



Ministry of Housing,
Communities &
Local Government

Energy Performance of Buildings Certificates in England and Wales

Technical Notes



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If you have any enquiries regarding this document/publication, complete the form at <http://forms.communities.gov.uk/> or write to us at:

Ministry of Housing, Communities and Local Government
Fry Building
2 Marsham Street
London
SW1P 4DF
Telephone: 030 3444 0000

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Experimental Statistics Status

Experimental Official Statistics are defined in the Code of Practice for Statistics as “new official statistics undergoing evaluation”. They are published in order to involve users and stakeholders in their development and as a means to build in quality at an early stage.

These statistics are based on information from based on Energy Performance Certificates (EPCs) issued for domestic and non-domestic buildings and Display Energy Certificates (DECs) issued for buildings occupied by public authorities. The certificates are lodged on the Energy Performance for Buildings Certificates Register for England and Wales.

On 20th September 2020, MHCLG took the register service in-house, creating a single register for England, Wales and Northern Ireland (Scotland still has [its own register](#)). However, MHCLG are responsible only for the publication of the statistics covering England and Wales. More information is available on the development of the [new register](#).

This administrative data is subject to continuing quality investigation and improvement, and they have been released because they have been judged to be of immediate value to interested parties and to encourage user feedback.

Data collection

Energy Performance Certificates

An Energy Performance Certificate (EPC) indicates the energy efficiency of a building. The assessments are banded from A to G, where A (or A+ for non-domestic properties) is the most efficient in terms of likely fuel costs and carbon dioxide emissions. An EPC is required when a building is newly constructed, sold or let. The purpose of an EPC is to show prospective tenants or buyers the energy efficiency of the property. The requirement for EPCs was introduced in phases and fully implemented for domestic properties by autumn 2008. EPCs are valid for 10 years.

Display Energy Certificates

Larger properties occupied by public authorities and frequently visited by the public must display a Display Energy Certificate (DEC) in a prominent place. DECs show the actual energy consumption of a building and are accompanied by reports which provide recommendations on potential energy saving measures.

Coverage

The Register does not hold data for every domestic and non-domestic building or every building occupied by public authorities in England and Wales. Buildings only require an EPC when, sold, let or constructed. If a building has been occupied by the same person since the regulations came into effect, there's no requirement to have an EPC. DEC are only required where a building is over 250 square meters and frequently visited by the public. Not all public buildings would meet those criteria. These statistics should, therefore, not be interpreted as a true representation of the whole of the building stock in England and Wales but viewed as part of a wider package of Government's provision of information on the energy efficiency of buildings.

Periodicity

The release covers certificates lodged from October 2008 and breaks the data down for each specified calendar quarter (Q1=Jan-Mar, Q2=Apr-Jun, Q3=Jul-Sep, Q4=Oct-Dec) within each specified calendar year.

New build vs new dwellings

If works are carried out to create a new buildings(s), either by means of new build or by conversion of an existing building (for example, subdivision of an existing building into flats or change of use of an office), the person responsible for the construction must obtain an EPC once construction has been completed. This will also apply if a building is converted into fewer or more units designed for separate occupation and there are changes to the heating, hot water provision or air conditioning/ventilation services.

Quarterly figures on EPCs lodged for new dwellings have followed a similar trend to quarterly new build dwelling completions, as reported in the [Housing supply: indicators of new supply statistics](#) since 2009-10. The number of new dwelling EPCs lodged are higher

than quarterly new build completions as they comprise of new build dwellings plus dwelling conversions (for example a house into flats) and change of use of an existing building (for example a shop into a house or a barn conversion).

Park homes

This category of property means a caravan within the meaning of Part 1 of the Caravan Sites and Control of Development Act 1960 which is situated on a relevant protected site and which is occupied as the only or main residence. EPCs for park homes have been lodged on the Energy Performance of Buildings Register (the Register) since December 2014.

Multiple certificates

The statistical counts in the tables cover all valid EPCs and DECAs (i.e. only those lodged on the Register where there are no doubts about their status) although individual buildings may have more than one certificate. EPCs are valid for up to 10 years. Depending on the size of the property, a new DEC may be issued annually. Data are kept on the Register for 20 years; therefore, more than one EPC or DEC may be stored over a number of years for one building. While it is possible to identify the most recent certificate at property level, this duplication is not distinguishable in these high-level statistics.

