



Ministry of Housing,
Communities &
Local Government

Energy Performance of Buildings Regulations 2012

Implementation Report



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Introduction

1. This document is the Implementation Report (IR) of the Energy Performance of the Buildings (England and Wales) Regulations 2012 (S.I. 2012/3118)¹ ('2012 regulations'). The regulations enact, where necessary, the requirements of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (recast) ('the EPB Directive')² and provisions enacting the original version of the EPB Directive³ ('the original Directive'). The EPB Directive came into force on 8 June 2010. EU Member States were required to transpose the directive by 9 January 2013.
2. The 2012 regulations consolidated the Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations 2007 ("the 2007 Regulations") and subsequent amendments. As a result of the consolidation, the 2007 Regulations were revoked in their entirety, as were most of the statutory instruments which amended them. A 'copy-out' approach was taken, transposing only the necessary parts of the EPB Directive generally without elaboration. Amendments also removed any provisions from the 2007 Regulations which went beyond the requirements of the original Directive.
3. This IR fulfils a statutory provision to establish whether and to what extent the 2012 regulations have achieved their original objectives, to assess whether those objectives remain appropriate and, if so, the extent to which they could be achieved with a system which imposes less regulation. The review must also have regard (where reasonable) to the implementation of the EPB Directive in other Member States. This review covers a five-year period as specified in the 2012 regulations. A proportionate approach to the IR has been taken to evaluate the effectiveness of the 2012 regulations in England and Wales and the impact of removing 'gold plating' from the regulatory requirements. This analysis has been undertaken by the Ministry of Housing, Communities and Local Government ("the department").

Objectives of the Regulations

4. The EPB Directive seeks to improve the energy efficiency of buildings, reducing their carbon emissions and lessening the impact of climate change. This complements the 2008 Climate Change Act⁴ which requires a reduction in carbon emissions by 80% on 1990 levels by 2050. As emissions from buildings account for 45% of all carbon emissions in the UK⁵, it is important to ensure that this is mitigated by improving the energy efficiency of existing buildings and ensuring that new buildings are designed and built to a high standard of energy efficiency.
5. The 2012 regulations aim to implement the EPB Directive and in doing so improve the energy efficiency of buildings, thus reducing CO₂ emissions and lessening the impact of climate change. It does this through a number of measures which

¹ <http://www.legislation.gov.uk/ukSI/2012/3118/contents/made>

² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:153:0013:0035:EN:PDF>

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32002L0091>

⁴ https://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf

⁵ [Carbon Trust: Building the Future. Today](#)

introduced structured assessment and reporting of aspects the buildings which have a bearing on their use of energy such as the construction style, the fabric used, insulation measures, the predicted performance of fixed building services for lighting, heating and cooling. Additionally, the reports contain recommendations which provide owners with optional actions and investments that they may make to increase the energy efficiency of their building.

Energy Performance Certificates

6. The 2012 regulations came into effect on 9 January 2013 and have subsequently been amended. The 2012 regulations require Energy Performance Certificates (EPCs) to be produced when a domestic or non-domestic building is constructed, sold or let. EPCs show the energy efficiency of a building on a scale of A (A+ for non-domestic buildings) to G and include recommendations to improve the energy efficiency of the building. An EPC should be given free of charge to a prospective buyer or tenant and ultimately to the person who buys or rents the building.

Display Energy Certificates

7. The original Directive required EPCs to be produced and clearly displayed in buildings over 1,000 square meters, occupied in whole or part by public authorities and where the building is frequently visited by the public. In the 2012 regulations, these are referred to as Display Energy Certificates (DECs). DECs for buildings over 1,000 square meters are valid for 12 months and the accompanying recommendation report for seven years. In January 2013, the 2012 regulations extended DECs to public buildings over 500 square meters. The size threshold was amended on 9 July 2015 to include buildings over 250 square meters. Under these provisions, DECs and the accompanying recommendation report are valid for 10 years.
8. DECs must be displayed in a prominent place clearly visible to the public, with the intention of raising public awareness of energy use. DECs provide an energy rating of the building from A to G based on the actual amount of metered energy used by the building over the last 12 months within the validity period of the DEC, where A is very efficient and G is the least efficient. An affected organisation must have in its possession, or control, a recommendations report.

Air Conditioning Inspection Reports

9. The 2012 regulations state that all air conditioning systems with an effective rated output of more than 12 kilowatts (kW) must be inspected at regular intervals no more than five years apart. This includes systems consisting of individual units which are less than 12kW, but whose combined effective rated output is more than 12kW.
10. An air conditioning system is defined as 'a combination of all components required to provide a form of air treatment in which the temperature is controlled, or can be lowered and includes systems which combine such air treatment with the control of ventilation, humidity and air cleanliness'. The Air Conditioning Inspection Report (ACIR) is intended to provide the building owner or manager with information regarding the efficiency of the air conditioning systems that they control to allow them to identify opportunities to save energy and reduce operating costs.

Inspection of heating systems

11. Although not specifically referred to in the 2012 regulations, the EPB Directive also requires the inspection of heating systems in buildings. The scope of the inspection covers all accessible parts of all systems used for heating buildings with boilers of an effective rated output of more than 20kW. However, the EPB Directive allows Member States to provide advice and adopt alternative solutions that achieve the same goals instead of a regular inspection regime. Member States adopting an alternative solution are required to prepare equivalence reports to demonstrate that their approach has a comparable impact to an inspection. This is the implementation route that the UK has adopted.

