CONCERTED ACTION
ENERGY PERFORMANCE OF BUILDINGS

Implementation of the EPBD United Kingdom - England

Status in 2020

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NATIONAL WEBSITES
www.gov.uk/government/organisations/ministry-of-housing-communities-and-local-government

1. Introduction

This report provides information about the implementation of the EPBD in England. It supersedes the previous reports published in 2010, 2012 and 2016. The implementation of the EPBD in the other three UK jurisdictions (Wales, Scotland and Northern Ireland) is addressed in separate reports.

In the UK, some powers of the UK Parliament have been transferred to the Scottish Parliament, the National Assembly for Wales, the Northern Ireland Assembly and to their executive bodies, i.e. the Scottish Government, the Welsh Government, and the Northern Ireland Executive. References to "Government" in this England report should be read as the "UK Government". References to the Scottish Government, the Welsh Government, and the Northern Ireland Executive have been included in their respective country report as appropriate[1].

The implementation of the EPBD in England is the responsibility of the Ministry of Housing, Communities and Local Government (MHCLG). This report introduces the most recent requirements. It also addresses performance standards, certification and inspection systems, including quality control mechanisms, the training of Energy Assessors, information campaigns, incentives and subsidies. For more details, please visit the referenced websites or contact the responsible institutions.

2. Current Status of Implementation of the EPBD

2.I. Energy performance requirements: NEW BUILDINGS

2.I.i. Progress and current status of new buildings (regulation overall performance)

Figures 1 and 2 show the simplified historical Building Regulations improvements in England for new residential and new non-residential buildings. Since 2010, energy standards for new buildings have been strengthened by over 30%. Energy requirements are set as net CO_2 emissions targets (kg CO_2/m^2.year) and primary energy is also reported. Each new building must have emissions below those of a reference

building, which has the same geometry as the actual building, but with standard levels of insulation, systems efficiency, etc. Each type of energy (e.g. gas, electricity) has a different carbon intensity, expressed as kg CO_2/kWh, which reflects the amount of CO_2 emitted to deliver 1 kWh of energy to the building.

The graphs in Figures 1 and 2 are based on the 2006 Building Regulations (the reference) and historical improvements for 2010[2] and 2013[3].

The 2013 Building Regulations set energy performance requirements for new and existing buildings (residential and non-residential) and came into effect in April 2014. The 2013 Regulations were strengthened to deliver improved CO_2 savings over the previous 2010 Building Regulations of:

- 6% across new residential buildings;
- 9% across new non-residential buildings.

There are no specific requirements for public buildings.

In 2019, the Government passed legislation to commit the UK to a legally binding target of net zero emissions by 2050[4]. The Grand Challenge Buildings Mission[5] builds on this legislation to at least halve the energy use of new buildings by 2030.

Within the same year, the Government consulted on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for new homes in England to ensure the 2050 target is met. The consultation proposes an ambitious uplift in the energy efficiency of new homes through the introduction of the Future Homes Standard from 2025[6]. It is expected that an average home built to the Future Homes Standard will have carbon emissions 75-80% lower than those built to current Building Regulations. Standards such as low carbon heating and good fabric will mean they will be fit for the future.

The Government has also consulted on a meaningful and achievable increase to the energy efficiency standards for new homes. It is anticipated that a two-stage approach to implementing the Future Homes Standard will help to prepare the necessary supply chains by encouraging the use of low-carbon heating in new homes, while accounting for the skills of industry and market factors. The Government will publish its response to the Future Homes Standard consultation in due course.

The UK Government will keep energy efficiency standards under review. Cost effectiveness/ cost optimality is regularly assessed and informs whether any strengthening of standards is required. The Government plans to consult further in due course, proposing improvements to the energy efficiency standards for new non-domestic buildings.

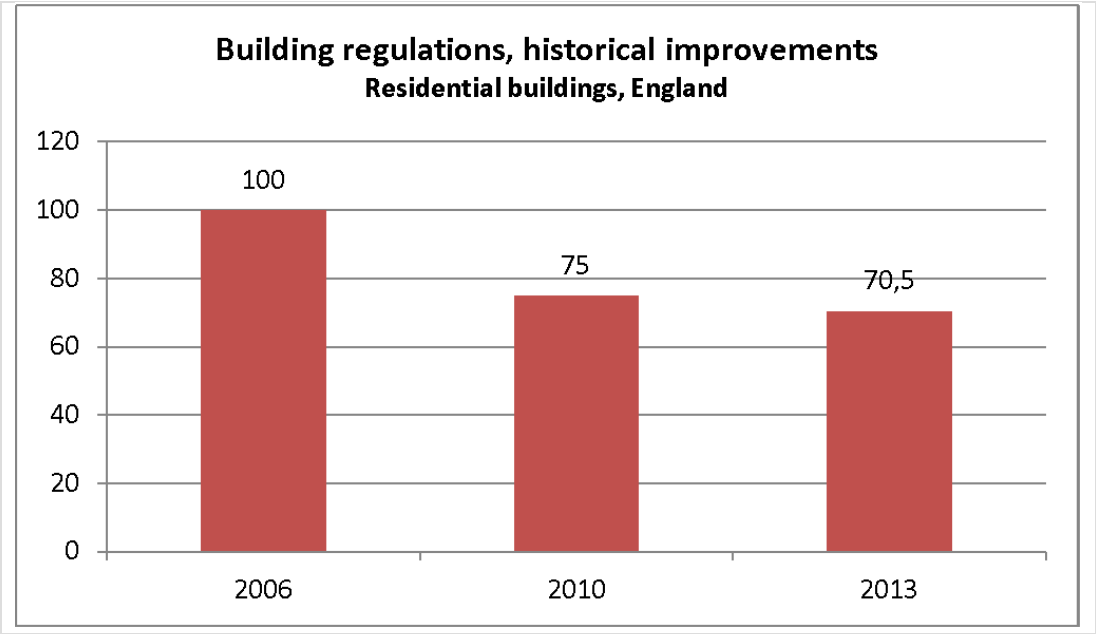


Figure 1: New residential Building Regulations (England), historical improvements.

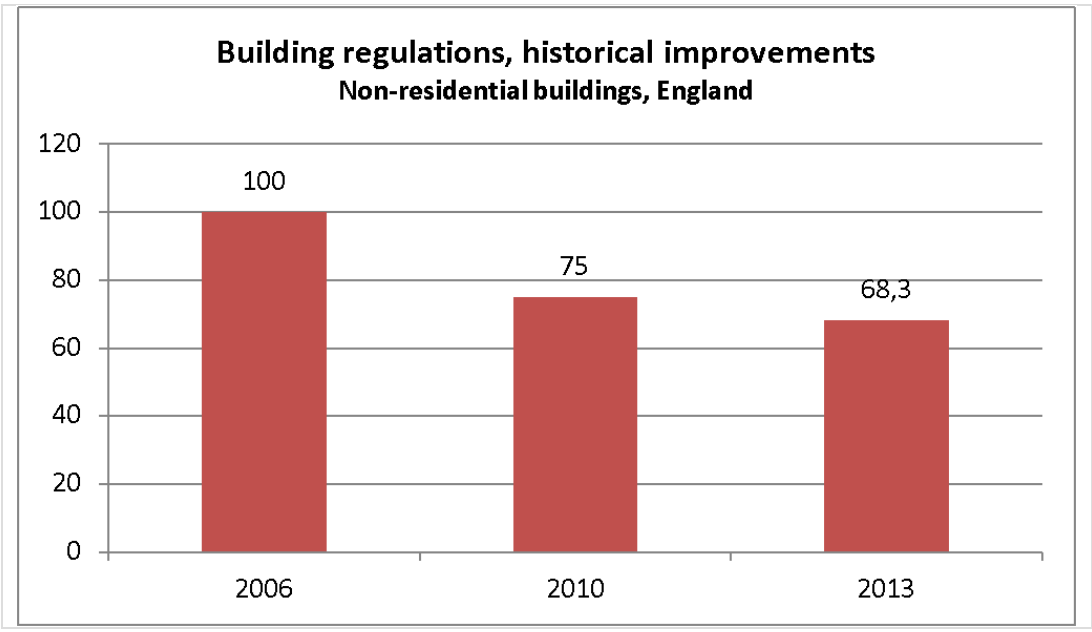


Figure 2: New non-residential Building Regulations (England), historical improvements.

2.I.ii. Format of national transposition and implementation of existing regulations

Part L of the Building Regulations addresses energy efficiency and transposes some of the EPBD requirements. To support the implementation of the Building Regulations, "Approved Documents" (ADs)[7] have been published. These ADs are adopted for most projects to demonstrate compliance with Building Regulations. The ADs are:

- AD L1A and AD L1B for new and existing residential buildings; and
- AD L2A and AD L2B for new and existing non-residential buildings.

The ADs include references to guides such as Eurocodes (EN) and set out five criteria for new buildings, as detailed in Table 1:

Criteria	Definitions
1	For all buildings: achieve a Target CO_2 Emission Rate. In addition, for residential buildings: achieve a Target Fabric Energy Efficiency, which reflects space heating and cooling demand in kWh/m^2 year.
2	Meet design flexibility limits, including minimum fabric standards and building services efficiencies.
3	Limit heat gains in summer including the effect of shading devices.
4	Ensure the building performance is consistent with design calculations. Focus on air permeability, commissioning of services and thermal bridges.
5	Provide information for energy-efficient building operation.

Table 1: New buildings requirements, England

Note that internal air quality is addressed under Part F of the Building Regulations: "Ventilation".

Compliance, particularly with the first three criteria, is assessed using the National Calculation Methodology (NCM)[8]. For new residential units, the NCM is the Standard Assessment Procedure (SAP)[9]. An updated version (SAP 2012) was released in 2013 and encoded in privately-owned software tools. For new non-residential buildings, the NCM Modelling Guide[10] was updated in 2013 and is encoded in both a Government-approved software tool (SBEM) and privately-owned software tools. Both NCMs use an Asset Rating approach, i.e. predicted energy consumption based on standardised thermal condition. These software tools are also used to produce EPCs on construction, sale and rent.

To support construction quality, the Government produced Accredited Construction Details (ACDs)[11]. Alternatively, construction details calculated by qualified professionals may also be used. ACDs focus on improving thermal bridging and airtightness. Airtightness testing is required for most new residential and non-residential buildings with some exemptions.

Building Regulations outputs are submitted to Building Control Bodies (BCBs)[12] for checking. Statistics on compliance, enforcement and penalties are not kept in England. "Competent Persons", who are registered with a Government-approved Competent Person Scheme[13], are allowed to self-certify that their work complies with Building Regulations as an alternative to a BCBs submission.

Cost-optimal assessment of energy performance requirements

A UK-wide cost-optimal report was published in January 2019[14]. The report compares Building Regulations[15] (current at the time) in each UK jurisdiction to the calculated cost-optimal levels.

Residential buildings

For new residential buildings, two reference building types were considered representative of developments in the UK: a 2-storey semi-detached house (Single Family Buildings) and a 4-storey apartment block containing 32 flats in total with two size variations (apartment blocks and multifamily buildings).

For existing buildings, the same two reference building types were adopted and modelled with the two most common wall construction types: uninsulated cavity wall and uninsulated solid wall, giving a total of four reference buildings for existing domestic buildings.

For new buildings, potential improvement measures were grouped into packages representing six different components of a building design: fabric, openings, thermal bridging, ventilation, heating and photovoltaic panels (PV). Five hundred and seventy-six (576) alternatives were considered for each reference building.

For existing buildings, improvement measures were analysed via two different methods: 'Elemental analysis' and 'Analysis of packages'. Elemental analysis, the first analysis method, consisted of each measure being assessed individually. Assessed elements included fabric, openings and heating. In total, around twenty (20) options were modelled for each of the four reference building scenarios (the number varying by wall type). The second method of analysis, analysis of packages, assessed multiple measures implemented at one time. The measures selected for packages were those most commonly applied for renovation improvements to the building fabric and heating system. In total, eighty-one (81) options were modelled for each of the four reference building scenarios for the second method of analysis. Primary energy was calculated for each package/measure using the National Calculation Methodology (NCM). Costs were calculated for each model to identify cost-optimal levels which were then compared to standards (current at the time) in each jurisdiction (Tables 2 and 3).

> *New residential buildings* – The results show that standards were on average 4% more energy efficient than the cost-optimal level for new houses, but, were 14% less energy efficient than the cost-optimal level for new apartment buildings. In both cases, they are within the 15% range described in the cost-optimal methodology so there is no significant discrepancy between the cost optimal level and current standards.

Reference building	Cost-optimal level (kWh/m^2.year)	Current requirements (kWh/m^2.year)	Gap (%)
New Houses	96	92	+4% better than cost-optimal
New Apartment Building	77	90	-14% worse than cost-optimal

Table 2: New residential buildings. Comparison of cost-optimal levels to current requirements for the UK.

> *Existing residential buildings* – In eight cases, the standards meet or improve upon cost-optimal levels: cavity walls (semi-detached house & apartment building), solid walls (semi-detached house & apartment building), windows (semi-detached house & apartment building) and heating standards (semi-detached house & apartment building). Reference standards in two cases were below cost-optimal levels: roof (semi-detached house & apartment building). The Government sets out in the report the next steps for reviewing current requirements for chillers and air handling units.

