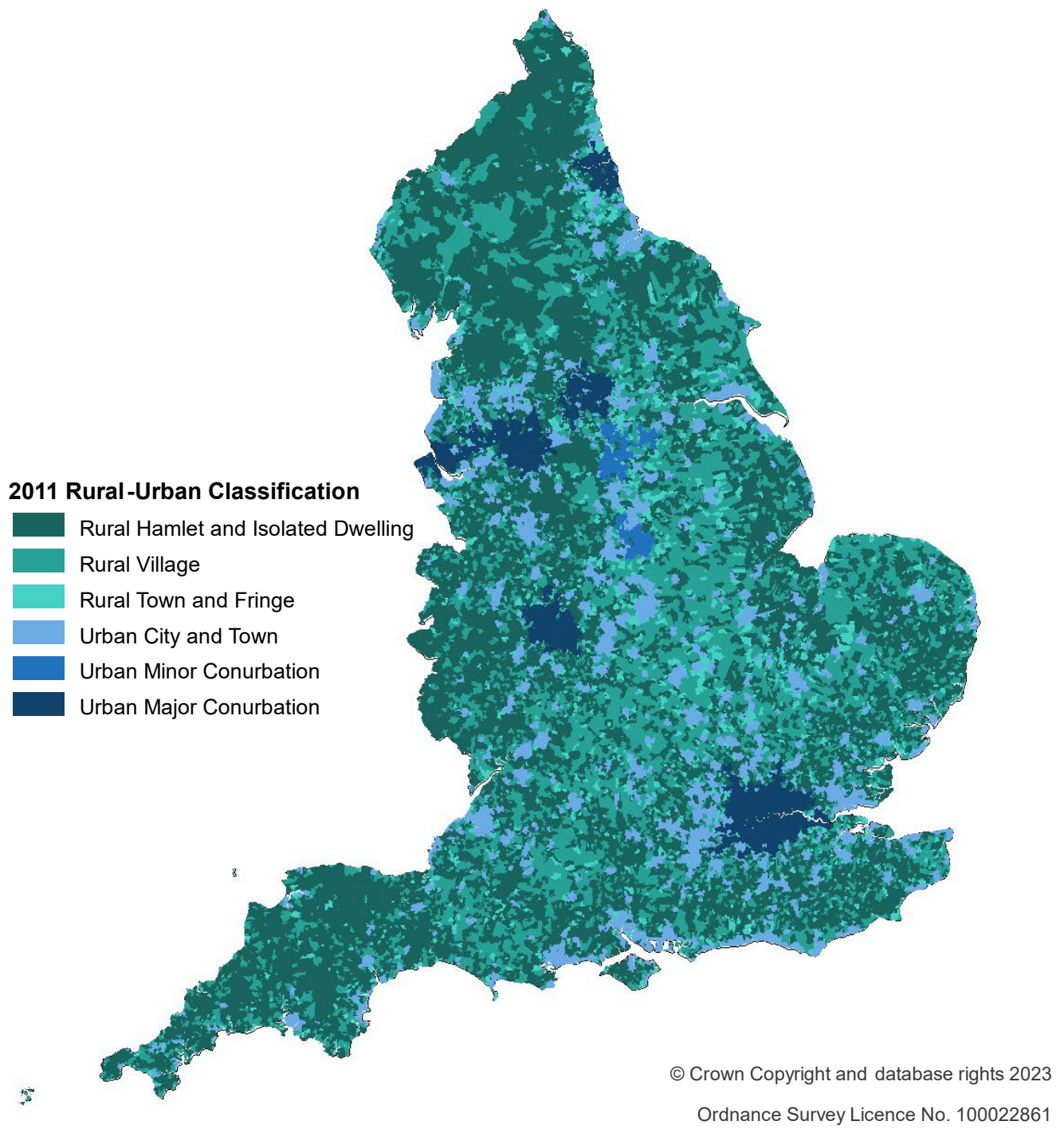

2011 Rural-Urban Classification

- Rural Hamlet and Isolated Dwelling
- Rural Village
- Rural Town and Fringe
- Urban City and Town
- Urban Minor Conurbation
- Urban Major Conurbation