Recommendations Report

12. EPCs, DECs and ACIRs are accompanied by a recommendations report that includes cost effective measures to improve the energy efficiency of the building or the air conditioning system. Under the 2012 regulations a recommendations report must include:
 - recommended cost-effective measures that could be carried out in connection with a major renovation of the building envelope or technical building systems;
 - recommended cost-effective measures for individual building elements that could be carried out without the necessity for a major renovation of the building envelope or technical building systems;
 - an indication of how the owner or tenant could obtain more detailed information about improving the energy efficiency of the building, including more detailed information about the cost-effectiveness of the recommendations and
 - information on the steps to be taken to implement the recommendations.

Additional requirements

13. In line with government policy to avoid 'gold plating' (i.e. going beyond the minimum requirements), the 2012 regulations transposed only the minimum requirements set out in the EPB Directive. The 2012 regulations introduced the following additional requirements arising from the EPB Directive:
 - property advertisements must include details of the EPC rating where available;
 - DECs must be completed for public authority buildings larger than 500 square meters that are frequently visited by the public (the size threshold was lowered to buildings of more than 250 square meters on 9 July 2015);
 - an EPC must be displayed in commercial premises larger than 500 square meters that are frequently visited by the public (where an EPC has previously been issued on the sale, let or construction of that building) and
 - the content of the EPC must be improved, to signpost consumers to more detailed information about the recommendations and how they can be implemented.

14. The 2012 regulations also removed 'gold-plating' from provisions contained within the original EPB Directive. Further information can be found in the recast EPB Directive Impact Assessment⁶ (recast Impact Assessment).
15. In addition, the requirement to attach an EPC to written particulars of a building during the marketing process was removed. This requirement was intended to ensure potential buyers or tenants were made aware of the existence of a Green Deal⁷ on the property and to improve levels of compliance with the requirement to obtain an EPC when a building is sold or let. These requirements were removed, because:
 - a) there are already adequate measures in place to alert buyers and tenants to the existence of a Green Deal on a property;
 - b) the new requirement for property advertisements to display EPC ratings would help to ensure compliance.
16. A number of 'gold-plated' provisions were retained to support cross-governmental policies, such as the Green Deal. The provisions that were retained are:
 - a) energy assessor accreditation schemes
 - b) the requirement for energy assessors to be both accredited and qualified
 - c) annual updates of DEC's for larger public buildings over 1,000 square meters
 - d) the requirement on estate agents to ensure an EPC has been commissioned at the start of the marketing process
17. The requirement for a domestic and non-domestic Energy Performance of Buildings Register ('the registers') was a domestic requirement first implemented in 2007 rather than something required by the EPB Directive. A later amendment to the 2012 regulations allowed the publication of register data on a website (in line with the government's agenda to make data more accessible).
18. Lodgement of an energy assessment on the registers may only be completed by and accredited individual who is registered with an assessment scheme.
19. How the requirements of the Directive have been implemented by the 2012 regulations are reviewed in this report.

⁶ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/39379/Impact_Assessment.pdf

⁷ <https://www.gov.uk/green-deal-energy-saving-measures>

Have the regulations achieved their objectives?

EPC rating in property advertisements (where available)

20. The 2012 regulations require the production of a valid EPC for that building and that the energy performance rating be included in advertisements in commercial media when a building is offered for sale or rent. A The energy efficiency rating had largely been included in advertising material on a voluntary basis before this requirement came into effect. Sporadic checks of commercial media, including property websites and in newspapers has also shown that the energy efficiency rating is regularly displayed conjunction with properties offered for sale or rent.

Extending DEC's to smaller public authority buildings

21. The discipline of obtaining energy consumption data, as well as the requirement to display a DEC in a prominent place visible to the public, may encourage public authorities to improve energy management, thereby reducing cost. Implementing recommended energy efficiency measures to reduce operational costs may provide funding for energy improvements that would otherwise may not have gone ahead.

Displaying an EPC in commercial premises

22. The requirement to display an EPC in a non-domestic building, frequently visited by the public and larger than 500 square meters was fully transposed into domestic legislation. This requirement only applies where an EPC has previously been issued on the sale, let or construction of that building. There is no requirement to produce an EPC for display purposes only. There is no reliable source of data which identifies the number of non-domestic buildings over 500 square meters that are frequently visited by the public and that information is not recorded on the EPC.

Improving the content of EPCs and signposting consumers to the recommendations

23. We have improved the content of the EPC and signpost consumers to detailed information regarding the recommendations and their implementation. A revised version of the domestic EPC was launched in 2012, with clear signposting to the Green Deal, information about qualifying for Green Deal finance and a mechanism for disclosing the existence of a Green Deal on a particular property.
24. Further changes, to both the domestic and non-domestic EPCs, were made at the end of 2016. These changes clarified the process for calculating the energy efficiency rating on the EPC and sign-posted consumers to guidance documents. During this period, domestic and non-domestic EPCs were amended to make the 'primary energy value'⁸ of the building more visible on the EPC. This was change that involved minimal cost.

⁸ Primary energy use is based on the energy required for the heating, ventilation, hot water and lighting systems and is calculated per square metre of floor area.