Regional and Local Authority matching

The [ONS Postcode Directory](#) (ONSPD) was used to allocate higher geographies such as region and local authority to the EPC address level data. Three levels of matching were used:

1. Exact postcode match: Where the postcode from the directory matched that of a property with a lodged EPC, a regional/local authority code was allocated
2. Outcode matching: Where the postcode did not match (approx. 0.1% of records), the outcode from an EPC certificate postcode was used to allocate an approximate region/local authority

3. No match: Where there was no match, certificates were allocated to an “unknown” category

Where no match was found, an “Unknown” category was created to inform users of those certificates that could not be coded.

Our aim is to backdate the allocations to ensure that the number of unknowns remain low.

Data quality

Things to note on this release

These are experimental official statistics drawn from data which have been lodged on the Register. Experimental official statistics are, by definition, still subject to evaluation and testing and may not meet the same rigorous quality standards as official statistics generally. In spite of any data quality variances which may exist, we have been publishing these statistics since 2014 because we believe them to be of immediate value and we welcome feedback from interested parties to aid their development.

In accordance with the regulations, the Ministry of Housing, Communities and Local Government cannot alter data which has been lodged on the Register. Primary responsibility for the robustness of the data in relation to individual buildings lies with the energy assessor who carried out the energy assessment and the energy assessor's accreditation scheme. Additional validation checks are undertaken as the data is lodged on the registers and improved quality assurance procedures for energy assessor accreditation schemes have been introduced.

However, data can be marked 'not for issue' or 'cancelled' for a range of reasons by the energy assessor's accreditation scheme. Users are asked to recognise that there may be anomalies in the published data. For example

Issue	Definition
'INVALID' fields	Invalid reports are where the value provided is out of bounds, e.g. a negative energy rating of -1199 or a non-integer, there is no valid energy band for this, so it is marked as INVALID!
'NO DATA'	When the energy certificate was first lodged on the register there was no requirement to lodge this data item, i.e. a non-mandatory item.
'N/A'	Input value supplied by the software which has produced the energy certificate.
'Not recorded'	A value generated by the register to account for a data item that was not mandatory when the lodgement of the energy certificate occurred. When the data item became mandatory the register operator, for backwards compatibility purposes, populated the data field with a value of 'not recorded' to ensure that the energy certificate retrieval process is successfully completed. Mandatory data items cannot be applied retrospectively to energy certificates lodged before the date of the change.

Data used to produce these published tables is updated continuously on the Register, therefore, will vary from day to day. To ensure consistency between the information detailed in separate tables the published tables are produced on the same day.

Originally, Energy Assessor Accreditation Schemes had the option of lodging the underlying data used to produce the certificate in addition to the PDF document of the final certificate itself. After September 2008, lodging the data became a mandatory requirement. Due to the technical difficulty involved in formatting PDFs into searchable data, the statistics do not include data lodged in the form of a PDF document only.

In May 2009, additional validation checks were introduced into the lodgement process to identify prescribed data quality issues. Before this period, statistics for domestic buildings may include anomalies which affect the quality of reported CO₂ emission rates. In addition, statistics for domestic and non-domestic buildings and for DEC's may include anomalies which affect total useful floor area figures.

