

# Parts L, F & J 2010

## Overview of the Key Changes

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## Today's presentation

- Part L 2010
  - New build
  - Existing buildings
- Part F 2010
- Part J 2010
- Transitional arrangements
- Summary and Programme

## Part L 2010 New Build: Compliance Steps

Criterion 1: Meet whole building carbon dioxide target  
(BER/DER  $\leq$  TER)

Criterion 2: Limits on design flexibility (backstops)

Criterion 3: Limiting effects of solar gain

Criterion 4: Quality of construction & commissioning

Criterion 5: Providing information / O&M instructions

**No changes proposed**

## Criterion 1: CO<sub>2</sub> Calculations

However:-

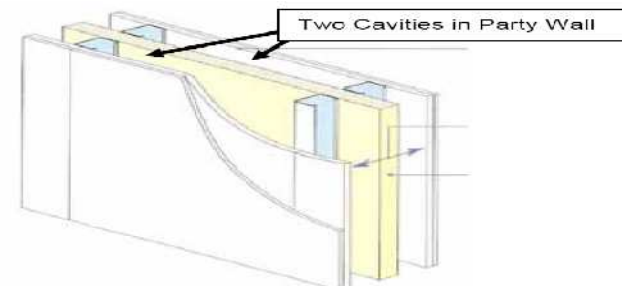
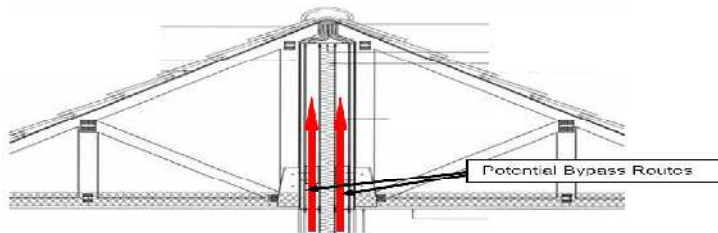
- New regulatory requirement for CO<sub>2</sub> emission rate calculations to be submitted before the start of building work along with a list of the specifications used in the calculations
- This is in addition to the CO<sub>2</sub> emission rate calculation required to be submitted after completion of the work

*This design stage calculation and list of specifications will assist Building Control in confirming what is being built aligns with the claimed performance.*

*The Approved Document sets out how compliance software input data could link to the list of specifications and highlights those features of the design that are critical to achieving compliance.*

