

# *Monitoring the Sustainability of Buildings*

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Progress reports to parliament on sustainability and measures to improve compliance with Part L of the Building Regulations

On 5th May 2006 the responsibilities of the Office of the Deputy Prime Minister (ODPM) transferred to the Department for Communities and Local Government (DCLG).

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February 2007

Product Code 06 BD04405

# Content

1. Introduction
2. Sustainable and Secure Buildings Act 2004: First biennial report as required by section 6 regarding progress made on sustainability.
3. Climate Change and Sustainable Energy Act 2006: Report as required by section 14 regarding compliance with Part L of the Building Regulations.

# Introduction

As the Stern Review highlighted, there is now an overwhelming body of scientific evidence showing that climate change is a serious and urgent issue.

We are publishing today, under the provisions of the Sustainable and Secure Buildings Act 2004 and the Climate Change and Sustainable Energy Act 2006 action the Government has taken, and plans to take, to address these issues.

Buildings account for approximately half of UK total carbon emissions with homes accounting for more than a quarter of emissions.

Construction and use of buildings has a range of other environmental impacts, created for example through water use, waste generation and use of polluting materials, which can be significantly reduced through the integration of higher sustainability performance standards within the design.

To harness the opportunities presented by environmental improvements to buildings, Government has introduced tougher standards such as the revisions to Part L of the Building Regulations in April 2006, which raised overall energy efficiency standards. These new measures, taken together with earlier changes to strengthen Part L of the Building Regulations in 2002, will improve energy efficiency standards for new homes by around 40 per cent, compared to 2001 standards.

On 13 December 2006 the Government launched a challenging package of measures, designed to help to reduce carbon emissions and improve the environmental footprint of new homes. The package includes:

- The consultation document Building a Greener Future: Towards Zero Carbon Development. This proposes a framework for progressively tightening building regulations up to 2016 to increase the energy efficiency and reduce the carbon footprint of new homes. The proposal is that all new homes should be zero carbon by 2016;
- The Code for Sustainable Homes, which aims to increase the environmental sustainability of new homes and give homeowners better information about the sustainability of their home. It sets out a star rating from one to six (with six being the most sustainable) which can be applied to all new homes. From April 2008, after learning from the voluntary phase, we intend to propose that all new homes should be required to have a mandatory Code rating, indicating whether they have been assessed and the performance of the home against the Code; and
- A draft Planning Policy Statement on climate change, which expects planning strategies to be tested on their carbon ambition and, in providing for new homes, jobs and infrastructure needed by communities, shape places with lower carbon emissions and resilient to climate change. The PPS expects new development to be located to optimise its carbon performance and make the most of existing and planned opportunities for decentralised, renewable and low-carbon, energy supplies.

In the pre budget report published in December 2006 the Government announced its ambition for all new homes to be zero carbon within a decade with a time-limited stamp duty exemption for the vast majority of zero carbon homes.

On 25 January 2007 the Government launched a further consultation to boost efforts to tackle climate change and promote energy efficiency by proposing estate agents must include Energy Performance Certificates (EPCs) with their property particulars for the first time.

This is intended to give consumers better access to information, helping them to make greener choices by comparing energy costs between homes. EPCs, energy ratings for homes, will give consumers for the first time information about the energy efficiency of properties, and practical steps to reduce carbon emissions and save on energy bills.

To increase awareness of the benefits of undertaking environmental improvements, the Government is also proposing to make the EPC the first document in the Home Information Pack when launched on 1 June. The consultation also includes changes to speed up the home buying process by proposing changes to accelerate the delivery of local searches, and tackling the post code lottery of different levels of service and different charges for consumers.

The Government is also discussing with the financial services industry the provision of green mortgages to fund the improvements suggested in EPCs. At the same time it is exploring options for linking EPCs to incentives to encourage energy efficiency such as the council tax rebates some local authorities are offering in conjunction with energy suppliers.



# *Sustainable and Secure Buildings Act 2004*

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A Biennial Report

# Executive Summary

The Sustainable & Secure Buildings Act 2004 (the Act) extended the Building Act 1984, to include the following additional purposes for which building regulations may be made:

- furthering the protection or enhancement of the environment;
- facilitating sustainable development; and
- furthering the prevention and detection of crime.

Section 6 of the Act requires the Secretary of State to report every 2 years to Parliament on progress during the preceding 2 years on:

- (b) Furthering the conservation of fuel and power;
- (c) Preventing waste, undue consumption, misuse or contamination of water;
- (d) Furthering the protection or enhancement of the environment;
- (e) Facilitating sustainable development.

**Section 6(2)(a) to (d) of the Act** – requires the department to address the effects (or likely effects) of building regulation measures that are planned under the S&SB Act as well as those which have already been introduced in the 2-year reporting period.

For 6(2)(a) the following building regulation changes have been made in the two-year period November 2004 to November 2006:

- Part L – Conservation of fuel and power (April 2006)
- Part P – Electrical safety (April 2006).

For 6(2)(b) the following building regulation proposals in relation to the relevant purposes were current at the end of the reporting period:

- Part B Fire safety – This is due to come into force in April 2007. The changes to Part B are primarily for the purposes of health and safety, although they will have environmental impacts.
- Water efficiency – Defra and Communities and Local Government have jointly been working on proposals to make water efficiency standards mandatory in new homes, existing homes and in respect of the domestic uses of non-household buildings.
- Review of Existing Buildings – The department is currently carrying out a review of measures which could be taken to improve the sustainability of the existing building stock. The review aims to identify measures to improve energy and water efficiency, resilience to flooding and the impacts on climate change of all existing buildings, but which will not adversely affect the fabric of the buildings or the health and safety of the occupants.

- Code for Sustainable Homes – The Code is a government initiative that aims to improve the sustainability (including energy and water efficiency) of new homes on a voluntary basis. However, Ministers are proposing that the Code for Sustainable Homes will signal the level of future building regulations, and that sustainability assessments will become mandatory for all new homes at some point in the future (yet to be determined).

For 6(2)(c) the effects or likely effects of regulations and proposals being considered are:

- Part L (Conservation of fuel and power) – The new and revised regulations and revised Part L to Schedule 1 of the Building Regulations 2000 have wide environmental benefits as they will lead to reductions in carbon emissions. The revisions taken together with the changes to strengthen Building Regulations in 2002 will improve standards of energy efficiency by 40 percent.
- Part P (Electrical safety) – Part P is focused on health and safety so the effects of its introduction on the environment are incidental. In this respect, the reduction in the risk of electrical fires will have a beneficial impact on the environment in a number of ways including: a reduction in air pollution (fewer combustion products emitted to atmosphere); less water used to extinguish fires and a reduction in the risk of water run-off polluting water courses.
- Part B (Fire Safety) – Although the focus of the amendments is health and safety, they are expected to lead to a reduction in the size and impact of fires in buildings. This in turn should reduce the associated environmental impacts described in the preceding paragraph.

For 6(2)(d) the proposals considered for the setting of targets for purposes in relation to buildings in England and Wales or services, fittings or equipments provided in connection with these buildings have been identified as:

- Water Efficiency – Communities and Local Government and Defra published a joint consultation document on proposals for standards for water efficiency in new buildings on 13 December 2006. The proposals for setting target rates of water use in new homes would underpin the water efficiency standard for Level 1 of the Code for Sustainable Homes and the target rates proposed range between 120 litres/person/day and 135 litres/person/day.