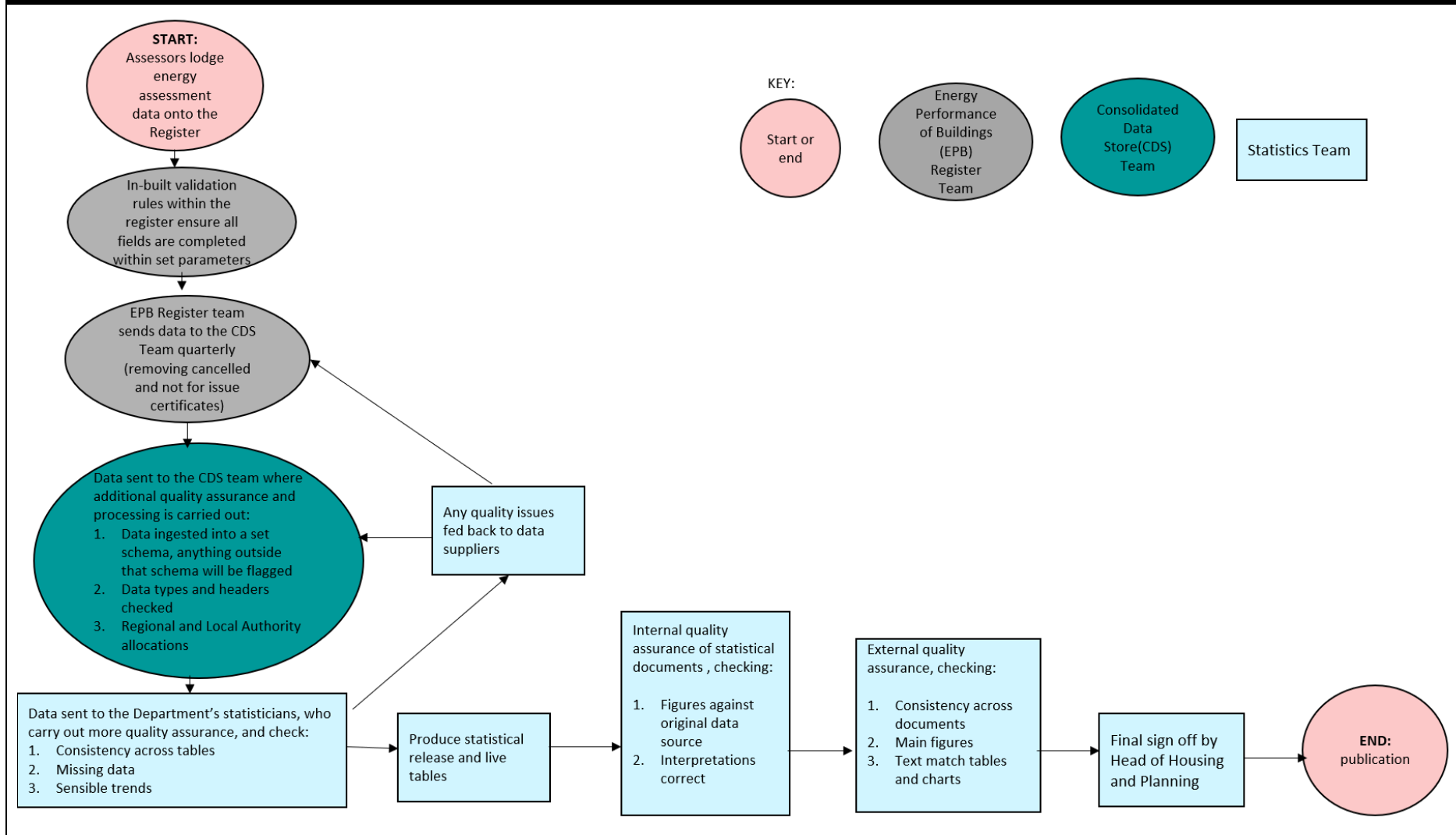
In April 2012, a revised set of Scheme Operating Requirements came into effect, setting rules for the operation of Energy Assessor Accreditation Schemes, which included quality assurance audits for EPCs. This resulted in an improvement in the quality of data lodged on the Registers from mid-2012 onwards. Users are asked to consider this when interpreting figures prior to that period.

Statistics from October to December 2014 onwards includes statistics for EPC lodged for properties defined as Park homes.

The new register service provides a cloud-based register and delivers an improved user experience by applying Government Digital Service (GDS) standards and best practice. For Energy Assessors and Accreditation Schemes it provides an improved lodgement method, access to more reporting and quicker and cheaper updates.

A full outline of the statistical production process and quality assurance carried out is provided in the flow chart in Figure 1 below.

Figure 1: Quality Assurance Flow Diagram



Quality Assurance Flow Diagram (Accessible version)

1. Assessors lodge energy assessment data onto the Register.
2. In-built validation rules within the Register ensure all data are within set parameters.
3. The Energy Performance Buildings (EPB) Register Team send the data quarterly to the in-house Consolidated Data Store (CDS) Team who load the data into the CDS where they carry out quality assurance checks:
 - a. Data is taken into the database to fit into a set schema, any data outside of this is flagged
 - b. Data types and headers are checked
 - c. Regons and local authorities are allocated
4. Any data quality issues are fed back to the EPB team and data resent
5. The responsible statistician runs stored procedures in SQL to pull out the statistical tables required for the statistical release, and then carries out additional quality assurance:
 - a. Checks consistency across tables, and totals add up
 - b. Checks for missing data
 - c. Checks that the trends over time look sensible
6. Any quality issues are fed back to the EPB/ CDS team and data resent.
7. Once the data have gone through the quality checks the data populate the live tables and statistical release
8. Internal quality assurance is then carried out on the documents:
 - a. Titles match tables
 - b. Figures are the same as the raw data
 - c. Interpretations made are sensible
9. External (outside of the statistics team) quality assurance is carried out to ensure consistency across documentation, the main figures are correct and that the commentary is clear and understandable to an outside reader.
10. The final statistical release and accompanying documents are signed off by the Head of Housing and Planning.
11. The Statistical Release is published.