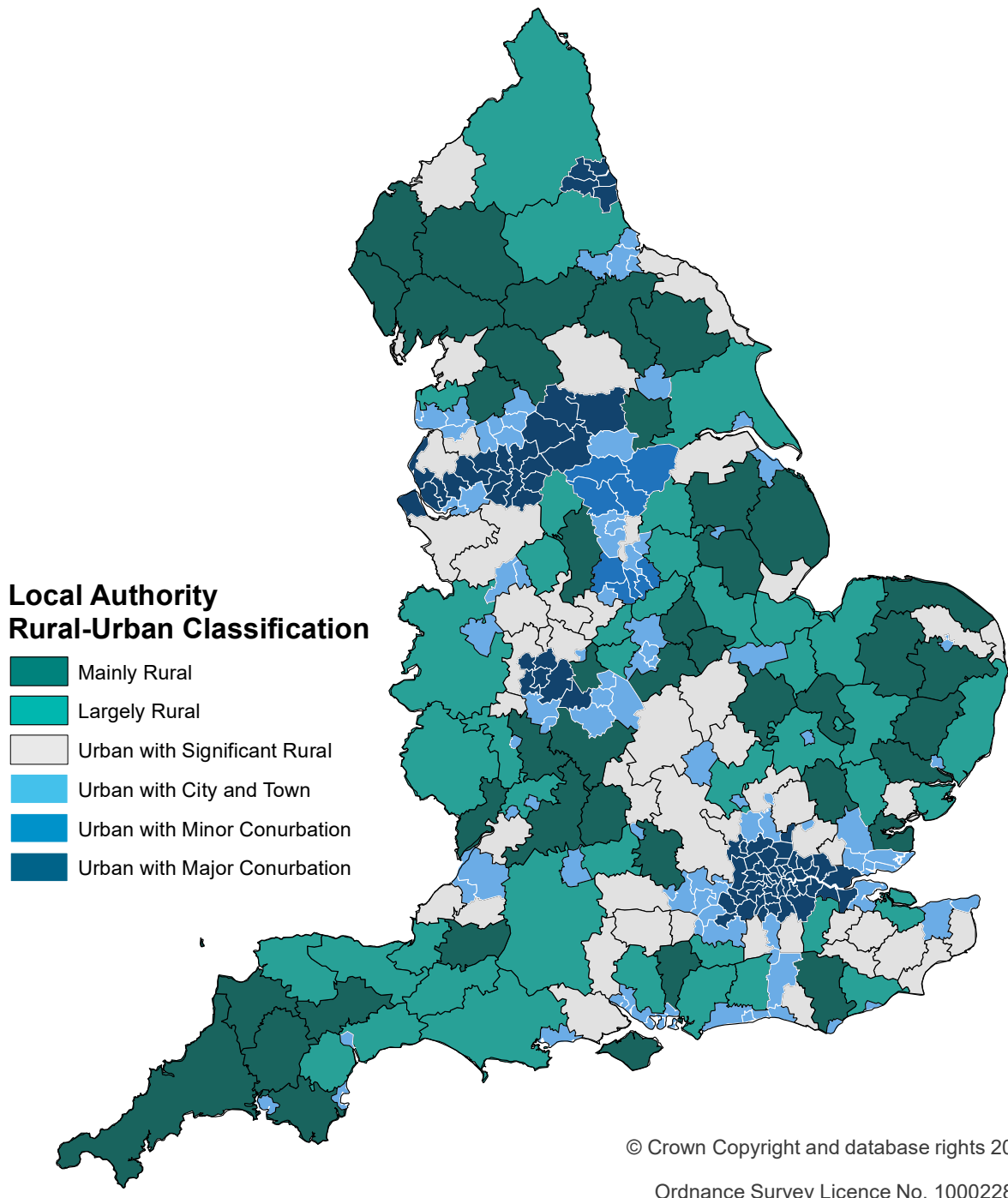© Crown Copyright and database rights 2023

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Figure X-3: Map of the 2011 Rural-Urban Classification for Local Authority Districts and Unitary Authorities in England

**Local Authority
Rural-Urban Classification**

- Mainly Rural
- Largely Rural
- Urban with Significant Rural
- Urban with City and Town
- Urban with Minor Conurbation
- Urban with Major Conurbation

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Under the classification, which is shown in Figure X-4, each Local Authority is assigned to one of six categories on the basis of the percentage of the total resident population accounted for by the combined Rural and Hub Town components of its population and its 'conurbation context'. The Local Authority Classification categories are frequently aggregated to 'Predominantly Rural', 'Urban with Significant Rural' and 'Predominantly Urban' as shown on Figure X-4.

