Communities and Local Government

Building a Greener Future: policy statement

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Introduction

There is now an overwhelming body of scientific evidence that indicates that climate change is a serious and urgent issue. And whilst there are some remaining uncertainties about the eventual impacts, the evidence is now sufficient to give clear and strong guidance to policy-makers about the pressing need for action.

Emissions of greenhouse gases, particularly carbon dioxide, are the main cause of climate change. The UK emitted more than 550 million tonnes of carbon dioxide ($MtCO_2$) in 2005. Energy use in buildings accounted for nearly half these emissions, and more than a quarter came from the energy we use to heat, light and run our homes.

Energy security is also an important challenge. We became a net importer of oil in 2006, and are dependent on imported gas at a time when global demand and prices are increasing. Many of the measures needed to cut carbon emissions to address climate change also contribute to creating a healthy diversity of energy supply, and address fuel poverty through lower bills for householders.

Against this backdrop, we need to address the issue of housing supply. Evidence indicates that too few homes have been built to meet demand over the last three decades of the 20th century. As Kate Barker's report into housing supply[1] made clear, we need additional housing provision. Rising house prices make it even harder for those trying to buy their first home. If we do not increase house building above previous plans, the percentage of 30-34 year old couples able to afford to buy will worsen significantly in the long term, falling from over half today to around 35 per cent in 2026.

If we build the houses we need, then by 2050, as much as one-third of the total housing stock will have been built between now and then. So we need to build in a way that helps our strategy to cut carbon emissions – both through reducing emissions of new homes and by changing technology and the markets so as to cut emissions from existing homes too. We want to see a volume of new development which will deliver economies of scale and bring down costs of environmental technologies that could apply not only to new homes but to existing homes too.

We therefore consulted in December last year on proposals progressively to improve energy/carbon performance set in Building Regulations to achieve zero carbon housing within 10 years. These proposals were set out in the consultation document *Building a Greener Future*.[2]

In summary, we proposed to achieve a zero carbon goal in three steps: moving first, in 2010 to a 25 per cent improvement in the energy/carbon performance set in Building Regulations; then second, in 2013, to a 44 per cent improvement; then, finally in 2016, to zero carbon. We said that zero carbon means that, over a year, the net carbon emissions from all energy use in the home would be zero.

[1] Review of Housing Supply (2004) – Delivering Stability: Securing our Future Housing Needs (Kate Barker, March 2004) http://www.hm-treasury.gov.uk/consultations_and_legislation/barker/consult_barker_index.cfm.

[2] *Building a Greener Future Consultation* http://www.communities.gov.uk/index.asp?id=1505157

At the same time, we also published proposals for a *Planning Policy Statement on Climate Change*[3], which would help support the achievement of zero carbon homes through the planning system. And we published the final version of the *Code for Sustainable Homes*[4]. This is currently a voluntary code, intended to promote higher environmental standards in housing ahead of implementation of regulatory standards. It considers not just energy/carbon but a range of sustainability issues such as water, waste and materials.

Finally, to further support our aim of zero carbon homes and kick-start deployment of these technologies, the government will introduce a time-limited stamp duty land tax relief with effect from 1 October 2007 for new homes built to a zero carbon standard to be set in Her Majesty's Treasury (HMT) regulations. A high level overview of the details are set out on HMT's website[5].

On 6 June 2007 we published a summary of the consultation responses received, prepared for Communities and Local Government by consultants Faber Maunsell[6].

Overall the response to the consultation was positive, and a large majority of respondents felt that the timetable to zero carbon by 2016 was achievable. However, there were a range of responses, and a number of issues and concerns raised, which we take extremely seriously, and which this document will consider in more detail below.

After the launch of the consultation, Communities and Local Government and the Home Builders Federation established the 2016 Taskforce, jointly chaired by Yvette Cooper, Minister of Housing and Planning and Stewart Baseley, Executive Chairman of the Home Builders Federation.

The Taskforce also includes members from local government, the energy supply industry, the construction industry and non-governmental organisations. The purpose of the Taskforce is to identify the barriers to implementation of the 2016 zero carbon target, and put in place measures to address them.

The analysis in *Building a Greener Future Regulatory Impact Assessment*[7] shows that while the implementation of our approach will increase construction costs, there are also benefits in terms of reduced energy bills and reduced carbon dioxide emissions. Overall, building to higher standards is likely to increase costs. These costs are more predictable in the short term, but are harder to assess over the longer term as these will be dependent on substantial changes in technology and the market response. Our approach, moreover, should stimulate the market to innovate and adapt to low carbon technologies.