Reference building (averages)	Cost-optimal level	Current requirements	Gap
Semi-Detached House - Cavity walls	U=0.55 W/m^2.K	U=0.52 W/m^2.K	+5% better than cost-optimal
Semi-Detached House - Solid walls	U=0.3 W/m^2.K	U=0.29 W/m^2.K	+3% better than cost-optimal
Semi-Detached House - Windows	U=1.6 W/m^2.K	U=1.6 W/m^2.K	cost-optimal
Semi-Detached House - Roof	U=0.11 W/m^2.K	U=0.18 W/m^2.K	-64% worse than cost-optimal
Semi-Detached House - Heating	88% (gas boiler)	88% (gas boiler)	cost-optimal
Apartment Building - Cavity walls	U=0.55 W/m^2.K	U=0.53 W/m^2.K	+4% better than cost-optimal
Apartment Building - Solid walls	U=0.3 W/m^2.K	U=0.30 W/m^2.K	cost-optimal
Apartment Building - Windows	U=1.6 W/m^2.K	U=1.6 W/m^2.K	cost-optimal
Apartment Building - Roof	U=0.11 W/m^2.K	U=0.18 W/m^2.K	-64% worse than cost-optimal
Apartment Building - Heating	88% (gas boiler)	88% (gas boiler)	cost-optimal

Table 3: Existing residential buildings. Comparison of cost-optimal levels to current requirements for the UK.

Non-residential buildings

For new non-residential buildings, seven reference buildings (representative of the building stock) were selected: office (natural ventilation and air-conditioning), secondary school, hospital, hotel (air-conditioning), distribution warehouse and retail warehouse. A construction type (cavity wall or steel frame) was selected for each reference building.

For existing buildings, five of the seven building models used for new build were selected: office, secondary school, hospital, hotel (air-conditioning) and retail warehouse. Two baseline specifications were considered for each of the five buildings: a low energy (EE1) and a high energy (EE2) efficiency building based on benchmark data – hence 10 reference buildings considered in total.

A similar approach was adopted for measures and packages as for residential buildings. For new buildings, packages represent four different components of a building: fabric (including openings and thermal bridging), services, heating and photovoltaics (PV), therefore selecting one package from each component forms a complete building design. A total of one hundred and thirty-five (135) packages were considered for each reference building.

For existing buildings, common renovation and replacement measures with significant impact on energy use were selected. Renovation measures included: floors, walls, roofs and heating systems. Replacement measures included: windows, packaged chillers, central ventilation Air Handling Units (AHUs), Fan Coil Units (FCUs) and light sources (lamp efficacy). In addition to the elemental analysis, existing building measures were assessed on a package basis. Similar to residential buildings, primary energy was calculated using the NCM. Costs were calculated for each model to identify cost-optimal levels which were then compared to standards (current at the time) in each jurisdiction (Tables 4 and 5).

> *New non-residential buildings* – In six building sectors, the reference standards were more energy efficient than the cost-optimal levels: naturally ventilated office, secondary school, hospital, hotel (air-conditioned), distribution warehouse and retail warehouse. Reference standards in one sector were below cost-optimal levels (air-conditioned office). On average across all sectors, standards were 13% better than cost-optimal levels.

Reference building	Cost-optimal Level (kWh/m^2.year)	Current requirements (kWh/m^2.year)	**Gap (%)**
Office (air-conditioned)	108	114	-6% worse than cost-optimal
Office (naturally ventilated)	102	65	+36% better than cost-optimal
Secondary school	128	122	+5% better than cost-optimal
Hospital	302	235	+22% better than cost-optimal
Hotel (air-conditioned)	428	396	+7% better than cost-optimal
Distribution warehouse	139	114	+18% better than cost-optimal
Retail warehouse	202	183	+9% better than cost-optimal
Average	201	175	+13% better than cost-optimal

Table 4: New non-residential buildings.
Comparison of cost-optimal levels to current requirements for the UK.

> *Existing non-residential buildings* – On average across all building sectors, the other walls, roof, windows and lighting standards met or improved upon cost-optimal levels. The standards were below cost-optimal levels for cavity walls, heating, floors, chillers, and air handling units. For heating and floors, the differences are within the 15% range allowed for in the cost optimal methodology so there is no significant discrepancy between the cost optimal level and current standards. Furthermore, the cost optimal level for cavity walls

is based on a 100mm cavity whereas most existing cavity walls have a 50mm cavity and fully filling (as per current standards) is considered to be very cost effective and worthwhile. The Government sets out in the report the next steps for reviewing current requirements for chillers and air handling units.

Reference building (averages)	**Energy Efficiency**	Cost-optimal level	Current requirement	Gap
Cavity walls	EE1	U=0.30 W/m².K	U=0.54 W/m².K	-80% worse than cost-optimal
	EE2	U=0.30 W/m².K	U=0.54 W/m².K	-80% worse than cost-optimal
Other walls	EE1	U=0.47 W/m².K	U=0.30 W/m².K	+36% better than cost-optimal
	EE2	U=0.47 W/m².K	U=0.30 W/m².K	+36% better than cost-optimal
Roof	EE1	U=0.24 W/m².K	U=0.19 W/m².K	+21% better than cost-optimal
	EE2	U=0.24 W/m².K	U=0.19 W/m².K	+21% better than cost-optimal
Heating	EE1	86% (gas boiler)	84%	-2% worse than cost-optimal
	EE2	86% (gas boiler)	84%	-2% worse than cost-optimal
Floor	EE1	U=0.23 W/m².K	U=0.25 W/m².K	-9% worse than cost-optimal
	EE2	U=0.23 W/m².K	U=0.25 W/m².K	-9% worse than cost-optimal
Windows	EE1	U=1.8 W/m².K	U=1.8 W/m².K	cost-optimal
	EE2	U=1.8 W/m².K	U=1.8 W/m².K	cost-optimal
Lighting	EE1	59 lm/W	60 lm/W	+2% better than cost-optimal
	EE2	59 lm/W	60 lm/W	+2% better than cost-optimal
Chiller	EE1	5.0	3.5	-30% worse than cost-optimal
		5.0	3.5	-30% worse than cost-optimal
AHU	EE1	1.9 W/l/s	2.2 W/l/s	-16% worse than cost-optimal
		1.9 W/l/s	2.2 W/l/s	-16% worse than cost-optimal

Table 5: Existing non-residential buildings.
Comparison of cost-optimal levels to current requirements for the UK.

2.I.iii. Action plan for progression to NZEB for new buildings

The 2012 UK national plan "Increasing the number of Nearly Zero-Energy Buildings"[16] covers all four UK jurisdictions. The plan was submitted to the European Commission and confirms the UK's legally binding commitment (under the Climate Change Act 2008) to reduce greenhouse gas emissions by at least 34% by 2020 and 80% by 2050. In 2019, legislation increased the 80% target to 100% by 2050[17]. To meet these targets, the emissions footprint of buildings will need to be almost zero, which will mainly be achieved through:

- reducing the energy demand in buildings;
- decarbonising the heating and cooling supply.

England has made successive improvements in new-build energy standards through changes to the Building Regulations (Figures 1 and 2).

The Government introduced Regulation 25B into the Building Regulations in 2012 to transpose the EU Energy Performance of Buildings Directive requirements for new buildings to be nearly zero energy buildings. Subsequently guidance has been provided for new buildings occupied by public authorities, which were required to be nearly zero energy buildings (NZEB) from 1 January 2019[18].

NZEB statistics are not maintained in England. Figure 3 shows historical EPC records for energy efficiency ratings A and A+. The graph shows a steady increase in A rated non-residential buildings[19] and a sharp drop in 2016 of A rated residential buildings[20], which levelled out between 2016 and 2018. Since 2018 there has been an increase in the number of A rated residential buildings. New building construction rates also affect these data.

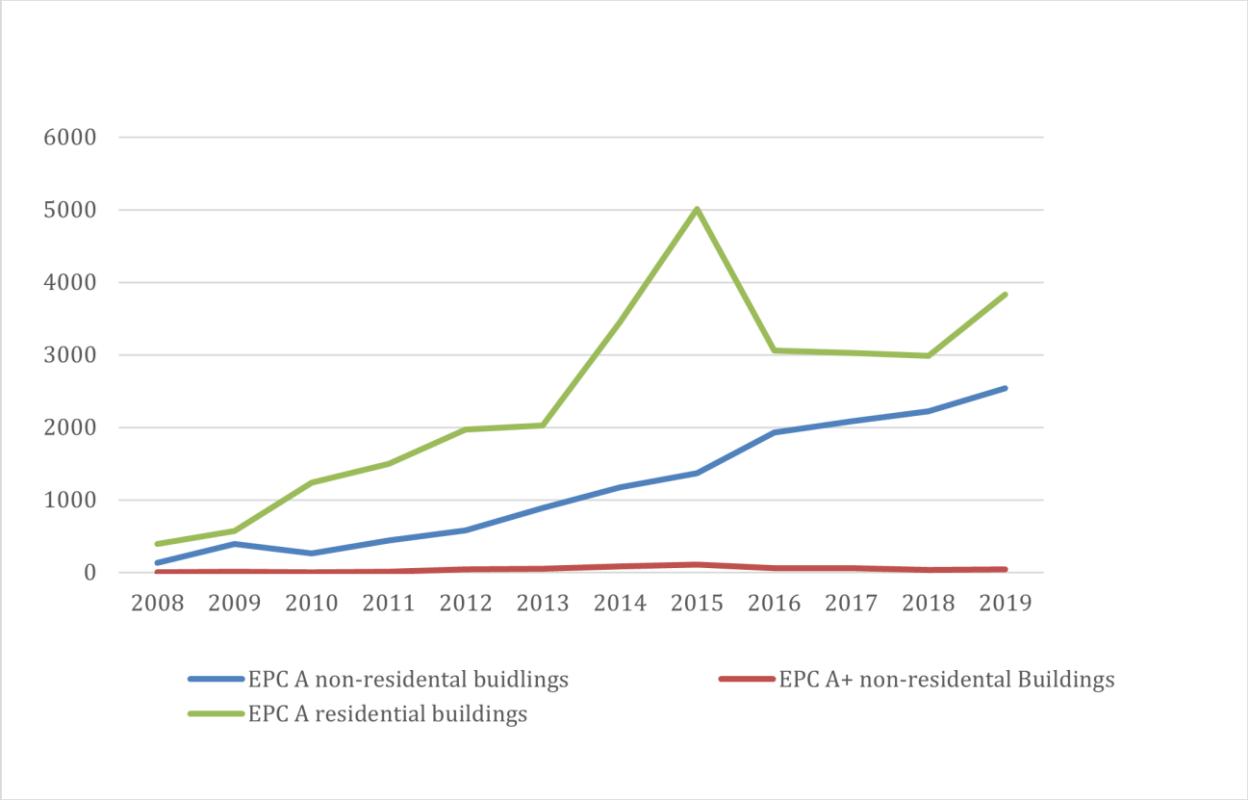


Figure 3: Historical EPC ratings A and A+, England.

2.I.iv. Requirements for building components for new buildings

Please refer to Section 2.I.i. Progress and current status of new buildings for details on building fabric requirements for new buildings.

2.i.v. Enforcement systems new buildings

A local authority has a general duty to enforce the Building Regulations in its area and will seek to do so by informal means wherever possible. If informal enforcement does not achieve compliance with the Regulations, the local authority may prosecute usually the builder, installer or main contractor and impose an unlimited fine. Alternatively, or in addition, the local authority may serve an enforcement notice on the building owner requiring alteration or removal of work which contravenes the Regulations. If the owner does not comply with the notice, the local authority has the power to undertake the work itself and recover the costs of doing so from the owner. Where an approved inspector is authorised to provide the building control service instead of the local authority, the approved inspector does not have formal enforcement powers. In a situation where the approved inspector considers building work does not comply with the Building Regulations and there is a refusal to bring it into compliance, the approved inspector will cancel the initial notice. If no other approved inspector takes on the work, the building control function will automatically be taken on by the local authority who has the enforcement powers set out above[21].

2.II. Energy performance requirements: EXISTING BUILDINGS

The UK National Energy Efficiency Action Plan[22] gave an overview of the UK building stock. Figures 4 and 5 illustrate data from the EPC register[23, 24], therefore they are not fully representative of the building stock.

England has 24.2 million homes. Figure 4 shows the distribution of about 19 million residential EPCs in England. Buildings with no EPC are not represented.

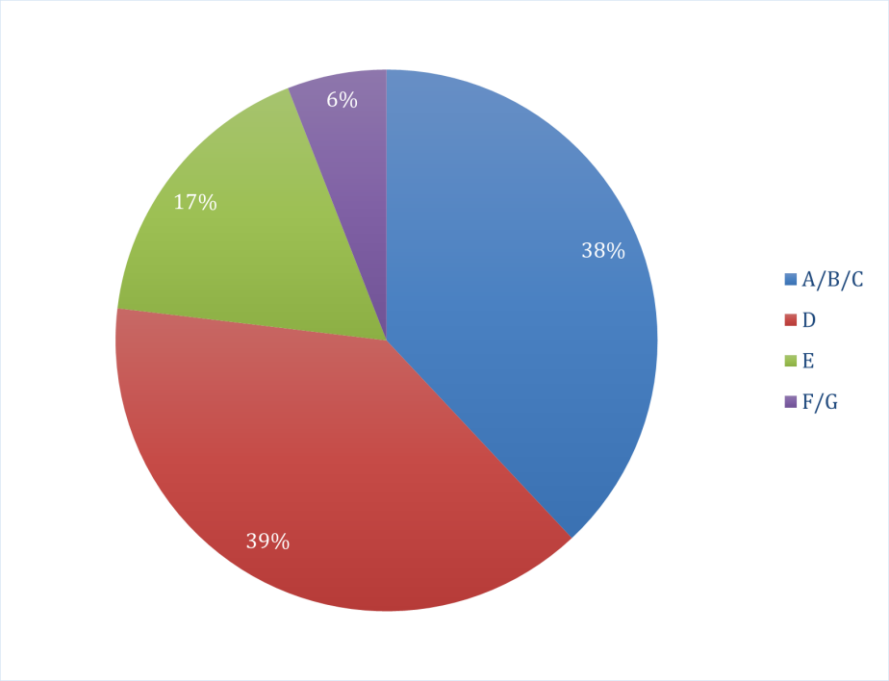


Figure 4: EPC ratings, residential buildings 2008 - 2019, England.

