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Changes to Part L 2010



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Introduction

Government has a requirement that all new homes are to be net zero carbon by 2016 and all new non-domestic buildings net zero carbon by 2019. Net zero carbon implies that the building generates at least as much energy from on site renewable energy as it would consume with the net result being zero carbon emissions from the building. The current definition of 'zero carbon homes' is based on a hierarchical approach as follows:

1. High levels of energy efficiency
2. Mandatory level of renewable energy
3. Allowable solutions (for example use of energy efficient appliances, export of low carbon or renewable heat)

The definition for zero carbon non domestic buildings is still to be finalised with indication that this will happen before the end of summer 2010.

It's the steps to achieve zero carbon that will result in improvements to Part L and F of the Building Regulations in phases. Part of the next phased in improvements will be amendments to Part L 2010, effective from October 2010, with the aim to achieve a 25% reduction in carbon emissions of all new buildings over the current Part L 2006 standard. The standards have also been raised in Part L 2010 for any work carried out on existing buildings.

Code for Sustainable Homes will also be amended in order to avoid the energy efficiency levels falling below that in Part L 2010.

Timescales for implementation for Part L1 & L2

- June 2009 – Consultation period began
- September 2009 – Consultation period ended, feedback to industry given final changes.
- Spring 2010 – New Part L was published to give industry opportunities chance to prepare for implementation.
- October 2010 – New Part L comes into effect.

Changes for new buildings

Proposed changes to Criterion 1: Predicted CO₂ emissions

Non Domestic Buildings

With the introduction of Part L 2006 the methodology for calculating the energy performance of buildings was adapted. A TER (Target CO₂ Emissions Rate) was calculated and the CO₂ emissions for the proposed new building i.e. the BER (or for dwellings known as the DER) was also calculated. In order to comply with Criterion 1 the BER/DER is required to be less than the TER.

The TER is essentially a percentage improvement applied to the calculated CO₂ emissions of a so called 'Notional Building'. The Notional Building has the same size, geometry and orientation as the proposed building but with the fabric and fixed building services that comply with Part L 2002. The TER for Part L 2006 specified CO₂ emissions of 23.5% less than the Notional Building for naturally ventilated buildings and 28% less for air-conditioned and mechanically ventilated buildings.

For the 2010 update the government proposed two methods of calculating the TER termed known as the 'flat' and 'aggregate' approaches with the aggregate approach eventually adopted in the final approved documents. More details on aggregate approach follows on page 3

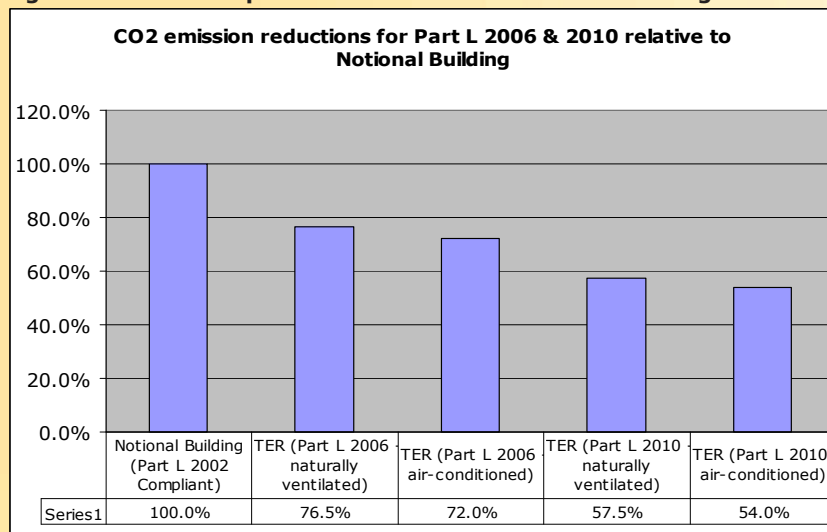
All new buildings will be required to achieve a 25% emissions reduction on Part L 2006 if the 'flat' approach is used. This is equivalent to a CO₂ emissions rate of 42.5% less than the Part L 2002 for naturally ventilated buildings and 46% less for air-conditioned and mechanically ventilated buildings.

The graph in Figure 1 below illustrates the reduction in CO₂ emissions for Part L 2006 and Part L 2010 relative to the Notional Building for non-domestic buildings. The percentage reductions for revisions of Part L beyond 2010 are still to be determined.