**Section 6(2)(e)** requires changes in the energy used by the building stock as well as the extent to which construction waste is reused and recycled to be determined and reported upon.

Section 6(2)(e) requires the report to cover:

*“Overall changes during the period in:*

- (i) *the efficiency with which energy is used in buildings in England and Wales;*
  - Available figures indicate that at the average annual energy use for buildings decreased overall by 0.7% between November 2004 and 2006.

(ii) *levels of emissions from such buildings that are emissions considered by the Secretary of State to contribute to climate change;*

- Figures indicate there was an overall increase in carbon emissions from buildings of 1.1% for the period.

(iii) *the extent to which such buildings have their own facilities for generating energy;*

Available figures show that for the reporting period there was an increase of:

- 67% for Photovoltaic installations
- 23-26% for small wind turbines
- 21-24% for small hydro schemes
- 150% for ground source heat pumps
- 140% for biomass installations.

(iv) *the extent to which materials used in constructing, or carrying out works in relation to, such buildings are recycled or re-used materials.”*

*Value*

Between 21% and 23% by value of the total construction products market was recycled material.

*Mass*

Between 20% and 22% by mass of the total construction products market was recycled material

Note – a more detailed breakdown is given in the body of the report

**Section 6(3)** requires an estimate of the number of dwellings in England & Wales at the end of the reporting period, which is approximately 23.2 million dwellings.

# Purpose of the Report

Section 6 of the Sustainable and Secure Buildings Act 2004 (the Act) requires a report to be laid before Parliament once every two years on progress made with regard to sustainability in the building stock of England and Wales

The scope of this biennial report as set out in Section 6 of the Act is reproduced below:

- (1) The Secretary of State must –
  - a) For the period of two years beginning with the commencement of this section, and
  - b) For each succeeding period of two years,  
prepare a report on progress during the period in connection with the purposes mentioned in section 1(1)(b) to (e) of the Building Act 1984 in the context of the building stock in England and Wales.
- (2) A report under this section must (in particular) deal with –
  - a) building regulations made during the period for any of those purposes;
  - b) proposals current at the end of the period to make building regulations for any of those purposes;
  - c) effects or likely effects of regulations or proposals dealt with in the report under paragraphs (a) and (b);
  - d) proposals considered by the Secretary of State during the period for the setting of targets for any of those purposes in relation to –
    - (i) buildings in England and Wales; or
    - (ii) services, fittings or equipment provided in or in connection with such buildings;
  - e) overall changes during the period in –
    - (i) the efficiency with which energy is used in buildings in England and Wales;
    - (ii) levels of emissions from such buildings that are emissions considered by the Secretary of State to contribute to climate change;
    - (iii) the extent to which such buildings have their own facilities for generating energy;
    - (iv) the extent to which materials used in constructing, or carrying out works in relation to, such buildings are recycled or re-used materials.
- (3) A report under this section must contain an estimate, as at the end of the period, of the number of dwellings in England and Wales.

- (4) The Secretary of State must lay before Parliament each report he prepares under this section.

## Methodology for complying with the requirements of section 6(2)(e)

The Act does not stipulate how to measure the factors listed in sub-paragraphs (i) to (iv) of section 6(2)(e). Therefore, in order to report on changes it has been necessary to identify key indicators for each factor. Changes in these indicators over the reporting period can then be measured and described so as to demonstrate changes in the factors to which they relate.

The methods by which the key indicators have been established, and the underlying data sources, are described in the second of two separate reports produced by the Building Research Establishment (BRE). The reports were commissioned by the Department (then ODPM) to assist preparation of this report and in addition to provide supporting information for this report:

- 1) “Sustainable and Secure Buildings Act: Report on the policy measures as required by Section 6(2)(a) to (d)”.
- 2) “Sustainable and Secure Buildings Act: Baseline KPI report on Section 6(2)(e) and 6(3)”.

These reports are available on request and on the Communities and Local Government website.

The current values for these indicators also provide benchmarks against which future changes can be measured. The key indicators and their values at the beginning and the end of the reporting period are set out below in the sections dealing with the relevant sub-paragraphs of section 6(2)(e).

# Sustainable & Secure Buildings Act 2004: Biennial report to Parliament

This first report covers the 2-year period from 16 November 2004 to 15 November 2006. The report is structured in accordance with the paragraphs of Section 6 of the Act.

## Section 6(2)(a) “building regulations made during the period for any of those purposes”

1. The following building regulations have been made in the two-year reporting period for the purposes mentioned in section 1(1)(b) to (e) of the Building Act 1984:
2. The Building (Amendment) (No. 3) Regulations 2004 inserted a new Part P (Electrical safety) in Schedule 1 to the Building Regulations 2000, and came into force on 31 December 2004. Minor amendments to Part P were made in the Building and Approved Inspectors (Amendment) Regulations 2006, which came into force on 6 April 2006. The insertion of Part P was primarily for the purposes of health and safety, although it has environmental impacts.
3. The Building and Approved Inspectors (Amendment) Regulations 2006 substituted a new Part L (Conservation of fuel and power) in Schedule 1 to the Building Regulations 2000, implemented articles 3-6 of the Energy Performance of Buildings Directive 2002, and made several related amendments to the Building Regulations. These regulations came into force on 6 April 2006

## Section 6(2)(b) “proposals current at the end of the period to make building regulations for any of those purposes”

4. The following building regulation proposals in relation to the relevant purposes were current at the end of the reporting period:
5. **Part B Fire safety** – This was subject to consultation and extensive review throughout 2004-06. Amendment regulations were made and laid before Parliament in December 2006,<sup>1</sup> and are due to come into force in April 2007.<sup>2</sup> The changes to Part B are primarily for the purposes of health and safety, although they will have environmental impacts.

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1 The Building and Approved Inspectors (Amendment)(No.2) Regulations 2006: S.I. 2006/3318.

2 The public consultation for Part B took place from July to November 2005 and can be found on the Communities and Local Government website at <http://www.communities.gov.uk/index.asp?id=1131416>

6. **Water efficiency** – Following a Ministerial commitment given in March 2006,<sup>3</sup> Defra and Communities and Local Government have jointly been working on proposals to make water efficiency standards mandatory in new homes, existing homes and in respect of the domestic uses of non-household buildings. Consultation was announced on 13 December 2006 and is expected to conclude on 9 March 2007.
7. **Review of the Existing Buildings** – We are currently carrying out a review of measures which could be taken to improve the sustainability of the existing building stock. The review aims to identify measures to improve energy and water efficiency, resilience to flooding and the impacts on climate change of all existing buildings, but which will not adversely affect the fabric of the buildings or the health and safety of the occupants. It is considering a wide range of regulatory and non-regulatory options for implementing improvements. We expect to make proposals on how to take this forward in the near future.
8. **Code for Sustainable Homes** – The Code is a government initiative that aims to improve the sustainability (including energy and water efficiency) of homes on a voluntary basis. In its current format, the Code will not be a statutory requirement in building regulations. However following the public consultation exercise on the Code, which took place from December 2005 to March 2006,<sup>4</sup> it is proposed that the Code for Sustainable Homes will signal the level of future building regulations, and that sustainability assessments will become mandatory for all new homes at some point in the future (yet to be determined).

