Today’s attitudes to low and zero carbon homes
Views of occupiers, house builders and housing associations

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The NHBC Foundation was established in 2006 by the NHBC in partnership with the BRE Trust. Its purpose is to deliver high-quality research and practical guidance to help the industry meet its considerable challenges.

Since its inception, the NHBC Foundation’s work has focused primarily on the sustainability agenda and the challenges of the Government’s 2016 zero carbon homes target. Research has included a review of microgeneration and renewable energy technologies and the earlier investigation of what zero carbon means to homeowners and house builders.

The NHBC Foundation is also involved in a programme of positive engagement with Government, development agencies, academics and other key stakeholders, focusing on current and pressing issues relevant to the industry.

Further details on the latest output from the NHBC Foundation can be found at www.nhbcfoundation.org.

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Glossary

Acronyms

CSH  Code for Sustainable Homes
DCLG  Department for Communities and Local Government
EPC  Energy Performance Certificate
FIT  Feed-in Tariff
MVHR  Mechanical Ventilation and Heat Recovery
RHI  Renewable Heat Incentive

Definitions

Enhanced new home  Defined for the purposes of this report as a home built in the last 2 to 3 years to higher standards of energy efficiency than required by the applicable Building Regulations. These include those built to Levels 4, 5 and 6 of the Code for Sustainable Homes (CSH) and its predecessor EcoHomes Very Good and Excellent

Existing home  Defined for the purposes of this report as one which is 5 or more years old

Housing association  Also known as registered provider and social landlord

New home  A home built to the applicable Building Regulations within the last 2 to 3 years

Occupiers  People renting as well as owners of properties. It includes tenants of housing associations and people renting privately

Renewable energy technologies  On-site solutions providing heating or power which are more efficient or emit less carbon than more traditional solutions

Technological features  Renewable energy technologies, controls and other equipment built into enhanced new homes eg rainwater harvesting or greywater recycling

Zero carbon homes  A definition of zero carbon homes is given in section 5
Foreword

The NHBC Foundation was established in 2006 to provide practical and relevant research to support the house-building industry, with particular emphasis on the sustainability agenda. With over 30 publications to date, the NHBC Foundation is now a leading knowledge resource for the industry, focusing on its three core research priorities of zero carbon, risk management and the consumer.

In 2008, NHBC Foundation published NF9 Zero carbon: what does it mean to homeowners and house builders? This innovative research provided a valuable insight into attitudes to low and zero carbon, including climate change, energy efficiency and microgeneration. In the time since its publication, much work has been done in line with the recommendations, but it is clear that in 2012 there is still some way to go.

In the 4 years since this research was published, the UK has undergone significant changes. The impact of the late 2008 recession that lasted officially for 18 months created an ongoing impact on a number of industries, particularly house building and the wider construction sector. A change of Government in 2010 was followed by a number of economic austerity measures, and combined with reduced availability in mortgage lending, slowed the housing market significantly. Official figures from NHBC show a fall of just under 30% in the number of completions between 2008 and 2010.

Positively, consumer awareness of, and engagement with, renewable technologies has gained momentum since 2008. Incentives such as the Feed-in Tariff and the forthcoming Renewable Heat Incentive and Green Deal have all contributed to an increase in domestic use of these technologies especially when utility bills are rising year-on-year. While the level of financial incentive looks set to be cut over the coming years, the commitment to building zero carbon homes remains in place, underlined by the clarification of the zero carbon definition in March 2011. The Government’s new Housing Strategy, published in November 2011 expresses hope for the number of new homes built to be increased dramatically, but it is important that they meet the new regulations and provide an energy-efficient lifestyle for their occupants.

At NHBC Foundation’s 5th anniversary event in January 2011, the hosted panel debate covered a wide range of issues, but one theme quickly emerged as crucial to the success of this agenda: winning hearts and minds of owners is the way forward to ensuring a sustainable future. Against an uncertain future for the industry, building zero carbon homes that consumers want to buy and live in is vital to the buoyancy of the market.

We therefore felt it appropriate for NHBC Foundation to revisit this research now, 4 years on, and to extend its remit. For the first time the opinions of housing associations as owners and their tenants have been included, along with the first independent study of occupiers in high Code for Sustainable Homes Level homes. This both enhances the previous study, and provides a more rounded survey of attitudes across the industry.

I hope that you find this research informative, and look forward to it helping to shape future development of zero carbon homes.