Extending the list of buildings exempt from the requirement to have an EPC

25. In order to quantify whether the cost savings set out in the recast Impact Assessment have been achieved we have used publicly available data regarding different types of buildings to estimate the number of 'exempt' buildings. A distinction has been made between residential and non-residential buildings as the cost of producing energy certificates for these buildings depends on the type of assessment undertaken and the complexity and size of the building being assessed.

Listed buildings

26. There are approximately 378,000 listed buildings⁹ in England and approximately 30,000 listed buildings¹⁰ in Wales. However, the actual total number of listed buildings may be different as one single entry on the National Heritage List for England (NHLE) can cover a number of individual units, such as a row of terraced houses. Certain types of building, which hold more than one classification, such as farmhouses, which are classified as both 'residential' and 'agricultural' buildings, can also affect the total. Without evidence to quantify the exact number of individual units, this report considers an estimate, based on publicly available data^{9, 10}. Buildings in Wales where there is no discernible building type (i.e. not recorded); where the listed entity is not a building (i.e. gardens, parks and urban spaces); or the designated listing is outside of the reporting period (i.e. after 9 January 2018) are not included in the listed building figures for Wales.
27. A study of NHLE¹¹ records by Ordnance Survey provides an insight into the types of uses of heritage assets. The study indicated that most assets were residential (71%) while 'other' residential buildings account for 6%. Commercial buildings represent 14% of the total and an additional 2% of buildings are a mix of residential and commercial use. The remaining 7% includes places of worship and 'other' uses. For the purpose of calculating the cost savings, 77% of buildings in England have been classified as 'residential'. In Wales, 51% of listed buildings are classified as 'domestic' and the remaining 49% have broad range of classifications, such as 'Commercial', 'Health and Welfare', 'Civil', 'Agricultural and Subsistence'. We do not have any information about the organisations that occupy listed buildings; therefore, for the purposes of this report, these types of listed buildings have been classified as 'non-domestic'. In England and Wales, this equates to approximately 305,000 domestic buildings and 101,000 non-domestic buildings.
28. An EPC is only required on the sale or let of a building. If a building continues to be owned or occupied by the same individual or organisation when the 2012 regulations came into effect, an EPC is not required. Other types of transactions may not qualify as a sale or let, for example lease renewals and extensions There is no data

⁹ <https://historicengland.org.uk/advice/hpg/has/listed-buildings/>

¹⁰ <http://cadw.gov.wales/historicenvironment/recordsv1/cof-cymru/?lang=en>

¹¹ [Historic England Annual Report: 'Heritage Counts: Heritage Indicators 2016'](#)

available to link listed buildings to a specific tenure type.

29. EPCs are valid for 10 years, regardless of whether a building has been sold or let a number of times during that period. However, an updated EPC may be required if an application is made for energy efficiency programme funding. The length of time an owner or tenant has occupied an address, or an organisation has occupied a building, also determines how frequently an EPC is needed. The English Housing Survey (EHS) 2016/17¹² suggests that owner occupiers live at their current address for 17½ years on average. In comparison, 50% of private renters occupy a property for approximately 4 years or less (Chapter 3: figures and annex tables, EHS Annex Table 3.1)¹³. It is common practice to let non-domestic buildings for a fixed term. The Property Industry Alliance, Property Data Report 2017¹⁴ indicates the average lease length for non-domestic buildings is now 7 years. It is reasonable to assume that the level of turnover for listed buildings in England or Wales is similar. There is no data available to link listed building data to a specific tenure type.
30. On this basis, it is assumed that not all listed buildings will have commissioned or needed an EPC during the five-year period of this review. An assumption has been made that a change of ownership or occupancy will occur in about 5% of domestic listed buildings and 15% of non-domestic listed buildings each year. These figures are based on assumptions made on the length of tenancy in the Impact Assessment¹⁵ produced for the recast EPB Directive. The percentage figures in this report have been adjusted to account for the increase in the amount of time owner occupiers and tenants live at their current address and an increase in length of commercial leases.
31. The price of an EPC is set by the market and market demand. The cost (based on internet research in January 2018) will vary according to a number of factors including size, location and age of the building. The costs for a domestic EPC can vary between £50 and £120. The cost of an EPC for a non-domestic building will typically range between £155 and £1,200 depending of the complexity of the building being assessed. We estimate that that the average cost savings for exempting listed domestic buildings from the requirement to have an EPC may result in average savings of between £2 million and £3 million over the period of this report. The estimated average costs savings for exempting non-domestic listed buildings is between £7 million and £11 million. The potential costs savings are lower than those shown in the Impact Assessment¹⁶ for the recast EPB Directive as the length of owner occupations and tenancies has increased since the previous assumptions in the original Impact Assessment.

Buildings used as places of worship and for religious activities

32. The recast Directive extended an exemption to cover buildings which may be used primarily for other purposes but occasionally used as 'places of worship or for religious activities' rather than just those which are primarily or solely either of those

¹² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/675942/2016-17_EHS_Headline_Report.pdf

¹³ <https://www.gov.uk/government/statistics/english-housing-survey-2016-to-2017-private-rented-sector>

¹⁴ <https://www.bpf.org.uk/sites/default/files/resources/PIA-Property-Data-Report-2017.PDF>

¹⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/39379/Impact_Assessment.pdf

¹⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/39379/Impact_Assessment.pdf

activities.