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Figure 1. Phased Improvements for Non-Domestic Buildings



The 'aggregate' approach takes into account that it will be more difficult to achieve the 25% reduction on some 'building types' than others. For certain buildings types the target for emissions reductions will be set below 25% while for others it will need to exceed the 25%. For example to achieve the same improvements in a building where demand is dominated by hot water, e.g. a hotel, is likely to be more difficult (and expensive) than in one where lighting dominates such as an office. As an example a hotel could be required to have a 15% reduction in CO₂ emissions whereas the office a 30% reduction.

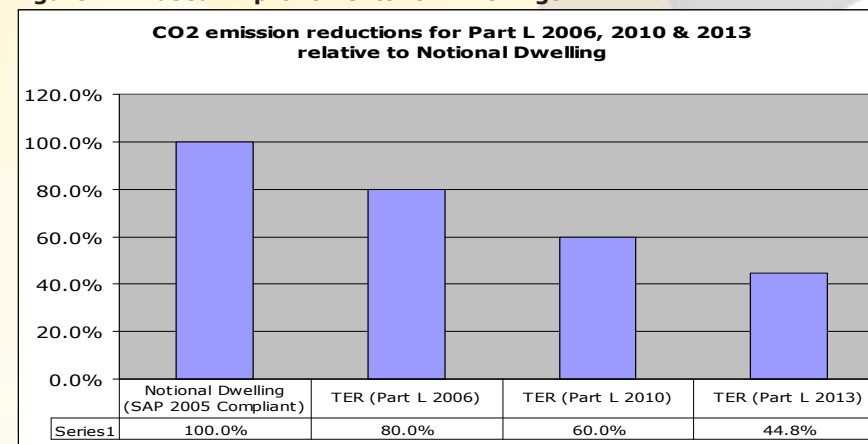
Dwellings

For dwellings the overall method used in defining the DER (Dwelling Emissions Rate) and TER is similar as for non-domestic buildings but with the consultation settling on a 'flat' approach only to calculating the dwelling TER. Here the Notional Dwelling is defined as a Part L 2006 standard with a 25% improvement added to create a new TER. The notional dwelling also now assumes a party wall heat loss of zero which means heat loss through party walls must be considered separately.

The phased improvements planned at this stage are a 25% emissions reduction for Part L 2010 and a 44% emissions reduction for Part L 2013 all relative to Part

L 2006. The graph Figure 2 below indicates the progression of improvements required relative to the Notional Dwelling.

Figure 2. Phased Improvements for Dwellings.



The calculation tools for dwellings and non domestic buildings known as the Standard Assessment Procedure (SAP) and Simplified Building Energy Model (SBEM) respectively will be retained as the approved methodologies.

Proposed changes to Criterion 2: Limits on Design Flexibility

Non-Domestic and Dwellings

In order to avoid builders using renewable energy technologies to compensate for poor energy efficiency Part L has proposed limits in design flexibility with regards to fabric and fixed building services. The limits proposed in Part L 2006 have been adjusted in Part L 2010 to strike a good balance between energy efficiency and design flexibility. For innovative solutions such as using lower levels of insulation but making good use of passive solar design will be considered by Building Control on a case by case basis. Overall there has not been any significant change in Part L 2010 to the limits on the fabric such as glazing and insulation levels as listed in Part L 2006.



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Proposed changes to Criterion 3: Limiting Summer Overheating

Non-Domestic

The wording for Criterion 3 for Part L2 2010 has been changed to provide greater clarity and different documents have been referred to as guidance documents on strategies to limit solar gain. The method for demonstrating that reasonable provision has been made to limit solar gains in summer for Part L2 2010 has also changed. The method in Part L2 2010 is more specific and the requirement is to demonstrate that for each mechanically cooled space in the proposed building the solar gains are no more than would be through a reference glazing as given in Part L2 2010.

Dwellings

There will be greater focus on mitigating building overheating. SAP will move to a 12 monthly calculation based on updated weather data. This brings it into line with the increased accuracy found in SBEM.

Proposed changes to Criterion 4: Building performance consistent with BER

Non-Domestic

Criterion 4 has been renamed in Part L2 2010 as above was referred to as 'Quality of Construction and Commissioning' in the 2006 version.