Rt. Hon. Nick Raynsford MP
Chairman, NHBC Foundation
Announced at NHBC Foundation’s 5th anniversary event in January 2011, this primary research study was commissioned to investigate attitudes to zero carbon housing and technologies in the 4 years since publication in 2008 of NF 9 *Zero carbon: what does it mean to homeowners and house builders?*.1

NF 9 was published at an important time for sustainable housing, and intervening years have seen the economic and political landscapes of the UK undergo significant changes. The recession, which began in the third-quarter of 2008, ran for 6 successive quarters until the end of 2009. The recovery has been slow, with subsequent quarters posting around 0.5% growth on average, including one-quarter of negative growth in 2010. The recession impacted heavily on the house-building industry, with NHBC statistics showing that from 2008 to 2010, housing completions fell from 148,000 to 103,000, representing a drop of almost 30% in 2 years.

The following areas of concern were raised in the 2008 research as items requiring further consideration: education, development cost and financing, investment in technology, health and safety and central coordination.

Since publication of NF 9, and despite the financially difficult times, much progress has been made to alleviate these concerns. National media campaigns have been run to inform consumers about home energy efficiency and products, both DIY and those requiring a qualified installer, appear more prevalent and increasingly available.

June 2008 saw the launch of the Zero Carbon Hub. The Hub has brought people together and carried out important work to explore the technical and financial aspects of the proposed 2016 requirements. The likely industry skills and knowledge requirements, and how homes might best appeal to consumers are also areas of focus for the Hub and continue to be examined.

1 Introduction
Over the last 4 years NHBC Foundation has engaged with a wide range of organisations and published information and guidance addressing such topics as the installation of renewable energy systems on roofs of dwellings, indoor air quality and the Feed-in Tariff (FIT). Current projects include the investigation of overheating in dwellings, a review of building performance test methodologies and an examination of how occupants interact with building control systems.

Following the May 2010 general election, the new Coalition Government’s first full budget in March 2011 announced clarification of the zero carbon new homes policy, confirming that it would now solely address emissions resulting from the use of regulated energy – in effect meaning that the house builder would not be responsible for CO₂ emissions arising from an occupant’s use of appliances. More information on the revised definition can be found in section 5.

To encourage a reduction in CO₂ emissions from the domestic sector, the FIT was introduced through legislation, providing a financial encouragement for the installation of renewable and low carbon electricity generation equipment. Significant cuts to the FIT payment rates were proposed in October 2011 and the effect of this, at both domestic and industry level, is yet to be felt. The forthcoming Renewable Heat Incentive (RHI) aims to significantly increase the proportion of heat generated from renewable sources, and at the time of printing has been delayed while compatibility with European Union state aid rules is resolved. A consultation on the Green Deal ended on 18 January 2012 and it is anticipated that this initiative will reduce CO₂ emissions from existing homes.

With this constantly changing background and 4 years after the first study, NHBC Foundation considered it important to undertake this new research project, aiming to achieve the following objectives:

- to determine if attitudes to zero carbon homes have changed since the 2008 study by comparing current findings with those of 4 years ago
- to broaden the scope of the research and establish views of major parties including those of housing associations, tenants, and those with experience of occupying an enhanced new home
- to identify any challenges that could impact on the successful delivery of zero carbon homes on a large scale.

Acceptance of the Government’s 2016 zero carbon requirements is reliant on an informed industry and engaged occupiers who will want to take advantage of, and benefit from, new energy efficient homes. Changes to Building Regulations over the past 4 years are leading the way towards delivery of the zero carbon homes policy, but there are very few independent studies assessing how these changes are impacting industry and consumers alike.

2012 research report

*Today’s attitudes to low and zero carbon homes* reveals the current thoughts, awareness and understanding towards issues such as climate change, the CSH, the 2016 zero carbon definition, airtightness and renewable technologies.

The new research summarised in this executive briefing assesses the priorities of industry and the consumer when building or purchasing a new home, and looks at views that could impact upon new homes of the future. Improving on the 2008 study, more rounded findings are presented with the addition of views from housing associations and tenants.

The executive briefing sets the context for the research and presents the key findings, recommendations and revised definition of zero carbon homes. A detailed examination of responses from occupiers, house builders and housing associations is contained in parts 2 and 3 of the full report: NF 40ii *Today’s attitudes to low and zero carbon homes.*
2 Methodology

The research involved both qualitative and quantitative stages:

- **Stage 1 qualitative**: 7 focus groups were conducted in different regions, engaging 51 respondents in facilitated discussion.
- **Stage 2 quantitative**: interviews with a representative sample of 1,331 occupiers and 101 house builders and housing associations.

