

# Scottish Building Regulations

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## 2010 & Beyond - Low & Zero Carbon Buildings, Improving Energy Performance

Steven Scott

Building Standards Division

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The Scottish  
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# Section 6 (Energy) 2010

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## Topics:

- 2010 - Background and Headlines
- Delivering Low Carbon Buildings - beyond 2010
- Existing Non-domestic Buildings - Climate Change (Scotland) Act
- 'EPBD 2'



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# Section 6 - Background

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- Section 6 - May '07
- The Sullivan Report - Dec '07
- Recommendation of staged improvements to energy standards
- Ministerial Announcement - Feb '09
- Consultation - June '09
- Climate Change (Scotland) Act - Aug '09

## 0 Eventual and Staged Standards We recommend for new buildings...

0.1 Net zero carbon buildings (i.e. space and water heating, lighting and ventilation) by 2016/2017, if practical.

0.2 Two intermediate stages on the way to net zero carbon buildings, one change in energy standards in 2010 (low carbon buildings) and another in 2013 (very low carbon buildings).

0.3 The 2010 change in energy standards for non-domestic buildings should deliver carbon dioxide savings of 50% more than 2007 standards.

0.4 The 2010 change in energy standards for domestic buildings should deliver carbon dioxide savings of 30% more than 2007 standards.

0.5 The 2013 change in energy standards for non-domestic buildings should deliver carbon dioxide savings of 75% more than 2007 standards.

0.6 The 2013 change in energy standards for domestic buildings should deliver carbon dioxide savings of 60% more than 2007 standards.

0.7 Backstop levels of U-values and airtightness for building fabric should be improved in 2010 to match those of Nordic countries, but consideration must be given to the social and financial impact of measures that would necessitate mechanical ventilation with heat recovery in domestic buildings.

0.8 The ambition of total-life zero carbon buildings by 2030.

## We recommend for existing buildings...

0.9 Consideration of developing practical performance standards for existing buildings (aligned with the energy performance certificates).

### 1 Performance in Practice.

We recommend...

1.1 Research to review the performance achieved in use and any issues found for buildings designed to be low energy, low carbon, zero energy or zero carbon.

1.2 Monitoring of recent private and public sector low carbon domestic and non-domestic buildings in Scotland including behavioural and occupier lifestyle monitoring as well as energy efficiency, carbon footprint,

temperature, ventilation etc. built both with public funding and by the private sector.

1.3 Research to establish efficiency of existing installations of low carbon equipment.

1.4 Consideration of 'PassivHaus' performance and its effect on occupant behaviour and comfort.

### 2 Raising Standards.

We recommend...

2.1 That both the carbon dioxide emissions standard and the backstop measures should be raised as set out in the eventual and staged standards.

2.2 That the carbon dioxide emissions standard be modified to take account of energy consumption.

2.3 Consideration of inclusion within building regulations of the energy efficiency of appliances that are built-in white goods in newly-created dwellings and IT equipment in non-domestic buildings.

2.4 Consideration of the possibility of taking account of the energy performance of transportation systems, such as escalators.

2.5 Consideration of the role that building regulations can play in terms of smart meters.

2.6 Consideration of a requirement for consequential improvements and research carried out on in equitability and compliance issues.

2.7 That new public buildings should be built to future energy standards, rather than just the current standards.

2.8 Training in new technologies, new products and new standards should be a priority for all parts of the construction industry and this should be supported by the Scottish Government.

2.9 Consideration of the embodied energy within construction products in preparation for any possible change in the Construction Products Directive.

### 3 Existing Non-domestic Buildings.

We recommend...

3.1 The introduction of legislation to require all owners of non-domestic buildings to conduct a carbon and energy assessment and produce a programme for upgrading.

3.2 The empowerment of local

authorities, or similar public bodies, to check such assessments.

3.3 The publication of guidance for different types of non-domestic buildings to assist in this process.

3.4 Consideration of ways to encourage owners to implement recommendations arising from the carbon and energy assessment.

3.5 That in the procurement of buildings by the Scottish Government the rating on the Energy Performance Certificate should be a significant factor.

### 4 Existing Domestic Buildings.

We recommend...

4.1 Consideration of measures and targets for reducing carbon emissions from the existing stock and incentives to encourage home owners to undertake improvements.

4.2 As part of this strategy existing carbon and energy efficiency programmes and measures are continued, making them more carbon focussed where appropriate.