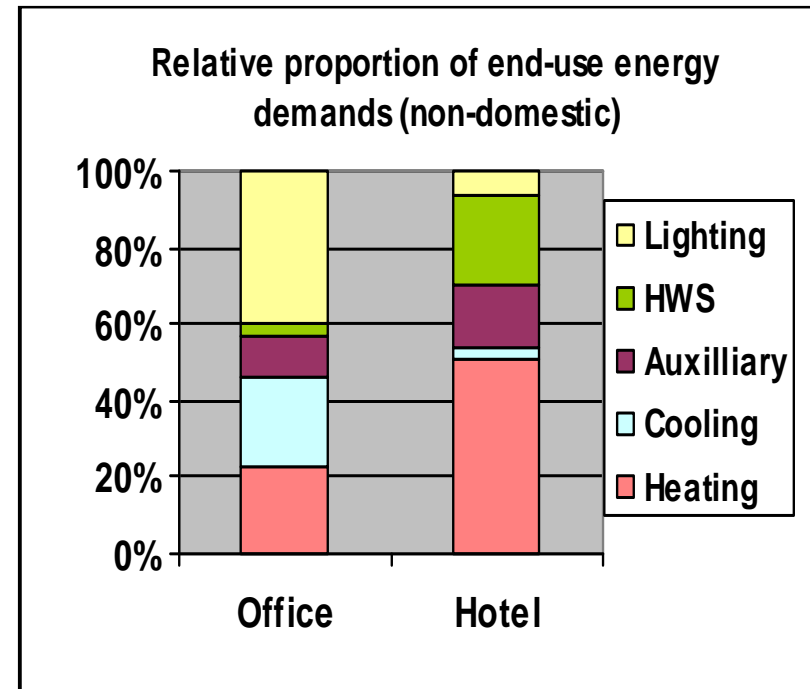
## Criterion 1: New Homes

- A “flat 25%” improvement for every new home using SAP2009
- CO<sub>2</sub> target (TER) set by reference to a 2002 notional dwelling with additional improvement of 25% relative to 2006 standards
- Appeasement (fuel factor) for fuels having greater carbon intensity than mains gas and block averaging retained
- Secondary heating only counted as part of the dwelling emission rate (DER) when actually installed or provided for
- Credit allowed wherever low energy lamps actually installed in fixed lighting locations
- Use measured air permeability or where not pressure tested use average results of same dwelling type plus 2m<sup>3</sup>/(h.m<sup>2</sup>) @ 50 Pa
- Notional dwelling now includes party wall heat loss of zero



# Criterion 1: New Non Domestic Buildings

- An “Aggregate 25%” improvement for new build stock rather than per building
- Takes into account the difficulties/opportunities of improving energy efficiency in different types of building based on relative cost effectiveness of making improvements to typical components
- Some buildings deliver more than 25%, some less – optimised to deliver national target of 25% when applied across build mix



# Projected Mix of Buildings

<b>Non-domestic building type</b>	<b>% of mix</b>	<b>CO2 reduction</b>
Shallow plan (heated only)	1	22%
Shallow plan (Air conditioned)	1	40%
Deep plan (Air conditioned)	40	26%
Warehouse	33	34%
Hotel	6	16%
School	4	27%
Retail	12	21%
Supermarket	2	26%

## Criterion 1: New Non Domestic Buildings

- 2010 notional building with improved building fabric and HVAC specifications and with no improvement factor
- Side-lit, roof-lit and no-lit classes of notional building determined by activity type assigned to zones in actual building
- Heating fuel and seasonal efficiency in notional building varies as a function of the fuel used in the actual building
- Management feature credits for aM&T and power factor correction retained
- Calculated using SBEM 2010 or approved Dynamic Simulation Models (DSMs)



## Criterion 1: Calculation Tools

- New CO<sub>2</sub> emission factors
- **SAP2009** now a monthly rather than annual calculation
- Now includes updated weather data, thermal mass factors and improved data on internal gains

[www.bre.co.uk/sap2009](http://www.bre.co.uk/sap2009)

- **SBEM2010** has improved calculation of auxiliary energy for HVAC and improved lighting procedures
- Rationalisation of building types linked to planning classes with simplified activity types below this
- Convergence of results from SBEM and approved DSMs
- NCM Modelling Guide provides guidance on defining the notional building and how the actual building is modelled

[www.2010ncm.bre.co.uk](http://www.2010ncm.bre.co.uk)

## Criterion 2: Limits of Design Flexibility

- Criterion 2 sets minimum levels of energy efficiency for building fabric and services
- Intent is that CO<sub>2</sub> targets cannot be achieved through renewables alone
- Some strengthening of backstops
- Emphasis on quality of construction, thermal bridging and fixed building services
- However more stringent values will be required to meet higher 2010 CO<sub>2</sub> targets

## Criterion 2: Fabric Design Limits Dwellings

<b>Table 2: Limiting fabric parameters</b>	
Roof	0.20 W/m <sup>2</sup> .K
Wall	0.30 W/m <sup>2</sup> .K
Floor	0.25 W/m <sup>2</sup> .K
Party wall	0.2 W/m <sup>2</sup> K
Windows, roof windows, glazed rooflights, curtain walling & pedestrian doors	2.0 W/m <sup>2</sup> .K
Air permeability	10.0 m <sup>3</sup> /h.m <sup>2</sup> at 50 Pa

*Approved Document C gives limiting values for individual elements to minimise condensation risk*