There are approximately 1.95 million non-residential premises in England. Figure 5 shows the distribution of 0.89 million non-residential EPCs in England. Buildings with no EPC are not represented.

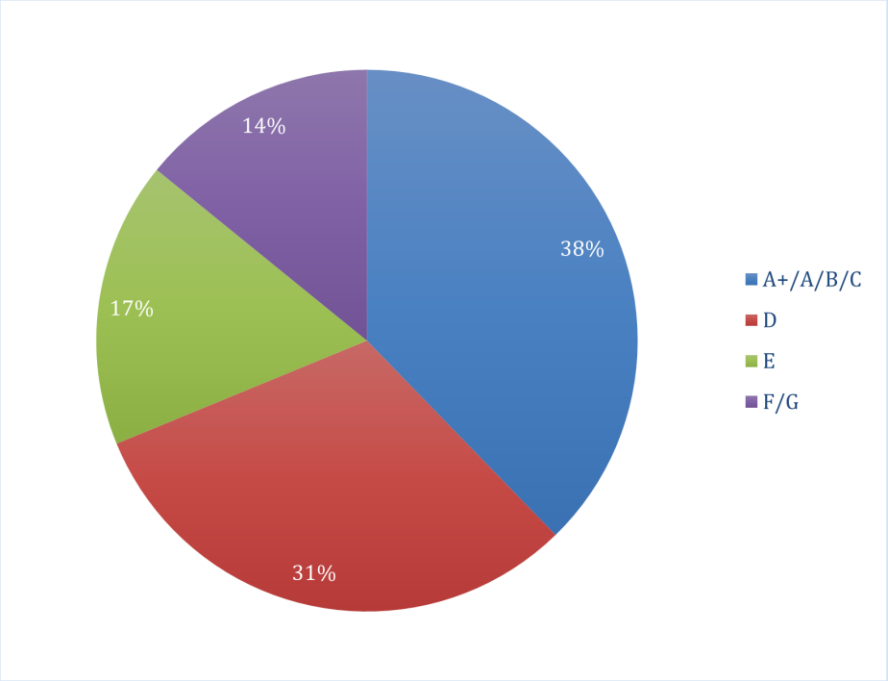


Figure 5: EPC ratings, non-residential buildings 2008 – 2019, England.

2.II.i. Progress and current status of existing buildings (regulation overall performance)

Building Regulations are supported by AD L1B and AD L2B for existing residential and existing non-residential buildings respectively[7], which set out an elemental approach for existing buildings, and Domestic and Non-domestic Building Services Compliance Guides[25, 26] which include minimum energy efficiency standards for new and replacement of existing building systems.

Under certain circumstances (typically where the liveable building area is extended or where the capacity of building services is increased), additional energy efficiency measures (named "consequential improvements") must be undertaken. These requirements only apply to large, existing residential and non-residential buildings (greater than 1,000 m^2) and can include improvements to the performance of the building fabric and/ or services, where technically, functionally or economically feasible.

The Government plans to consult further in due course, proposing improvements to the energy efficiency standards, set through Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations, for building works to existing homes and non-domestic buildings.

2.II.ii. Regulation on individual parts, distinct from whole building performance

As per new buildings. See details above.

2.II.iii. Initiatives/plans to improve the existing building stock

The Department for Business, Energy & Industrial Strategy (BEIS) is responsible for the transposition of the Energy Efficiency Directive (EED)[27], which is mostly implemented on a UK-wide basis with some jurisdiction-specific exceptions.

The UK National Energy Efficiency Action Plan[22] includes a Building Renovation Strategy in compliance with EED Article 4. The strategy references existing measures, e.g., the Energy Company Obligation (helping households insulate homes), Salix (improving energy efficiency in public sector organisations) and RE:FIT (financing modernisation of public sector buildings), smart meters for households and small businesses, and the residential Renewable Heat Incentive (transforming the way homes are heated).

The UK is implementing the alternative approach under Article 5(6) of the EED and notified the Commission of the alternative measures adopted to achieve an equivalent improvement in the energy performance of Government buildings. The National Energy Efficiency Action Plan confirms the main policies and measures used to meet the target: The Greening Government Commitments (GGC)[28] for Central Government in England, and separate initiatives in Scotland, Wales and Northern Ireland. The measures include behavioural change, facilities management, estate management, and energy efficient technology. The GGC are expected to deliver 516.6 GWh savings by 2020, exceeding the 163.6 GWh target for equivalence.

Under Article 8 of the EED, the Government also introduced the Energy Savings Opportunity Scheme (ESOS)[29] in 2014 which requires all large businesses to carry out regular audits of the energy use in their buildings, industrial processes and transport. The most recent audits were due to be completed by December 2019 and, in February 2020, the Government published an evaluation of the scheme, a Post Implementation Review (PIR), including options for strengthening the scheme[30].

The 2017 Clean Growth Strategy[31] also sets out Government aspirations for existing buildings:

- "as many homes as possible will be upgraded to an Energy Performance Certificate (EPC) band C by 2035, where practical, cost effective, and affordable."
- "a long-term trajectory for energy performance standards across the private rented sector, with the aim of as many private rented homes as possible being upgraded to EPC Band C by 2030, where practical, cost-effective and affordable."
- "build and extend heat networks across the country, underpinned with public funding (allocated in the Spending Review 2015) out to 2021."
- "Invest in low carbon heating by reforming the Renewable Heat Incentive, spending £4.5 billion to support innovative low carbon heat technologies in homes and businesses between 2016 and 2021."
- "Invest around £184 million of public funds, including two new £10 million innovation programmes to develop new energy efficiency and heating technologies to enable lower cost low carbon homes."

The Government sets minimum energy efficiency standards in Building Regulations for works to existing residential and non-residential buildings. It plans to consult in 2020 on raising these standards.

2.II.iv. Long Term Renovation Strategies, status

The Long Term Renovation Strategy (LTRS) requirement (EPBD article 2a) was transposed at the UK national level via the Energy Efficiency (Building Renovation and Reporting) (Amendment) Regulations 2020[32]. While the LTRS will provide detail on the UK's pathway to delivering the carbon and fuel poverty targets, it is important to note that the Government already has a robust, clearly defined strategic framework in place. The Clean Growth Strategy[31] sets out the UK's strategic aims for energy efficiency on homes, businesses and the public sector within the context of the Government's legally binding greenhouse gas emission reduction targets. Since its publication in 2017, the Government has made progress on the policies to deliver those. The Government is considering where it can progress in the context of the Net Zero 2050 target set in 2019 and will aim to publish a UK specific LTRS in 2021.

2.II.v. Financial instruments and incentives for existing buildings

The UK has a wide range of financial instruments and incentives in place, spanning domestic, non-domestic and public sector buildings. While some instruments can be used to drive energy savings in the short term, others can serve to drive and enable future innovation and progress. Examples of Government action include:

Domestic

- Continuing the Energy Company Obligation (ECO) scheme[33], worth £640 million per year, which has already installed over 7 million energy saving measures in 2.2 million homes since 2013. The Government has pledged to maintain at least the current level of ECO funding for domestic energy efficiency until 2028.
- Committing to an additional £6.3 billion of public investment to upgrade the energy performance of fuel poor homes and social housing. Further details on this will be made available in due course.

- Supporting the development of the supply chain through six Local Supply Chain Demonstration projects[34], as well as a £10 million Whole House Retrofit competition[35] to trial innovative, cost-effective projects for whole house retrofit.

Non-domestic

- Launching the 'Boosting Access for SMEs to Energy Efficiency' (BASEE) innovation competition in March 2019[36]. This offers up to £6 million to fund the development of new, innovative scalable business models or solutions that reduce costs, simplify processes and encourage the take up of energy efficiency by Small and Medium Enterprises (SMEs) at scale. Fourteen projects were selected to receive Phase 1 funding to develop feasibility studies for their solutions. Eight of those projects were awarded Phase 2 funding to develop their solutions.

- Working to better understand how the UK can better facilitate energy efficiency in the electricity system. The Electricity Demand Reduction Pilot[37] offered organisations £6 million of funding for projects which could improve energy efficiency and security of supply through delivery of electricity savings at peak times. This pilot has finished and the evaluation was published in July 2019, alongside a call for evidence which ran to September 2019.

Public Sector

- Continuing to enable greenhouse gas emission reductions through the Public Sector Energy Efficiency Loan Scheme. The capital pot for England stands at £312 million as of the end of 2019/ beginning of 2020, and is planned to increase to a total of £385 million by 2020/2021. This funding, managed by Salix Finance, has delivered over 17,000 projects, significantly improving energy performance in the public sector.

- Funding a programme called Modern Energy Partners[38] working to develop integrated energy efficiency solutions on campus-scale public sector sites (e.g. hospitals, military sites). The pilot phase concluded in March 2019 and the second phase of the project commenced in April 2019.

2.II.vi. Information campaigns / complementary policies

The Simple Energy Advice Service (SEA)[39] was set up in 2018 to provide impartial and tailored advice to help people make their homes greener and cheaper to run. The service consists of an easy-to-use website, supported by a call centre which members of the public may contact for assistance. SEA was created in response to the Government-commissioned Each Home Counts Review[40], which emphasised the importance of consumers receiving trusted, impartial advice on energy efficiency. SEA's 'core' offer is an assessment of users' behavioural traits and of the fabric of their homes (using EPC data), resulting in tailored energy saving advice. Where relevant, users are also directed towards financial support and qualified installers. There is further information, for example on smart meters, and specific advice for tenants and landlords. The Government is continuing to develop the service to broaden and further improve its functionality.

As discussed in section 2.IV.i, smart meters are being rolled out across Great Britain (i.e. England, Wales and Scotland). Smart Energy GB[41] is responsible for the national public engagement campaign for the rollout, raising awareness, driving behaviour change, and helping consumers benefit from smart metering (see Figure 6 example below).

Figure 6: Smart Energy GB's "Thank You" print campaign which focuses on the national benefits of smart meters.

Another UK-wide scheme, the Energy Technology List (ETL)[42], seeks to overcome barriers to the procurement of the most energy efficient plant and machinery – such as boilers, heat pumps and lighting – in the non-domestic sector. It does so by providing consumers with information on a product's energy performance through independent assurance of performance and by reducing transaction costs for businesses.

2.III. Energy performance certificate requirements

2.III.i. Progress and current status on EPCs at sale or rental of buildings

Overview and administration system

The systems in place are identical across all building sectors. The Government has approved Accreditation Schemes which are responsible for managing energy assessors and for ensuring their assessors are competent and possess the appropriate skills and qualifications to conduct energy assessments that comply with the requirements of the Energy Performance of Buildings Regulations. Accreditation Schemes are monitored and audited which means their approval may be revoked at any time. In December 2019, there were six Accreditation Schemes.

Accredited Energy Assessors must use Government-approved software tools to produce regulatory outputs such as EPCs, recommendations reports, Air Conditioning Inspection Reports, etc. The outputs generated by the software are lodged on the Energy Performance of Buildings Registers which cover both England and Wales. These outputs are publicly available.

Format and content of the EPC

Residential

The EPC provides a calculated energy rating (asset rating) of the current and potential energy efficiency of the building on an A to G scale (Figure 7). The current rating is based on the characteristics of the building, a standardised occupancy profile and the energy consumption cost. The potential rating shows the effect of undertaking the EPC's recommendations. The average EPC for a residential property in England & Wales is D. Typically, the average rating for a new residential property is B.