### 2.1 Research with occupiers

- 5 focus groups of occupiers, including some living in enhanced new homes (homes built in the last 2 to 3 years to higher standards of energy efficiency than required by the applicable Building Regulations)
- 300 in-home interviews with occupiers of existing homes at least 5 years old
- 50 in-home interviews with occupiers of new homes (homes built to applicable Building Regulations in the last 2 to 3 years)
- 54 in-home interviews across a number of developments with occupiers of enhanced new homes built in the least 2 to 3 years to higher standards of energy efficiency than required by the applicable Building Regulations
- 927 telephone interviews with occupiers across all tenures and home types.

With the proportion of people renting homes standing at 30%, and expected to increase, occupiers renting homes as well as owners were included in the survey.
2.2 Research with house builders and housing associations

- 2 focus groups with house builders and housing associations
- 101 telephone interviews with house builders and housing associations, whose combined organisations represent about 12% of new homes built and 10% of the managed social housing stock.

2.3 Weighting of results

The results of interviews with occupiers have been weighted in two ways to ensure they are representative of the population:

- New homes built in the last 2 to 3 years represent about 2% of the entire housing stock. Therefore where views of those living in a new home are combined with those living in an older property, a factor is applied to ensure that the combined figure reflects the true proportions in which they occur.
- Occupiers’ results are weighted to ensure views are representative of the population by region, age, male/female ratio, occupational group and type of tenure of home.
3  Key findings

The zero carbon agenda has moved on considerably since the publication of NF 9 Zero carbon: what does it mean to homeowners and house builders? in 2008[1]. More homes have been constructed to higher energy efficiency standards, increasing collective experience of design, build and occupation of these homes.

Four years on, NHBC Foundation has revisited the study to establish how this increased experience has impacted industry and consumers, and to help guide the Government’s 2016 zero carbon requirements.

The 2008 study concluded that occupiers were reluctant to adopt the lifestyle changes associated with low and zero carbon homes, and that focusing on cost-saving benefits would provide the best means of encouraging interest in these homes and the technical features incorporated in them. At that time, house builders were concerned about meeting the sustainability targets and delivering high volumes of affordable and appealing homes.

This current study indicates a positive shift in attitude and engagement by consumers compared with the 2008 findings and identifies areas of concern, raised by both house builders and housing associations. Sections 3.1 to 3.12 give a summary of the key findings.

3.1  Occupiers like their new and enhanced new homes

Levels of satisfaction expressed by those occupying new or enhanced new homes are high, with only 5% of respondents stating they are dissatisfied with the experience of living in their homes. As in 2008, location remains the key consideration when choosing a home. When compared with occupiers’ previous homes, those living in new homes consistently prefer features of their new homes to those of their old homes; foremost among these are the design of living spaces
and ability to maintain comfortable internal temperatures. Furthermore, many could not think of anything they dislike about their new home, with most owners of enhanced new homes stating that they would choose another similar home again.

3.2 New and enhanced new homes help occupiers save money on energy bills

Energy efficiency remains a minor consideration for consumers when choosing a home, with small numbers identifying it as a specific feature that attracted them. However, on further questioning, 96% of respondents regard the cost of energy bills as important to them, with most expecting that a new home would have lower energy bills. Over two-thirds of occupiers of new or enhanced new homes stated that they are satisfied or very satisfied with their energy bills, compared with a little over one-third of occupiers of existing homes. Over half say their energy bills are lower in their new or enhanced new home, which was also consistently reported in the focus groups.

3.3 Those looking to move need more information about energy savings

Just over half of all respondents are aware of the mandatory Energy Performance Certificate (EPC). However, of the consumers looking to move or those who had recently moved, only around one-third recall seeing an EPC, a figure that reduced to less than a quarter of respondents in the rental market. Of all those looking to move, or those who had recently moved, just 12% say that the EPC influenced them. Most house builders use the mandatory EPC ratings in their marketing, but very few provide projected energy usage or costs for the home to potential buyers. In most cases, lower energy bills are intimated but not quantified in monetary terms. In general, occupiers say that information on utility bills would be helpful in making a decision about buying a home, rather than simply being told it is energy efficient.