33. The Church of England has published tables (October 2017)¹⁷ which show that there are currently over 15,500 church buildings in total. However, these buildings may have been exempt by the original regulations. The University of Manchester has published data on the Number of Registered Places of Worship (England and Wales), 1999 to 2009¹⁸, which estimates that almost 30,000 buildings are used as places of worship. It is presumed that these buildings would be used solely as places of worship so were covered by the existing exemption.
34. There is no data available to identify the number of buildings exempt from the requirements of the EPB Directive as a result of the extension. Under the provisions of the Places of Worship Registration Act 1855¹⁹, the owners or trustees of places of worship can certify to the Registrar General for England and Wales that a premise is used as a place of worship and request that it be recorded as such. However, this is not obligatory and the occasional use of buildings for religious activities is not a matter of public record. It has therefore not been possible to provide an estimate of the impact of extending this exemption.

Temporary buildings with a planned time of use of two years or less, industrial sites, workshops and non-residential agricultural buildings with low energy demand

35. This provision includes a very broad range of buildings and precise information on the number of buildings in this category is not available. Therefore, there is a level of uncertainty regarding the cost savings for implementing the requirements of the Directive. Valuation Office Agency statistics²⁰ for England and Wales provide information on the number and value of the stock of rateable properties, broken down by property type and sector. However, these statistics do not identify 'temporary' buildings or buildings with 'low energy demand'.
36. As a lack of data exists to quantify the number of temporary buildings with a planned time of use of two years or less, industrial sites, workshops and non-residential agricultural buildings with low energy demand, it is difficult to accurately quantify the impact of this exemption. However, it should be noted that the scope of this exemption has not changed. For the purposes of this report, we have assumed that approximately 107,000 'rateable' buildings may be categorised as a non-residential agricultural building or industrial building which involves some form of industrial processing, storage or distribution. Taking into account assumptions regarding the average length of owner occupation and commercial leases (see paragraph 28 above), non-domestic Valuation Office ratings and the average cost of EPCs, this would equate to cost savings of approximately £10 million.

Residential buildings which are intended to be used for less than four months of the year

¹⁷ [Church of England Research and Statistics](#)

¹⁸ <http://www.brin.ac.uk/figures/number-of-registered-places-of-worship-england-and-wales-1999-2009/>

¹⁹ <https://www.gov.uk/government/publications/places-of-worship-registered-for-marriage>

²⁰ <https://www.gov.uk/government/statistics/non-domestic-rating-stock-of-properties-march-2016>

37. This exemption was the subject of a previous analysis in 2012²¹. It was estimated that the exemption would affect approximately 28,000 buildings and result in a net annual saving of £300,000. There is no evidence to suggest that there has been a significant change to the number of residential buildings which are intended to be used for less than four months of the year.

Stand-alone buildings with a total useful floor area of less than 50 meters squared

38. Based on data published in The English Housing Survey²², we estimate that 10% of dwellings in England have a total useful floor area of less than 50 square meters. There are more than 23 million dwellings in England (EHS Annex 2.1) which equates to approximately 2.3 million dwellings in scope. However, the exemption only applies to standalone buildings of less than 50 square meters and figures for standalone buildings are not available. It is likely that the majority of dwellings with useful floor area of less than 50 square meters are flats, either purpose-built or conversions, which are not exempt. There is no reliable estimate of the number of non-domestic buildings in England and Wales that are both stand-alone and smaller than 50 square meters. As such, there is no reliable data to quantify the impact of this exemption.

Improving energy efficiency

39. Energy certificates are designed to report on the energy efficiency of a building and highlight how its energy efficiency could be improved. Roughly 42 per cent of the UK's energy consumption and carbon emissions arise from the way our buildings are lit, heated and used and so the certificate and the associated recommendations to improve energy efficiency as provided during the inspection are essential.
40. The associated recommendations in EPCs suggest ways in which the energy performance of the building can be improved and how buildings are utilised which can have a significant impact in terms of reducing energy consumption. These are recommendations, not requirements, but the Energy Saving Trust has estimated that the average household could save up to £300 a year through applying energy saving improvements²³.
41. The 2012 regulations increase the availability of energy efficiency information by mandating the use of energy certificates to show the energy rating when a building is constructed, sold or let. Energy Performance Certificates (EPCs) provide prospective buyers and tenants of a building with information about the energy performance of the building and practical recommendations on improving energy efficiency and reducing costs. Each recommendation includes the indicative cost, typical cost savings and the performance rating after improvement. The efficient running of heating, ventilation and air conditioning systems, as set out in guidance documents and recommendations reports, contribute to a reduction in carbon emissions and the carbon footprint of the building as well as lower running costs for building

²¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/39379/Impact_Assessment.pdf

²² <https://www.gov.uk/government/statistics/english-housing-survey-2016-to-2017-headline-report>

²³ [HM Government. The Carbon Plan: Delivering our low carbon future](#) (paragraph 2.50)

occupants.

