Building Performance and Energy in Buildings

Update on current legislation
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Presentation Outline

- Introduction
- Part L
- Zero carbon buildings
- European Directives
  - Renewables Directive
  - EPBD recast
- Where might it all lead?
- Minimum Energy Performance Standards
Introduction – Buildings, Energy & Carbon

1. CRC Energy Efficiency Scheme (CRC),
2. Climate Change Agreements & Climate Change Levy
3. Energy Performance Certificates (EPCs), Display Energy Certificates (DECs) & Air conditioning inspections
4. Green Deal,
5. Smart Meters,
6. Enhanced Capital Allowances (ECAs),
7. EU minimum standards and energy performance labelling,
9. Mandatory Greenhouse Gas reporting,
10. Energy Audits (Energy Savings Opportunity Scheme),
What’s in the current policy mix?

Allowable solutions:
- Renewables
- Energy Efficient systems
- Energy Efficient equipment
- Fabric energy efficiency
- Reduce demand for energy

Who leads on what?
- DECC
- CLG
- DEFRA
- Planning Policy
- Energy Efficiency Directive
- Smart Meters
- DECs and Air conditioning inspections
- ECO
- Green Deal
- EPBD recast
- Building Regulations 2014

- Feed in tariffs
- Renewable Heat Incentive
- Zero Carbon buildings
- Electricity Demand Reduction
- Energy related Products
- CRC Energy Efficiency Scheme
- EPCs
- CERT / HEMS
- CERT
- DECC
Key energy policies for buildings

- Building Regulations Part L
  - “zero carbon” new build
  - reducing emissions from existing buildings?

- Zero Carbon Buildings
  - “nearly zero energy” buildings – new and refurb!

- EPBD Recast
  - “nearly zero energy” buildings – new and refurb!
  - public display of energy certificates

- Energy Efficiency Directive
  - energy efficiency measures in existing buildings

- Minimum Energy Performance Standards
  - requiring poorly rated buildings to be improved
Or

what does Part L of the Building Regulations 2013 require me to do in 2014?

(or even in some cases not until 2015)!
Why 2014?

- 15 months elapsed between the end of the consultation (April 2012) and the announcement of the 2013 changes to Building Regulations

- To satisfy the moratorium on new regulations for small (micro) businesses announced in 2010

- Balancing Growth and reducing regulatory burdens with being Green – moving towards zero carbon, reducing energy costs for business and consumers, contributing to the fourth carbon budget under the Climate Change Act
2012 Building Regulations Consultation

- Section one: consultation approach and proposals to change various technical aspects of regulations.
- Section two: proposals to increase the energy efficiency of buildings – Part L
- Section three: proposals in relation to electrical safety in homes.
- Section four: changes to the building control system.
Building Regulations and Burdens on Business

11. This Section of the consultation outlines the scope of the consultation, its structure and contents and describes how the consultation fits with current Government policies to reduce the burden of regulation on business.
Fit with Government policies to reduce the burden of regulation

12. This Section - referring to the Government commitments to reducing the burdens that fall on business as a result of regulation and to reducing the total regulatory burden on the house building industry during the current Spending Review period - explains how all the proposals in the consultation will impact on business (specifically highlighting home building) and illustrates the overall regulatory picture for the package as a whole. It shows the fit with Government’s “one-in, one-out” policy on regulation where net cost imposed on business by new regulation (an “in”) is offset by at least an equivalent net reduction (an “out”).
What was proposed in 2012?

- 8% uplift new for homes
- 20% uplift for new non domestic buildings
  both seen as a “meaningful step” towards zero carbon
- Consequential improvements for existing homes when extended, or a new boiler installed or new windows fitted
- Proposals for a QA system to ensure that as-built performance was in line with the design intent
Where are Building Regulations now (31st Oct 2013)?

- No consequential improvements – DCLG won a Judicial Review of the decision not to proceed
- Announcement on the changes to come into force in April 2014 made on 30th July – the day the House of Lord’s went into recess
- Amendments to Building Regulations made on 3rd August (a Saturday!) and laid in Parliament on 8th August – during the recess
- Revised Approved Documents, Compliance Guides and SAP and SBEM tools awaited
What are the major changes for 2014?