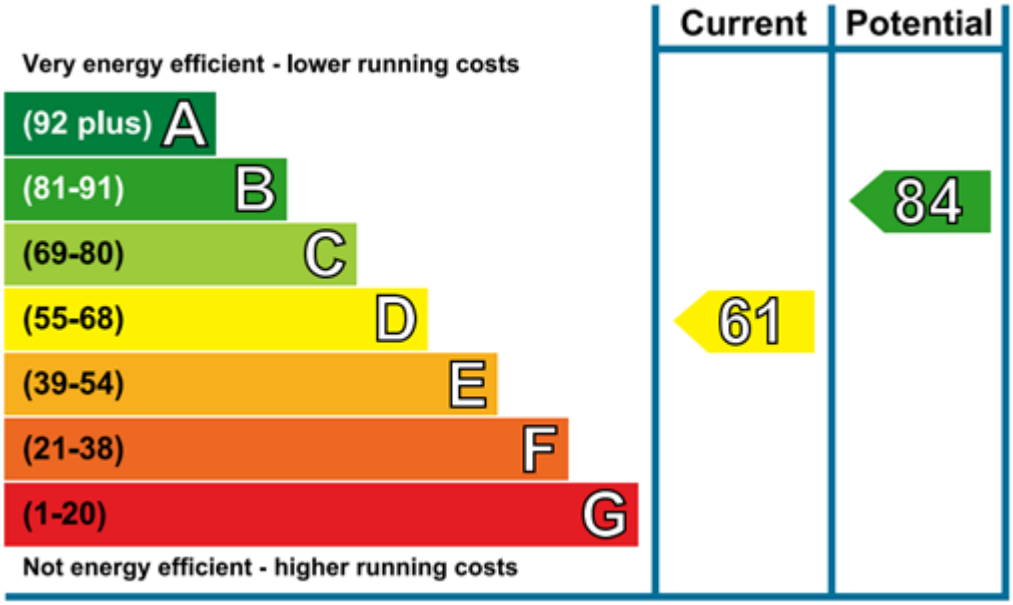
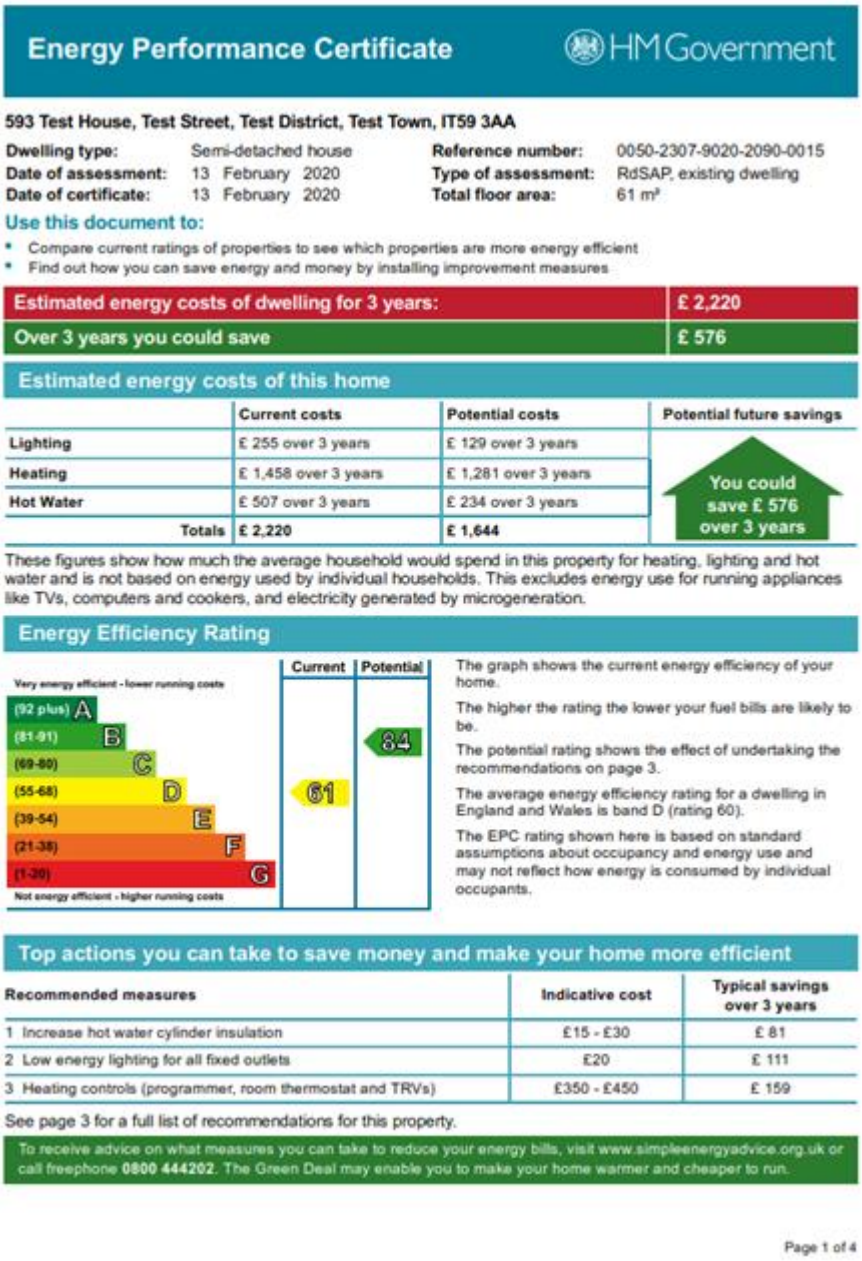


Figure 7: Residential EPC classes, asset ratings, and examples of current and potential ratings.

In 2012, the format of the EPC was revised based on consumer research. The residential EPC is shorter, uses plain English and has an improved design. It focuses on potential costs and savings. In 2018, further revisions were made to the EPC to clarify how the information contained within EPCs may be used. The first page of a residential EPC is shown in Figure 8.



Energy Performance Certificate — HM Government

593 Test House, Test Street, Test District, Test Town, IT59 3AA

Dwelling type:	Semi-detached house	**Reference number:**	0050-2307-9020-2090-0015
Date of assessment:	13 February 2020	**Type of assessment:**	RdSAP, existing dwelling
Date of certificate:	13 February 2020	**Total floor area:**	61 m²

Use this document to:

- Compare current ratings of properties to see which properties are more energy efficient
- Find out how you can save energy and money by installing improvement measures

Estimated energy costs of dwelling for 3 years:	**£ 2,220**
Over 3 years you could save	**£ 576**

Estimated energy costs of this home

	Current costs	Potential costs	Potential future savings
Lighting	£ 255 over 3 years	£ 129 over 3 years	You could save £ 576 over 3 years
Heating	£ 1,458 over 3 years	£ 1,281 over 3 years	
Hot Water	£ 507 over 3 years	£ 234 over 3 years	
Totals	£ 2,220	£ 1,644	

These figures show how much the average household would spend in this property for heating, lighting and hot water and is not based on energy used by individual households. This excludes energy use for running appliances like TVs, computers and cookers, and electricity generated by microgeneration.

Energy Efficiency Rating

	Current	Potential
Very energy efficient - lower running costs		
(92 plus) A		
(81-91) B		84
(69-80) C		
(55-68) D	61	
(39-54) E		
(21-38) F		
(1-20) G		
Not energy efficient - higher running costs		

The graph shows the current energy efficiency of your home.

The higher the rating the lower your fuel bills are likely to be.

The potential rating shows the effect of undertaking the recommendations on page 3.

The average energy efficiency rating for a dwelling in England and Wales is band D (rating 60).

The EPC rating shown here is based on standard assumptions about occupancy and energy use and may not reflect how energy is consumed by individual occupants.

Top actions you can take to save money and make your home more efficient

Recommended measures	Indicative cost	Typical savings over 3 years
1 Increase hot water cylinder insulation	£15 - £30	£ 81
2 Low energy lighting for all fixed outlets	£20	£ 111
3 Heating controls (programmer, room thermostat and TRVs)	£350 - £450	£ 159

See page 3 for a full list of recommendations for this property.

To receive advice on what measures you can take to reduce your energy bills, visit www.simpleenergyadvice.org.uk or call freephone **0800 444202**. The Green Deal may enable you to make your home warmer and cheaper to run.

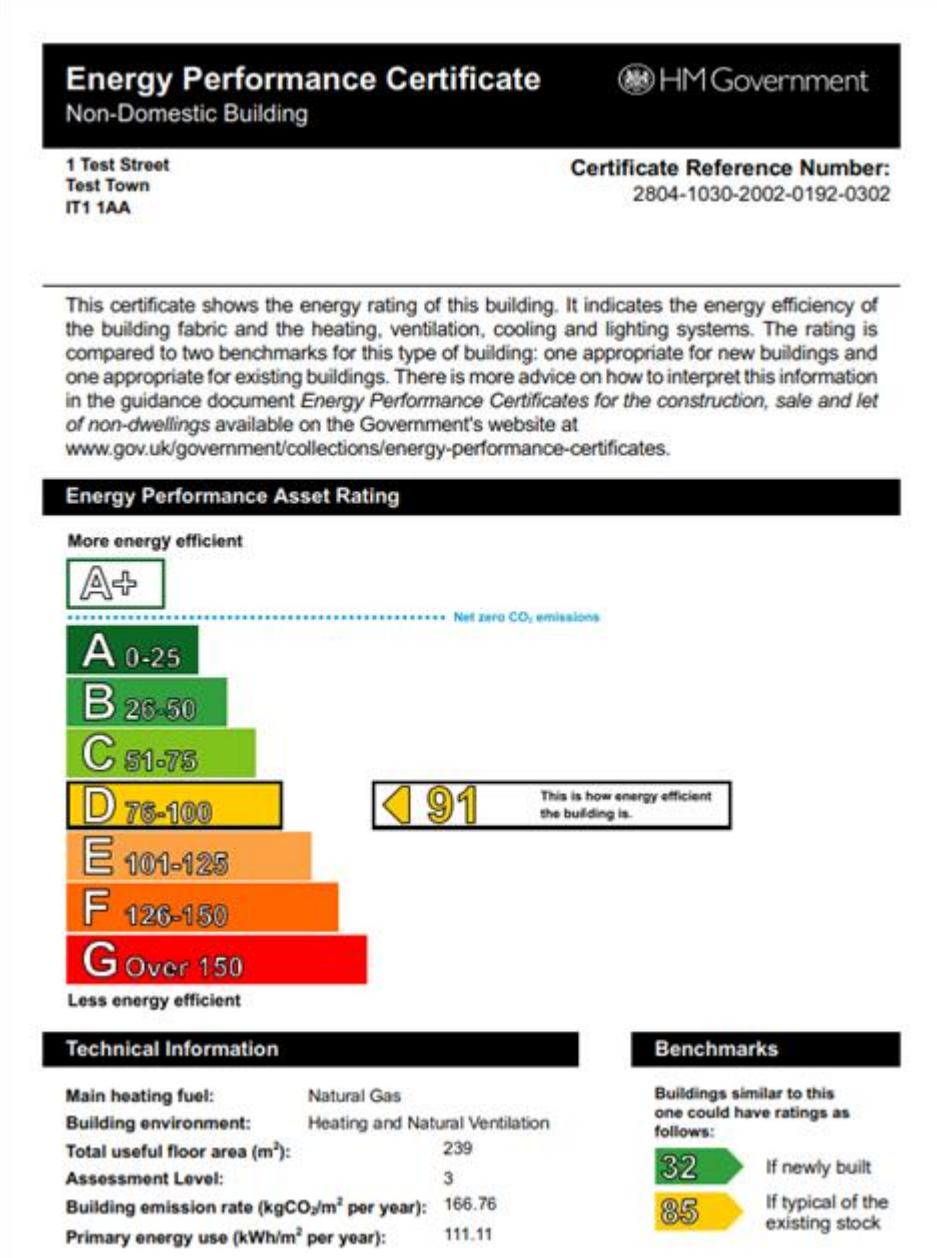
Page 1 of 4

Figure 8: First page of a residential EPC.

The EPC includes: an environmental impact rating in terms of CO_2 emissions and a list of cost-effective recommendations. It indicates the potential energy efficiency and environmental impact ratings if all cost-effective measures were installed. For new buildings, the current and potential rating may be similar.

Non-residential

Energy performance is shown as a CO_2-based asset rating against an A+ to G scale (Figure 9). The EPC includes two benchmarks: the energy rating if the property were new and the energy rating if it were typical of the existing stock (Figure 10). Standard cost-effective recommendations are generated by the EPC software. The recommendations report includes improvements that are appropriate for the building. Bespoke recommendations may also be provided, based on the assessor's knowledge.



Energy Performance Certificate
Non-Domestic Building

HM Government

1 Test Street
Test Town
IT1 1AA

Certificate Reference Number:
2804-1030-2002-0192-0302

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

More energy efficient

A+ Net zero CO_2 emissions

A 0-25
B 26-50
C 51-75
D 76-100
E 101-125
F 126-150
G Over 150

91 This is how energy efficient the building is.

Less energy efficient

Technical Information

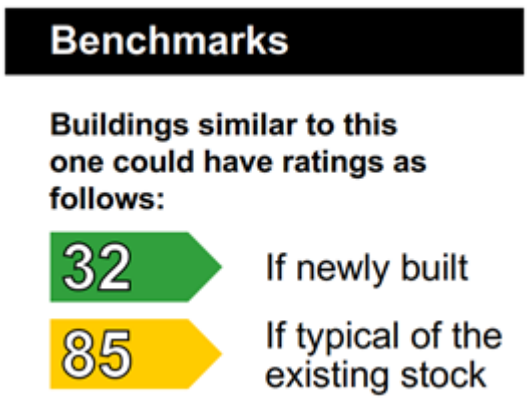
Main heating fuel:	Natural Gas
Building environment:	Heating and Natural Ventilation
Total useful floor area (m^2):	239
Assessment Level:	3
Building emission rate ($kgCO_2/m^2$ per year):	166.76
Primary energy use (kWh/m^2 per year):	111.11

Benchmarks

Buildings similar to this one could have ratings as follows:

32 If newly built
85 If typical of the existing stock

Figure 9: First page of a non-residential EPC.



Benchmarks

Buildings similar to this one could have ratings as follows:

32 If newly built
85 If typical of the existing stock

Figure 10: Non-residential EPC benchmarks.

EPC activity levels

EPCs are produced for buildings on construction, sale and rent and are valid for 10 years. All EPCs become valid once the data that generates the EPC has been lodged on the Energy Performance of Buildings Registers[23]. The Energy Performance of Buildings Registers contains ~21 million residential and non-residential EPCs (including multiple EPCs produced for a single building) in England and Wales, which is growing on average by ~1.7 million lodgements per year. This represents a valuable source of information as they cover an increasingly larger proportion of the 24.2 million English homes.

Most EPCs on the Energy Performance of Buildings Registers are publicly accessible through an address search, unless the building owner has opted out. All EPCs on the Energy Performance of Buildings Registers are accessible through a unique reference number search. The Government has published quarterly statistics on EPC activity in England & Wales[43]. Data from 2008 to December 2019 is included in Tables 6 and 7, Figures 11 and 12.