The work of the Taskforce, the positive response to our consultation, and the additional analysis commissioned by this Department into the costs and benefits of the zero carbon homes target, enable us to confirm in this policy statement the Government's commitment to a zero carbon target in 2016, and the proposed steps along the way.

[3] *Planning Policy Statement: Planning and Climate Change* http://www.communities.gov.uk/index.asp?id=1505140

[4] *Code for Sustainable Homes* http://www.communities.gov.uk/index.asp?id=1506120

[5] See Budget Note 26: www.hmrc.gov.uk/budget2007/bn26.htm

[6] The summary documents can be found at: www.communities.gov.uk/index.asp?id=151113

[7] *Building a Greener Future Regulatory Impact Assessment* www.communities.gov.uk/index.asp?id=1505157

We believe that the achievement of this target will make a significant contribution to addressing climate change – saving at least 15 $MtCO_2$ per year by 2050. And these developments will benefit consumers, who could gain through lower fuel bills and warmer homes in the winter. This strategy document sets out in more detail the thinking behind this conclusion, and some of the significant issues that are raised by the zero carbon target.

Our strategy for delivering the targets will involve changes to the Building Regulations to strengthen the requirements in relation to insulation, ventilation, air tightness, heating and light fittings. Planning policy will be developed to set a framework for development to deliver zero carbon outcomes. We will be working with industry and organisations such as English Partnerships to encourage exemplar developments. We will work with the Taskforce on issues like skills, research and the development and dissemination of good practice.

We are publishing a Forward Look[8] to give more detail about our proposals for changes to Part L of the Building Regulations in 2010 and 2013. We hope this will provide greater clarity to industry on the changes that will be required to meet the 2010 and 2013 regulations.

We also take the wider issues of sustainability very seriously. In the consultation document we proposed to make rating against the *Code for Sustainable Homes* mandatory. This would mean that all new homes would be required to have a mandatory Code rating indicating whether they had been assessed and, if they had, the performance of the home against the Code. The response to the consultation was extremely positive and today we are also publishing a further consultation on the specifics of how a mandatory rating against the Code might work[9] and how it will build on Energy Performance Certificates.

The final *Planning Policy Statement: Planning and Climate Change* will be published later in the year, together with a good practice guide on how planning authorities can tackle the issues of climate change.

Next steps

We welcome the serious and sustained commitment from stakeholders and want to continue working with them as we move forward to implementation. The Taskforce will also continue to meet on a regular basis to take forward this work. The Taskforce terms of reference can be found on the Communities and Local Government website[10].

Help with queries

Questions about the policy issues raised in the document can be addressed to:

Chloe Meacher
2/J5 Eland House
Bressenden Place
London SW1E 5DU

[8] Building Regulations Forward Look www.planningportal.gov.uk

[9] *The future for the Code for Sustainable Homes – Making a rating mandatory* www.communities.gov.uk/index.asp?id=1511885

[10] 2016 Taskforce terms of reference www.communities.gov.uk/index.asp?id=1508822

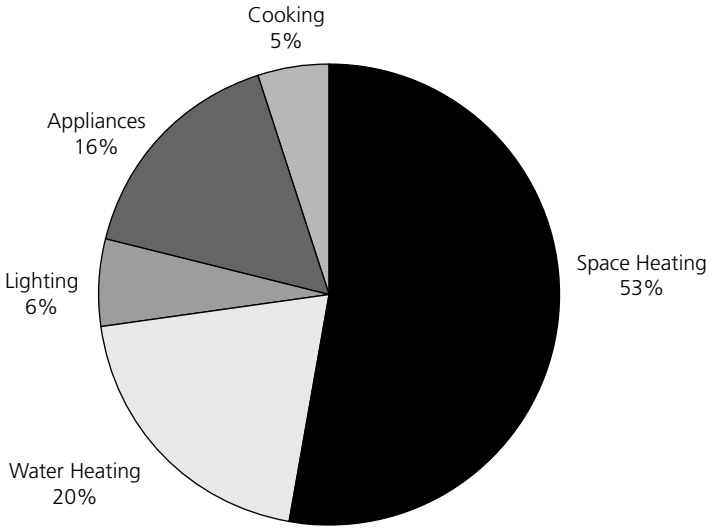
Section 1: The importance of housing in delivering real emissions reductions