## Section 6(2)(c) “effects or likely effects of regulations or proposals dealt with in the report under paragraphs (a) and (b)”

### PART L – CONSERVATION OF FUEL AND POWER

9. The regulations described in paragraph 4 above were made for the purposes mentioned in Section 1(1)(b) of the Building Act 1984 (conservation of fuel and power). The new and revised regulations and revised Part L to Schedule 1 of the Building Regulations 2000 have wide environmental benefits as they will lead to reductions in carbon emissions. Four new Approved Documents containing practical guidance with respect to the requirements of Part L were also approved.

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3 Ministerial commitment was given initially in a press release on the Code for Sustainable Homes consultation outcomes which can be found on the Communities and Local Government website at <http://www.communities.gov.uk/index.asp?id=1002882&PressNoticeID=2093>. It was repeated in an open letter from David Miliband to the PM, published on the Defra website in mid-July <http://www.defra.gov.uk/news/latest/2006/climate-0711.htm>

4 The public consultation for the Code for Sustainable Homes took can be found on the Communities and Local Government website at: <http://www.communities.gov.uk/index.asp?id=1162094>

10. Full details of the impacts of the changes are given in the supporting RIA which also covers the impact of the amendment to the technical guidance in the 2002 edition of Approved Document L1 that came into effect in April 2005. This amendment made high efficiency condensing boilers (i.e. Band B or better) the standard for compliance with the Building Regulations in most cases whenever domestic boilers are replaced.
11. In total therefore the April 2006 Part L amendments will lead to:
  - An expected total carbon saving of 0.91 MT per year in 2010 (this is consistent with the estimated figure in the Government's Energy Efficiency Action Plan published in April 2004), which is equivalent to an annual cash saving of £266m in 2010
  - An improvement in the energy efficiency of new buildings, and hence a reduction in the carbon emissions they would otherwise produce, of around 20-25% compared to those built in compliance with the previous Part L requirements
  - The greater use of insulation, high efficiency boilers and solar panels
  - 20% overall increase in energy efficiency over 2002 standards (up to 27% in non dwellings, around 22% in dwellings and 18% in flats)
  - Around 40% overall improvement in the energy efficiency of buildings when taken together with the 2002 measures over previous standards
  - Mandatory pressure testing in new buildings, which should ensure high standards of workmanship and prevent heat loss through uncontrolled ventilation.

## **PART P – ELECTRICAL SAFETY**

12. Part P is focused on health and safety so the effects of its introduction (see paragraph 3 above) on the environment are incidental. In this respect, the reduction in the risk of electrical fires (i.e. those arising from problems with fixed electrical wiring as well as fixed, non-portable and portable electrical appliances) through the application of Part P is calculated to result in 1,500 less domestic fires each year. This will have a beneficial impact on the environment in a number of ways including: a reduction in air pollution (fewer combustion products emitted to atmosphere); less water used to extinguish fires and a reduction in the risk of water run-off polluting water courses.

## **PART B – FIRE SAFETY**

13. As with the introduction of Part P, the focus of the amendments (see paragraph 6 above) is health and safety but again, they are expected to lead to a reduction in the size and impact of fires in buildings. This in turn should reduce the associated environmental impacts described in the preceding paragraph.

***Section 6(2)(d) “proposals considered by the Secretary of State during the period for the setting of targets for any of those purposes in relation to (i) buildings in England and Wales; or (ii) services, fittings or equipment provided in or in connection with such buildings”***

**WATER EFFICIENCY**

14. Communities and Local Government and Defra published a joint consultation document on proposals for standards for water efficiency in new buildings on 13 December 2006.
15. The consultation contains proposals for mandatory minimum standards of water efficiency in new buildings through either a whole building performance standard which would be enforced by local authority building control through the Building Regulations or efficiency standards for individual fittings enforced through the Water Supply (Water Fittings) Regulations.
16. The proposals for setting target rates of water use in new homes would underpin the water efficiency standard for Level 1 of the Code for Sustainable Homes and the target rates proposed range between 120 litres/person/day and 135 litres/person/day.
17. A similar approach is proposed for domestic uses of water in the workplace. A target rate of 20 litres/full-time employee/day is suggested for offices and retail premises.
18. The preferred regulatory route is building regulations rather than the water supply regulations.

## Section 6(2)(e) “overall changes during the period in...”

### (I) “THE EFFICIENCY WITH WHICH ENERGY IS USED IN BUILDINGS....”

#### 19. *Key indicators for dwellings (domestic buildings) in England & Wales*

Available figures indicate that, between 16 November 2004 and 15 November 2006:

Of 18,345,000 households with lofts (at 15 November 2004), 2.8% (522,000) acquired loft insulation, of which 1.0% of this total were initial acquisitions.

Of 16,750,000 households with cavity walls (at 15 November 2004) 2.9% (489,000) acquired cavity wall insulation.

Of 17,416,000 households with hot water tanks (at 15 November 2004), 0.5% (87,000) acquired tank insulation, all of which were initial acquisitions.

11.6% of households (total households 22,886,000 at 15 Nov 2004) acquired double glazing, of which 3.7% (847,000) were initial acquisitions.

Note: the percentages have been rounded to one decimal place

Available figures indicate that, between 16 November 2004 and 15 November 2006:

2,800,000 gas boilers were installed in homes in England & Wales (representing about 15.4% of the baseline boiler stock at 16 Nov 2004).

Of these:

1,667,000 (59.5%) were the most efficient condensing boilers (A-rated),

431,000 (15.5%) were slightly less efficient (B-rated) condensing boilers, and,

694,000 (25.0%) were regular boilers (D-rated).

Available figures indicate that at 16 November 2004:

Average annual dwelling energy use per m<sup>2</sup> of floor area was 255 kWh/m<sup>2</sup>.

And at 15 November 2006 (allowing for temperature correction):

Average annual energy use per m<sup>2</sup> of floor area was 257 kWh/m<sup>2</sup> which represents an increase of 0.9%.

#### 20. *Key indicators for non-domestic buildings in England & Wales*

Available figures indicate that at 16 November 2004:

Average non-domestic building energy use per m<sup>2</sup> of floor area was 294 kWh/m<sup>2</sup>.

And at 15 November 2006 (allowing for temperature correction):

Average non-domestic building energy use per m<sup>2</sup> of floor area was 284 kWh/m<sup>2</sup> which represents a decrease of 3.3%.

21. *Key indicators for all buildings in England & Wales*

Available figures indicate that at 16 November 2004:  
Average energy use in buildings per m<sup>2</sup> of floor area was 268 kWh/m<sup>2</sup>.  
And at 15 November 2006 (allowing for temperature correction):  
Average energy use in buildings per m<sup>2</sup> of floor area was 266 kWh/m<sup>2</sup> which represents a decrease of 0.7%.