Residential EPC lodgements by band									
	Total EPCs	A	B	C	D	E	F	G	Not recorded
Total	19,022,418	29,046	2,011,720	5,190,600	7,395,560	3,267,775	870,679	256,620	418
%	100 %	0.2%	10.6%	27.3%	38.9%	17.2%	4.6%	1.3%	0.0%

Table 6: Residential EPCs, 2008 to 2019, England.
"not recorded" = invalid EPC data entry.

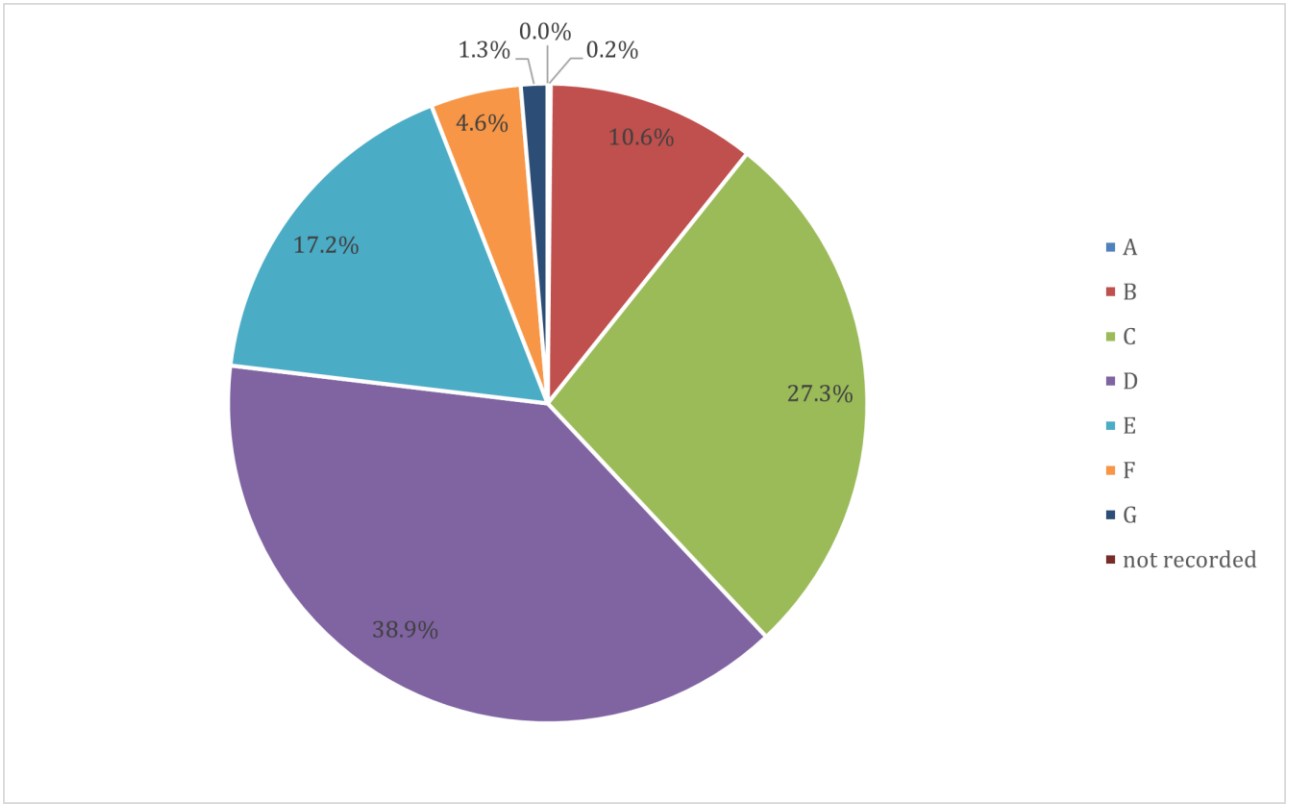


Figure 11: Residential EPCs, 2008 to 2019, England. Percentages by EPC band.

Non-residential EPC lodgements by band										
	Total EPCs	A+	A	B	C	D	E	F	G	Not recorded
Total	891,000	499	13,991	75,060	246,503	276,572	152,014	57,031	68,936	494
%	100 %	0.1%	1.6%	8.4%	27.7%	31.0%	17.1%	6.4%	7.7%	0.1%

Table 7: Non-residential EPCs, 2008 to 2019, England.

"not recorded" = invalid EPC data entry.

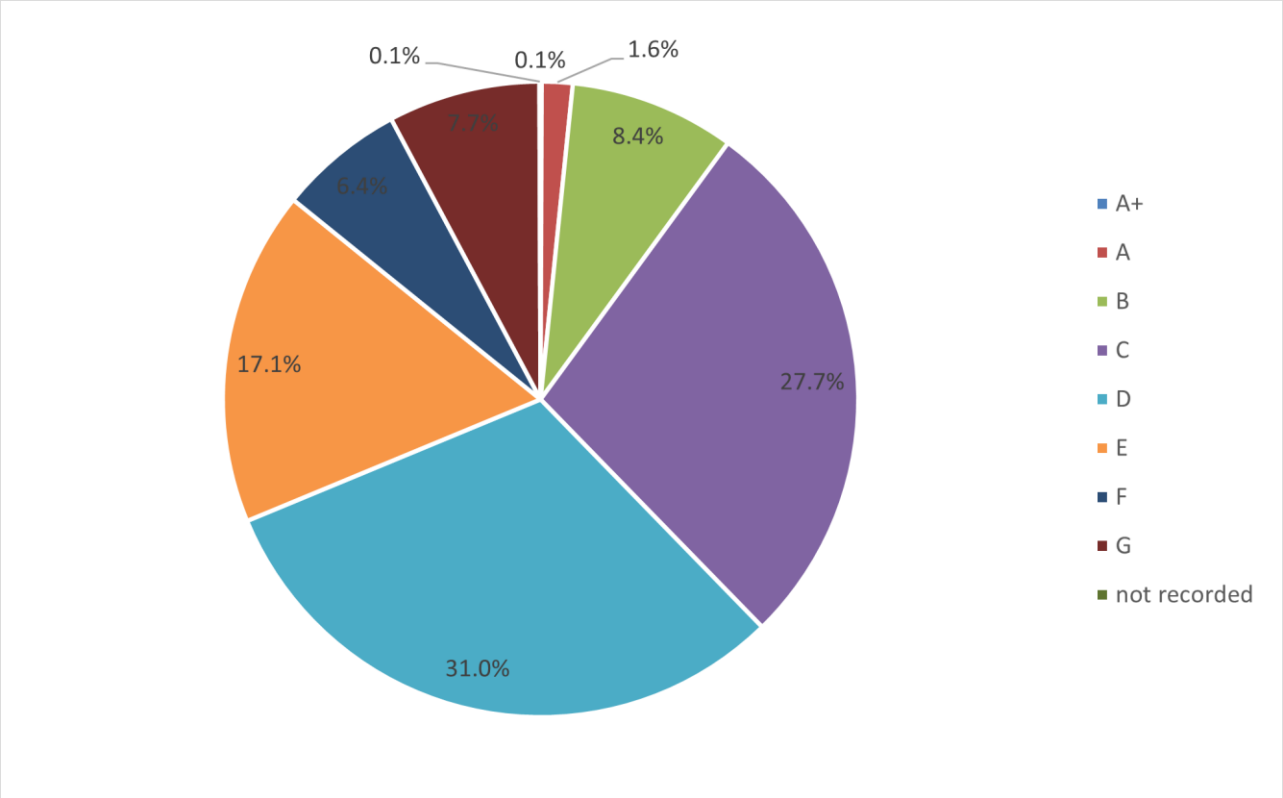


Figure 12: Non-residential EPCs, 2008 to 2019, England. Percentages by EPC band.

Previously, bulk data was only made available to a limited number of authorised recipients, such as local authorities, universities and researchers. The value of information about the energy performance of buildings in delivering national climate change objectives is significant. In 2017, the Government extended access to bulk data to a greater number of users by publishing the data on its open data platform[44].

Typical EPC costs

EPC costs vary significantly and are market led. In practice, the cost of an EPC will typically vary according to a number of factors including size, location and age of the building. Indicative lowest costs based on internet search:

- for residential EPCs: £35 to £80 (~41 to ~93 €)
- for non-residential EPCs: £140 to £200 (~162 to ~223 €)

The cost may include the lodgement fee payable each time the data that generates an EPC is lodged on to the relevant Energy Performance of Buildings Register. The lodgement fee for the domestic register is £1.82 (~2.11 €), for the non-domestic register the fee is £9.84 (~11.4 €).

Energy assessors

National Occupational Standards (NOS)[45] for gaining accreditation as an energy assessor have been developed to ensure energy assessors are competent and possess the appropriate skills to conduct energy assessments. The type of accreditation (Table 8) will depend on the type of building being assessed, the complexity of the software and the type of outputs being produced. Accreditation Schemes ensure accredited energy assessors satisfy the NOS requirements through training and examinations, or by demonstrating they have suitable qualifications and experience.

Type of energy assessor	Energy assessor numbers
Residential	
EPCs for existing buildings	24,427
EPCs for newly constructed buildings	3,449
Non-residential	
EPCs for Level 3 buildings	4,623
EPCs for Level 4 buildings	3,154
EPCs for Level 5 buildings	661
DECs for public authority buildings	1,607
AC inspections for Level 3 systems	1,095
AC inspections for Level 4 systems	948
Total number	39,964
Notes	
RdSAP: Reduced Standard Assessment Procedure SAP: Standard Assessment Procedure EPC: Energy Performance Certificate DEC: Display Energy Certificate AC: Air-conditioning EPC level 3: simple non-residential buildings EPC level 4: medium complexity non-residential buildings EPC: level 5 complex non-residential buildings AC level 3: simple packaged air conditioning systems	

Table 8: The type and number of registered energy assessors in England and Wales.

The NOS apply across England and Wales, therefore, accredited energy assessors can operate in both jurisdictions. Energy assessors must also carry out minimum Continuous Professional Development (CPD) requirements. For example, energy assessors must complete 10 hours of CPD per year per type of assessment. Penalties for not meeting the CPD requirement include temporary suspension from the Accreditation Scheme, which prevents the assessor from producing.

2.III.ii. Quality assurance of EPCs

The Government introduced Scheme Operating Requirements (SORs) in 2010 to ensure all Accreditation Schemes achieve common minimum quality standards. The most recent update of the SORs took place in 2019[46].

SORs require Accreditation Schemes to quality assure the outputs produced by their accredited energy assessors. The Government carries out audits of the quality assurance systems implemented by Accreditation Schemes to monitor compliance with the SORs. These requirements ensure that a statistically significant percentage of certificates is checked.

In the most severe cases of malpractice the Government may suspend or revoke an Accreditation Scheme's approval. To date, the Government has made limited use of these powers. Similarly, Accreditation Schemes may remove their members' accreditation to operate as an Energy Assessor.

Compliance levels by sector

The Government is not responsible for enforcing compliance. Compliance is enforced by Local Weights and Measures Authorities, through Trading Standards, which may publish a compliance report.

Enforcement with building owners and real estate actors

Local Weights and Measures Authorities have the powers to require the "relevant person" (e.g., the seller, the prospective landlord or the person who constructed the building) to produce copies of the EPC for inspection. In 2012, these powers were extended to include persons acting on behalf of the "relevant person", e.g., the Estate or Letting Agents.

It is the decision of the Local Weights and Measures Authority or its authorised officer to determine what action is appropriate when they find that breaches of the Regulations have been committed. It may be that providing advice and information is sufficient to ensure compliance. In some cases, educating the relevant person regarding the benefits of knowing the cost-effective energy efficiency improvements they could make may be all the encouragement needed to ensure compliance with the requirements. However, in some cases, it may be that only imposing a penalty will do. It is for the enforcement authority or its authorised officer to decide the appropriate course of action in these circumstances.

Penalties for non-compliance vary depending on building types:

- for residential properties, the penalty is £200 (~232 €);
- for non-residential properties, the penalty is 12.5% of the rateable value of the building, subject to a minimum of £500 (~580 €) and a maximum of £5,000 (~5,800 €).

2.III.iii. Progress and current status of EPCs on public and large buildings visited by the public

Overview

The approach depends on the type of occupier and the building's floor area (Table 9). Display Energy Certificates (DECs) are issued and displayed in buildings > 250 m² that are occupied by a public authority and frequently visited by the public. EPCs are displayed in commercial premises > 500 m² that are frequently visited by the public and where an EPC has previously been issued.

Occupier	Floor area	Requirements	Validity
Public authority*	>250 m^2	Produce and display a DEC	10 years
		Produce a Recommendation Report	10 years
	>1,000 m^2	Produce and display a DEC	1 years
		Produce a Recommendation Report	7 years
Commercial premises*	>500 m^2	If an EPC has been produced (for construction, sale or rent), the EPC must be displayed**	10 years
(*) The building must be frequently visited by the public.			
(**) EPCs must be accompanied by a Recommendation Report.			

Table 9: Energy performance display requirements.

EPCs are based on calculated energy consumption. DECs are based on measured energy, normalised to allow cross sector comparison. Annual DECs are only required for public authority buildings with a floor area > 1,000 m^2 (Table 9).

Format and content of DECs

DECs show the performance of a building based on actual energy consumption for the previous year in the form of an Operational Rating (OR), Figure 13. If available, the building's performance over the previous three years is shown to illustrate the performance trend. The OR is a numerical indicator of a building's annual CO_2 emissions on an A to G scale. In its simplest form, the Operational Rating would be expressed as the total annual energy used by the building divided by the area of the building, compared to the energy use per unit area of building typical of its type.