Figure X-4: 2011 Rural-Urban Classification for Local Authorities in England
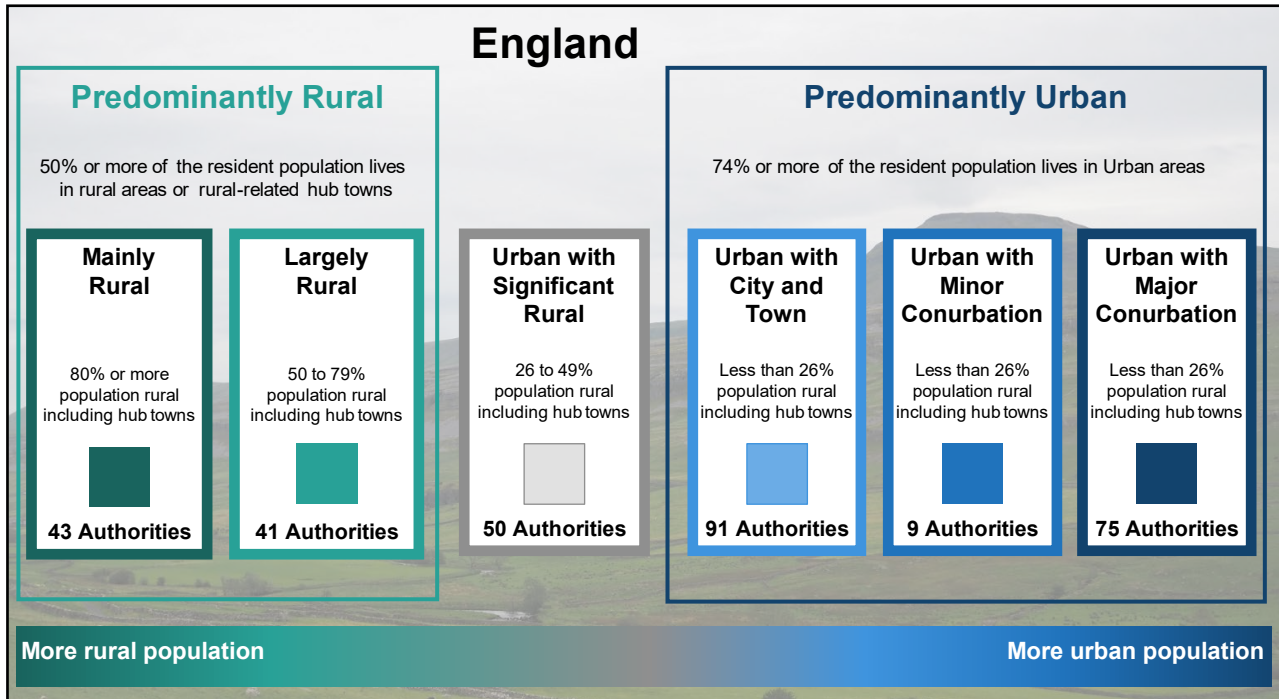
The Local Authority Rural-Urban Classification is based on <u>populations and settlement patterns, not on how much countryside there is</u>. Authorities classified as Urban may have wide areas of countryside and may have sizeable Rural populations. The classification has been made according to the proportions of the population residing in Urban settlements and outside Urban settlements. More information on the classifications can be found at: The Rural-Urban Definition.

A similar approach to that for Local Authorities was used to create a classification for Westminster Parliamentary Constituencies. Under this classification, which is shown in Figure X-5, each Parliamentary Constituency is assigned to one of six categories on the basis of the percentage of the total resident population accounted for by the combined Rural and Hub Town components of its population and its 'conurbation context'. A map of the geographical distribution of the Rural and Urban Westminster Parliamentary Constituencies is shown in Figure X-5. This map depicts a classification for the new rebalanced Parliamentary Constituencies that were introduced for 2024 General Election. The Parliamentary Constituency Classification categories are frequently aggregated to 'Predominantly Rural', 'Urban with Significant Rural' and 'Predominantly Urban' as shown on Figure X-6.

