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# The Evolution and Future of the Zero Carbon Homes Policy: April 2011

## Outlook for the Residential Sector



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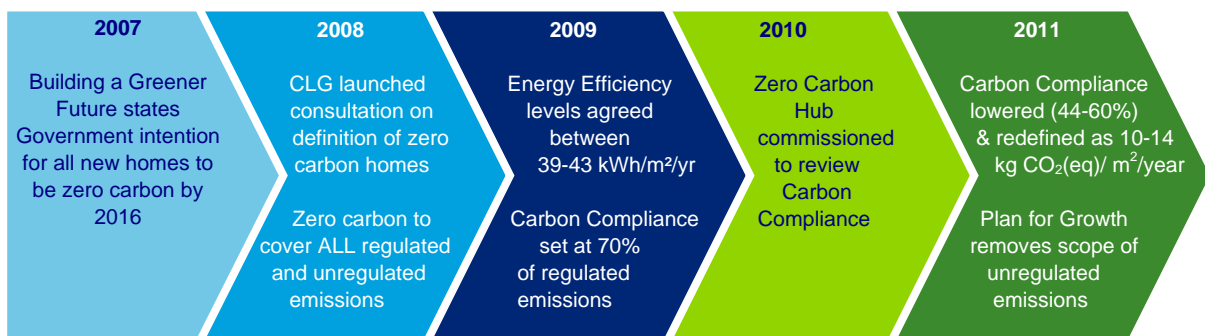
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# 1 Introduction

- 1.1 The term 'zero carbon homes' has been used with increasing familiarity over recent years. Many agree that it is a laudable ambition and a strong soundbite, but have been frustrated in trying to follow the moving definition, the resulting implications and the timetable for implementation.
- 1.2 This note outlines the evolution of the zero carbon homes policy and definition, and highlights the potential implications for planned and future residential development. It describes the key aspects of the 'history' of the zero carbon definition which can be summarised thus:



**Figure 1:** The Evolution of the Zero Carbon Policy

# 2 Policy Context prior to The Budget – March 2011

## Zero Carbon

- 2.1 In July 2007, the Government's *Building A Greener Future: Policy Statement*<sup>1</sup> announced that all new homes will be zero carbon from 2016; and in July 2010 the Coalition Government confirmed its commitment to ensure that from 2016 new homes will be zero carbon.
- 2.2 More recently, the Government's *Carbon Plan*<sup>2</sup>, released as a draft in March 2011, reconfirmed the Government's commitment stating:

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“The Government is committed to ensuring that new-build homes are zero carbon from 2016 and do not add extra carbon dioxide emissions to the atmosphere.”

- 2.3 The definition of zero carbon homes was first set out in 2008. It is in the process of being reviewed and the Zero Carbon Hub released recommendations for the scope of the revised standard in February 2011. The current thinking is set out below.

## What is Zero Carbon?

- 2.4 In advance of the announcements made at the Budget in March 2011 (see below), the current published definition considers a zero carbon home to be one where net carbon dioxide emissions resulting from **all** energy used in the occupation of the dwelling are zero or better. This calculation will include:

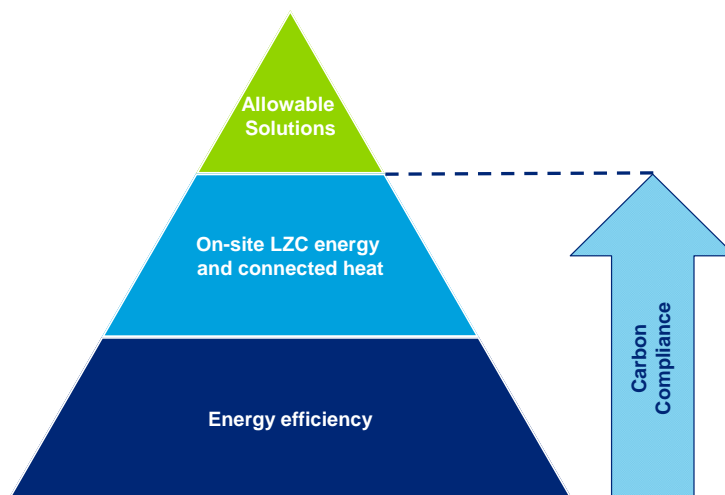
- **Regulated emissions:** space heating/cooling and hot-water systems.
- **Unregulated emissions:** all internal electrical appliances.

To achieve this target, house builders must adopt a hierarchical approach to cutting emissions as illustrated and described below:

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<sup>1</sup> Communities and Local Government, *Building a Greener Future: policy statement*, July 2007.

<sup>2</sup> HM Government, *Carbon Plan*, March 2011.