42. There is limited analysis to determine whether building owners or occupiers have made improvements based on the recommendations. However, a report²⁴ published by the Home Builders Federation (HBF) using EPC data identified that new homes being built in England and Wales were considerably more energy efficient than their predecessors, saving owners on average £629 a year in energy bills. The Carbon Plan (December 2011)²⁵ identified the expected effect of energy efficiency programmes on greenhouse gas emissions, including EPCs.
43. The 2012 regulations also contained provision for the publication of data from EPCs and DEC's to support energy efficiency measures. In 2017 MHCLG released data for the period to November 2016 relating to the domestic and non-domestic EPCs and DEC's on the Open Data Communities website²⁶. We know from responses and enquiries that this data has been of considerable interest to researchers, academics, local authorities and others who have used it to better investigate, understand or manage the energy efficiency of buildings in their geographical or thematic areas of interest.
44. Analysis of the published quarterly statistics (from Q1 2018)²⁷ produced from the data lodged on the EPB registers has concluded:
 - a) In Q1 2018, compared to Q4 2017, there were reductions, across the board (for all domestic properties) in Energy Use, CO₂ Emissions, Lighting Costs, Heating Costs and Hot Water Costs
 - b) a rising trend (since 2014) in the number of domestic properties awarded an Energy Efficiency Rating of A or B (the highest).

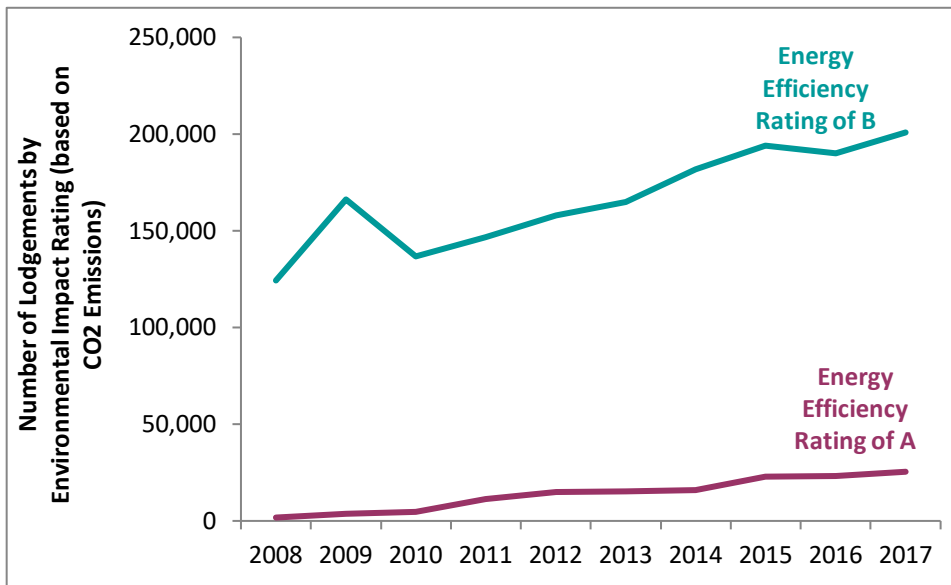
²⁴ <https://www.hbf.co.uk/news/new-build-homes-save-owners-629-a-year-on-energy-bills/>

²⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47613/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf

²⁶ <https://epc.opendatacommunities.org/>

²⁷ [Energy Performance of Buildings Certificates Statistical Release: Q1 2018: England and Wales](#)

Figure 1: Number of Lodgements by Environmental Impact Rating (based on CO2 Emissions), Energy Efficiency Rating of A or B (the highest)



- c) 70% of 'new dwellings' achieve an Energy Efficiency Rating of either A or B between 2008 and Q1 2018
- d) for public buildings, there have been reductions in Q1 2018, compared to Q4 2017, across the board, in Energy Use and CO₂ Emissions.

45. EPCs and DEC's play an important part in reducing energy use and consumption in public authority buildings. DEC's are intended to raise public awareness of energy use and inform visitors to public buildings about their energy use and show the energy performance of a building based on actual energy consumption as recorded over the last 12 months within the validity period of the DEC (the operational rating). The recommendation report that accompanies a DEC contains a range of possible improvements, including cost effective measures that may be implemented to improve the energy performance of the building although there is no statutory requirement to carry out any of the recommended measures stated. The report includes zero and low cost operational and management improvements, possible upgrades to the building fabric or services and opportunities for the installation of low and zero carbon (LZC) technologies. The recommendations report enables the occupier to identify what may be done to improve, for example, building energy management, building services, etc. therefore reducing energy consumption and CO₂ emissions.

46. The Government's 2015/16 State of the Estate report, which was produced as a the requirement in the Climate Change Act 2008, assesses the progress made towards improving the efficiency and contribution to sustainability of buildings that are part of the Civil Estate²⁸ EPCs are used as one of the two principal measures that are used

²⁸ The Civil Estate comprises the properties that are owned, leased or occupied by government organisations, including ministerial and non-ministerial departments, executive agencies and executive non-departmental public bodies.

to assess progress on the environmental impact of both new and existing buildings. In this period, the Government reported a 27% reduction in its carbon emissions²⁹. By the end of 2015/16, 19 out of 22 departments had met or exceeded the Government's 25% reduction target.