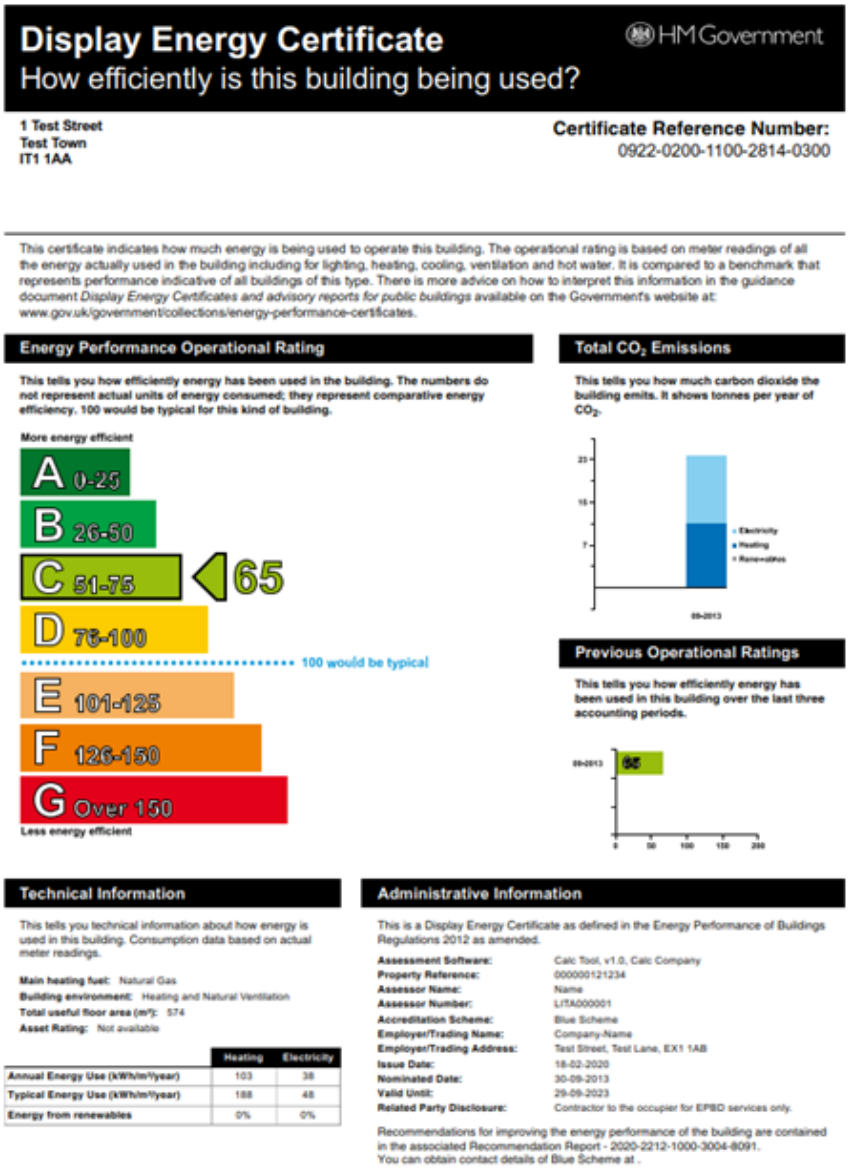


Figure 13: Display Energy Certificate (DEC).

The building's performance is compared to a benchmark specific to its category. Benchmarks are reviewed periodically to ensure they are adequate. Buildings with zero CO_2 emissions or net energy generators achieve an OR of zero. Buildings, which perform at the benchmark level, achieve an OR of 100 at the D to E boundary. Buildings, which emit twice as much CO_2 as the benchmark, achieve an OR of 200. The approved benchmarks are set out in Energy Benchmarks (TM46)[47]. DECs are accompanied by a Recommendation Report, which includes cost-effective recommendations and has a maximum validity of seven or 10 years (Table 10). DEC record data from 2008 to December 2019[48] is included in Table 10 and Figure 14.

DEC lodgements by band									
	Total	A	B	C	D	E	F	G	Not recorded
Total	368,420	3,066	22,699	80,826	128,391	77,455	29,144	26,696	143
Percentage	100 %	0.8%	6.2%	21.9%	34.8%	21%	7.9%	7.2%	0.04%

Table 10: Display Energy Certificates 2008 to 2019, England.

"not recorded" = invalid DEC data entry

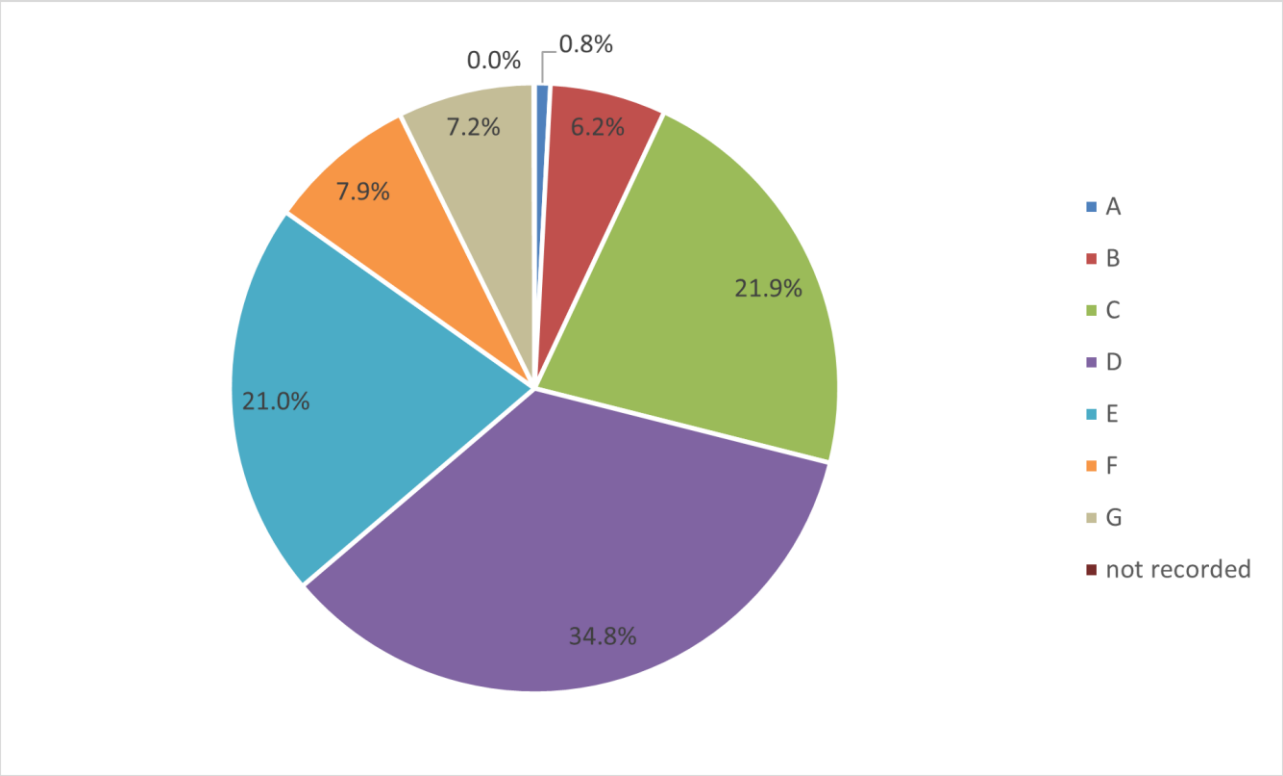


Figure 14: Display Energy Certificates, 2008 to 2019, England. Percentages by band.

DEC costs vary greatly. Indicative market costs (based on internet search) for a first year DEC and Recommendations Report range from £130 to £300 (~151 € to ~348 €).

2.III.iv. Implementation of mandatory advertising requirement - status

Sellers and landlords are responsible for commissioning an EPC before the property is marketed. Before marketing the property, an estate or letting agent (acting on behalf of sellers or landlords) must be satisfied that an EPC has been commissioned for the property.

Since 2013, when a building is offered for sale or rent, the seller, landlord, or where applicable, a person acting on their behalf (e.g. an estate or letting agent), must ensure that the energy performance rating of the building expressed in the EPC is stated in any advertisement of the sale or rental in commercial media[49].

The enforcement and penalty regimes are as described for EPCs above.

2.IV Smart buildings and building systems

The Approved Documents (ADs)[7] reference the Domestic and Non-domestic Building Services Compliance Guides [25] [26], which set out minimum energy efficiency standards for fixed building services systems, including:

- space heating;
- domestic hot water;
- mechanical ventilation;
- comfort cooling;
- internal and external lighting;
- low carbon generation of heat by heat-pumps, solar thermal panels, and combined heat & power.

Table 11 shows a summary of minimum standards for residential buildings as an example.

Building Services Type	Recommended minimum energy efficiency standard
Gas-fired wet central heating: condensing boiler	Seasonal Efficiency of Domestic Boilers in the UK (SEDBUK 2009): 88%
Solid fuel heating: independent boiler – wood/ pellets/ chips	75% nominal load 70% part load
Oil-fired wet central heating: condensing regular boiler	Seasonal efficiency (SEDBUK 2009): 88%
Heat pump – electrically driven (not air to air): space heating	For new buildings: coefficient of performance 2.5 at rating conditions in EN 14511
Heat pump – electrically driven (not air to air): domestic hot water	For new buildings: coefficient of performance 2.0 at rating conditions in EN 14511
Mechanical ventilation: continuous supply and extract with heat recovery	Specific fan power (W/(l.s)): 1.5
Heat recovery: balanced mechanical ventilation systems	Dry heat recovery efficiency: 70%
Fixed lighting: internal light fittings	Lighting efficacy: 45 lamp lumens per circuit-watt
Comfort cooling: water-cooled air-conditioners working in cooling mode	Energy efficiency ratio: 2.5

Table 11: Selected examples of minimum standards[25].

The ADs (for new buildings) include detailed specifications for the "reference building" from which the Target CO_2 Emission Rate is derived. The "reference building" provides typical specifications for the actual building design. Standards higher than the minimum outlined in Table 11 may be required to satisfy Building Regulations for new buildings.

2.IV.i. Status and plans on smart buildings

The UK's Clean Growth Strategy[31], published in 2017, sets out policies and proposals that aim to accelerate the pace of 'clean growth'.

This includes the rollout of smart electricity and gas meters in Great Britain as part of an infrastructure upgrade to make the energy system cleaner and more efficient, helping to deliver net zero greenhouse gas emissions and modernise energy services for consumers[50]. As of December 2019, 20.6 million smart meters had been installed in homes and businesses across Great Britain[51] and the Government has confirmed a new policy framework for delivering a market-wide rollout after 2020[52]. The 2017 Smart Systems and Flexibility Plan and 2018 Progress Update[53] sets out actions underway. The UK Government is working closely with the energy regulator (Ofgem) and industry to support the transition to a smarter, more flexible energy system. This includes work by Government to set regulatory requirements and to facilitate the development of technical standards for smart appliances and smart electric vehicle charge points, which will provide market certainty and stimulate consumer demand[54].

The Government also declared that it will invest around £265 million into the innovation of Smart Systems, including up to £70 million over the five years from 2016, dedicated to supporting innovation in energy storage, demand side response and other smart energy technologies[55].

2.IV.ii. Regulation of system performance

The commissioning of fixed technical building systems is required by Building Regulations to ensure the actual building performance is as consistent as possible with design intentions. The Approved Documents[7] reference the Domestic and Non-domestic Building Services Compliance Guides[25] [26] and industry guidance. Typically, the guides recommend following manufacturer's instructions, and include information such as the qualifications/accreditation required for commissioning experts.

The non-residential ADs also reference Soft Landings[56], a voluntary approach to address the performance gap between design intentions and operational outcomes. It is the responsibility of each Central Government Department to implement the Government Soft Landings policy[57].

2.IV.iii. Building Automation and Controls (BACs)

Control of technical building systems are included in the Domestic and Non-Domestic Building Services Compliance Guides[25] [26], the ADs[7], and the Building Regulations[3]. The National Calculation Methodology (NCM) also provides additional benefits for more effective controls.

The new ADs for non-residential buildings[7] include benefits for installing automatic monitoring of the building's energy performance and power factor correction equipment. E.g., the calculated Building Emission Rate (BER) may be reduced where management features are provided, which helps the new building to meet the maximum Target Emission Rate (TER). For "automatic monitoring and targeting with alarms for out of range values" the BER may be reduced by 5%.

2.IV.iv. Status and encouragement of intelligent metering

In addition to the smart meter roll out (see section 2.IV.i for details), metering requirements are included in the ADs for new and existing non-residential buildings[7]. The aim is to enable occupiers to meter at least 90% of the estimated annual energy consumption and to assign energy to the various end uses. The ADs for non-residential buildings reference industry best practice for meters installation. Automatic meter reading and data collection must be provided in new non-residential buildings greater than 1,000 m^2.

2.IV.v. Progress and current status on heating systems (Inspection / Equivalence)

The UK adopted alternative measures for heating systems and inspections for AC systems. The UK-wide Energy Savings Opportunity Scheme (ESOS)[29] transposes the requirements of EED Article 8[26]. ESOS allows compliance with EED Article 8 through the use of DECs. The inspection of AC systems and the alternative measures adopted for heating systems are not recognised by ESOS but they would likely be considered to inform ESOS assessments.

The UK decided to provide advice on boilers/heating systems, rather than implement an inspection regime. This is in continuation of the extensive programme of information, grant schemes and regulation which the UK has implemented historically. Equivalence reports were first issued to the Commission in 2007. The fifth equivalence report, covering the period 2017-2019, was issued to the Commission in 2018 and its publication is pending. The information below is based on the most recent 2018 report rather than previous reports[58].