3.4 Some attitude and behaviour change is evident

Most occupiers consider climate change as a global threat, but only one-third consider it a major global threat. Concern about climate change appears slightly lower than in the 2008 study, reflected in an increase in the percentage of people who think there is no evidence for climate change. There appears to be more concern expressed about scarcity of resources, such as oil and gas, than for climate change and few consider energy used in homes to be a major influence on CO₂ emissions. Most occupiers say they are doing more to reduce energy use now than 4 years ago. Unprompted, two-thirds state that they turn off lights and over half say that they have installed energy-efficient light bulbs. Behaviour change is also evident in lower water usage, with many saying they take showers instead of baths to save water. The ‘carbon rebound’ effect is also evident, with most respondents saying they would spend any money saved on energy bills on things such as a new television or a foreign holiday that would actually increase their carbon footprint. Only a small number would invest savings in additional energy efficiency measures for their home to save even more money on their bills.

3.5 There is confusion about zero carbon homes

Most house builders and housing associations say that their organisations understand the revised definition of zero carbon homes that will apply from 2016. However, further questioning reveals confusion about much of the detail and the associated costs of construction. A high proportion of occupiers associate very energy efficient homes with contemporary design. However, more than half of
house builders say they will be able to meet the zero carbon requirements by modifying existing more traditional designs – a style preferred by the vast majority of occupiers and a preference that increases with the age of respondent.

3.6 Home valuations do not take renewable technologies into account

An overwhelming majority of house builders that expressed an opinion think that valuers and lenders do not place a premium on new and enhanced new homes when compared to the secondhand market. Valuers and lenders have reported anecdotally that if consumers placed a premium on new or enhanced new homes, then they would follow suit. Findings show that house builders think, or have found, that very few occupiers are prepared to pay a premium for an enhanced new home, when in fact a high number of occupiers state that they would pay a premium when it is directly linked with a saving in energy bills. Interest in paying a premium decreases with age of respondent with the majority of those not interested stating ‘payback period’ as the main reason. Owners of enhanced new homes with environmentally-friendly features believe that it will make their home more saleable.

3.7 There is some industry scepticism around implementation of zero carbon targets

Approximately half of house builder and housing association respondents consider that the zero carbon requirements will be achieved between 2016 and 2020. Some think it will never happen. Few house builders have experience of building to enhanced energy efficiency standards, such as the higher levels of the CSH, and many will wait until the Building Regulations change before considering the requirements. Most believe that zero carbon homes will have a negative effect on profitability, a factor, that combined with confusion about future requirements, cost and valuation concerns, may be influencing decisions about building to enhanced energy efficiency standards. Estimates of the additional build cost per dwelling required to meet the proposed 2016 requirements vary widely and differ from existing published figures.

3.8 User-friendly terminology would benefit consumers

Description of the home has a strong effect on how occupiers perceive its attractiveness. Almost three-quarters of those asked find the term ‘energy efficient home’ the most likely to attract them, far more than those who like the terms ‘eco home’ and ‘zero carbon home’ – despite eco home being the most widely recognised. There is some scepticism about the term ‘zero carbon’ because of doubts about whether any home can be truly zero carbon. Other terminology issues include terms such as ‘airtight’ and ‘greywater recycling’. Fewer than half of respondents think that an airtight home sounds like it would be a positive thing until it is described in an alternative way. Similarly, the term greywater recycling was perceived negatively among the focus groups but when a different description was provided, a more positive response was given.

3.9 Financial incentives could encourage more occupiers to buy or rent a very energy efficient home

Very few occupiers had heard of the existing financial incentives for renewable technologies such as the FITs or forthcoming RHI. There is an appetite for financial incentives such as lower council tax, stamp duty reduction or an income tax refund to encourage occupiers to move to a more energy efficient home, suggesting these preferred options could be used to encourage higher take-up.
3.10 Action is needed to help understanding of use and maintenance of renewable technologies

Although a large number of both owners and tenants had been given instructions and/or training on how to use the technologies in their new home, it was widely recognised in each of the focus groups (including house builders and housing associations) that the quality of information is currently inconsistent and often inadequate. Most believe that there is a need for user-friendly information to be provided to owners and tenants on the maintenance and use of the technologies in order to achieve the potential energy and carbon savings and to ensure a safe environment – an opinion reinforced by commitments from 8 out of 10 house builders and housing associations who plan to improve the information provided. A high percentage of occupiers with a solar thermal or solar electric system fitted feel that they benefit from it, but a lesser number feel that they understand how to operate it correctly. When questioned about maintenance and filter changing for Mechanical Ventilation and Heat Recovery (MVHR) units, most respondents with the systems fitted stated that they have not carried out any maintenance. In addition, those with MVHR systems appear to open windows just as much, if not more, than those in homes without the systems, although doing so should generally be avoided.