47. In addition, the Government's State of the Estate report details the role of EPCs in monitoring energy efficiency standards during the acquisitions of new Government buildings as the Government has pledged to procure more energy efficient buildings. The EPC rating of all new procurements are monitored and departments are expected to provide an explanation of any procurements of buildings that have a performance rating that are outside of the top quartile for energy performance. During 2015/16, buildings in the top quartile of energy performance achieved an EPC rating ranging from 0 to 73.
48. There is evidence that other public sector organisations use DECAs as a means of reducing energy consumption and prioritising energy efficiency improvements to existing building stock. For example, to maximise site-wide opportunities and to ensure that an expansive 'sustainability gap' does not open up between the existing older buildings or infrastructure and the new development, the Cambridge University Hospitals NHS Foundation Trust³⁰ encourages the use of data from individual DECAs for existing buildings as a means of prioritising work.
49. In England and Wales, a system of inspecting air-conditioning systems was put in place in accordance with the requirements of the original Directive and its continuation for the recast Directive did not impose any new costs or burdens. A 'regular' inspection raises awareness of the efficiency of air-conditioning systems and offers opportunities to improve performance and cut operating costs. A five-year interval for an inspection and production of a report (an 'ACIR') is considered to meet the requirements of the EPB Directive and be both proportionate and also deliver reasonable benefits.
50. The inspection seeks to highlight improvements to the operation of existing systems and highlights opportunities to replace older or oversized, less energy efficient systems with new energy efficient systems. ACIRs ensure that building owners and managers are provided with information regarding the efficiency of the air conditioning systems that they control, together with advice on how the energy efficiency or effectiveness of these systems might be improved, to reduce both operating costs and related carbon emissions.
51. There is no publicly accessible database that records the number of air-conditioning systems that have been sold and no accurate figures on the actual number of air-conditioning systems. In England and Wales, detailed information on the installed stock of air conditioning systems is sparse, but it is assumed that the majority of

²⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/588811/2015-16_State_of_the_Estate_Report_final_1.pdf

³⁰ <https://www.cuh.nhs.uk/corporate-information/services/non-clinical-services/think-green/energy-efficiency-buildings>³¹
<https://www.bre.co.uk/filelibrary/pdf/projects/aircon-energy-use/StudyOnEnergyUseByAirConditioningFinalReport.pdf>

systems in scope of the regulations are in office and retail buildings³¹.

52. The statutory requirement to lodge ACIRs on the non-domestic EPB Register came into effect on 6 April 2012. Introducing statutory lodgement was intended to bring air conditioning inspection reports in line with the existing arrangements for EPCs and DECAs. There is no requirement for the air conditioning energy assessor or the operator of the air conditioning system to provide the department with a copy of the ACIR that had been produced before 6 April but not lodged on the non-domestic register, or for a valid ACIR produced before this date to be lodged retrospectively. It is estimated that there were approximately 860 ACIR lodgements per month over the five-year period of this report. This is based on the total number of lodged ACIRs³² and the average number of weekly ACIR lodgements since 6 April 2016.
53. Air conditioning inspections identify poor practice and recommend actions to correct them. However, we do not monitor whether improvements are made based on the recommendations. An analysis of air conditioning inspection reports confirmed that the most frequent recommendations relate to operation and maintenance issues³³.
54. For the inspection of the accessible parts of systems used to heat buildings with boilers of an effective rated output of more than 20kW, England and Wales have derogated from the requirement of regular inspection of boilers but have set up a system to provide users with appropriate advice. This approach was continued under the recast as it is cost-effective and proportionate. In the recast, it was specified that the boiler equivalence report must demonstrate that the impact of providing advice to users is equivalent to carrying out inspections, whereas the previous requirement had been to show broad equivalence. Under the recast EPB Directive, a report must be submitted every three years to be published on the EU Commission's website³⁴.
55. Apart from the EPB Directive requirements, the 2012 regulations also support the UK's energy efficiency and carbon emission targets. EPCs underpin many existing policies, including:
 - The Green Deal, a finance mechanism enabling property owners and occupiers to take out loans to pay for energy efficiency improvements in their properties, with repayments made through their energy bill.
 - The Domestic Renewable Heat Incentive (RHI)³⁵, a government financial scheme to promote the use of renewable heat. The Department for Business, Energy & Industrial Strategy (BEIS) develops the scheme policy and rules, which is implemented and administered by Ofgem.

³¹ <https://www.bre.co.uk/filelibrary/pdf/projects/aircon-energy-use/StudyOnEnergyUseByAirConditioningFinalReport.pdf>

³² [82,818 ACIR lodgements on 20-06-2019](https://www.bre.co.uk/filelibrary/pdf/projects/aircon-energy-use/StudyOnEnergyUseByAirConditioningFinalReport.pdf)

³³ <https://www.bre.co.uk/filelibrary/pdf/projects/aircon-energy-use/StudyOnEnergyUseByAirConditioningFinalReport.pdf>

³⁴ <https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings/certificates-and-inspections>

³⁵ <https://www.ofgem.gov.uk/environmental-programmes/domestic-rhi/about-domestic-rhi>

- The Feed-in Tariffs (FIT) scheme³⁶, a government programme designed to promote the uptake of renewable and low-carbon electricity generation technologies.
56. The requirements (from April 18) on the private rented sector for efficient housing³⁷ (required by UK policy), set a minimum level of energy efficiency for private rented property in England and Wales and are dependent on EPCs. The requirements are intended to ensure that those tenants who most need more efficient homes, particularly vulnerable people, are able to enjoy an improved living environment and lower energy bills. These minimum energy requirements are also being extended to non-domestic buildings.