(II) "LEVELS OF EMISSIONS FROM SUCH BUILDINGS THAT... CONTRIBUTE TO CLIMATE CHANGE"

22. *Key indicators for dwellings (domestic buildings) in England & Wales*

Available figures indicate that at 16 November 2004:  
Average annual dwelling carbon emission per m<sup>2</sup> of floor area was 18.2 kgC/m<sup>2</sup>.  
And at 15 November 2006 (allowing for temperature correction):  
Average annual dwelling carbon emission per m<sup>2</sup> of floor area was 18.4 kgC/m<sup>2</sup> which represents an increase of 0.9%.

23. *Key indicators for non-domestic buildings in England & Wales*

Available figures indicate that at 16 November 2004:  
Average annual non-domestic building carbon emission per m<sup>2</sup> of floor area was 27.9 kgC/m<sup>2</sup>.  
And at 15 November 2006 (allowing for temperature correction):  
Average annual non-domestic building carbon emission per m<sup>2</sup> of floor area was 28.1 kgC/m<sup>2</sup> which represents an increase of 0.9%.

24. *Key indicators for all buildings in England & Wales*

Available figures indicate that at 16 November 2004:  
Average annual carbon emission from buildings per m<sup>2</sup> of floor area was 21.4 kgC/m<sup>2</sup>.  
And at 15 November 2006 (allowing for temperature correction):  
Average annual carbon emission from buildings per m<sup>2</sup> of floor area was 21.6 kgC/m<sup>2</sup>.  
This represents an increase of 1.1%.

(III) "THE EXTENT TO WHICH SUCH BUILDINGS HAVE THEIR OWN FACILITIES FOR GENERATING ENERGY"

25. *Photovoltaic installations in England & Wales*

At the beginning of the reporting period (16 November 2004) it is estimated that there were:

1,500 PV installations of which 1,360 were in dwellings and 140 were in non-domestic buildings.

And at the end of the reporting period (15 November 2006) it is estimated that there were:

2,515 PV installations of which 2,280 were in dwellings and 235 were in non-domestic buildings which represent an increase of 67%.

At the beginning of the reporting period (16 November 2004) it is estimated that:

0.014% of dwellings and 0.01% of all non-domestic buildings had PV installations.

And at the end of the reporting period (15 November 2006) it is estimated that:

0.023% of dwellings and 0.017% of all non-domestic buildings had PV installations.

26. *Solar thermal domestic hot water (DHW) installations in England & Wales*

At the beginning of the reporting period (16 November 2004) it is estimated that there were:

65,000 solar thermal DHW installations of which 62,400 were in dwellings and 2,600 were in non-domestic buildings.

And at the end of the reporting period (15 November 2006) it is estimated that there were:

71,100 solar thermal DHW installations of which 68,300 were in dwellings and 2,800 were in non-domestic buildings which represent an increase of 9.5%.

At the beginning of the reporting period (16 November 2004) it is estimated that:

0.32% of dwellings and 0.19% of all non-domestic buildings had solar thermal DHW installations.

And at the end of the reporting period (15 November 2006) it is estimated that:

0.35% of dwellings and 0.21% of all non-domestic buildings had solar thermal DHW installations.

27. *Small wind turbine installations in England & Wales*

At the beginning of the reporting period (16 November 2004) it is estimated that there were:

570 to 630 small wind turbines.

And at the end of the reporting period (15 November 2006) it is estimated that there were:

720 to 780 small wind turbines which represents an increase of 23-26%.

At the beginning of the reporting period (16 November 2004) it is estimated that:

0.0024-0.0026% of all buildings had small wind turbine installations.

And at the end of the reporting period (15 November 2006) it is estimated that:

0.0030-0.0032% of all buildings had small wind turbine installations.

28. *Small hydro schemes in England & Wales*

At the beginning of the reporting period (16 November 2004) it is estimated that there were:

80 to 90 small hydro schemes supplying electricity to buildings.

And at the end of the reporting period (15 November 2006) it is estimated that there were:

100 to 110 small hydro schemes which represents an increase of 21-24%.

29. *Ground source heat pump (GSHP) installations in England & Wales*

At the beginning of the reporting period (16 November 2004) it is estimated that there were:

380 GSHP installations with 340 in dwellings and 40 in the non-domestic sector.

And at the end of the reporting period (15 November 2006) it is estimated that there were:

940 GSHP installations with 860 in dwellings and 80 in the non-domestic sector which represents an increase of nearly 150%.

At the beginning of the reporting period (16 November 2004) it is estimated that:

0.002% of dwellings had ground source heat pumps.

And at the end of the reporting period (15 November 2006) it is estimated that:

0.006% of dwellings had ground source heat pumps.

It is not possible to produce equivalent figures for non-domestic buildings.

30. *Biomass installations in England & Wales*

At the beginning of the reporting period (16 November 2004) it is estimated that there were:

180 biomass installations (wood fuelled boilers and pellet stoves) of which 100 were in dwellings and 80 were in the non-domestic sector.

And at the end of the reporting period (15 November 2006) it is estimated that there were:

440 biomass installations (wood fuelled boilers and pellet stoves) of which 340 were in dwellings and 100 were in the non-domestic sector which represents an increase of about 140%.

(IV) "THE EXTENT TO WHICH MATERIALS USED IN CONSTRUCTING, OR CARRYING OUT WORKS IN RELATION TO, SUCH BUILDINGS ARE RECYCLED OR RE-USED MATERIALS"

31. *Recycled material*

Available figures indicate that for November 2004:

*Value*

Between 21% and 23% by value of the total construction products market was recycled material.

*Mass*

Between 20% and 22% by mass of the total construction products market was recycled material.

Explanatory note: A percentage range for the proportion of recycled material by both value and mass in the construction products market is given, rather than an exact figure, because of the lack of data for some construction products. There are two alternative sets of data for both value and mass indicators, based on different proportions of the total construction products market, and the range quoted reflects figures produced by both sets of data.

32. The data used to develop and calculate the proportions of recycled material in the construction products market by value and mass for November 2004 are not as yet available for November 2006. However, it is calculated that as a result of increased recycling and recycled content of construction products, if **good** practice was adopted by manufacturers the proportion by value of recycled material could have risen to between 25% and 28% of the total construction products market. If manufacturers had adopted **best** practice in relation to recycling and recycled materials the proportion by value of recycled material could have risen to between 30% and 36% of the total construction products market. It must be emphasised that these figures are only estimates.

33. *Reused material*

Available figures indicate that for November 2004 (based on 1998 data):

*Value*

Reclaimed products made up 2.6% by value of the total construction products market.

*Mass*

Reclaimed products made up 1% by weight of the total construction products market.

Note: For further details on calculations, see section 5 of the BRE report "Secure and Sustainable Buildings Act: Baseline KPI report on Section 6(2)(e) and 6(3)".

34. A forecast has not been made for the proportion of reused material in the construction products market in November 2006 the relevant data is not yet available.

**Section 6(3) “*an estimate, as at the end of the period, of the number of dwellings in England & Wales*”**

Available figures indicate that as at 15 Nov 2006:

The estimated number of dwellings in England and Wales was 23,222,000.