The report found that the UK's alternative measures would produce a primary energy saving of 2,706,654 MWh. In comparison, a hypothetical inspection regime would produce a saving of 1,132,932 MWh.

Activities to improve energy performance of heating systems

Two broad types of alternative measures identified in the 2018 were considered in this assessment:

Alternative measures targeting domestic properties – these comprise policies and programmes that include specific measures targeted at domestic boiler heating systems. These were grouped under the following types of impact:

- Boiler adjustment
- Implementation of controls
- Early boiler replacement
- Insulation of pipework
- Insulation of hot water storage

Alternative measures that affect non-domestic properties – these comprise policies and programmes that target improved energy efficiency in non-domestic buildings, but do not specify the type of measure to be implemented. For these programmes, the Government estimated the proportion of the overall saving that could be attributed to boiler system improvements.

The 2018 report sets out a number of non-domestic sector policies aimed at increasing the energy efficiency of existing buildings using energy measurement and/or energy auditing often in conjunction with financial levies or incentives. The policies (listed below) were aimed at encouraging the uptake of cost-effective capital investment and measures designed to encourage behavioural change.

- The Climate Change Levy
- Carbon Reduction Commitment (CRC) Energy Efficiency Scheme
- Mandatory greenhouse gas reporting
- Climate Change Agreements
- The Energy Savings Opportunity Scheme

Impact and equivalence assessment

The impact of the alternative measures is detailed in Table 12.

Domestic and non-domestic primary energy savings (MWh) for the UK's alternative measures energy savings – by measure	
Domestic	*June 2017 - May 2020*
Measure D1: Boiler adjustment	53
Measure D2: Implementation of controls	864,494
Measure D3: Early boiler replacement	386,829
Measure D4: Insulate pipework	1,659
Measure D5: Insulate hot water storage	286
Total primary energy savings from the domestic sector	1,253,321
Total primary energy savings from the non-domestic sector	1,453,333
Total primary energy savings from alternative measures	2,706,654

Table 12: Primary energy savings attributable to alternative measures, UK 2018 Equivalence Report.

The UK boiler stock model was updated to estimate the savings (Table 13) that would result from a hypothetical inspection regime that extended the existing boiler inspection regime and met the requirements.

Domestic and non-domestic energy savings (MWh) for the hypothetical inspection scenario – by measure			
	Domestic	**Non-Domestic**	**Total**
Measure D1: Boiler adjustment	96,976	516,645	613,621
Measure D2: Implementation of controls	219,944	11,212	231,156
Measure D3: Early boiler replacement	152,803	101,173	253,975
Measure D4: Insulate pipework	7,559	6,055	13,613
Measure D5: Insulate hot water storage	15,117	5,449	20,566
Total primary energy savings	492,399	640,534	1,132,932

Table 13: Primary energy savings attributable to a hypothetical inspection regime, UK 2018 Equivalence Report.

2.IV.vi. Progress and current status on AC systems (Inspection / Equivalence)

Overview, technical method and administration system

Air Conditioning (AC) inspections were phased in between 2009 (systems > 250 kW) and 2011 (systems > 12 kW). Installations must be inspected by an accredited Energy Assessor at regular intervals not exceeding five years.

From 2012, all new AC inspection reports must be lodged on the Non-Domestic Energy Performance of Buildings Register for England & Wales[23]. Lodging the AC inspection report enables the building owner or manager to check the validity of the report by accessing an online copy. The report is publicly accessible from the Energy Performance of Buildings Registers using the building address or the report reference number.

Arrangements for assurance, registration and promotion of competent persons

Inspection of Air-conditioning Systems (TM 44)[59] guidance sets out good practice for AC inspections. The Chartered Institution of Building Service Engineers (CIBSE) is one of the main professional institutions for building services engineers.

National Occupational Standards (NOS)[45] and Scheme Operating Requirements (SOR)[46] have been established for AC inspections. NOS provide two levels of accreditation for assessors: "Level 3" for simple packaged cooling systems, and "Level 4" for complex, centralised systems. SOR define minimum requirements for Accreditation Schemes and the quality assurance of AC reports.

Promotional activities

Publicity campaigns were run in 2008 and 2009 to promote a range of initiatives, including AC inspections. The Government has not run promotional activities focused solely on AC inspections.

2.IV.vii. Enforcement and impact assessment of inspections

Enforcement and penalties

Local Weights and Measures Authorities through their Trading Standard Officers (TSOs) are responsible for ensuring that owners of AC systems (>12 kW) possess a valid inspection report. The penalty for non-compliance is £300 (~348 €).

TSOs are required to record any enforcement action and may publish a report annually.

Quality control of inspection reports

Over 95,600 AC inspection reports are lodged on the England and Wales register. It is difficult to estimate how many reports were produced before mandatory registration came into effect.

Impact assessment.

The original 2007 impact assessment forecasted a cost for AC inspection in England & Wales of ~£149 million (~173 M€) and benefits (improved performance, reduced operating costs, added stimulus for improvements) of ~£213 million (~247 M€). The net benefit is ~£64 million (~74 M€), with CO_2 savings in the year 2020 at ~0.08 million tonnes.

3. A success story in EPBD implementation

Although at the time not required by the EPBD, an Energy Performance of Buildings Register was established in 2007, when EPBD requirements were first implemented. An energy certificate is only valid if it has been generated from data lodged on the register and each set of data has been allocated a report reference number. The data that produces energy certificates must be entered on the register before they are given to the person who requested them. Any data entered on the register must be kept for a period of at least 20 years.

The registers are the only official place for storing energy certificate data. The registers provide a central repository from which historic certificates and reports can be retrieved and enables those who require certificates and reports for statutory purposes to check the validity of the documents they have received. The registers also support quality assurance and enforcement activities, reduces fraud and allows statistical and data analysis to inform policies and to improve the Government's knowledge of the building stock.

Open Data

As part of the Government's move to make more data publicly available, the Ministry of Housing, Communities and Local Government (MHCLG) has enabled greater access to the data held on the Energy Performance of Buildings Registers.

Previously, energy certificates were only available individually, via the register search functions. In 2012, individual data records were made available in bulk to a limited number of authorised data users. However, the Government recognised the value of information about the energy performance of buildings to researchers, local authorities and environmental organisations in delivering national climate change objectives. The public interest in making this information more readily available was fully aligned with the wider Government commitment to greater transparency of data held by public authorities.

Making Government data more accessible empowers citizens, fosters innovation and reforms public services. MHCLG believes there have been significant benefits in publishing the data, these include:

- Informing the development of better policy making across the Government, the public sector and other sectors to support energy efficiency
- Providing local authorities and other organisations contributing to the delivery of national climate change objectives with evidence to inform their plans
- Supporting further research into issues like fuel poverty, climate change and building stock analysis to identify innovative solutions and targeted interventions to improve energy efficiency
- Support the Government to achieve its obligation of reducing emissions as set out in the Climate Change Act 2008 by 2050
- Meeting the Government's duties under the Environmental Information Regulations 2004, to progressively make environmental information available to the public
- Encouraging innovation in the private sector to develop consumer applications that can enable informed consumer choice (e.g. integration of EPCs into building sale and rental websites), an objective of the EU Directive

In March 2017, data for domestic and non-domestic EPCs and DECs for public authority buildings was published on the Open Data Communities website[60]. The data is updated 2 to 4 times a year. In making the data available, data protection legislation and privacy risks were considered. MHCLG provided EPC holders with the opportunity to decide whether to 'opt out' before the data were released. MHCLG does not publish data where there may be national security concerns.

MHCLG is aware from responses and enquiries that this data has been of considerable interest. Data users can investigate, understand and manage the energy efficiency of buildings in their geographical or thematic areas of interest. There are approximately 3,000 registered data users and 2,300 to 2,600 user sessions per calendar month. The process does not record which sector data users come from. Anecdotal evidence gathered through user engagement suggests data users are mainly from the private sector, analysts specialising in a particular field (housing, energy, etc), Government departments, Local Authorities, universities and other organisations with an interest in energy efficiency.

Positive uses of energy performance of buildings data, include an insight into the housing stock in England and Wales as e.g.:

- Financial institutions have used the EPC data to explore the feasibility and impact of green mortgages for the most energy efficient new-build residential properties (bands A or B).
- The Home Builders Federation has used EPC data to identify that new homes being built in England and Wales are considerably more energy efficient than their predecessors, saving owners £629 a year in energy bills.

Internally, MHCLG's Data Analysts have used the data:

- To verify and quality control English Housing Survey[61] results and to complete information where there are gaps.
- To identify 'high rise' blocks of flats in different geographical areas.
- To look at how different housing characteristics contribute to house prices, such as the impact of energy efficiency on house valuation.

4. Conclusions, future plans

The UK is divided into four jurisdictions. In some instances, the mix of approaches transposing the requirements of the EPBD differs between jurisdictions. In other cases, similar approaches were adopted by two or more jurisdictions.

Overall, the 2013 Building Regulations in England were expected to improve the performance of new residential units by 6% and non-residential buildings by 9% over the previous (2010) standards. The Government will keep energy standards under review and plans to consult further in due course, proposing improvements to the energy efficiency standards for new non-domestic buildings and for existing domestic and non-domestic buildings. This will include assessing cost effectiveness/ cost-optimality to inform any strengthening of existing standards.

The transposition of the EPBD and its benefits continue to be reviewed by each jurisdiction as part of their programmes to achieve national energy efficiency objectives and to meet carbon emissions reduction targets.

In some instances, these reviews validated the current implementation approach. In other cases, the reviews resulted in changes, such as the 2012 updates of the residential EPC adopted in England, Wales and Scotland. At the time of writing, changes have been made to the implementation instruments, where deemed appropriate by the reviews.

Endnotes

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Annexes - Key Implementation Decisions

Key Implementation Decisions - General Background

no	Key Implementation Decisions – General Background	Description / value / response	Comments
01.01	Definition of public buildings (according to article 9 b)	Not available	
01.02	Definition of public buildings used by the public (according to article 13)	Display Energy Certificates (based on measured energy consumption) are issued and displayed in buildings >250m² that are occupied by a public authority and frequently visited by the public. Energy Performance Certificates (based on predicted energy consumption) are displayed in commercial premises >500m² that are frequently visited by the public, and where an EPC has previously been issued.	
01.03	Number of residential buildings	24.2 million homes* in England (March 2018)	(*) Estimated based on: Live tables on dwelling stock – Table 104: Dwelling stock: by tenure, England (historical series), MHCLG (May 2019). https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants#history Dwelling Stock Estimates: 2018, England, MHCLG, (May 2019), ISBN: 978-1-4098-5461-6 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/803958/Dwelling_Stock_Estimates_31_March_2018__England.pdf
01.04	Number of non-residential buildings	1,953,380 in England*	(*) Estimated based on: Non-domestic rating: stock of properties including business floorspace, 2019. Table SC1.0, Valuation Office Agency (Nov 2019). https://www.gov.uk/government/statistics/non-domestic-rating-stock-of-properties-including-business-floorspace-2019
01.05	If possible, share of public buildings included in the number given in 01.04	Not available	
01.06	If possible, share of commercial buildings included in the number given in 01.04	487,810 retail premises in England*	(*) Estimated based on: Non-domestic rating: stock of properties including business floorspace, 2019. Table SC1.0 Valuation Office Agency (Nov 2019). https://www.gov.uk/government/statistics/non-domestic-rating-stock-of-properties-including-business-floorspace-2019
01.07	Number of buildings	Residential: see 01.08 Non-residential: not identified	

<table>
<tr><th>no</th><th>Key Implementation Decisions – General Background</th><th>Description / value / response</th><th>Comments</th></tr>
<tr><td></td><td>constructed per year (estimate)</td><td></td><td></td></tr>
<tr><td>01.08</td><td>If possible, share of residential buildings constructed per year (estimate, included in the number given in 01.07)</td><td>New build completions (England)*:
2016-17[P]
183,570
2017-18[P]
195,290
2018-19[P]
213,860
[P] Figure provisional and subject to revision.</td><td>(*) Estimated based on:
Housing supply; net additional dwellings, England: 2018-19, MHCLG (Dec 2019)
https://www.gov.uk/government/statistics/housing-supply-net-additional-dwellings-england-2018-to-2019</td></tr>
<tr><td>01.09</td><td>If possible, share of non-residential buildings constructed per year (estimate, included in the number given in 01.07)</td><td>Not identified</td><td></td></tr>
<tr><td>01.10</td><td>Useful floor area of buildings constructed per year in million square meters (estimate)</td><td>Floor areas of residential buildings constructed per year (England)*:
<table><tr><th>Year</th><th>Million m^2</th></tr><tr><td>2009</td><td>10.3</td></tr><tr><td>2010</td><td>10.6</td></tr><tr><td>2011</td><td>11.9</td></tr><tr><td>2012</td><td>12.3</td></tr><tr><td>2013</td><td>12.5</td></tr><tr><td>2014</td><td>14.2</td></tr><tr><td>2015</td><td>17.7</td></tr><tr><td>2016</td><td>19.0</td></tr><tr><td>2017</td><td>20.2</td></tr><tr><td>2018</td><td>22.2</td></tr><tr><td>2019</td><td>23.4</td></tr></table>
Floor areas of non-residential buildings constructed per year (England)^:</td><td>(*) Live Table NB3, published quarterly statistics on Energy Performance of Buildings Certificates in England and Wales:
(^) Live Table A, published quarterly statistics on Energy Performance of Buildings Certificates in England and Wales
https://www.gov.uk/government/statistical-data-sets/live-tables-on-energy-performance-of-buildings-certificates</td></tr>
</table>

no	Key Implementation Decisions – General Background	Description / value / response	Comments