There has been increased emphasis on minimising the effects of thermal bridging within Part L2 2010. As thermal insulation improves losses via thermal bridging at wall/floor and wall/roof junctions become a more significant proportion of the total heat loss. In Part L 2006 the generic Accredited Construction Details (ACD) were published to give guidance on construction of junctions to minimise thermal bridging. The proposed changes in Part L 2010 offers an option of 3 methods for compliance:

- By adopting the ACD scheme with quality control and allowing for better linear thermal transmittance values to be claimed in the energy performance calculation
- By calculation of the linear thermal transmittance values by a suitably qualified person and accepting an increase in these values in the energy performance calculation where there is no independent quality control.

- By using unaccredited details and accepting more conservative defaults in the energy performance calculation

The guidance and the requirement of $10\text{m}^3/(\text{m}^2\text{h})$ at 50Pa for pressure testing for Part L2 2010 remains the same as for 2006 version. However there is an additional requirement in Part L2 2010 that Building Control needs to be provided with evidence that the equipment used for pressure testing has been calibrated within the last 12 months using a UKAS accredited facility.

There should also be a commissioning plan drawn up and submitted to Building Control at the design stage so that Building Control can check commissioning is done as work proceeds.

Dwellings

The new Part L1a states that there should be an increase in the size of the sample of dwellings to be air-tightness tested, and that the air-tightness of non-tested dwellings should be assumed to be worse than that of dwellings that have been tested. The air permeability limit of $10\text{ m}^3/\text{hm}^2$ @ 50Pa remains unchanged for Part L 2010. However for non tested dwellings this means their air permeability will need to reflect an average of those units tested plus be increased by a confidence factor of $2\text{ m}^3/\text{hm}^2$ @ 50Pa. This will result in tested dwellings needing to achieve a value of $8\text{ m}^3/\text{hm}^2$ @ 50Pa in order for the non tested dwellings to achieve the $10\text{ m}^3/\text{hm}^2$ @ 50Pa required.

Proposed changes to Criterion 5: Provision of information

Non-Domestic and Dwellings

To satisfy criterion 5 the owner of the building will need to be provided sufficient information about the building and its fixed services so that it may be operated in an energy efficient manner. The requirements for criterion 5 in Part L 2010 remain the same as for the 2006 version of Part L.

Changes for existing buildings

Non-Domestic

The EU has recognised that for significant reductions in carbon to be made a greater focus is required upon existing buildings and housing stock. As a result it has proposed to remove the 1000m^2 threshold for improvements to



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buildings under major renovation (in this case major renovation is classed as project cost of 25% of buildings value or surface area).

It will be up to member states to define the level of minimum standards expected in building fabric and mechanical systems and this is reflected in the requirements set out in Part L2B for the UK.

Dwellings

For Dwellings 'retrofit' is being heavily promoted by the government based upon the large quantities of UK housing stock built with poor levels of insulation and inefficient heating systems. The Part L1b 2010 Conservation of fuel and power in existing buildings has seen some minor technical and legal adjustments over the 2006 edition which helps encourage this retrofit approach. These form the following:

- The guidance has moved to a generally elemental approach to energy efficiency. These elements must reach minimum standards but the guidance does offer more flexibility.
- The updated energy efficiency measures also apply in some circumstances where extensions for porches and conservatories.
- The guidance has been updated to offer certain historical and traditional buildings exemption from the energy efficiency requirements.
- There has been an expansion to the guidance for modifying or replacing thermal elements of buildings.

Overall the focus, like new dwellings, is on energy efficiency improvements throughout. For newly built elements and replacement elements they must conform to the same thermal standards set out in Part L1a for new dwellings. For renovating existing elements there are less arduous u-values but will be towards a the upper limit of the materials currently available on the market. If achieving these u-value can be proved to not achieve a 15 years payback then a standard which is technically and functionally achievable within a 15 year payback should be sought.

Summary

Part L 2010 was published in Spring 2010 and will come in to force in October 2010.

The carbon calculation methodology will fundamentally stay the same but the pass threshold has been lifted by 25%. For dwellings this is similar to the current Code for Sustainable Homes Level 3.

A greater emphasis will be placed upon lowering carbon emissions through building fabric with higher standards expected before the consideration of renewable technologies.

Quality of building fabric will also be reflected in a greater attention paid to air tightness and thermal bridging within buildings.

There will be greater focus on mitigating building overheating. SAP for new build dwelling will move to a 12 monthly calculation based on updated weather data. This brings it into line with the increased accuracy found in SBEM used for non-domestic buildings.

For existing dwellings the energy efficiency standards for building fabric have been lifted with new and replacement elements to match the same standards as Part L1a for new dwellings.

For existing non-domestic buildings the 1000m² GIFA threshold for compulsory improvements set in the EPBD has been removed.