Assessment of data quality

In 2015 the UK Statistics Authority (UKSA) published a [regulatory standard for the quality assurance of administrative data](#). To assess the quality of the data provided for this release the department has followed that standard.

The standard is supported with an [Administrative Data Quality Assurance Toolkit](#) which provides useful guidance on the practices that can be adopted to assure the quality of the data they utilise.

The Energy Performance of Building Certificates statistical release is based on data from the new MHCLG in-house register (launched on 20th September 2020). Prior to this data were provided by a contractor (Landmark). An assessment of the level of risk based on the Quality Assurance Toolkit since the change in register is as follows (see previous statistical releases for level of risk relating to data for the period to 20th September 20):

Risk/Profile Matrix Statistical Series	Administrative Source	Data Quality Concern	Public Interest	Matrix Classification
Energy Performance of Buildings Certificates Statistical Release: England and Wales	MHCLG Register	Medium	High	Medium Risk [A2]

The publication of Energy Performance of Buildings Certificates can be considered high profile as there is significant mainstream political interest and media attention. These statistics show EPCs for domestic. The data quality concern is considered an A2: medium concern, this is mainly driven by the ongoing development of the new Register and high-profile nature of the figures. However, this concern is mitigated by the statistician responsible for this publication, who performs further detailed validations and sense checks for consistency across tables. This risk assessment is unchanged from previous assessments using a contractor managed register due to the development work still going on, but it is expected to become a lower risk in the future as further development of the Register takes place .

Operational context and administrative data collection

When an **existing** property is sold or let the seller or landlord is responsible for ensuring there is an EPC for the building.

For **new** properties being constructed or modified, the requirement for an EPC to be made available to a prospective buyer or tenant does not apply until construction or modification of the building has been completed.

EPC assessments are carried out by an energy assessor who is a current member of an Accreditation Scheme. Accreditation Schemes are responsible for managing energy assessors and for monitoring the quality of the EPCs by ensuring their energy assessors are competent and possess the appropriate skills to conduct energy assessments. Energy assessors will need to be qualified for the type of building being assessed.

To monitor quality, Assessment Schemes undertake audits on a sample of assessments. In addition to this, MHCLG also carry out independent audits twice a year (one scheduled, one on the spot), to increase the quality of the data.

Further details on [Accreditation Schemes](#) and when an EPC is required can be found on the website.

QA principles, standards and checks by data suppliers

The EPB Register has fail safes built into its design. This means that the XML data that is sent by an assessor needs to fit against a permitted schema which confirms that the data is in an expected format and that the XML has been created by software which has been through a separate validation process to ensure that calculations are carried out against expected parameters. Furthermore, values that are in the correct format but fall outside of expected ranges are flagged as problematic before lodgement is confirmed so that the assessor is able to check their inputs.

Producers' QA investigation and documentation

Whilst the EPB Register is designed to issue validation failures which prevent obviously incorrect values being submitted, the Consolidated Data Store (CDS) Team's data ingestion of the data ensures that any data transformation or data type issues are detected. Additional processing is carried out to:

- a. Data is taken into the database to fit into a set schema, any data outside of this is flagged
- b. Data types and headers are checked

Once the data have been processed, further checks are carried out by the Department's statisticians. These checks are designed to pick up any missing data, inconsistencies across tables and ensure trends across time look sensible. Any issues are queried and escalated to the other teams, if necessary, to resolve.

The statistical release and live tables are quality assured by another member of the production team (for example, to check figures, formatting and text). These checks use a checklist approach to ensure the figures are consistent across the release and live tables with each being checked systematically and signed off when completed. Final checks are then performed to the end products by a statistician outside of the immediate team to check consistency across documentation and ensure the commentary is clear and easy to understand. The final statistical release is quality assured independently by the Deputy Director of Housing Planning and Analysis Division.

Definitions

A [consolidated glossary](#) of all the terms related to energy performance of buildings certificates can be accessed on GOV.UK.

Revisions policy

This policy has been developed in accordance with the UK Statistics Authority's Code of Practice for Statistics, see the Ministry of Housing, Communities and Local Government [Revisions Policy](#) for more information.

It covers two types of revisions that the policy covers, as follow:

Non-Scheduled Revisions

Where a substantial error has occurred as a result of the compilation, imputation or dissemination process, the statistical release, live tables and other accompanying releases will be updated with a correction notice as soon as is practical.

Scheduled Revisions

MHCLG does not alter the source data for these releases. The next quarterly release will include new certificates and any changes to existing ones (e.g. cancellations).