3.11 Some new technologies attract consumers more than others

Most occupiers perceive reduced energy bills to be the biggest benefit of having technological features fitted to their homes. Most occupiers of existing homes have fitted or plan to fit energy-efficient light bulbs, however very few have solar panels or plan to install them. There is a high level of awareness of solar technologies, but much less so of ground source heat pumps, combined heat and power, MVHR, biomass boilers and air source heat pumps. Over half of people are either slightly or strongly attracted to buying a home with solar panels fitted – either solar thermal or solar electric. Interest declines with age of respondent for solar as well as other systems and there is less interest among those buying in comparison to those looking to rent. Issues raised by consumers across a number of technologies show a strong financial focus, with concerns including potential savings, payback periods and maintenance costs.

3.12 There are concerns about product manufacturers’ service

House builders and housing associations have concerns about the abilities of product suppliers to satisfactorily meet their needs. As a result, 45% of housing associations have experience of installing back-up systems and 27% have had to decommission a technology. Less than one-third of house builders and housing associations could think of an example of good service from a supplier. A number of areas were raised where there is scope for improvement including a lack of trained installers (who were blamed for 90% of failures), poor after-sales support and a need for more user-friendly information for occupiers.
The overriding recommendation drawn from this research is that the topic of zero carbon homes needs to be simplified – from communications and language to operation and maintenance, for the benefit of both industry and occupiers. This recommendation will be achieved in the ways outlined in sections 4.1 to 4.7.

4.1 Link energy efficiency of new homes to cost benefits

The house-building industry should use the energy efficiency of new homes as an opportunity to emphasise the benefit of lower running costs. This should be the primary message, over and above climate change. Many house builders indicate that they promote some energy efficiency or utility bill information, but it is clear from the research that occupiers want further quantification of running costs for homes and payback periods for technological features.

Recommendations

- The house-building industry should emphasise the lower running costs that result from the energy efficiency of new homes through their marketing materials and sales staff.
- The Government should undertake a review of the EPC, mandatory during the purchase or rental of a home, to ensure they better inform consumer views with accurate, actual home running costs.
4.2 Develop consumer-friendly terminology

Consumers generally are finding it difficult to understand the number of terms that are associated with zero carbon homes. While ‘energy efficient’ appears to be the most popular, other references and the names of technologies themselves are struggling to be accepted.

Recommendations
- House builders need to adopt terminology that is user-friendly, engaging and easily understood, appealing to both buyers and renters.
- A lexicon of terminology should be developed that will allow the industry and consumers to benefit from a consistent approach.

4.3 Improve valuation of energy efficient new homes

The addition of designer kitchens and bathrooms can lead to higher property valuations, whereas fabric efficiency or renewable technologies fail to attract the same level of financial recognition.

Recommendation
- Valuers and mortgage lenders must recognise that new homes, built to higher levels of energy efficiency, save owners money in running costs and need to factor this into valuations and lending decisions.

4.4 Deliver better information for occupiers

There is a very real need to provide improved information to occupiers at two key stages: prior to purchase to help them make an informed purchase or rental choice, and on moving in, so that efficient use of technological features can be explained.

Recommendation
- Urgent further work needs to be carried out by house builders on developing a combination of user-friendly instructions and guides, training and intuitive control systems and the most effective use of each.

4.5 Provide clear information on current financial incentives to stimulate interest in renewable technologies

It is clear from the research that many occupiers have little knowledge of existing financial incentives such as the Feed-in Tariff which aims to encourage the generation and use of renewable electricity.

Recommendation
- To further encourage occupier engagement with renewable technologies and potentially drive aspiration, simple and concise information about current financial incentives should be provided. Taxation breaks such as reduced stamp duty or council tax could also be explored in further detail.
4.6 Work with product manufacturers to deliver reliable technologies to the market

A number of housing associations indicate that they have built in back-up systems in anticipation of technologies failing, or in some cases, have decommissioned systems considered to be unreliable.