A significant proportion of energy is used to heat and run our homes

1.1 In 2005 the UK's total carbon dioxide emissions were 556 $MtCO_2$. Emissions from the domestic housing sector represent around 27 per cent of this figure – these emissions come from energy use in the home for heating, hot water, lighting and appliances. The chart below shows that the overwhelming use of energy in homes goes to heating and hot water. Nearly three-quarters of the emissions come from heating and hot water, and around one-fifth is from lighting and appliances. Recent trends in the domestic sector have shown an increase in use of energy for lighting and appliances, whilst energy use for cooking and hot water has been declining.

1.2 There is likely to be a continuation of these trends through, for example, the growth in the market for home entertainment equipment such as large-screen plasma televisions and home computers. Moreover, climate change itself may lead to further developments, for example, a growth in demand for home air conditioning.

2005
Domestic carbon emissions by source
Average household emissions 5.64 tonnes CO_2 per year



We already have a significant programme of measures in place to tackle domestic energy use

1.3 Government has in place a strong programme to secure reductions in emissions from the domestic sector through promoting energy efficiency and conservation. This programme includes: action to promote achievement of greater domestic energy efficiency by electricity and gas suppliers through the Energy Efficiency Commitment (EEC), and its successor, the Carbon Emissions Reduction Target (CERT); promotion of voluntary schemes in the retail sector to encourage take-up of more energy-efficient consumer electronics products; engagement with citizens, retailers and suppliers via the Energy Savings Trust (EST); and action via the Warm Front programme and Decent Homes Standard to tackle fuel poverty and energy wastage through improved home insulation and heating.

1.4 In addition, the introduction of Energy Performance Certificates, which are being phased in from August this year, will provide home-buyers with detailed information about the energy performance of their home, and will be accompanied by a report on the action they can take to reduce carbon emissions and reduce their fuel bills.

1.5 The total investment by Government and energy companies in energy efficiency in the existing housing stock now totals over £1 billion per year.

1.6 These schemes have produced significant results to date. In 2005 (the most recent year for which figures are available), emissions in the domestic sector fell by 3.8 $MtCO_2$. This represents a 2.5 per cent reduction on the previous year. Part of this is likely to be due to higher energy prices and the warm winter temperatures we experienced that year, but some is explained by better levels of insulation, improved heating systems, and behavioural change. EEC, Warm Front and other measures to improve energy efficiency and cut fuel poverty are expected together to deliver reductions in emissions of about 44 $MtCO_2$ by 2020.

New homes will need to make a significant contribution too

1.7 The Climate Change Bill sets out the Government target to reduce carbon emissions to 60 per cent of 1990 levels by 2050. If the domestic sector took a proportionate share of this target, carbon emissions in the domestic sector would need to fall from around 154 $MtCO_2$ to around 62 $MtCO_2$. This requires a reduction of about 92 $MtCO_2$ from existing levels. However, as this is set against a background of rising pressures on energy demand due to growing household numbers and appliance use, the gap between 1990 levels and the 2050 target may be higher, at around 110 $MtCO_2$, as indicated by long-term government projections. Current policies aimed at the domestic sector are projected to bring carbon emissions down by around 43 $MtCO_2$ by 2020 but we need to go further to reach 60 per cent and prevent emissions rising again in the long term.

1.8 In addition, although new homes make up less than one per cent of the stock every year, we estimate that by 2050, as much as a third of the housing stock could have been built between now and then.

1.9 That is why, in the consultation paper *Building a Greener Future* published on 13 December 2006, we set out proposals for how we might achieve progressive environmental improvements in new homes as well, in order to minimise further increases in carbon emissions.

Section 2: New development

We need to tackle housing affordability by delivering more homes

2.1 As we set out in the consultation *Building a Greener Future*, the availability of new homes is an important policy issue. The housing market has not responded sufficiently to meet the needs of the country's ageing and growing population, leading to a significant gap between housing supply and demand. Over the last 30 years of the 20th century, housebuilding rates halved while the number of households increased by 30 per cent. As a result, many people cannot afford a suitable standard of accommodation, and families are finding that it is increasingly difficult to get onto the housing ladder.