- All new homes require a fabric energy efficiency calculation before construction and when completed, to be submitted to the Building Control Officer.
- New homes to have carbon emissions at least 6% lower than 2010 Regulations.
- New non domestic buildings at least 9% lower on average across the non domestic stock, with elemental backstops.
- Wider range of notional non-domestic buildings (inc. smaller warehouses).
- Achievable with good fabric & services in most building types.

All achieved within the Spending Review commitment to reduce regulatory burden on house builders. Detail to be set out in Budget updates. (DCLG, 8th October)
## Non domestic uplift by building type

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Uplift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution warehouse</td>
<td>4%</td>
</tr>
<tr>
<td>Deep plan air conditioned office</td>
<td>12%</td>
</tr>
<tr>
<td>Retail Warehouse</td>
<td>8%</td>
</tr>
<tr>
<td>Shallow plan office</td>
<td>13%</td>
</tr>
<tr>
<td>Hotel</td>
<td>12%</td>
</tr>
<tr>
<td>School</td>
<td>9%</td>
</tr>
<tr>
<td>Small Warehouse</td>
<td>3%</td>
</tr>
</tbody>
</table>
Changes to standards for services

- Introduction of Lighting Energy Numerical Indicator, LENI as an alternative compliance option for lighting

- Some strengthening of the standards for
  - Chillers
  - Fan coil units
  - Lighting
Changes to the Guidance

- ADL1A and ADL2A meet tablets – single column “tablet friendly” layout and summaries of the notional buildings
- Amendments to ADL1B and ADL2B for clarification ONLY
- NEW Building Services Compliance Guides
- SAP to be updated to include calculation of the Target Fabric Energy Efficiency
- SBEM to be updated with new Notional Buildings
- Non domestic Appendix Q framework has been added
- DCLG will work with industry to develop further “pattern books” and “how to” guides
- Library of advanced construction joint details
Transitional Arrangements

Fabric energy efficiency rates for new dwellings

5. After regulation 26, insert—

“26A. Where a dwelling is erected, it shall not exceed the target fabric energy efficiency rate for the dwelling which have been approved pursuant to regulation 25.”
Transitional provisions

9. — (1) The amendment made by regulation 5 does not apply in any case where on the date these Regulations come into force (6th April 2014, Ed) —

(a) building work has started in accordance with any relevant notification provision; or

(b) a relevant notification provision has been complied with in relation to proposed building work and the building work is started within the period of twelve months beginning on the day this Part of these Regulations come into force.

(2) In this regulation, “relevant notification provision” means regulation 12(2) of the Building Regulations 2010 and sections 47(1), 50, 51A(2) and 54 of the Building Act 1984.

So start on site, or deposit plans or building notices, and its Part L 2015 (or beyond!)
Zero Carbon Buildings
The Road to Zero Carbon

- Budget 2013 confirms Government committed to Zero Carbon homes. “Should not lose sight of this important commitment.” (DCLG, BRE Event, 8th October)
- Part L ‘2013’ is “an important ‘technical’ step: strikes balance between Zero Carbon and growth commitments” (DCLG)
- “Next steps to Zero Carbon” consultation explored thinking on 2016 step, including design principles and options for Allowable Solutions – consulted on over summer 2013
- Energy elements of the Housing Standards Review a key part of the approach – and NOT JUST for homes.
Key UK commitments to zero carbon

- Government still committed to zero carbon homes from 2016 – reconfirmed in the budget, and again in the announcement about Part L
- Zero carbon non domestic buildings from 2019 is still a policy goal – it’s not been withdrawn
- EPBD Recast requires “nearly zero energy” buildings from 2020 (2018 for the public sector)
The Zero Carbon Hierarchy – stepped progress towards a workable definition.
What is an Allowable Solution?

(i) Undertaking the full 100% of carbon abatement on site or through connected measures (e.g. a heat network);
(ii) Meeting the remaining carbon abatement requirement themselves through off-site carbon abatement actions;
(iii) Contracting with a third party Allowable Solutions provider for them to deliver carbon abatement measures sufficient to meet the house builders’ obligations.
(iv) Making a payment which is directed to a fund which then invests in projects which will deliver carbon abatement on their behalf. The payment would be based on a fixed price which would be subject to periodic review.
Nearly zero energy buildings in Building Regulations

- Non domestic buildings zero carbon from 2019

AND

Nearly zero-energy requirements for new buildings

- **25B.** Where a building is erected, it must be a nearly zero-energy building.