## Criterion 2: Fabric Backstops Non-domestic Buildings

<b>Table 4: Limiting fabric parameters</b>	
Roof	0.25 W/m <sup>2</sup> .K
Wall	0.35 W/m <sup>2</sup> .K
Floor	0.25 W/m <sup>2</sup> .K
Windows, roof windows, rooflights <sup>3</sup> , curtain walling & pedestrian doors <sup>1,2</sup>	2.2 W/m <sup>2</sup> .K
Vehicle access and similar large doors	1.5 W/m <sup>2</sup> .K
High usage entrance doors	3.5 W/m <sup>2</sup> .K
Roof ventilators (inc. smoke vents)	3.5 W/m <sup>2</sup> .K
Air permeability	10.0 m <sup>3</sup> /h.m <sup>2</sup> at 50 Pa
<p><sup>1</sup> Excluding display windows and similar glazing. There is no limit on design flexibility for these exclusions but their impact on CO<sub>2</sub> emissions must be taken into account in calculations.</p> <p><sup>2</sup> In buildings with high internal heat gains, a less demanding area weighted average U-value for the glazing may be an appropriate way of reducing overall CO<sub>2</sub> emissions and hence the BER. If this case can be made, then the average U-value for windows can be relaxed from the values given above. However values should be no worse than 2.7 W/m<sup>2</sup>.K.</p> <p><sup>3</sup> The relevant rooflight U-value for checking against these limits is that based on the developed area of the rooflight, not the area of the roof aperture.</p>	

## Criterion 2: Building Services

- Domestic and non-domestic building services compliance guides:
  - Set limits for design flexibility for new buildings
  - Set minimum energy efficiency standards for new/replacement systems in existing buildings
- Includes minimum controls and commissioning guidance
- Standards raised compared with earlier editions of guides and updated in line with BS ENs
- Updated sections on minimum seasonal efficiencies for boilers, air-conditioning, DHW heat loss performance, SFPs and heat recovery efficiency for mechanical ventilation
- New sections on lighting, air conditioning and circulator pumps

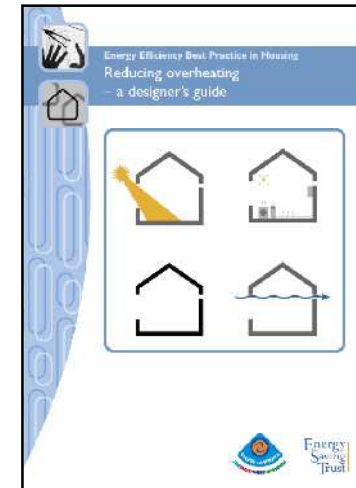
## Criterion 3: Limits on Solar Gains

### New Homes

- Inclusion of updated weather data in SAP Appendix P.
- Thermal mass now included in main SAP calculations.
- When seeking to limit solar gains, consideration should be given to the provision of adequate levels of daylight < 20% of floor area may lead to poor levels of daylight.

### Non-domestic

- New approach to limiting solar gains.
- Limit on solar gain per unit area of façade no greater than would occur through a reference case.
- Applies to both naturally ventilated and air conditioned spaces.
- Will require that good solar protection where highly glazed facades are proposed.



## Criterion 4: Building Performance (Linear Thermal Bridging)

	Quality calc	Build-ability	Checks made	$\Psi$ -margin
ACD Scheme	✓	✓	<ul style="list-style-type: none"> <li>• <math>\psi</math>-value calculated by “accredited expert” calculator</li> <li>• Assessment of buildability &amp; robustness</li> <li>• Sample inspection &amp; feedback loop</li> </ul>	0%
Private	✓	✗	<ul style="list-style-type: none"> <li>• Accredited calculation</li> <li>• No independent assessment of buildability</li> </ul>	+ 0.02 W/mK or 25% whichever is greater
None	✗	✗	<ul style="list-style-type: none"> <li>• No accreditation</li> </ul>	$Y = 0.15$

