CARBON BITES

From the CIBSE YOUNG ENERGY PERFORMANCE GROUP

LEGAL BACKGROUND TO REGULATIONS FOR BUILDING ENERGY PERFORMANCE

What regulations are relevant to Building Energy Performance?

The building energy performance policy framework consists of a diverse and complex set of regulations and schemes, aiming to reduce the energy consumption associated with the way our buildings are lit, heated and used, currently accounting for almost 40% of the UK's carbon emissions. The primary driver is the Energy Performance of Buildings Directive, and the Carbon Reduction Commitment and Climate Change Levy also play an important role in shaping these regulations.

The EU's Energy Performance of Buildings Directive (EPBD, 2010/31/EU) aims to make buildings' energy efficiency transparent through the provision of certificates showing their energy rating on construction, sale or rent and in use for public buildings, and giving information about their potential for improvement:

- Buildings are required to have an Energy Performance Certificate (EPC) when constructed, sold or let;
- Larger buildings occupied by a public authority and frequently visited by the public must display an energy certificate (such as a Display Energy Certificate (DEC) inEngland and Wales).

Building Regulations set out carbon emissions targets for new buildings and energy performance requirements for interventions on existing ones, as well as providing building services compliance guidance. As Building Regulations have been devolved, there are now four different regimes in the UK, with Part L being effective in England.

Other key policies for buildings are Minimum Energy Performance Standards (MEPS, requiring F or G rated rented buildings to be improved), the Heat networks (Metering and Billing) Regulations, the EU Energy Efficiency Directive and associated shemes (such as ESOS). Building energy performance is also regulated by energy policies setting requirements for certain energy consuming products, such as the Ecodesign of Energy Related Products Directive 2009/125/EC, F gas regulation and Renewable Heat Incentives (RHI) for the renewable market.

Key Issues& Considerations

- The EPBD requires 'nearly zero energy building' from 1st January 2021 (1st January 2019 for new publicly owned and occupied buildings). NZEBs are required by Building Regulation Part L, applicable to new buildings, but this has a coming into force date of 1st January 2021.
- Despite being required, the 'nearly zero energy building' definition is vague. A clearer, *quantitative* definition of this concept is needed.
- The EPBD requires Member States to review their minimum energy efficiency standards (e.g. Part L) based on a cost-optimal methodology.
- The cost optimal approach considers global lifetime costs of buildings, factoring in industry innovation, learning rates and prices trends. All the measures deemed to be cost optimal need to be adopted, but going beyond cost optimality is not required.
- The next Part L review is due to be completed in 2018, and this version will shape nZEBs (required in 2019-2021): from an energy efficiency perspective, this means that anything needed to deliver nZEBs needs to be cost optimal and adopted in 2018.

Further Information

- UK Government guidance - EPBD, UK Government guidance - Ecodesign, UK Government guidance - Metering & Billing, UK Government - RHI, UK Government - MEPS
- CIBSE Knowledge portal - Part L; UK Government - Part L
- UK Government guidance - Metering & Billing
- CIBSE Journal overview of energy policy, CIBSE Journal article 1, CIBSE Journal article 2, CIBSE Journal article 3

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Case Study: ESOS scheme - London football club

The Energy Savings Opportunity Scheme (ESOS) is a mandatory energy assessment scheme which implements the EU Energy Efficiency Directive (2012/27/EU). Compared to the alternative routes of compliance (ISO 50001, DECs or Green Deal assessments), it provides a greater level of information on initiatives and potential energy and cost savings.

ESOS requires UK large organisations to carry out an energy audit covering their buildings, transport and industrial uses of energy and to identify realistic cost effective improvements to energy use in their business. The energy audit must be overseen by a 'lead assessor' every four years, with the first round deadline, 5 December 2015, now passed. The Environment Agency is the UK scheme administrator to whom compliance must be reported (there are financial penalties for non-compliance).

A recent case study on a London football club illustrates how a full ESOS assessment can provide a well-targeted advice on energy efficiency initiatives and investment grade proposals for their implementation, resulting in significant CO_2 and money savings.

Through data collection and analysis of the building energy consumption and efficiencies, the energy audit identified the energy use breakdown, peak scenarios and areas for improvement. As a result, a detailed set of Energy Efficiency Initiatives (EEI) was proposed, with recommendations being prioritised based on their effectiveness.

Specifically, the main pool energy retrofit and behavioural change in operating the building ranked as the top investment opportunities, accounting respectively for 15 and 10.5 kgCO2 savings per £ CapEx.

The completion of this ESOS assessment provided the organization with a clear picture of the building energy upgrade opportunities, unveiling the potential for 6,609MWh (or £386k) in energy savings, equivalent to 1,784 tonnes CO2, with a simple payback of only 7.5 years.

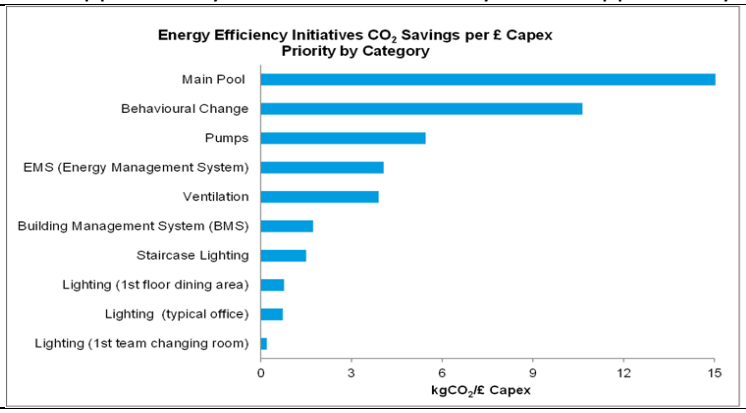
Key Lessons Learnt

Capital Expenditure ECMs

- 6,609MWh in Energy Savings
- £386k *(based on current energy tariff)*
- 30% reduction (2014 energy baseline)
- £2.9M to realise savings
- Simple payback of approx. 7.5 year

Low and Zero Carbon Technologies

- 316MWh from LZC technologies
- £52M
- 2% reduction based on 2014 energy baseline
- £553k to realise savings
- Payback of approx. 11 years



Further Information

- CIBSE Certification guide to ESOS
- UK Government - ESOS

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