*Climate Change and  
Sustainable Energy Act 2006  
section 14*

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Report regarding compliance with Part L of the Building Regulations

# Executive summary

Section 14 of the Climate Change and Sustainable Energy Act 2006 requires production by the Secretary of State of a report on the steps taken, or those proposed, to improve compliance with those 'relevant provisions' of building regulations which have been made in connection with the use of fuel and power or for the purpose of reducing emissions of greenhouse gases. In practice, the relevant provisions are those contained in Part L (*Conservation of Fuel and Power*) of Schedule 1 ('Part L') to the Building Regulations 2000 ('the Building Regulations'), and those to which Part L applies.

The principal method identified for improving compliance with the relevant provisions during the period covered by this report has been and remains a dissemination and training strategy. The need for such a strategy to improve compliance was identified during consultations with stakeholders between 2003 and 2004. A working party was brought together to develop the strategy. The general approach has been to engage and work with the umbrella organisations of key industry sectors wherever possible, in order to utilise sector knowledge and communication networks. The aim has also been to help these sectors to help themselves, with support provided in specific key areas.

The dissemination process started during consultation on the proposed changes to Part L in July 2004. Key groups were contacted in order to highlight the contents of the proposals, initiate engagement and to encourage participation in the consultation process. A number of support elements were developed for offer to organisations interested in understanding and communicating the proposals to wider audiences including short summaries of the draft Approved Documents to support the proposed new Part L (which provide practical guidance on how to comply with Part L), the provision of expert speakers for important events and the provision of articles and press releases. A review of the main sectors affected by the changes was carried out and their associated umbrella organisations were identified, prioritised and contacted. Following the consultation the strategy was rolled out and provided the following main elements.

- Provision of expert speakers for over a hundred key seminars and events.
- Setting up a Building Control Group to contribute to implementation.
- A programme of 'Train the Trainers' workshops to inform key training providers.
- A programme of seminars across the country aimed at all building control managers.
- Support for road show seminars for building control surveyors and designers which included training on Part L.
- Development and issuing of an e-Learning tool to all 4,000 building control surveyors.
- A programme of building control implementation seminars for building control managers.
- A comprehensive programme of detailed workshops for building control surveyors, to provide practical training for 2,400 delegates.

- Production and promotion of leaflets aimed at installers and householders explaining the energy performance standards for new and replacement boilers.
- Holding a 'Train the Trainer' workshop on the design of low energy non-domestic buildings.
- Setting up a help desk facility for, among others, Part L.
- Writing a range of articles for key journals to support dissemination of the changes.

A range of activities will continue to be taken forward over the coming months as implementation continues.

# 1 Purpose of the report

Section 14 of the Climate Change and Sustainable Energy Act 2006 ('the Act') requires production of a 'report regarding compliance'. The section is reproduced here:

- (1) The Secretary of State –
  - (a) must, not later than 6 months after this section comes into force, lay before Parliament a report as mentioned in subsection (2), and
  - (b) may from time to time lay further such reports before Parliament.
- (2) A report under this section is a report on what, if any, steps –
  - (a) he has taken during the reporting period, or
  - (b) he proposes to take,

with a view to securing greater incidence of compliance with relevant provisions of building regulations.

- (3) In this section –

“reporting period” means the period specified in the report as the period to which the report relates;

“relevant provision”, in relation to building regulations, means a provision of building regulations which is in force at any time during the reporting period and which, in the opinion of the Secretary of State, was made –

- (a) for the purpose of furthering the conservation of fuel and power, or otherwise in connection with the use of fuel and power, or
- (b) for the purpose of reducing emissions of greenhouse gases.

A new Part L, together with amendments to the Building Regulations to implement Articles 3-6 of the Energy Performance of Buildings Directive ('EPBD'), were introduced in April 2006 for the purpose of furthering the conservation of fuel and power. This report provides a summary of the dissemination and training strategy and activities undertaken by Communities and Local Government, formerly ODPM, ('the Department') in order to secure greater incidence of compliance with these provisions of the Building Regulations.

This report has been written to satisfy the requirement set out in section 14 of the Act. The reporting period is the period from September 2003 to the date this report is laid in Parliament (21 February 2007), and the report also includes plans for the future.

## 2 Background to the dissemination and training strategy

Between September 2003 and March 2004 the Department held informal consultations with stakeholders on the improvement of the energy efficiency provisions of the Building Regulations. It was identified that a particularly important element of this work, needed to improve compliance with the Regulations, was an investigation into the strategies for effectively disseminating information about the improvements and preparing people for the changes. An expert panel (Working Party 7) comprising representatives from the Department, DEFRA, and many industry bodies (Concrete Centre; Royal Institution of Chartered Surveyors, RICS; British Coatings Federation, BCF; Heating and Hot Water Industry Council, HHIC; British Rigid Urethane Foam Manufacturers, BRUFMA; European Phenolic Foam Association, EPFA; Construction Products Association, CPA; Federation of Environmental Trade Associations, FETA; Zurich Building Guarantees; Engineered Panels in Construction, EPIC; Chartered Institution of Building Services Engineers, CIBSE; Faber Maunsell; British Institute of Architectural Technologists, BIAT; Building Services Research and Information Association, BSRIA; FAERO Ltd and Eurisol (UK) Ltd), was commissioned to undertake this work and to produce a dissemination strategy. When the Department went to public consultation on proposals for Part L in July 2004, the inclusion of the dissemination strategy was a first, reflecting a commitment to address this important requirement. The findings communicated in the dissemination strategy provided the basis for the development of a programme of activities.

## 3 Strategy overview

The general approach has been to build upon and implement the findings and strategy developed by Working Party 7 and detailed in section 10 of the Part L Consultation Document, published in July 2004.

This work recommended a number of dissemination and training plans, defining key target audiences along with principal routes and mechanisms to reach them. The general plan has been to engage and work with key umbrella organisations wherever possible, in order to utilise existing sector knowledge and communication networks. The aim has also been wherever possible to help these sectors to help themselves, with the option of providing additional support in specific and important areas.

It was also recognised that the dissemination programme was required within a short timescale, particularly in areas such as communicating the new changes to boiler efficiency requirements.

The dissemination and training strategy is divided into two general strands. The first strand focuses upon the implementation of the new Part L and EPBD Articles 3-6. The second strand addresses the dissemination and training associated with EPBD Articles 7-10. Articles 1-10 are reproduced in Appendix A.

### Part L & EPBD Articles 3-6

The main thrust of the strategy aimed at Part L and EPBD Articles 3-6 is to target and engage representatives of key audiences. These audiences are Building Control, clients, Small and Medium Enterprises ('SMEs'), builders, major constructors and the umbrella organisations associated with technical and professional sectors affected by the changes.

With limited time and resources, engaging with the representative organisations of these audiences offers the potential of reaching a significant proportion of the sector. It also provides a relatively rapid way of gaining understanding of issues and opportunities associated with these audiences. The aim in engaging with the umbrella groups is to encourage them to do as much as they can themselves and to offer support if needed and practicable. This includes engaging with the Energy Saving Trust and the Carbon Trust when possible in order to maximise opportunities to capitalise on joint initiatives.

The strategy is to deliver information that is tailored in terms of emphasis to particular sector requirements and is pitched at the right level in terms of the degree of detail needed by the audience. This has been achieved by the audience focus identified above and by a tiered approach to the method of delivery, from awareness raising elements, such as presentations at events, through general training such as 'Train the Trainers', to detailed technical workshops for building control officers.