Recommendations
- Manufacturers need to develop products that work well in practice, give greater confidence to house builders and housing associations and reduce the need for back-up systems.
- Technical support, including clearer instructions on installation, use, maintenance and improved training needs to be provided to both house building companies and individual installers.

4.7 Improve understanding of zero carbon homes

While understanding of zero carbon homes policy has increased in the past 4 years, it is clear that further clarification of the revised 2016 definition and better communication is needed for house builders and housing associations, responsible for developing the UK’s new homes.

Recommendations
- The zero carbon definition has been subject to much change and it has been hard for industry to fully understand the current proposals. The Government needs to confirm the remaining parts of the definition without delay to give the industry the confidence required to engage with and rise to the challenge it presents.
- Continued communication to industry is required to ensure that those responsible for delivery are fully informed.
5 Zero carbon homes defined

5.1 The zero carbon new homes policy

In July 2007, the Department for Communities and Local Government (DCLG) published Building a greener future: policy statement\(^2\), confirming the Government’s intention for all new homes to be zero carbon from 2016. Progressive tightening of the energy requirements within the Building Regulations would ensure delivery of that policy.

Originally, the term ‘zero carbon home’ within the context of the policy was envisaged to be ‘no net CO\(_2\) emissions resulting from all energy used within a home over the course of a year’. At that time the policy was to address regulated energy use (from space and water heating, fixed lighting, pumps and fans) and unregulated energy use (from occupants’ use of plug-in household appliances and cooking). Together these energy uses result in approximately 3.2 tonnes of CO\(_2\) emissions per year for a typical new home, with about two-thirds attributable to regulated energy use and one-third to unregulated energy use. This is illustrated in Figure 1, which also shows the steps in Building Regulations requirements that were anticipated and the comparable level of requirements set by the CSH. It is in this context that the research for NF 9 Zero carbon: what does it mean to homeowners and house builders?\(^1\) was carried out in 2008.

In March 2011, Budget announcements stated that the zero carbon new homes policy would solely address emissions resulting from the use of regulated energy – in effect meaning that the house builder would not be responsible for CO\(_2\) emissions they have the least influence over, ie those arising from cooking and the use of appliances by occupants. It is in this context in which data has been gathered for this study. Figure 2 illustrates approximately 1.1 tonnes of CO\(_2\) emissions resulting from the use of unregulated energy which will not be abated by the revised zero carbon new homes policy and also shows the comparable level of requirements set by the CSH (Levels 3 and 5).
Zero carbon homes defined

Pre-2010 CO₂ emissions target (2006 Part L1A)

2010 CO₂ emissions target (2010 Part L1A)

2013 CO₂ emissions target (2013 Part L1A)

2016 Zero net CO₂ emissions from regulated and unregulated energy use (2016 Part L1A)

Pre-March 2011 position

CO₂ emissions from regulated energy use – space and water heating, fans, pumps and fixed lighting

CO₂ emissions from unregulated energy use – cooking and plug-in appliances

Approximately 3.2 tonnes of CO₂ per year

Zero carbon target

Figure 1 Pre-2011 understanding of the zero carbon new homes policy (source: Zero Carbon Hub, 2011). Numbers 3 and 6 represent relevant Code for Sustainable Homes Levels

Post-March 2011 position

CO₂ emissions from regulated energy use – space and water heating, fans, pumps and fixed lighting

CO₂ emissions from unregulated energy use – cooking and plug-in appliances

Approximately 2.1 tonnes of CO₂ per year

Zero carbon target

Emissions from unregulated energy use no longer form part of the zero carbon target

Pre-2010 CO₂ emissions target (2006 Part L1A)

2010 CO₂ emissions target (2010 Part L1A)

2013 CO₂ emissions target – to be confirmed (2013 Part L1A)

2016 Zero net CO₂ emissions from regulated energy use (2016 Part L1A)

Figure 2 Post-2011 understanding of the zero carbon new homes policy (source: Zero Carbon Hub, 2011). Numbers 3 and 5 represent relevant Code for Sustainable Homes Levels
5.2 The zero carbon new homes policy and the Code for Sustainable Homes

The CSH is a nationally recognised standard for the sustainable design and construction of new homes. It uses 9 categories to rate a new home with the amalgamated scores giving the home a 1 to 6 star rating or CSH Level. In 2008 it became a requirement for new homes to be rated against the CSH and as part of funding or planning requirements it has been common to stipulate achievement of a specific rating against the CSH.