**Figure 2: The Zero Carbon Policy**<sup>3</sup>

2.5 The first two steps, the layers of the pyramid diagram in Figure 3, are together referred to as **Carbon Compliance**:

**1. Energy efficiency** – the fabric of each zero carbon home must be built to very high levels of energy efficiency. In November 2009, the government agreed on the required level of energy efficiency. The preferred metric is kWh/m<sup>2</sup>/yr covering space heating and space cooling energy demand.

To be responsive to varying proportions of external wall, two levels are proposed: 39 kWh/m<sup>2</sup>/yr for apartment blocks and mid terrace houses and 46 kWh/m<sup>2</sup>/yr for semi detached, end of terrace and detached houses.

**2. On-site low/zero carbon energy and connected heat** – new zero carbon homes will have to achieve a specific minimum level of reduction in carbon dioxide emissions from on-site and directly connected sources. It should be achieved through a combination of energy efficiency, on-site energy supply from low and zero carbon (LZC) technologies and directly connected LZC heat.

2.6 **Carbon Compliance** was originally set at a 70% reduction in carbon dioxide emissions from on-site and directly connected sources, compared against 2006 Building Regulations. However, the building industry expressed concern that this would be too costly and would block development. In 2010 the Government commissioned the Zero Carbon Hub to review the level of Carbon Compliance and establish a stringent target to push innovation, but not to compromise the viability of new housing and the resulting delivery of actual carbon savings.

2.7 In February 2011, the Zero Carbon Hub<sup>3</sup>, recommended that the **Carbon Compliance** limits for built performance (derived from energy efficiency and on-site or directly connected LZC sources) from 2016 should be:

<sup>3</sup> Zero Carbon Hub, *Carbon Compliance: setting an appropriate limit for zero carbon new homes – findings and recommendations*, February 2011.

- 10 kg CO<sub>2</sub>(eq) / m<sup>2</sup>/year for detached houses  
(equivalent to a 60% reduction in CO<sub>2</sub> emissions)
- 11 kg CO<sub>2</sub>(eq) / m<sup>2</sup>/year for attached houses  
(equivalent to 56% reduction in CO<sub>2</sub> emissions)
- 14 kg CO<sub>2</sub>(eq) / m<sup>2</sup>/year for low rise apartment blocks, four storeys and below  
(equivalent to 44% reduction in CO<sub>2</sub> emissions)

These standards will form the basis of the 2016 Building Regulations, and although still stringent, they will lessen the burden on housebuilders and place a greater emphasis on off-setting residual carbon emissions.

2.8 The third step in the zero carbon hierarchy in Figure 3 is to mitigate the remaining carbon emissions:

- 3. Allowable Solutions** – the remaining emissions reduction will be achieved through a range of allowable solutions, which secure carbon savings away from the site. Allowable Solutions are anticipated to be agreements whereby developers pay a set sum of money to make up for any carbon emissions that they cannot mitigate on site. These funds could then pay for renewable energy in the community. The details are yet to be determined and Allowable Solutions will be capped at an agreed cost (per tonne of CO<sub>2</sub> saved).

## The 2011 Budget

2.9 The Government's *Plan for Growth*<sup>4</sup>, a supplementary document to the 2011 Budget, announced the Government's revised regulatory requirements for zero carbon homes, to apply from 2016.

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“To ensure that it remains viable to build new houses, the Government will hold housebuilders accountable only for those carbon dioxide emissions that are covered by Building Regulations, and will provide cost-effective means through which they can do this.”