The strategy has aimed to deliver targeted and tailored information to the main audiences in advance of and during implementation. This strand of the strategy will run until around the middle of 2007, by which time it is anticipated that the initial implementation of Part L and EPBD Articles 3-6 should be reasonably well advanced.

## **EPBD Articles 7-10**

The second strand of the strategy focuses upon EPBD Articles 7-10. The strategy here will again be to engage umbrella organisations, and will include working with the Energy Saving Trust and the Carbon Trust when possible. However there will be more of a requirement to focus upon the client and end users as well as the technical/professional sectors affected.

The strategy will be to divide each of the Article requirements into appropriate sectors e.g. residential certification, commercial/government certification and for each to develop both client and technical dissemination and training strands.

This strategy will aim to deliver tailored information to the audiences in advance of, and following, implementation and will run until 2009.

# 4 Aims and objectives

The main aim of this programme has been to deliver a programme of training and dissemination on the changes to Part L. The programme aims to achieve the following.

- To ensure that as many people as possible who are affected by the changes, know in advance what the proposals are and what they will mean to them and their industry sectors.
- To help prepare those who have to comply with and enforce the requirements.
- To engage key sectors in the process of training and dissemination, in order to make the most of their expertise, knowledge, contacts and communication networks.
- To provide support and encouragement for industry sectors to help them to successfully disseminate to their own organisations.
- To identify and utilise effective routes to get the key information to the affected sectors using limited resources.
- To take forward new approaches to dissemination and training in order to help inform future efforts.
- To bring affected organisations together to encourage sharing of ideas and co-operation in getting key messages out to their sectors.
- To provide opportunities for discussion and feedback on what has been successful and what else needs to be done by the Department.

# 5 Implementation

This section provides details of all 13 of the training and dissemination elements implemented since consultation on Part L started in July 2004.

## **a. Consultation – Proposals for amending Part L of the Building Regulations and implementing the Energy Performance of Buildings Directive, July 2004 – October 2004**

It was recognised that the consultation process for amending Part L and implementing the EPBD provided the first opportunity for dissemination and training. Communication with key groups during this period was seen as an opportunity to both highlight the contents of the proposals and to encourage participation in the consultation process.

A number of support elements were developed for offer to organisations interested in understanding and communicating the proposals to wider audiences. These included:

- ‘Flyers’ providing a short summary of the main changes for each of the proposed Approved Documents
- The provision of expert speakers to attend key events and seminars and deliver presentations explaining the changes
- Summary articles/press releases to provide short summaries of the changes for news letters and web sites.

A review of the main sectors affected by the changes was carried out and their associated umbrella organisations were identified and prioritised. The organisations were tiered according to importance.

First tier organisations (e.g. Royal Institute of British Architects, RIBA; Chartered Institution of Building Services Engineers, CIBSE; Heating and ventilating Contractors’ Association, HVCA) were all contacted directly by telephone, in order to prompt response to the consultation, to carry out a telephone survey regarding how they train and disseminate information to members and to offer the support elements listed above. This involved contacting 38 first tier organisations identified. A further 127 second and third tier organisations were contacted by email, providing each with the flyer summaries, a link to the consultation document and the offer of further support.

## **b. Provision of expert speakers for key events (autumn 2004 – ongoing)**

A key strand of the dissemination and training programme, which has been provided throughout the period leading up to and during implementation, has been the provision of expert speakers for major events and seminars. A list of expert speakers made up of Departmental officers and advisors, capable of responding to a broad range of audiences was put together at the start of the programme.

Expert speakers have delivered presentations outlining the key changes to Part L at over a hundred key seminars and events over the past two years, disseminating information to thousands of delegates.

## **c. Building Control Group – (September 2004 – ongoing)**

Amongst the important groups affected by the changes, the building control profession has been specifically identified as the critical target audience for training and dissemination.

Effective communication with Building Control has been recognised as an essential aim by the Department. In order to achieve this, an umbrella group containing representatives of all of the main building control representative organisations was established in September 2004. This group includes the following:

- Royal Institution of Chartered Surveyors ('RICS')
- Local Authority Building Control
- The Association of Building Engineers ('ABE')
- The Association of Consultant Approved Inspectors
- District Surveyors Association.

The group has played a crucial role in terms of generating and developing the ideas and content of the training and dissemination programme aimed at building control surveyors, as well as contributing to delivery of the programme. The group has met quarterly since it was established and its contribution is ongoing.

## **d. Train the Trainers (June 2005)**

Another important group identified for particular effort were the key training providers. By providing this group with good quality information and training materials it would be possible to reach a broader audience, through their own delivered training programmes.

A programme of eight 'Train the Trainer' workshops was held in June 2005 at the Department's offices in London. These workshops provided places for 240 key trainers covering all of the important sectors and were funded and hosted by the Department.

Delegates received a presentation of key information slides endorsed by the Department for incorporation in their own training materials and presentations. A Train the Trainer network web location was established for information access. These events were well received.

## **e. Building Control Managers seminars (September 2005)**

The Building Control Group identified that a key audience to engage are the Building Control Managers (heads of building control and directors of approved inspector companies). It was felt that it was very important to communicate the main messages and the implications of the changes to these people as soon as possible. The aim would be to hold these events before launching further activities aimed at building control surveyor level professionals.

The seminars would focus upon the main changes, transitional arrangements, training and resourcing requirements and other implications. All 400 Building Control Managers across the England and Wales were invited to one of the four events held as follows:

- 15 September (Birmingham)
- 21 September (London)
- 27 September (London)
- 29 September (Leeds).

The events were funded in full by the Department and were arranged in partnership with RICS and ABE. The seminars were well received, and attended by 350 delegates.

## **f. Part L & F road shows (October 2005 – December 2005)**

As part of the major focus upon engaging with Building Control, it was proposed by the Building Control Group that the Department should support a programme of road show seminars explaining the requirements of new Part L, in conjunction with explanations of the requirements of new Approved Document F (*Ventilation*) which was due to come into force at the same time. These would be aimed primarily at building control surveyors, but would also attract some designers. As outlined above, ABE and RICS have worked in partnership with the Department on previous events and they regularly hold road show seminars, which tour the country delivering expert information on key issues. It was agreed that the Department would provide support in the form of key speakers and RICS and ABE would arrange and deliver the seminars, as detailed in the following schedule:

Venue	Org.	L&F Road-show
Norwich	RICS	3 Nov 2005
York	ABE	10 Nov 2005
Preston	RICS	17 Nov 2005
Bournemouth	ABE	22 Nov 2005
London	RICS	29 Nov 2005
Birmingham	ABE	1 Dec 2005
Bristol	RICS	6 Dec 2005
London	ABE	13 Dec 2005

## g. E-Learning tool

Another element of the training and dissemination activity aimed at Building Control was the development of an electronic learning tool. The overall aim of this project was to develop a Department-owned training/education tool to support the dissemination and implementation of revisions to Part L (as well as those to Approved Document F). The tool appeared on a single CD-ROM, with the potential to be placed on a suitable web site, when available. The tool presented the key issues and messages in simple clear terms and provided a practical, example based approach to build understanding of the contents of the new Approved Documents. The CD-ROM also contained as many second tier documents and other useful information as possible. In order to develop the training content an expert training provider to the building control profession (JHAI) was engaged. The package was developed during 2005/2006 and 5,000 were issued to all building control officers and approved inspectors in July 2006 and August 2006. Further potential applications of the learning tool are being pursued with CIBSE and RIBA.

