

Consultation on changes to Building Regulations Parts L and F (Conservation of Fuel and Power/Means of Ventilation) for England and Wales

Summary of key points for new house building

Reducing emissions

The basic approach of the current AD (AD L 2006) will remain and emissions will be modelled using SAP (Standard Assessment Procedure) – see notes below. A 25% reduction in carbon dioxide (CO₂) emissions beyond AD L 2006 has to be achieved and this will require a package of improvements to the building fabric and services specification to be implemented. In many circumstances some renewable energy generating capacity will also need to be provided.

A key question asked in the consultation is whether the 25% should be applied rigidly for each and every property (the 'Flat 25% approach'), or whether some flexibility should be allowed, provided that on average 25% is achieved across the range of new buildings (the 'Aggregate approach'). This flexibility would recognise that, for example, because flats are already inherently energy efficient, achieving a further 25% CO₂ saving is very hard. Conversely it is relatively straightforward for an improvement greater than 25% to be made for some detached homes. The measures required and their associated costs could therefore be disproportionate for certain types of building.

Fabric first

The consultation expresses a clear preference for the fabric of the building to be designed and built to high standards as energy efficiency measures such as insulation are 'locked in for the lifetime of the building'. In contrast, it is noted that providing large amounts of renewable energy that is then 'wasted' by an inefficient building fabric does not make sense. Fabric measures are encouraged by the use of 'longstop' U-values, which are retained at the levels of AD L 2006.

An end to the party wall bypass

The Stamford Brook research project demonstrated that a significant cause of heat loss from homes, not accounted for in SAP calculations, is the 'party wall bypass'. This is the heat escaping to the outside through the cavity of the party wall. The proposed AD recognises this mechanism and encourages sealing of the party wall around its edges and/or the use of full-fill insulation to limit the movement of air and associated heat loss.

Further information on the Stamford Brook research project, which was supported by NHBC, was published in *NHBC Sustainability Extra 1*, May 2008 at:
<http://tinyurl.com/NHBCsustextra1>

Keep your cool

A growing concern is that well-insulated homes - particularly those designed to benefit from passive solar gain, with larger glazed areas facing towards the south - will be liable to overheat, especially if average temperatures increase as a result of climate change. This could drive homeowners to install air conditioning, which would greatly increase household CO₂ emissions. To address this issue and reduce the risk of overheating, SAP 2009 includes a more rigorous procedure to check whether solar gains are excessive, particularly during the summer months.

Build tight

One of the main causes of heat loss from homes is air leakage. The 2006 changes to AD L introduced a requirement for a sample of new homes on each development to be pressure tested. The latest proposals build on that by asking for a larger sample to be subject to a pressure test. Further encouragement for testing of an *even* larger sample is proposed by requiring that, for those homes not actually tested, a lower level of airtightness needs to be assumed, i.e. the home is assumed to be less airtight [$2\text{m}^3/(\text{h}\cdot\text{m}^2)$ worse than the average result being achieved on site] and additional compensating measures will need to be provided.

The NHBC Foundation recently published '*A practical guide to building airtight dwellings*', available at: <http://tinyurl.com/NHBCFoundationreports>

Thermal bridging

Additional emphasis is placed on thermal bridging and, in future, it will be essential for all junction details (e.g. wall to floor; wall to window) to be designed carefully to minimise heat loss. Encouraged by the impressive performance of the Robust Details scheme for Part E (Sound), the Government is keen for a similar 'Accredited Construction Details Scheme' (or schemes) to be developed to manage the design and on-site implementation of junction details, specifically designed to maintain the continuity of both the insulation layer and the air barrier. The use of Accredited Construction Details also reduces the amount of airtightness testing required.

Lighting the way

A requirement for 75% of fixed lighting to be fitted with low energy bulbs is proposed, although dedicated bulbs and fittings will no longer be necessary. This reflects the fact that ordinary incandescent lights are being phased out and will cease to be available in future.

Getting it right on site – improving compliance

There has been concern that some homes are constructed in such a way that their intended energy performance is not fully realised and the Government wishes to address this. In addition to the proposal for 'Accredited Construction Details Scheme(s)' referred to above, it is also proposed that a '*design stage* energy performance calculation' should be submitted to the Building Control Body (BCB) with additional supporting information before work begins on site. This would identify clearly the particular features incorporated in the design which allow the home to 'pass' AD L. The intention is that the BCB will be able to do a more thorough job of inspecting for compliance if these features are clearly identified from the outset.

Ventilate right

Whilst higher standards of airtightness are being sought for the construction, it is essential that adequate ventilation is provided to ensure reasonable standards of indoor air quality can be maintained. The current ventilation requirements of AD F 2006 are based on construction that achieves an airtightness standard of 3 to 4 m³/(h.m²), but it is now realised that a proportion of homes designed to reach this level will turn out to be more airtight than 3 m³/(h.m²). Indeed, since the introduction of the requirement for airtightness testing, NHBC has observed a marked improvement in test performance and it is inevitable that some homes will achieve standards higher than was intended.

There is a concern that very airtight homes could be inadequately ventilated. For this reason AD F 2010 sets a threshold of 5 m³/(h.m²) and homes designed to achieve a higher standard of airtightness than this require additional ventilation provision. It is expected that homes built to higher levels of airtightness would normally be provided with mechanical ventilation with heat recovery.

The consultation document refers to research that demonstrates under-performance of mechanical extract ventilation systems due to poor installation and commissioning. It also recognises the need for practice to be improved in these areas and acknowledges the need for these systems to operate quietly, to avoid the risk that they will be turned off due to noise nuisance. Guidance and performance standards are included in AD F 2010 Appendix E.

As for AD L 2010, there is a requirement for user information to be provided in order to encourage correct operation and maintenance of the home and its heating and ventilation systems so that the expected performance is delivered in practice.

Notes

1. The SAP is itself currently under review and this will have an effect on all assessments. Further information is available in the consultation document (Volume 2, Chapter 5) and at www.bre.co.uk/sap2009.

A free software tool - called cSAP and based on SAP2009 - allows consultees to investigate the implications of proposed changes to the Regulations, to AD L and to SAP. <http://www.2010ncm.bre.co.uk/>

2. The 25% reduction of AD L 2010 is not same as the 25% reduction required for Level 3 of the Code for Sustainable Homes. It is likely that the wording of the Code will be amended prior to implementation of AD L 2010 in order that the two documents align.