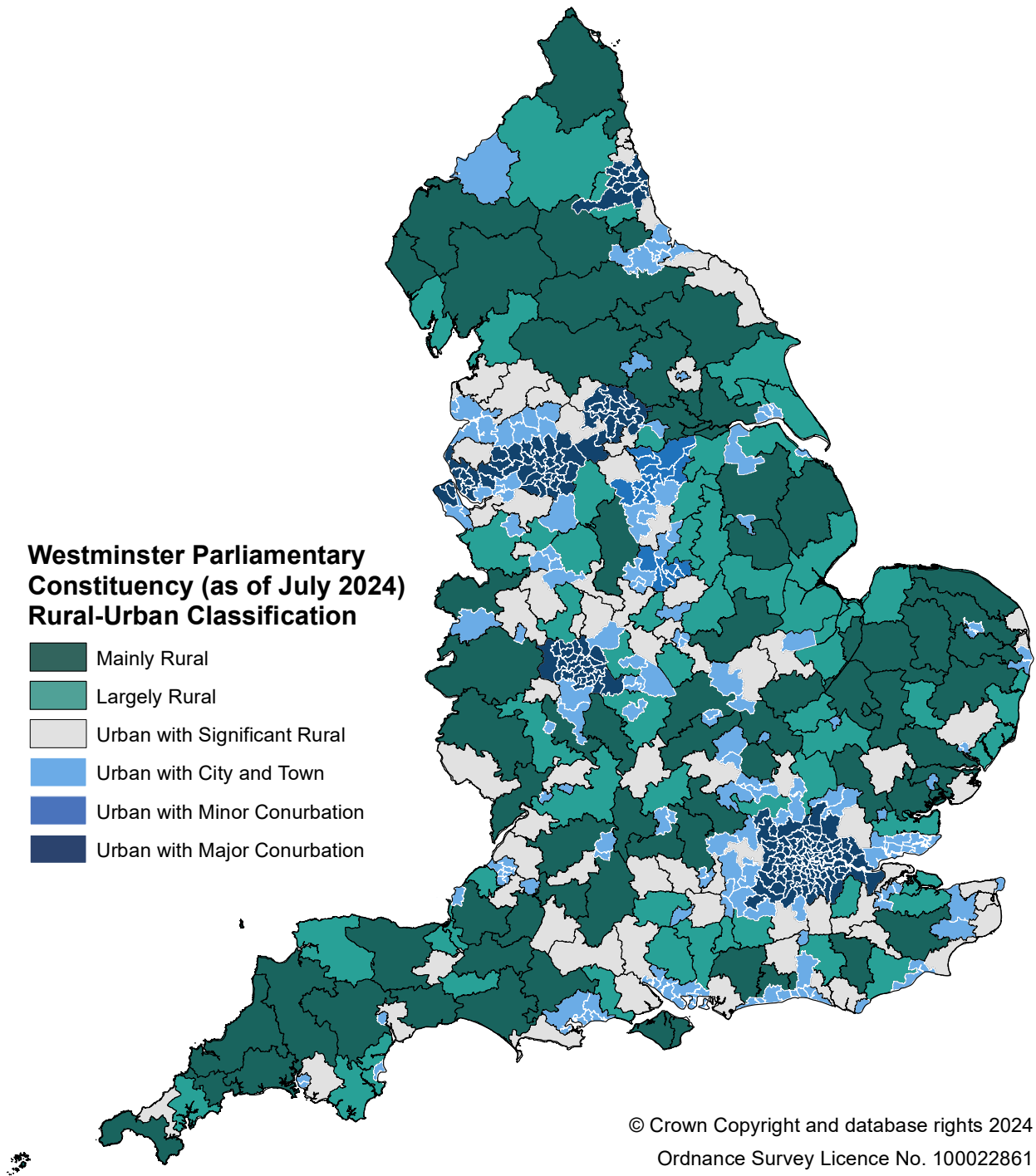**Figure X-5: Map of the 2011 Rural-Urban Classification for Westminster Parliamentary Constituencies in England**