## h. Building control implementation seminars (November 2006 ongoing)

In order to build upon the positive reaction to the Building Control Managers seminars held in September 2005, it was decided that an ongoing series of Part L implementation workshops should be held as the revisions to the Building Regulations began to be implemented. These workshops aim to engage managers of building control and approved inspector companies, in order to identify:

- (i) Levels of compliance associated with the new Part L, and areas where it is sometimes unclear what constitutes compliance.
- (ii) Key issues associated with the implementation of the new Part L.
- (iii) The effectiveness of the existing dissemination and training programme developed and implemented in conjunction with the Building Control umbrella bodies.
- (iv) The best mechanism for identifying and promoting Building Control “best practice” on key areas of Part L.

- (v) Specific additional areas of guidance, clarification, training, awareness etc that can further ensure the implementation of the new Part L. These outputs can be directed at a wide range of audiences including Building Control.
- (vi) Inputs to the development of a Departmental methodology aimed at assessing the impact of non-compliance on levels of CO<sub>2</sub> emissions.

The workshops aim to build on the current initiatives aimed at awareness raising and training of key groups. The first workshop was held on 8th November 2006 and was attended by 18 representatives of Building Control Managers. This event identified a range of elements to support dissemination and compliance. The aim is to hold these events on a six monthly basis in order to review progress and identify opportunities and issues.

## **i. Building Control workshops (April 2006 – June 2006 and September 2006)**

A key element of training and dissemination identified by the Building Control Group was the need for a series of detailed workshops aimed specifically at building control officers and private sector approved inspectors. These workshops would provide a practical insight into the detail of the Part L changes for front-line building control professionals. Options for these workshops were discussed with the Building Control Group. It was decided that two separate workshops covering dwellings and non dwellings would be required in order to cover the breadth of material. It was agreed that RICS and ABE would deliver the programme of workshops. The Department funded the development of the workshop content and the trainer's time on the day.

An initial programme of 40 workshops was rolled out during April – June 2006. These were well received and over-subscribed and as a result a further 8 workshops were arranged and held during September. The 48 workshops trained around 2,400 delegates and feedback was generally very positive.

## **j. Boiler change leaflets (January 2005 ongoing)**

In April 2005 the energy performance standards for new and replacement boilers were raised as part of the requirements for new Part L of the Building Regulations. The Department provided support to the industry in the development of an information leaflet for installers. Following on from this the Department brought together a group of key industry umbrella organisations, in order to identify further specific support needed to get the messages to those affected. The group consisted of representatives of all key stakeholders and identified the need for a householder leaflet and some key messages for posting on websites and in newsletters. The Department worked with the Heating and Hot Water Information Council and the Energy Saving Trust ('EST') to develop the detail of the leaflet and its dissemination. The Department provided the EST with a grant to produce, market and distribute the leaflet, with around 1 million printed and advertisements in the following key industry journals:

- PHPI (Professional Heating and Plumbing Installer)

- Gas Installer
- PHAM (Plumbing, Heating and Air Movement News)
- Heating & Ventilation magazine.

## **k. SBEM Train the Trainers workshop (March 2006)**

The aim of this Train the Trainers event was to enable a number of different training providers to gain sufficient familiarity with the Simplified Building Energy Model ('SBEM') software to be able to offer training packages to potential users of the tool for designing low energy non-domestic buildings. Such training will be required by all those who will use the tool in demonstrating compliance with Part L. The training event was successfully hosted by BRE on the 9 March 2006. The intention was to invite 40 building services engineers, architects, surveyors, energy professionals, building control officers and others who might be in the market to offer training in the use of SBEM as the default calculation tool in support of Approved Document L2A (and subsequently probably for building energy certification). Forty-two delegates attended the event, with a number saying that they intended to run SBEM training courses following the day.

## **l. Help desk (April 2006 ongoing)**

The overall aim of this project was to provide an effective "help" facility for Part L, Part F and Part P (*Electrical Safety*) of the Building Regulations for England & Wales 2006. The approach has to been to provide an e-mail help facility to deal with technical enquiries, with responses provided by a team of technical experts. An additional facility enables telephone enquiries to be directed (via e-mail) to the technical e-mail help system. The help desk was launched in April 2006 and has resolved around 1,000 enquiries to date.

## **m. Articles (January 2005 ongoing)**

The Department has supported the writing of a range of articles for key journals to assist dissemination of the relevant changes to the Building Regulations. These have included articles in the following publications: RIBA Journal, National Industrial and Commercial Building Control Review, Government Business magazine, Local Authority Maintenance, Building Services Magazine, Building Products Magazine.

# 6 Future work

A range of activities will continue to be taken forward over the coming months. These will include the following.

- **Building Control Group**  
The intention is to continue working with this important group throughout implementation of the changes.
- **Implementation workshops**  
The intention is to hold implementation workshops around every 6 months to review progress towards implementation and any opportunities or issues.
- **SBEM Train the Trainers**  
A further workshop will be held in the Spring/Summer 2007 to continue training on the SBEM which is used in the design of non-domestic buildings.
- **SME communication**  
Work is ongoing to understand the requirements of SMEs in terms of support with dissemination and training. This is being pursued through the formation of two SME working groups
- **Help desk**  
The help desk facility will continue until March 2007 and possibly beyond.
- **Articles & information**  
Articles and reports will continue to be produced for key journals and documents as required by the Department.
- **Speakers at events**  
The Department will aim to continue to support key events through the provision of expert speakers, giving information on changes to the Building Regulations
- **Further support**  
Where possible, the Department will aim to continue to work with and support key sectors.

# Appendix A

## DIRECTIVE 2002/91/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2002 on the energy performance of buildings

### ARTICLE 1

#### Objective

The objective of this Directive is to promote the improvement of the energy performance of buildings within the Community, taking into account outdoor climatic and local conditions, as well as indoor climate requirements and cost-effectiveness.

This Directive lays down requirements as regards:

- (a) the general framework for a methodology of calculation of the integrated energy performance of buildings;
- (b) the application of minimum requirements on the energy performance of new buildings;
- (c) the application of minimum requirements on the energy performance of large existing buildings that are subject to major renovation;
- (d) energy certification of buildings; and
- (e) regular inspection of boilers and of air-conditioning systems in buildings and in addition an assessment of the heating installation in which the boilers are more than 15 years old.