2.10 The revised zero carbon calculation will therefore include:

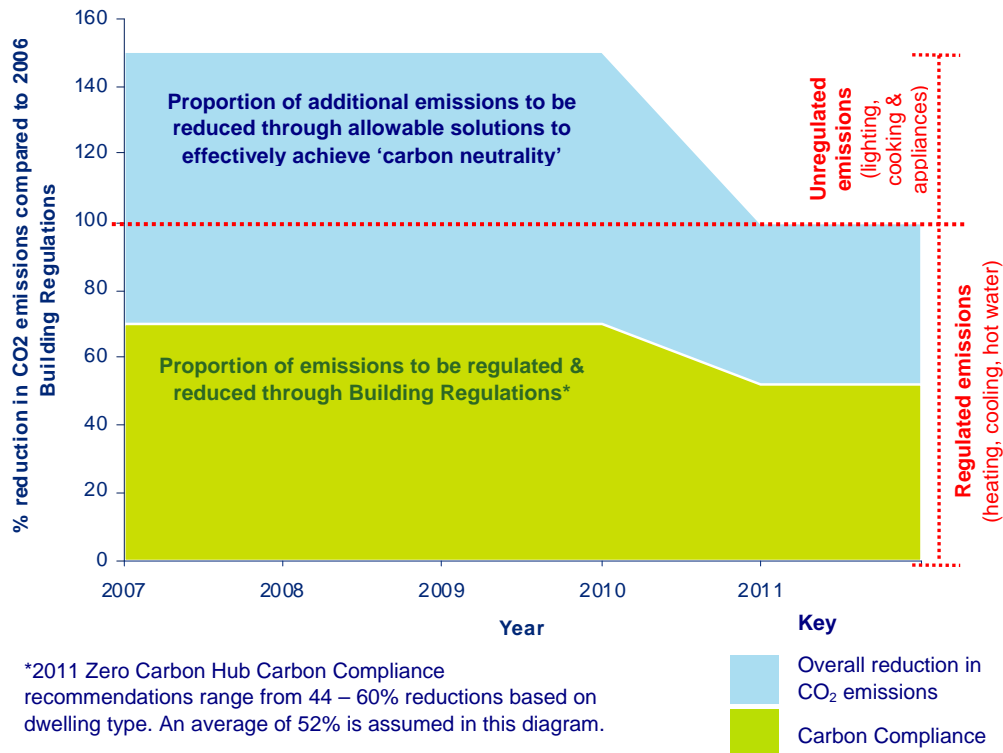
- **Regulated emissions:** space heating/cooling and hot-water systems.
- BUT NOT**
- **Unregulated emissions:** all internal electrical appliances.

2.11 In effect, Carbon Compliance will be required through updated Building Regulations, and Allowable Solutions will still exist, but only to move beyond Carbon Compliance to capture regulated emissions, not all emissions. Therefore from 2016 new homes will no longer have to make a net zero addition to the carbon footprint of the UK's overall housing stock.

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<sup>4</sup> HM Treasury: *Plan for Growth*, March 2011.

2.12 According to the UK Green Building Council<sup>5</sup>, it is thought the change of policy will result in the direct mitigation of approximately two thirds of emissions from the typical home over the course of a year; reducing true zero carbon homes to low carbon homes in reality.



**Figure 3:** The changing scope of carbon emissions covered by Zero Carbon Policy

## Zero Carbon vs Code Level 6

2.13 The Code for Sustainable Homes<sup>6</sup> currently defines zero carbon for Code Level 6 as follows:

Where net carbon dioxide emissions resulting from ALL energy used in the dwelling are zero or better. This includes the energy consumed in the operation of the space heating/cooling and hot-water systems, ventilation, all internal lighting cooking and all electrical appliances.

Off-site renewable contributions can only be used where these are directly supplied to the dwellings by private wire arrangement.

2.14 This definition is therefore more stringent than the current Government thinking on zero carbon as it applies to both regulated and unregulated emissions, and only takes account of off-site low or zero carbon technologies which are directly connected to properties by private wire. Off-site allowable solutions are not accounted for.

<sup>5</sup> UK-GBC Press Release on the Budget: Government's U turn on Zero Carbon is anti-green and anti-growth, 23 March 2011.

<sup>6</sup> Code for Sustainable Homes Technical Guide, Version 2, May 2009.

- 2.15 The revised definition of Zero Carbon now only meets Code for Sustainable Homes Level 5. Code Level 5 requires that 100% of the emissions from heating, lighting and heating hot water need to be reduced or generated onsite.
- 2.16 It is understood that Building Regulations and the Code for Sustainable Homes will both be aligned to the Government's new definition of zero carbon once this has been formally defined. A date for the revisions of these standards is not yet known.
- 2.17 In the meantime a Code Level 6 home will be assessed against significantly higher energy standards than required by regulation both now and in the foreseeable future.
- 2.18 Similarly, developments aspiring to Eco-towns standards, which also define zero carbon as net carbon dioxide emissions from **all** energy use, will be designed to more onerous energy requirements than industry regulation requires. However, the political support for Eco-towns is waning and the standards are expected to be relaxed or abolished under planning policy with the introduction of the National Planning Policy Framework, which is due to be launched for public consultation later in 2011.