The Building Regulations &c. (Amendment) Regulations 2012 SI 2012 No.3119
ZC = NZE
Q. Is a Zero Carbon building a Nearly Zero Energy building?

A. It depends!

Zero Carbon is a UK domestic policy, which depends upon Allowable Solutions.

Nearly Zero Energy is an EU policy/term:

‘nearly zero-energy building’ means a building that has a very high energy performance, as determined in accordance with Annex I. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby;
European Directives

The Renewables Directive

The EPBD (Recast)

The Energy Efficiency Directive
The EU Renewables Directive, 2009/28/EC

Sets the UK a target of 15% by 2020
UK Target for increasing the share of national energy from renewables

UK Renewables Policy

- Driven by three principal concerns
  - Improving the UK security of supply
  - Reducing UK carbon emissions
  - Controlling the cost of energy to industry and consumers

- A combination of incentives and requirements

- Implemented via the Renewable Energy Strategy, Carbon Reduction Commitment, EPB and Building Regulations and Financial incentives:
  - Feed in Tariffs
  - Renewable Heat Incentive
  - Green Deal ????
Energy Performance of Buildings Directive (Recast)
The Energy Performance of Buildings Directive – the EPBD

- First adopted in 2003, implemented in two phases
  - labelling and whole building calculations (2006)
  - air conditioning and boiler inspections (2009)

- Recast adopted in May 2010, replaces the original EPBD from 1st February 2012
  - expands the scope of the Directive

- Consolidated Regulations adopted in UK In December 2012
Extended Scope of the EPBD as Recast

- Display Energy Certificates required in public buildings over 500m² (previously over 1,000m²)
- All buildings over 500m² and frequently visited by the public which have an energy certificate must display it
- Article 27, Penalties, requires that

  “Member States shall lay down the rules on penalties applicable to infringements of the national provisions adopted pursuant to this Directive and shall take all measures necessary to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive.”
Why do we have energy certificates?

▪ To make energy use in buildings transparent and actionable

▪ To motivate and inform improved energy performance of buildings
So where are we now with energy certificates and air conditioning reports?

Inspection of air conditioning systems

Energy Performance Certificate
Non-Domestic Building

Jubilee House
High Street
Anytown
A1 2CD

Certificate Reference Number:
1234-1234-1234-1234

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Asset Rating

More energy efficient

A+ 0.25
A 1.25-2.5
B 2.6-5.0
C 5.1-7.5
D 7.6-10.0
E 10.1-12.5
F 12.6-15.0
G Over 15.0

Less energy efficient

Not zero CO₂ emissions

Technical information

Main heating fuel: Gas
Building environment: Air Conditioned
Total useful floor area (m²): 2927
Building complexity (NO6 level): 4

Benchmarks

Buildings similar to this one could have ratings as follows:

09 if newly built
56 if typical of the existing stock
Don’t act on the data - change the benchmarks!
Energy Efficiency Directive
Energy Efficiency Directive

- Published in November 2012
- Comes into force in stages over next 3 years
- Introduces energy audits for “large enterprises”
  - may be based on ISO 50001 (was BS EN 16001)
  - may also use Display Energy Certificates

Consultation over the summer on the Energy Savings Opportunity Scheme
What might the future look like?

Minimum Energy Performance Standards
If you want to let or sell a property with an F or G rated EPC then you will have to improve it:

I can’t afford that!

Well, you can take out a Green Deal plan…

Oh no you can’t…

Or I could just not get an EPC in the first place….?

nearly 3 out of 5 buildings said their owners currently prefer that option
So is it working?

- Too much focus on individual measures or incentives, lack of an overall strategy
- Not enough systems thinking
- Not enough logical attention to the hierarchy
  - Saving energy by avoiding using it is more cost effective than generating it from renewables – energy efficiency is cheaper than generating it – negawatts, not megawatts
  - Too much of a dash to green bling
  - Not enough engineering input to policy
  - Not enough attention yet to existing buildings – if the Green Deal is the flagship, where is the flotilla?
- **We need robust enforcement of existing measures**
Thank you for listening

Any Questions?