Production of Energy Certificates

57. The production of EPCs and DEC's play an important role as a mechanism for monitoring energy efficiency and providing recommendations on energy saving measures and reducing energy use. The department has published quarterly statistics³⁸ from the data lodged on the registers. The quarterly statistics are an important part of the evidence base which informs the development and evaluation of housing, energy and climate change policy by central and local government. The statistics should not be interpreted as a true representation of the entire building stock in England and Wales. However, they do provide an overview of a wider package of information on the energy efficiency of buildings.
58. EPCs and DEC's lodged on the registers reflect changes to the housing and rental markets, changes to consumer energy efficiency programmes and operational or policy developments that may affect the number of buildings that may require an EPC or DEC. There are no accurate estimates of number of buildings that are required to produce a valid energy certificate in any given year. Compliance in some areas could be improved and more effectively monitored if accurate baseline data was to become available. There are a number of factors which mean EPCs may not be directly comparable to other publicly available transaction or rental data.
59. There are a number of mitigating factors that make it difficult to predict the number of buildings that would require an EPC over the period of this report. These include;
- limited information on the number of buildings marketed for sale or rent
 - the average length of time buildings are occupied will have a significant impact on which buildings need an EPC
 - EPCs are valid for 10 years and can be reused as many times as needed within that period.
60. From 1 January 2013 to 31 December 2017, approximately 9 million EPCs for domestic (including new builds) and non-domestic buildings in England and Wales, along with around 183,000 DEC's for public buildings have been lodged on the registers.

³⁶ <https://www.ofgem.gov.uk/environmental-programmes/fit/about-fit-scheme>

³⁷ [Domestic private rented property: minimum energy efficiency standard – landlord guidance](#)

³⁸ [Live tables on Energy Performance of Buildings Certificates](#)

Domestic sales and lettings

61. The average number of years occupiers stay in their current homes will impact on how frequently EPCs are needed. In comparison, the length of residence for private renters is approximately four years. This is shorter than social renters, who on average live in their current home for more than 11 years.
62. Over the same period, there were approximately 5 million EPCs for marketed and non-marketed domestic sales in England and Wales. This includes EPCs for 'new' domestic buildings categorised as 'owner-occupied'. An assumption has been made that these new buildings have been marketed for sale. When compared to HM Revenue and Custom's (HMRC) UK Property Transaction Statistics³⁹, approximately 93% of EPCs were produced for domestic sales.
63. The English Housing Survey headline report 2016 to 2017: section 1 household tables (Annex Table 1.1⁴⁰) and Welsh Government dwelling stock estimates⁴¹ shows there were 4.1 million social rented and 4.9 million private rented domestic buildings in 2016/17. Over the period of this report, more than 2.3 million EPCs were produced for private and social rented buildings - approximately 26% of domestic rented buildings.

Non-domestic sales and lettings

64. Over the same period, more than 361,000 EPCs for non-domestic buildings in England and Wales were lodged on the register. HMRC's UK Property Transaction Statistics for non-residential buildings⁴² estimate there were more than 530,000 sales transactions over the same period. There is no verifiable data source to identify non-residential buildings that were rented out during the same period. However, the Valuation Office Agency estimates that there are approximately 1.9 million rateable properties in the non-domestic sector⁴³.
65. The Property Industry Alliance, Property Data report 2017⁴⁴ estimates that approximately 55% of the UK's commercial property is rented rather than owner occupied. It is common practice to let non-domestic buildings for a fixed term. The report also estimates the average lease length for non-domestic buildings is now seven years. However, a lack of information about 'new' lettings makes it difficult to determine how many EPCs would be needed for non-domestic buildings over a five year period.
66. In the absence of more accurate information, it is broadly estimated that 149,000 rented non-domestic buildings would have needed a 'new' EPC during the five year period of this report. This figure is based on an increase in length of commercial leases; adjustments to the recast Impact Assessment and an estimate of the total number of rented non-domestic buildings. We estimate that approximately 53% of EPCs were produced for non-domestic sales and rentals.

39 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700950/UK_Tables_Apr_2018_cir_.pdf

40 <https://www.gov.uk/government/statistics/english-housing-survey-2016-to-2017-headline-report>

41 <https://stats.wales.gov.wales/Catalogue/Housing/Dwelling-Stock-Estimates/dwellingstockestimates-by-year-tenure>

42 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700950/UK_Tables_Apr_2018_cir_.pdf

43 <https://www.gov.uk/government/statistics/non-domestic-rating-stock-of-properties-and-update-of-2017-revaluation-statistics>

44 <https://www.bpf.org.uk/sites/default/files/resources/PIA-Property-Data-Report-2017.PDF>

Display Energy Certificates

67. When the requirements of the recast EPB Directive were transposed into domestic legislation in 2013, an updated Impact Assessment⁴⁵ estimated 63,000 public authority buildings would be affected by these new requirements, which extended DEC's to all public buildings over 250 square meters unless exemptions could be applied. There is no reliable source of information that identifies public authority buildings that are over 250 square meters and frequently visited by the public.
68. There is evidence that the number of public authority buildings may differ from the numbers quoted in the recast Impact Assessment. The 2015/16 'State of the Estate' report⁴⁶ shows that the government estate has reduced by 468 properties. This represents a reduction of 5%. To reduce costs and to manage their estates more efficiently, it is reasonable to assume other public sector organisations may have also reduced their property portfolio. In addition, DEC's for buildings of 1,000 square meters or less (which are renewable every tenth year) are only required once during the five year period of this report.
69. Based on an assumption that public authority buildings have reduced by 5%, approximately 220,000 DEC's would be needed for public authority buildings over the five year period of this report. When compared to over 183,000 DEC lodgements over the same time period this equals a rate of approximately 83%.