### Implications for Planned Development

- 2.19 The key implications of this policy change will depend on how Government's revised regulatory requirements for zero carbon homes impacts the status of the Code for Sustainable Homes, in particular Level 6, in addition to local development policies.
- 2.20 Developments already planned to be zero carbon or Code Level 6 will be subject to abnormal costs of delivering net zero carbon homes and buildings when the rest of the market is not building to this standard.
- 2.21 Given the absence to date of any clear carbon differential in relation to property value, and the expectation this is like to remain largely the case in the residential sector in the future, there will be an impact on the commercial viability of schemes, which may not have not been anticipated. In effect there could no longer be a level playing field across the market from 2016 if all new homes are built to differing zero carbon standards.
- 2.22 Furthermore, the Zero Carbon Hub publication on Carbon Compliance<sup>3</sup> touches on the impacts of Localism on the zero carbon agenda. The Zero Carbon Hub recommend there should be no local power to set a different limit for Carbon Compliance. However, should the Government wish local authorities to be able to set a more stringent level the following should apply:
- Local authorities should be required to set out Carbon Compliance requirements in local plans whose soundness will be independently tested.
  - Local plans and specific planning policy conditions should be underpinned by rigorous technical analysis and should use the same metric as in Building Regulations.

- House builders should be given flexibility in how they deliver the local derived Carbon Compliance level, subject to any conditions within the local plan.
  - Local plans and specific consents should be subject to whatever new arrangements the Government introduces to constrain the total regulatory burden such as a commercial viability test.
- 2.23 Given the new indication to relax zero carbon policy, the current Code Level 6 requirement net zero carbon solutions will undoubtedly be deemed too onerous by the market and it is unlikely that developers would continue to plan for this standard.
- 2.24 However, the Code for Sustainable Homes has been recently updated in line with the updated Building Regulations 2010, and it is anticipated that Code Level 6 will be further reviewed in light of the revised Government definition of zero carbon. It is certain that the Code will be amended again before the eventual 2016 definition takes effect.

## Final Thoughts

- 2.25 Continuing to use the term “**zero carbon**” could be misleading, if the target is to change in line with recent Government announcements. It has been suggested that “**low carbon**” homes could be a more realistic label.
- 2.26 Although the aim is that all new homes will still be “zero carbon” from 2016, they will now meet only Code Level 5 rather than Level 6 of the Code for Sustainable Homes.
- 2.27 The ambitious UK target of an 80% reduction in carbon dioxide emissions by 2050, set by the Government<sup>7</sup>, still remains. Housing represents approximately one quarter of the UK’s total emissions and is expected to play a key role in meeting the national reduction target. Therefore the relaxed definition of zero carbon new homes proposed by the Government means that the existing housing stock will have to take on greater emission reductions in order to realise the national target.
- 2.28 Furthermore, one of the objectives of the Code for Sustainable Homes is to encourage best practice beyond regulatory compliance. Application of enhanced standards where the higher levels of the Code goes further than current Building Regulations is entirely voluntary, other than where it is a requirement of planning or grant-funding conditions, but is intended to help promote even higher standards of sustainable design. Should Code Level 6 therefore conform to the Government’s new definition of zero carbon, or continue to drive more significant carbon reductions through innovation and community based infrastructure?

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<sup>7</sup> The Climate Change Act, 2008.

- 2.29 Communities and Local Government are in the process of determining the definition of zero carbon for new non-domestic buildings. The approach is following the domestic zero carbon hierarchy and carbon compliance is currently under review. The revised regulatory requirements for zero carbon homes are therefore also likely to impact the emerging policy for non-domestic buildings.
- 2.30 There is also increasing recognition that the theoretical outcomes of any regulatory standards, including Code levels, are subject to significant variances in resident behaviour with regard to energy usage. We recognise that buildings do not consume energy on their own – people do. Along with a number of other organisations, we are engaged in research into the obstacles to achieving the designed results, and how these might impact on the policy, financing, marketing and ongoing maintenance of new housing stock.

### **National Planning Policy Framework**

- 2.31 The 2011 Budget also announced the principle of a 'presumption in favour of sustainable development' which will underpin the entire National Planning Policy Framework. The framework will set out the Government's clear expectation that the default answer to development and growth should be 'yes', except where this would compromise the key sustainable development principles set out in national planning policy.
- 2.32 The Government will publish a draft presumption in favour of sustainable development in May 2011, alongside details of how it proposes to integrate the presumption into national planning policy. Whilst sustainable development encompasses many more factors than carbon emissions alone, the alignment of this with the emerging Localism agenda could have significant impact on the viability of development.

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“...A zero carbon home will no longer do what it says on the tin. The world leading commitment that new homes would not add to the carbon footprint of our housing stock from 2016 has been scrapped despite a remarkable consensus between industry and NGOs in support of it... This U-turn will result in loss of confidence leading to lower investment, less innovation, fewer green jobs and fewer carbon reductions...”

Paul King, UK-GBC Chief Executive

For further details of the documents referenced in this briefing note, please refer to the Drivers Jonas Deloitte Sustainability Timeline Tool  
<http://www.djdeloitte.co.uk/sustainabilitytimeline>

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