4.3 That the building regulations continue to set the minimum standards that apply when building owners elect to do work on existing domestic buildings.

4.4 That the Scottish Building Standards Agency continue to provide guidance on how to meet the minimum standards that apply to new work on the existing housing stock and should give consideration to joint 'badging' with industry bodies of such material.

4.5 That, only where there is insufficient material currently provided in the public domain, the Scottish Building Standards Agency should provide additional guidance on energy performance, sustainability and carbon dioxide saving measures to bridge the gap.

### 5 Low Carbon Equipment.

We recommend...

5.1 That the requirement for on-site low and zero carbon equipment should be reviewed and probably removed from Scottish Planning Policy 6 (Renewable Energy) as the 'very low carbon' standards are introduced in 2013.

5.2 That the energy standards for buildings should only be set at national level under the building regulations.

5.3 Consideration of the appropriate split of responsibilities for local energy generation between planning and building standards.

5.4 Research to find ways to encourage low carbon local energy centres for large developments and, where potential exists, in existing stock.

5.5 Development of guidance on safe and productive installation that is appropriate to designers, installers and the general public.

5.6 Examination of the building regulations and associated guidance with respect to low carbon equipment, including consideration of the design of buildings for the future installation of certain technologies.

5.7 Schemes for Approved Certifiers of Construction should be encouraged, so that suitably qualified and experienced tradesmen can certify that installations comply with the building regulations.

### 6 Process.

We recommend...

6.1 That the future standards should be set in advance (i.e. publish the 2010 standards in 2008 and the 2013 standards at the same time as the 2010 standards become mandatory).

6.2 Consideration of the introduction of a reduced or zero warrant fee for those designing to the future energy standards in advance of their implementation.

6.3 Consideration of the duration of warrants and examination of the possibility of requiring a substantial start to be made on site within a fixed period of the date of granting of the warrant.

### 7 Compliance.

We recommend...

7.1 Consideration of the guidance to verifiers on what constitutes 'reasonable enquiry'.

7.2 Consideration of the role and effectiveness of airtightness testing and the use of thermal imaging.

7.3 Research to understand better why there is a gap between 'as designed', 'as built' and 'as managed' energy

performance.

7.4 Consideration of the funding of verification work at the completion certificate stage.

7.5 Encouragement of the development of more schemes for certifiers of construction.

## 8 Energy Performance of Buildings Directive.

We recommend...

8.1 That primary legislation is sought to allow Scottish Ministers the opportunity to extend the provision and type of Energy Performance Certificates.

8.2 That a national electronic database is set up for collecting the information that underpins the Energy Performance Certificate calculation for non-domestic buildings

### 9 Costings.

We recommend...

9.1 Research to analyse the cost impacts on new buildings of energy standards and other sustainability measures proposed for the building regulations in 2010, including life cycle analysis techniques.

9.2 Cost benefit analyses are also undertaken of incentives through the building warrant system for building to higher levels of energy performance and of the use of tests for compliance with energy standards.

9.3 Cost benefit analyses are undertaken of measures to promote the improved energy performance of existing buildings (a duty on owners to assess and improve the condition of their buildings, a requirement for consequential improvements and extended energy certification using operational ratings for non-domestic buildings).

9.4 Research to analyse cost projections for new technologies and techniques.

9.5 That all costing research is conducted in partnership with industry, with particular attention paid to the full cost of development projects and the potential impact on construction practice.

9.6 Opportunities are taken to learn from international partners.

# Summary of Key Changes

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- Methods retained, content of section and actions needed remain familiar
- Review focused on target setting for new buildings, revised SAP & SBEM
- Improvements to energy efficiency
- Efficient services, effectively controlled, role of LCE
- Improving existing buildings

# ... for New Buildings?

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- 30% reduction in emissions - aggregate for dwellings, flat 30% for non-domestic
- Improvements in performance of fabric and services
- Role of Low Carbon Equipment
- Post-completion testing

# ...Alter, Extend and Convert?

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- Retaining elemental approach
- Improved performance of fabric and services
- Flexibility for older buildings
- NEW - improving energy performance of existing buildings

# CO<sub>2</sub> Targets – Standard 6.1

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- 30% flat improvement
- 2002 Notional building specification retained but ‘tweaked’
- Moderation of  $C_{\text{notional}}$  for cooling load
- Carbon emission factors & choice of heating fuel - ‘parity’ with 2007
- ‘Shell’ Building warrants