*Note: Non-domestic uses a simplified version of the above*

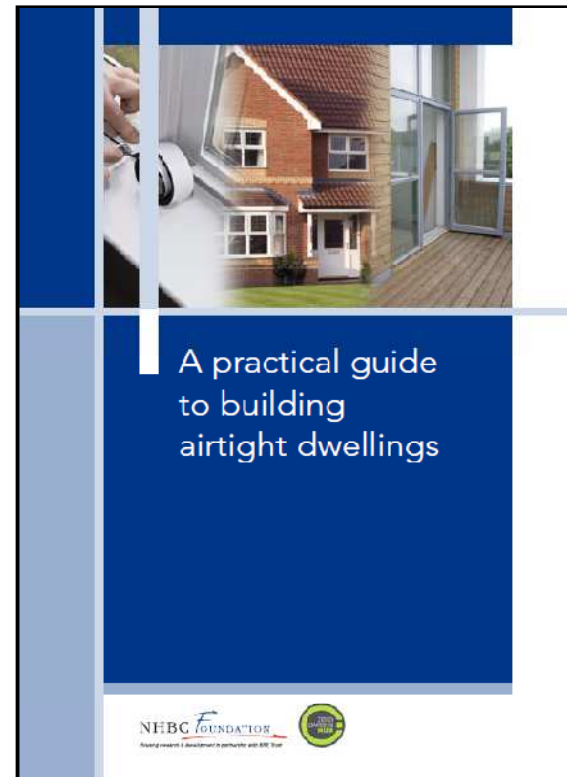
## Criterion 4: Building Performance (Airtightness testing)

Increase in sampling rate (~ doubled)  
for domestic developments

Change to 'Test method B' from  
ATTMA Guide - trickle vents  
temporarily sealed rather than just  
closed - better test of building envelope

Separate ATTMA Guides for domestic  
and non-domestic

Alternatives for small housing  
developments and very large buildings





# Criterion 5: Provision of Information

- Information on how to use and maintain the building efficiently
- The data used to calculate the TER and the DER should be included
- Improvement recommendations to be provided with the on-construction EPC
- Logbooks for non domestic buildings

**Section H: Energy Performance Certificate**  
Save money, improve comfort and help the environment


The following report is based on an inspection carried out for:

Address: 100 Any Street, Any Town, Anyshire, S91 000	Building type: Whole or part of building	Home: Wholesaler	Certificate number: Date issued: Name of inspector: Date of inspection:	XXXXX XXXXX XXXXX XXXXX
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**This home's performance ratings**


This home has been inspected and its performance rated in terms of its energy efficiency and environmental impact. This is calculated using the UK Standard Assessment Procedure (SAP) for dwellings which gives you an energy efficiency rating based on fuel cost and an environmental impact rating based on carbon dioxide (CO<sub>2</sub>) emissions.

**Energy Efficiency Rating**



Rating	Current	Potential
A		
B		
C		
D		
E		
F		
G		

**Environmental Impact Rating**



Rating	Current	Potential
A		
B		
C		
D		
E		
F		
G		

The energy efficiency rating is a measure of the overall efficiency of a home. The higher the rating the more energy efficient the home is and the lower the fuel bills will be.

The environmental impact rating is a measure of the home's impact on the environment. The higher the rating the less impact it has on the environment.

**Typical fuel costs and carbon dioxide (CO<sub>2</sub>) emissions of this home**

This table provides you with an indication of how much it will cost to provide lighting, heating and hot water for this home. The fuel costs and carbon dioxide emissions are calculated based on a SAP assessment of the actual energy use that would be needed to deliver the defined level of comfort in this home, using standard occupancy assumptions, which are described on page 4. The energy use includes the energy used in producing and delivering the fuels to this home. The fuel costs only take into account the cost of fuel and not any associated services, maintenance or safety inspection costs. The fuel costs have been provided for guidance only as it is unlikely they will match actual costs for any particular household.

	Current	Potential
Energy use	xxx kWh/m <sup>2</sup> per year	xxx kWh/m <sup>2</sup> per year
Carbon dioxide emissions	xx tonnes per year	xx tonnes per year
Lighting	£xx per year	£xx per year
Heating	£xx per year	£xx per year
Hot water	£xx per year	£xx per year

To see how this home's performance ratings can be improved please go to page 2.