Implementation of EPB Directive in other Members States

70. The Directive does not prescribe the detail of implementation. It is left to Member States to choose the regime which corresponds best to its particular situation as long as the general principles of EU legislation are observed and Member States take all necessary measures to implement the requirements.
71. There is scant available information about how other Member States have dealt with 'gold plating' of the EPB Directive during implementation but the European Union report 'Concerted Action – 2016 Implementing the Energy Performance of Buildings Directive (EPBD)'⁴⁷ provides an overview of the developments and achievements accomplished from 2011 to 2015 regarding EPC-relevant topics of the EPBD. The Concerted Action report attempts to include the relevant information from every Member State in the EU. However, as this was not possible for every aspect, the total number of Member States covered by some of the statistics included in this report may be lower than 28.
72. The report sets out how effectively Member States have implemented EPBD, including individual overviews for England and Wales, and concentrates on key themes including: advertising requirements and the role of estate agents; mandatory provision of recommendations for improving energy performance as part of the EPC; the obligatory display of the EPC in non-residential buildings occupied by public authorities and frequently visited by the public.
73. In addition, the Buildings Performance Institute Europe (BPIE) published a report in

⁴⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/39379/Impact_Assessment.pdf⁴⁶

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/588811/2015-16_State_of_the_Estate_Report_final_1_.pdf

⁴⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/588811/2015-16_State_of_the_Estate_Report_final_1_.pdf

⁴⁷ <https://www.dropbox.com/s/vaq0h8if64ypmlh/CA3-BOOK-2016-web.pdf?dl=0>

October 2014, 'Energy Performance Certificates across the EU – A Mapping of National Approaches'⁴⁸. The study evaluated the implementation status of the EU legislation by focusing on the quality, availability and usability of EPC data and providing examples of good practices.

74. EPC prices in most Member States are governed by the market. The price of an EPC is largely dependent on attributes directly linked to the energy performance calculation, such as the applied methodology; the building type and complexity; the software used; the qualified energy assessor's work; the effort required to collect information on the building and the asking price.
75. The 2016 EU 'Concerted Action Report' estimated that for single family homes the cost of producing an EPC is between 100 € and 400 € per EPC. Typically, for non-residential buildings the cost is around 1,500 €. Based on an estimate of the number of 'exempted' buildings, the average costs of producing residential and non-residential EPCs for buildings in England and Wales and Euro exchange rate in September 2016, estimated average cost savings to businesses in England and Wales when compared to EU Member States is £4m for residential and £10m for non-residential buildings.

Do the objectives remain appropriate and to what extent could they be achieved with a system that imposes less regulation?

76. The original Directive was transposed into UK legislation in 2007, as the Energy Performance of Buildings (Certificates and Inspections) (England and Wales) Regulations and have been amended on several occasions since then. The requirement for energy certificates is intended to tackle climate change by reducing the amount of carbon produced by buildings across the European Union.
77. The 2012 regulations implemented Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings (recast), which establish requirements concerning the assessment and certification of the energy performance of buildings, including the production of EPCs, DEC, ACIRs and recommendation reports. The recast of the EPB Directive provided an opportunity to consolidate all of the current and new regulations into a single set of regulations.
78. The Directive does not prescribe the detail of implementation and it is left to Member States to choose the regime which corresponds best to its particular situation as long as the general principles of EU law are observed and Member States take all necessary measures to implement the requirements. The UK approach to the regime has been to give it meaningful effect to aid consumers and industry while at the same time observing the general principles, such as, for example, loyal cooperation, legal certainty and good administration. Although, steps have been taken to remove much of the 'gold-plating' of the EPB Directive from the 2012 regulations, we believe the mandatory requirements of the regulations should be retained, including the obligations on the owner or landlord to make an EPC available to the prospective buyer or tenant for a building that is sold or rented out. Requiring building owners and occupiers to acquire energy reports about improving the energy efficiency of their

⁴⁸ <http://bpie.eu/wp-content/uploads/2015/10/Energy-Performance-Certificates-EPC-across-the-EU.-A-mapping-of-national-approaches-2014.pdf>

buildings, how to reduce energy consumption and carbon emissions, through EPCs, DECAs and ACIRs, will achieve cost savings and may encourage additional actions by proposing improvements that could be made to the buildings fabric or services.

79. In conclusion, the 2012 regulations are currently achieving the objectives of creating a system designed to measure the energy performance of buildings, which remain appropriate. The UK has implemented the requirements of the Directive with the minimum regulation needed in order to achieve those objectives. There is evidence that energy certificates are seen as an effective tool, especially by public sector organisations, in reducing energy use and carbon emissions to improve the energy efficiency of buildings.