# Building Fabric –Standard 6.2

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- Limiting energy demand - ‘fabric first’
- Improved backstops - 10 to 20%
- Infiltration - post-completion, sample testing of all buildings
- Improvement when converting, esp. previously heated buildings
- Consistency across D & ND
- Traditional buildings

# Building Services - Overview

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- Standards 6.3 to 6.6
- Developed and addressed on UK basis - referring to 2010 CLG Building Services Compliance Guides
- Review and updating of minimum efficiencies and controls
- Standard 6.10 - enable fuller metering strategies

# Improving Non-dom Services

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- As with Climate Change work, focus on improving building services
- Why not fabric?
- Considers systems covered by standards 6.3 to 6.6
- Proportionate approach to improvement
- Develop guidance & examples

# Calculation Methodologies

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- SAP 2009 - key changes for 2010
- SBEM 2010 – recent developments and changes since 2007
- NCM Modelling Guide for Scotland
- Provide more information on SAP & SBEM on BSD web pages
- Flag forthcoming developments



# Section 6 - 2013 and Beyond

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- S6 - commitment to review
- Timetable & methods of engagement
- Research & sources of information
- Work ongoing in elsewhere in the UK (e.g. Zero Carbon Hub)
- Signalling of intent – late 2010?



# Section 6 - 2013 and Beyond

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Discussion points -

- Recognising the UK context?
- Improvements - cost and practicality
- Definition of zero carbon
- Reviewing current compliance models
- Compliance/performance

# s.63 - Improving Existing Stock

- The 2008 Consultation

ACTION ON CLIMATE CHANGE:  
PROPOSALS FOR IMPROVING  
THE ENERGY PERFORMANCE  
OF EXISTING NON-DOMESTIC  
BUILDINGS

A CONSULTATION BY THE SCOTTISH GOVERNMENT



- Sept to Nov 2008
- 500+ consultees, 71 responses
- Analysis report & SG response produced

# s.63 - Improving Existing Stock

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- Section 63 of the Climate Change (Scotland) Act 2009

(1) The Scottish Ministers must, by regulations -

(a) provide for the assessment of -

- (i) the energy performance of non-domestic buildings;
- (ii) the emission of greenhouse gases produced by or

otherwise

carried out in such buildings or with activities associated with such buildings or with activities carried out in such buildings;

(b) require owners of such buildings to take steps, identified by such assessments, to -

- (i) improve the energy performance of such buildings;
- (ii) reduce such emissions.



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# s.63 - Improving Existing Stock

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## Key issues

- Developing from current EPC base
- Relationship with existing legislation; EPBD2
- Initial scope - Building type & size covered
- Cost effective recommendations
- Reporting strategy for operational performance
- Single non-domestic register



# s.63 - Improving Existing Stock

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## Timetable

- Working Group - May 2010 onwards
- S.63 Scottish Minister report - April 2011
- Consultation - Summer 2011
- Review & develop, lay regs - end 2011
- In force - Autumn 2012, with requirement to assess identified buildings & prepare action plan

# EPBD

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- EPBD (2002/91/EC) implemented between 1 May 2007 and 4 January 2009.
- EPC where buildings are built, sold or rented out; display in large public buildings
- Inspection of A/C systems over 12kW; recommend improvements
- Advice on efficient use of boilers
- Over 250,000 EPCs issued, 13 Approved Organisations

# EPBD 2 - anticipated

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- All new buildings 'nearly zero energy' from 2020 (public authorities 2018)
- Assessment against 'cost optimal' benchmarks - TBA
- Greater promotion of the use of the EPC – use in advertisement & reduction in display 'threshold'

# EPBD 2 - anticipated

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- Tightening up on assessment process – QA on EPCs and A/C
- Improve content of EPCs - more specific to particular building, more detailed information on cost-effective recommendations & steps to be taken
- Reporting duties for Member States

# EPBD 2 - programme

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## Key issue

- Review in context of matters raised since implementation

## Timetable

- EPBD2 sign-off imminent
- Develop & Discuss/Engage
- Consultation end of 2010
- Transposition by 2012/13

# Questions?

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Steven Scott

Energy Team - BSD

e: [steven.scott@scotland.gsi.gov.uk](mailto:steven.scott@scotland.gsi.gov.uk)

t: 01506 600414



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