The CSH rates the most sustainable new homes as achieving Level 6 based on assessment against 9 categories:

- Energy and CO\(_2\) emissions
- Water
- Materials
- Surface water run-off
- Waste
- Pollution
- Health and well-being
- Management
- Ecology.

Of the 9 categories, energy and CO\(_2\) emissions relates most closely to the zero carbon homes policy (and to Building Regulations Approved Document L1A\(^{[3]}\)), however a direct comparison cannot be made.

The main difference is that currently the CSH requires all CO\(_2\) emissions to be abated at plot/site level. The zero carbon new homes policy is more flexible, allowing a certain proportion of CO\(_2\) emissions to be addressed by measures that are not necessarily on-site, through a mechanism known as Allowable Solutions. Following the March 2011 Budget announcement, the total CO\(_2\) emissions to be addressed by the zero carbon new homes policy are now equivalent to that required by Level 5 of the CSH, as shown in Figure 3.

It is likely that the zero carbon new homes policy and CSH will be aligned in due course, however currently while the total CO\(_2\) abatement is the same, the two standards are achieved in very different ways and are likely to result in different development strategies and costs.
Zero carbon homes defined

On-site low or zero carbon heat and power
Fabric energy efficiency

Carbon compliance: 10, 11 or 14* kgCO₂/m²/year

2016 Zero carbon home
Code for Sustainable Homes (current edition) Level 5 home

*Specific values recommended for particular dwelling types: Zero Carbon Hub 2011

Figure 3  Zero carbon home versus today’s Code for Sustainable Homes Level 5 home[5]
References


5. Zero Carbon Hub and also the Energy Performance of Buildings Directive introductory guide (see www.nhbcfoundation.org/LinkClick.aspx?fileticket=vuga43X50g0%3d&tabid=458&m id=848).
NHBC Foundation recent publications

The impact of occupant behaviour and use of controls on domestic energy use

Reducing the energy used for space heating, lighting and appliances is vital if the Government is to hit its carbon targets. This report reviews previous research and knowledge on how occupants use the controls in new housing and recommends that if energy efficiency is to be achieved that the attitudes and behaviour of occupants needs to be addressed. NF 38 February 2012

Part F 2010: where to start

This publication guides designers and housebuilders to decide which Part F 2010 strategies are most appropriate by explaining, in simple terms, ways for new homes to comply and works through possible solutions on a range of common house and apartment types. The guide also explains some of the terminology, gives a broad understanding of the changes and points the builder and designer towards the relevant tables and data that must be consulted as well as requirements for installation and commissioning. NF 37 November 2011

Fire performance of new residential buildings

The move towards non-traditional construction has mostly been brought about by the need to achieve both construction efficiency and better energy performance from the finished building. But could the increasing use of thermal insulating products – some of which are combustible – result in constructions being more susceptible to disproportionate damage in the event of fire?

To present a balanced view of the risks involved, this guide provides useful information on the risks and best practice guidance for designers, builders and those involved in the fire safety aspect of new homes. NF 36 November 2011

NHBC Foundation publications can be downloaded from www.nhbcfoundation.org

NHBC Foundation publications in preparation

- Building sustainable homes at speed: Risks and rewards
- Energy efficient fixed appliances and building control systems
Executive briefing

Today’s attitudes to low and zero carbon homes
Views of occupiers, house builders and housing associations

This executive briefing summarises the current thoughts, awareness and understanding towards issues such as climate change, the 2016 zero carbon definition, airtightness and renewable technologies.

It assesses the priorities of industry and the consumer when building or purchasing a new home, and looks at views that could impact new homes of the future. It sets the context for the research and presents the key findings, recommendations and current details of the definition of zero carbon homes.

A detailed examination of responses from occupiers, house builders and housing associations is contained within parts 2 and 3 of the full report: NF 40i Today’s attitudes to low and zero carbon homes.

The NHBC Foundation has been established by NHBC in partnership with the BRE Trust. It facilitates research and development, technology and knowledge sharing, and the capture of industry best practice. The NHBC Foundation promotes best practice to help builders, developers and the industry as it responds to the UK’s wider housing needs. The NHBC Foundation carries out practical, high quality research where it is needed most, particularly in areas such as building standards and processes. It also supports house builders in developing strong relationships with their customers.