## Existing Buildings

- General strengthening of replacement standards
- Building Services Compliance Guides set minimum standards for new and replacement services in existing buildings
- Capture more work – e.g. swimming pool basins inside buildings U-value of 0.25 W/m<sup>2</sup>.K as calculated according to BS EN ISO 13370
- Extensions continue to use elemental approach but can trade-off or use SAP/SBEM for greater flexibility
- Additional “trigger” for consequential improvements for buildings over 1000m<sup>2</sup> including of increase in habitable / conditioned area
- Regulation 9 amended to clarify when an extension is a conservatory or porch that is not exempt from the energy efficiency requirements and amended guidance is given
- More focused guidance for thermal elements.

## Part F 2010 Changes

- Revised (greater) ventilation provisions are now recommended as the default option for all new dwellings:
- Alternative guidance (as ADF2006 provisions) recommended only if designing to an air permeability  $> 5 \text{ m}^3/(\text{h.m}^2)$  and from experience developer expects the actual air permeability will be  $> 3 \text{ m}^3/(\text{h.m}^2)$
- Flats - additional vent area recommended where at least 70% of the ventilation area is on a single façade
- 10mm door undercut if floor finish fitted or 20mm if no floor finish not fitted
- Mechanical ventilation systems air flow rates to be measured on site and a notice of the results given to Building Control **(new dwellings only)**  
*New domestic ventilation compliance guide*
- Mechanical ventilation systems that can be adjusted and tested to be commissioned and a notice given to the Building Control **(all buildings)**  
*New domestic ventilation compliance guide for dwellings, CIBSE Code M for non-domestic buildings*
- Building owner to be given sufficient information about the ventilation system and its maintenance requirements so that the ventilation system can be operated to provide adequate air flow **(all buildings)**  
*New domestic ventilation compliance guide for dwellings, CIBSE TM31 Building log book toolkit for non-domestic buildings*

## Part J 2010 Changes

- New guidance for access for visual inspection of concealed flues to ensure that they can be properly inspected both when an appliance is first commissioned and subsequently serviced
- Guidance amended to increase the permanent ventilation openings for open flued appliances in airtight houses (with a design air permeability less than or equal to  $5 \text{ m}^3/\text{h}/\text{m}^2$ )
- New requirement on the provision of carbon monoxide alarms where solid fuel appliances are installed affects both new and existing dwellings
- Guidance for flue outlet clearances relative to adjacent pitched roofs clarified
- Guidance on the provision of hearths and wall clearances for solid fuel appliances have been made more flexible



# Transitional Arrangements

Changes to come into effect from 1 October 2010 except for:

- Work already (physically) commenced
- Where no notification and contract in place before 1 October 2010 (competent person schemes, Schedule 2B)
- Building notice, full plans, initial notice or plans certificate given to a local authority before 1 October 2010 and carried out in accordance with the plans or notice given, so long as work commenced by 1 October 2011

## Part L – Conservation of fuel and power

- Approved Document L1A – new dwellings
- Approved Document L1B – existing dwellings
- Approved Document L2A – new non-domestic
- Approved Document L2B – existing non-domestic
- Domestic Building Services Compliance Guide
- Non-Domestic Building Services Compliance Guide

## Part F – Ventilation

- Approved Document F
- Domestic Ventilation Compliance Guide

## Part J – Combustion

- Approved Document J

all at [www.planningportal.gov.uk](http://www.planningportal.gov.uk)



- Delivers around 2 million tonnes of carbon a year by 2020
- An **improvement of 25% in the energy efficiency standards of every new home**
- An **aggregate improvement of 25% in the energy efficiency standards of all new non-domestic stock**
- Measures to **improve compliance**
- **Tightening of existing standards for some building services and elements**
- Changes to Part F to **ensure adequate ventilation provision** in more air-tight buildings and ***new requirements and guidance for installation and commissioning*** of ventilation systems
- Changes to Part J