### ARTICLE 2

#### Definitions

For the purpose of this Directive, the following definitions shall apply:

1. 'building': a roofed construction having walls, for which energy is used to condition the indoor climate; a building may refer to the building as a whole or parts thereof that have been designed or altered to be used separately;

2. 'energy performance of a building': the amount of energy actually consumed or estimated to meet the different needs associated with a standardised use of the building, which may include, *inter alia*, heating, hot water heating, cooling, ventilation and lighting. This amount shall be reflected in one or more numeric indicators which have been calculated, taking into account insulation, technical and installation characteristics, design and positioning in relation to climatic aspects, solar exposure and influence of neighbouring structures, own-energy generation and other factors, including indoor climate, that influence the energy demand;
3. 'energy performance certificate of a building': a certificate recognised by the Member State or a legal person designated by it, which includes the energy performance of a building calculated according to a methodology based on the general framework set out in the Annex;
4. 'CHP' (combined heat and power): the simultaneous conversion of primary fuels into mechanical or electrical and thermal energy, meeting certain quality criteria of energy efficiency;
5. 'air-conditioning system': a combination of all components required to provide a form of air treatment in which temperature is controlled or can be lowered, possibly in combination with the control of ventilation, humidity and air cleanliness;
6. 'boiler': the combined boiler body and burner-unit designed to transmit to water the heat released from combustion;
7. 'effective rated output (expressed in kW)': the maximum calorific output specified and guaranteed by the manufacturer as being deliverable during continuous operation while complying with the useful efficiency indicated by the manufacturer;
8. 'heat pump': a device or installation that extracts heat at low temperature from air, water or earth and supplies the heat to the building.

## ARTICLE 3

### Adoption of a methodology

Member States shall apply a methodology, at national or regional level, of calculation of the energy performance of buildings on the basis of the general framework set out in the Annex. Parts 1 and 2 of this framework shall be adapted to technical progress in accordance with the procedure referred to in Article 14(2), taking into account standards or norms applied in Member State legislation.

This methodology shall be set at national or regional level.

The energy performance of a building shall be expressed in a transparent manner and may include a CO<sub>2</sub> emission indicator.

## ARTICLE 4

### Setting of energy performance requirements

1. Member States shall take the necessary measures to ensure that minimum energy performance requirements for buildings are set, based on the methodology referred to in Article 3. When setting requirements, Member States may differentiate between new and existing buildings and different categories of buildings. These requirements shall take account of general indoor climate conditions, in order to avoid possible negative effects such as inadequate ventilation, as well as local conditions and the designated function and the age of the building. These requirements shall be reviewed at regular intervals which should not be longer than five years and, if necessary, updated in order to reflect technical progress in the building sector.
2. The energy performance requirements shall be applied in accordance with Articles 5 and 6.
3. Member States may decide not to set or apply the requirements referred to in paragraph 1 for the following categories of buildings:
  - buildings and monuments officially protected as part of a designated environment or because of their special architectural or historic merit, where compliance with the requirements would unacceptably alter their character or appearance,
  - buildings used as places of worship and for religious activities,
  - 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 and non-residential agricultural buildings which are in use by a sector covered by a national sectoral agreement on energy performance,
  - residential buildings which are intended to be used less than four months of the year,
  - stand-alone buildings with a total useful floor area of less than 50m<sup>2</sup>.

## ARTICLE 5

### New buildings

Member States shall take the necessary measures to ensure that new buildings meet the minimum energy performance requirements referred to in Article 4.

For new buildings with a total useful floor area over 1,000m<sup>2</sup>, Member States shall ensure that the technical, environmental and economic feasibility of alternative systems such as:

- decentralised energy supply systems based on renewable energy,
- CHP,
- district or block heating or cooling, if available,
- heat pumps, under certain conditions,

is considered and is taken into account before construction starts.

## ARTICLE 6

### Existing buildings

Member States shall take the necessary measures to ensure that when buildings with a total useful floor area over 1,000 m<sup>2</sup> undergo major renovation, their energy performance is upgraded in order to meet minimum requirements in so far as this is technically, functionally and economically feasible. Member States shall derive these minimum energy performance requirements on the basis of the energy performance requirements set for buildings in accordance with Article 4. The requirements may be set either for the renovated building as a whole or for the renovated systems or components when these are part of a renovation to be carried out within a limited time period, with the abovementioned objective of improving the overall energy performance of the building.

## ARTICLE 7

### Energy performance certificate

1. Member States shall ensure that, when buildings are constructed, sold or rented out, an energy performance certificate is made available to the owner or by the owner to the prospective buyer or tenant, as the case might be. The validity of the certificate shall not exceed 10 years.

Certification for apartments or units designed for separate use in blocks may be based:

- on a common certification of the whole building for blocks with a common heating system, or
- on the assessment of another representative apartment in the same block.

Member States may exclude the categories referred to in Article 4(3) from the application of this paragraph.

2. The energy performance certificate for buildings shall include reference values such as current legal standards and benchmarks in order to make it possible for consumers to compare and assess the energy performance of the building. The certificate shall be accompanied by recommendations for the cost-effective improvement of the energy performance.

The objective of the certificates shall be limited to the provision of information and any effects of these certificates in terms of legal proceedings or otherwise shall be decided in accordance with national rules.

3. Member States shall take measures to ensure that for buildings with a total useful floor area over 1,000 m<sup>2</sup> occupied by public authorities and by institutions providing public services to a large number of persons and therefore frequently visited by these persons an energy certificate, not older than 10 years, is placed in a prominent place clearly visible to the public.

The range of recommended and current indoor temperatures and, when appropriate, other relevant climatic factors may also be clearly displayed.

## ARTICLE 8

### Inspection of boilers

With regard to reducing energy consumption and limiting carbon dioxide emissions, Member States shall either:

- (a) lay down the necessary measures to establish a regular inspection of boilers fired by non-renewable liquid or solid fuel of an effective rated output of 20 kW to 100 kW. Such inspection may also be applied to boilers using other fuels.

Boilers of an effective rated output of more than 100 kW shall be inspected at least every two years. For gas boilers, this period may be extended to four years.

For heating installations with boilers of an effective rated output of more than 20 kW which are older than 15 years, Member States shall lay down the necessary measures to establish a one-off inspection of the whole heating installation. On the basis of this inspection, which shall include an assessment of the boiler efficiency and the boiler sizing compared to the heating requirements of the building, the experts shall provide advice to the users on the replacement of the boilers, other modifications to the heating system and on alternative solutions; or

- (b) take steps to ensure the provision of advice to the users on the replacement of boilers, other modifications to the heating system and on alternative solutions which may include inspections to assess the efficiency and appropriate size of the boiler. The overall impact of this approach should be broadly equivalent to that arising from the provisions set out in (a). Member States that choose this option shall submit a report on the equivalence of their approach to the Commission every two years.

## ARTICLE 9

### Inspection of air-conditioning systems

With regard to reducing energy consumption and limiting carbon dioxide emissions, Member States shall lay down the necessary measures to establish a regular inspection of air conditioning systems of an effective rated output of more than 12 kW.

This inspection shall include an assessment of the air-conditioning efficiency and the sizing compared to the cooling requirements of the building. Appropriate advice shall be provided to the users on possible improvement or replacement of the air-conditioning system and on alternative solutions.

## ARTICLE 10

### Independent experts

Member States shall ensure that the certification of buildings, the drafting of the accompanying recommendations and the inspection of boilers and air-conditioning systems are carried out in an independent manner by qualified and/or accredited experts, whether operating as sole traders or employed by public or private enterprise bodies.