Year	Million m^2
2009	80.9
2010	48.3
2011	49.9
2012	67.2
2013	56.0
2014	51.8
2015	52.7
2016	48.0
2017	51.0
2018	56.5
2019	63.1

Key Implementation Decision – New Buildings

no	Key Implementation Decision – New Buildings	Description / value / response	Comments
02.01	Are building codes set as overall value, primary energy, environment (CO_2), reference building or other	Reference building approach	
02.02	Requirements for energy performance of residential buildings in current building code	To support the implementation of the Building Regulations, "Approved Documents" (ADs) have been published. The ADs set out five criteria for new buildings: 1. For all buildings: achieve a Target CO_2 Emission Rate. In addition, for residential buildings: achieve a Target Fabric Energy Efficiency, which reflects space heating and cooling demand in kWh/m^2/year. 2. Meet design flexibility limits, including minimum fabric standards and building services efficiencies. 3. Limit heat gains in summer including the effect of shading devices. 4. Ensure that the building performance is consistent with design calculations. Focus on air permeability, commissioning of services and thermal bridges. 5. Provide information for energy-efficient building operation.	Residential buildings: Conservation of Fuel and Power: Approved Document L1A. HM Government, 2013 edition incorporating 2016 amendments. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540326/BR_PDF_AD__L1A__2013_with_2016_amendments.pdf
02.03	Requirements for energy performance of non-residential commercial buildings in current building code	Ditto 02.02	Non-residential buildings: Conservation of Fuel and Power: Approved Document L2A. HM Government, 2013 edition incorporating 2016 amendments. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540328/BR_PDF_AD_L2A_2013_with_2016_amendments.pdf

no	Key Implementation Decision – New Buildings	Description / value / response	Comments
02.04	Requirements for energy performance of non-residential public buildings in current building code	Ditto 02.02	Non-residential buildings: Conservation of Fuel and Power: Approved Document L2A. HM Government, 2013 edition incorporating 2016 amendments. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/540328/BR_PDF_AD_L2A_2013_with_2016_amendments.pdf (
02.05	Is the performance level of nearly zero energy (NZEB) for new buildings defined in national legislation?	Building Regulation 25B* states: 'Where a building is erected, it must be a nearly zero energy building'. The performance level of nearly zero energy (NZEB) for new buildings is not defined within national legislation. However, SI. 3119 (2012) defines NZEB as "a building that has a very high energy performance, as determined in accordance with a methodology approved under regulation 24, where the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby." The approved methodology does not set a performance level for NZEB.	(*) Statutory Instruments No. 3119: The Building Regulations &c. (Amendment) Regulations 2012. Available at: http://www.legislation.gov.uk/uksi/2012/3119/pdfs/uksi_20123119_en.pdf
02.06	Nearly zero energy (NZEB) level for residential buildings (level for building code)	Ditto 02.05.	
02.07	Year / date for nearly zero energy (NZEB) as level for residential buildings (as indicated in 02.04)	For all new buildings (excluding new buildings occupied by public authorities), the coming-into-force date for Regulation 25B is 31 December 2020.	Statutory Instruments No. 3119: The Building Regulations &c. (Amendment) Regulations 2012. Available at: http://www.legislation.gov.uk/uksi/2012/3119/pdfs/uksi_20123119_en.pdf
02.08	Nearly zero energy (NZEB) level for all non-residential buildings (level for building code)	For new buildings occupied by public authorities the coming-into-force date for Regulation 25B is 1st January 2019. For other new buildings, see 02.07.	Statutory Instruments No. 3119: The Building Regulations &c. (Amendment) Regulations 2012. Available at: http://www.legislation.gov.uk/uksi/2012/3119/pdfs/uksi_20123119_en.pdf
02.09	Year / date for nearly zero energy (NZEB) as level for non-residential buildings (as indicated in 02.06)	See above	

no	Key Implementation Decision – New Buildings	Description / value / response	Comments
02.10	Are nearly zero energy buildings (NZEB) defined using a carbon or environment indicator?	Carbon based	
02.11	Is renewable energy a part of the overall or an additional requirement?	Part of the overall requirement.	Statutory Instruments No. 3119: The Building Regulations &c. (Amendment) Regulations 2012. Available at: http://www.legislation.gov.uk/uksi/2012/3119/pdfs/uksi_20123119_en.pdf
02.12	If renewable energy is an additional requirement to NZEB, please indicate level	Not applicable	
02.13	Specific comfort criteria for new buildings, provide specific parameters for instance for airtightness, minimum ventilation rates	See 02.02	

Key Implementation Decision - Existing Buildings

no	Key Implementation Decision – Existing Buildings	Description / value / response	Comment
03.01	Is the level of nearly zero energy (NZEB) for existing buildings set in national legislation?	No	
03.02	Is the level of nearly zero energy (NZEB) for existing buildings similar to the level for new buildings?	Not defined	
03.03	Definition of nearly zero energy (NZEB) for existing residential buildings (if different from new buildings)	Not defined	
03.04	Definition of nearly zero energy (NZEB) for existing non-residential buildings (if different from new buildings)	Not defined	
03.05	Overall minimum requirements in case of major-renovation	Building Regulations are supported by Approved Documents, which set out an elemental approach for existing buildings, and “Domestic and Non-domestic Building Services Compliance Guides” which include minimum energy efficiency standards for new and replacement of existing building systems. Under certain circumstances additional energy efficiency measures (named “consequential improvements”) must be undertaken.	
03.06	Minimum requirements for individual building parts in case of renovation	Ditto 03.05	
03.07	National targets for renovation in connection to Long Term Renovation Strategy (number or percentage of buildings)	Not defined	
03.08	National targets for renovation in connection to Long Term Renovation Strategy (expected reductions and relevant years)	Not defined	

Key Implementation Decision - Energy Performance Certificates

no	Key Implementation Decision – Energy Performance Certificates	Description / value / response	Comment
04.01	Number of energy performance certificates per year (for instance average or values for of 3-5 years)	England: Domestic EPCs (annual average 2017 - 2019): 1,318,362* Non-domestic EPCs (annual average 2017 - 2019): 82,687^ Non-domestic DECs (annual average 2017 - 2019): 33,015**	Live tables on Energy Performance of Buildings Certificates, MHCLG, Table A1: *Energy Performance Certificates for all properties by total floor area and type of property (*)* & Table B: *non-domestic Energy Performance Certificates by property group (^)*, January 2020. https://www.gov.uk/government/statistical-data-sets/live-tables-on-energy-performance-of-buildings-certificates#epcs-for-all-properties-non-domestic-and-domestic (**) Live Tables, published quarterly statistics on Energy Performance of Buildings Certificates in England and Wales: https://www.gov.uk/government/statistics/energy-performance-of-buildings-certificates-in-england-and-wales-2008-to-december-2019
04.02	Number of EPCs since start of scheme	England: Domestic EPCs (total to December 2019): 19,022,418* Non-domestic EPCs (total to December 2019): 891,100^ Non-domestic DECs (total to December 2019): 368,420**	Live tables on Energy Performance of Buildings Certificates, MHCLG, Table A1: *Energy Performance Certificates for all properties by total floor area and type of property (*)* & Table B: *non-domestic Energy Performance Certificates by property group (^)*, January 2020. https://www.gov.uk/government/statistical-data-sets/live-tables-on-energy-performance-of-buildings-certificates#epcs-for-all-properties-non-domestic-and-domestic (**) Live Tables, published quarterly statistics on Energy Performance of Buildings Certificates in England and Wales: https://www.gov.uk/government/statistics/energy-performance-of-buildings-certificates-in-england-and-wales-2008-to-december-2019
04.03	Number of EPCs for different building types	England: **Residential buildings*** Bungalow: 1,624,523 Flat: 5,241,431 House: 11,663,552 Maisonette: 488,703 Park home: 4,085 Not Recorded: 124 Total: 19,022,418 **Non-residential buildings^** Administration, Business, Commerce: 684,251 Culture, Leisure, Sport, Travel: 134,850 Education: 24,749 Health & Social Care: 38,998 Law & Order, Emergency Services: 2,274 Transport: 960	Live tables on Energy Performance of Buildings Certificates, MHCLG, Table A1: *Energy Performance Certificates for all properties by total floor area and type of property (*)* & Table B: *non-domestic Energy Performance Certificates by property group (^)*, January 2020. https://www.gov.uk/government/statistical-data-sets/live-tables-on-energy-performance-of-buildings-certificates#epcs-for-all-properties-non-domestic-and-domestic

no	Key Implementation Decision – Energy Performance Certificates	Description / value / response	Comment
		Other 5,018 Total: 891,100	
04.04	Number of assessors	39,964* registered assessors in England & Wales (breakdown England/ Wales not available) Assessor registration with a Government-approved Accreditation Scheme is mandatory.	(*) Energy Performance of Buildings Registers for England and Wales, 2019 Previously reported registered assessors' numbers (~86,000) included all assessors. The reported ~39,000 assessors only includes practicing/ active assessors, excluding suspended assessors, struck-off assessors, inactive assessors, etc.
04.05	Basic education requirements for assessors	National Occupational Standards (NOS) specify the qualifications and skills, which Energy Assessors should meet to be accredited to produce regulatory outputs. Different accreditations are available depending on the building type, the complexity of the building/ software to be used, and the type of regulatory outputs to be produced.	
04.06	Additional training demands for assessors	Minimum Continuous Professional Development (CPD) requirements apply.	
04.07	Quality assurance system	Government introduced Scheme Operating Requirements (SORs) to ensure all Accreditation Schemes (which accredit Energy Assessors) achieve common minimum quality standards. SORs require Accreditation Schemes to undertake quality assurance of the outputs produced by their accredited Energy Assessors. Government carries out audits of the quality assurance systems implemented by Accreditation Schemes and compliance with the SORs. These provisions ensure that a statistically significant percentage of certificates are checked. In the most severe instances of non-compliance, Government may suspend or revoke an Accreditation Scheme's license. Similarly, Accreditation Schemes may	Published SORs Level 1 & Level 2 documents: http://www.easob.co.uk/Level_1_SORs_v1.1_07.06.19.pdf http://www.easob.co.uk/Level%202%20SORs_v1.5.pdf

no	Key Implementation Decision – Energy Performance Certificates	Description / value / response	Comment
		revoke an Energy Assessor's accreditation.	
04.08	National database for EPCs	Yes	Domestic Energy Performance Certificate Register https://www.epcregister.com/ Non-Domestic Energy Performance Register https://www.ndepcregister.com/
04.09	Link to national information on EPCs / Database	Yes	Published quarterly statistics: https://www.gov.uk/government/statistics/energy-performance-of-buildings-certificates-in-england-and-wales-2008-to-december-2019 (Published Energy Performance of Buildings Data: https://epc.opendatacommunities.org/

Key Implementation Decision – Smart Buildings and Building Systems

no	Key Implementation Decision – Smart Buildings and Building Systems	Description / value / response	Comment
05.01	Is there a national definition of smart buildings?	Not defined	
05.02	Are there current support systems for smart buildings?	Not defined	
05.03	Are there currently specific requirements for technical building systems (for instance in building codes)?	Yes	Building Regulations require the commissioning of fixed technical building systems to ensure the actual building performance is as consistent as possible with design intentions. The ADs* reference the Domestic and Non-domestic Building Services Compliance Guides and industry guidance. Typically, the guides recommend following manufacturer's instructions, and include information such as the qualifications/accreditation required for commissioning experts. (*) Approved Documents: AD L1A, AD L1B, AD L2A and AD L2B for new and existing residential and non-residential buildings respectively. These are available at: https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l
05.04	Are there current requirements for automatics (for instance in building codes)?	Yes	Section 2.43 of AD L2A states: Systems should be provided with appropriate controls to enable the achievement of reasonable standards of energy efficiency in use. Energy Meters Section 2.47 of AD L2A states: Reasonable provision for energy meters would be to install energy metering systems that enable the following: 1. At least 90 per cent of the estimated annual energy consumption of each fuel to be assigned to the various end-use categories (heating, lighting etc.). 2. The output of any renewable system to be separately monitored; and 3. In buildings with a total useful floor area greater than 1,000m^2, automatic meter reading and data collection facilities. Further information available at: https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l
05.05	Chosen option A or B for heating systems (inspection or other measures)	Option B	Ditto 5.1
05.06	Number of heating inspections; reports per year (if option A)	Not applicable	

no	Key Implementation Decision – Smart Buildings and Building Systems	Description / value / response	Comment
05.07	Chosen option A or B for cooling systems (inspection or other measures)	Option A	
05.08	Number of air-conditioning / cooling system inspections; reports per year (if option A)	Total AC inspection reports (England & Wales): 92,320* (Breakdown of England & Wales not available)	(*) Non-domestic Energy Performance of Buildings Register for England and Wales. https://www.ndepcregister.com/lodgementStats.html
05.09	Is there a national database for heating inspections?	No	The UK decided to provide advice on boilers/ heating systems, rather than implement an inspection regime.
05.10	Is there a national database for cooling / air-conditioning inspections?	Yes	From 2012, all new AC inspection reports must be registered on the Non-domestic Energy Performance of Buildings Register for England & Wales which made AC inspection reports easier to validate and quality assure.
05.11	Are inspection databases combined with EPC databases for registration of EPCs and inspection reports?	Yes	Non-domestic EPCs, DECs and AC inspection reports are registered on the Non-domestic Energy Performance of Buildings Register for England and Wales.
05.12	Link to national information on Inspection / Database	Yes	Non-domestic Energy Performance of Buildings Register for England and Wales. https://www.ndepcregister.com/lodgementStats.html

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