Other information

Uses of the data

The Energy Performance of Buildings Certificates statistical series is an important part of the evidence base which informs the development and evaluation of housing, energy and climate change policy by central and local government. An EPC is required for all properties when constructed, sold or let (unless qualifying for an exemption) and this data source provides the most comprehensive evidence of energy efficiency and property attributes in buildings, which is widely used by housing market and energy analysts, environmental modellers, forecasters and decision makers, for example in the construction industry. They are used by the media in reports on the housing market, energy and climate change and by academics both in the UK and abroad. The [Housing supply: indicators of new supply](#) statistics use them as part of their suite of housing supply indicators. They are also used for market research by a wide range of other organisations and businesses.

Related Statistics

MHCLG is part of a cross-government working group, including devolved administrations and the Office of National Statistics, working to improve the trustworthiness quality and value of housing and planning statistics across the UK. This working group has published action plan to make the planned improvements on house building statistics clear and transparent to users.

Details of this work and how you can provide feedback are available via the [Government Statistical Service website](#).

House building and related statistics are detailed in Table 2. Further information can be found in the separate statistical release for each source which can be found at the links below.

Table 1: Energy Performance of Buildings Certificates for England and Wales and related statistics				
Source	Included	Excluded	Where does the data come from	Other useful information
This release: MHCLG Energy Performance Certificates	<p>Energy Performance Certificates (EPCs) and Display Energy Certificates (DECs) lodged on the Register for England and Wales.</p> <p>New domestic properties can be identified separately.</p>	<p>Existing Properties which for which no EPC has been lodged.</p> <p>(An EPC is only required when a property is constructed, sold or let).</p>	<p>Energy assessors. Assessors lodge energy assessment data onto the EPB Register.</p>	<p>The EPC definition of 'new domestic properties' includes new build and conversions. It is broader than 'Housing supply: indicators of new supply' and is closer to 'Housing supply: net additional dwellings.'</p> <p>This is an 'early indicator' of housing supply.</p>
MHCLG Housing supply; indicators of new supply	<p>Quarterly estimates of new build starts and completions in England.</p>	<p>Communal accommodation, e.g. university, student or hostel</p> <p>These statistics are based on new build dwellings <u>without</u> a completion certificate.</p>	<p>Building control officers at:</p> <ul style="list-style-type: none"> • National House Building Council • Local Authorities • Approved Inspectors 	<p>This is a 'leading indicator' of overall housing supply.</p>
MHCLG Housing supply: net additional dwellings	<p>Total housing supply that comprises new build, conversions, change of use, other gains/losses and demolitions in England.</p>	<p>Communal accommodation not included in main figures; provided separately.</p>	<p>Annual statistical return from local authorities and Greater London Authority.</p> <p>The new build figures from the annual return provide a more complete count than the building control based quarterly statistics. Local authorities have longer to complete the annual return and to reconcile various sources including building control, council tax records and site visits The new build component of the net additions statistics is generally larger than the corresponding annual total from the quarterly new build series.</p>	<p>Provides an accurate assessment of annual change in housing stock.</p> <p>This is the 'primary and most comprehensive measure of housing supply'.</p>

Devolved administration statistics

The requirement on domestic and non-domestic properties to have an EPC on construction, sale or let and for buildings occupied by public authorities to have a DEC are devolved matters in Scotland and Northern Ireland. Further information can be found on Devolved Administration websites:

[Scottish Government](#)

[Department of Finance, Northern Ireland](#)

User engagement

MHCLG took over the in-house running of the EPB Register and redeveloped it from the ground up, following the user-needs driven principles of the [Digital Service Standard](#). As a result, there is now one service for residential and non-residential which provides improved usability and clearer links from GOV.UK.

The process to 'find an assessor' has been simplified and to encourage citizens to improve the energy efficiency of their property the new, digital EPC is easier to access and simpler to understand. The most commonly used data, such as the description of the property, is presented upfront. The Energy Efficiency Rating and cost-saving data has been given more prominence along with costs of heating and carbon emissions.

Users are encouraged to provide feedback on how these statistics are used and how well they meet user needs. Comments on any issues relating to this statistical release are welcomed and encouraged. Responses should be addressed to the "Public enquiries" contact given in the "Enquiries" section below.

Please refer to the Department's [engagement strategy](#) to see how we meet the needs of statistics users.

Enquiries

Media enquiries:

0303 444 1209

Email: newsdesk@communities.gov.uk

Public enquiries and Responsible Statistician:

Claire Smith

Email: EPBStats@communities.gov.uk

Information on Official Statistics is available via the [UK Statistics Authority](#) website.

Information about statistics at MHCLG is available via the [Ministry's](#) website.