Westminster Parliamentary Constituency (as of July 2024) Rural-Urban Classification

- Mainly Rural
- Largely Rural
- Urban with Significant Rural
- Urban with City and Town
- Urban with Minor Conurbation
- Urban with Major Conurbation

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Figure X-6: 2011 Rural-Urban Classification for Westminster Parliamentary Constituencies in England
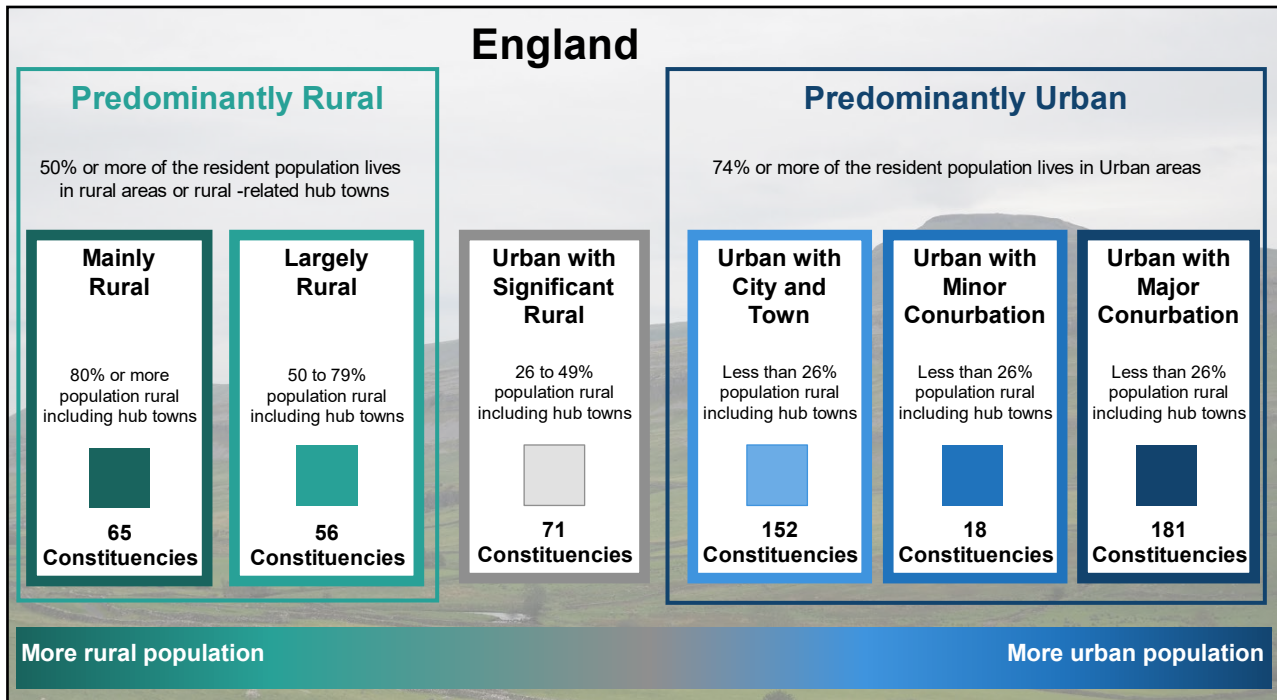
Defining Rural areas explanatory notes

- **Note 1:** Defining Super Output Areas and Wards

    - *Census Output Areas* (OAs) were created for publication of the results of the recent Censuses. They cover around 125 households. In practice few datasets are produced at OA level. However, other larger geographies can be built up from OAs. These include *Lower Layer Super Output Areas* (LSOAs) which typically contain 5 OAs, so contain approximately 625 households or a population of approximately 1,500 and a minimum 1,000. Their Rural-Urban Classification is based on the majority category of OAs they contain. Some other geographies, for example postcodes are classified based on the location of their central point and the classification of respective OA.

- **Note 2:** Accessibility of Figure X-2

    - We accept that this map might not be accessible for all users, but it is difficult to develop a map containing six colours that will provide enough contrast between all colours to enable every user to see them, especially when the shaded areas are small. Separate maps (showing only three levels of shading) for Rural and Urban areas are available on request from: rural.statistics@defra.gov.uk