2.2 This pressure is likely to grow. The latest household projections show that the number of households in England will grow by 223,000 per year up to 2026, of which 70 per cent will be single person households. In 2005–06, around 185,000 net additional new homes were delivered. This is a significant increase from the low of 131,000 in 2001–02, but still leaves an unsustainable gap. If we do not increase the supply of homes above previous plans, the percentage of 30-34 year old couples able to afford to buy will worsen significantly in the long term, falling from over half today to around 35 per cent by 2026.

And we have consulted on proposals to reduce the carbon footprint of new homes….

2.3 But, as we set out in *Building a Greener Future*, we believe that these new homes offer a real opportunity to assist our strategy to cut carbon emissions and reduce fuel poverty.

2.4 That is why the Government set out proposals for consultation on how we move towards zero carbon homes over time. We proposed that we progressively improve the energy/carbon performance set in Building Regulations in three steps: the first step would improve the carbon performance standard of Building Regulations by 25 per cent (compared to 2006 Part L Building Regulations); the second step would improve them by 44 per cent; and the third step would be to move to zero carbon.

2.5 The table below summarises the three steps and also shows the equivalent levels of carbon in the *Code for Sustainable Homes*. However, the Code covers a range of environmental issues, such as water, waste and materials, whilst the mandatory Building Regulations standards we are proposing relate only to carbon performance.

Table 1: proposed carbon improvements over time

Date	2010	2013	2016
Carbon improvement as compared to Part L (BRs 2006)	25%	44%	zero carbon
Equivalent energy/carbon standard in the Code	Code level 3	Code level 4	Code level 6

2.6 We published a full summary of the responses to our consultation on 6 June 2007, prepared for us by the consultants Faber Maunsell.[11]

…which received a largely positive response

2.7 The response to our proposals was largely positive. Two-thirds of respondents said they agreed that new housing should lead the way in delivering low and zero carbon housing (Q1A). 39 per cent thought that the targets we had set out were achievable within the timescale; with 13 per cent saying they were not achievable; and 16 per cent saying they were not stringent enough (Q8). A full breakdown of responses is available in the summary report.

2.8 Opinion was divided on the issue of the costs of achieving the targets, with a large number of respondents feeling that there was insufficient evidence presented on costs. This is an issue that we have attempted to rectify in the Regulatory Impact Assessment accompanying this policy statement, which sets out in more detail the costs and benefits of the measures we have proposed.

2.9 There was strong support for our proposal to make rating against the *Code for Sustainable Homes* mandatory for all new homes (Q7). 61 per cent of respondents agreed that it should be mandatory, with eight per cent disagreeing, and the remainder unsure. We also said in *Building a Greener Future* that we would consult in full on proposals for making rating against the Code mandatory for all new homes, and this is published today alongside this policy statement.

The consultation also threw up a number of policy issues

2.10 In addition, three central themes emerged from the responses to our consultation. In summary, these were:

- In focussing on new homes, we should not lose sight of the need to improve energy efficiency further in the existing stock, and in the non-residential sector;
- That the way in which we define zero carbon will have a big impact on the achievability and cost of meeting the target;
- That there is a policy choice to be made about the extent to which there is a national standard for Building Regulations, compared with a system of local standard setting.

[11] This can be found at: www.communities.gov.uk/index.asp?id=1511113

2.11 We discuss these three issues in more detail below.

2.12 Immediately after the consultation was published, the 2016 Taskforce on zero carbon homes was established, jointly chaired by Yvette Cooper, Minister of State for Housing and Planning and Stewart Baseley, Executive Chairman of the Home Builders Federation.

2.13 The Taskforce also includes members from local government, the energy supply industry, the construction industry and non-governmental organisations. The purpose of the Taskforce is to identify the barriers to implementation of the zero carbon 2016 target, and put in place measures to address them. It has considered several policy issues in relation to the consultation, and where appropriate the views of its members are referred to in this document.

Section 3: Policy issues raised in the consultation

Many respondents wanted to see a similar level of ambition on existing homes and the non-residential sector, as for new homes

3.1 A number of respondents in their answers to several questions (Q3, Q4 and Q5 in particular) said that they did not want to see the focus on new homes come at the expense of action on the existing housing stock and the non-residential sector. This appeared to be driven by a combination of a belief that other sectors could offer greater scope for emissions reductions and a feeling that new homes (or housing developers) were being unfairly targeted over other sectors.

3.2 This reaction is understandable, given that the focus of the consultation paper was on the scope for carbon reductions in the new housing stock. However, this does not mean that the government is taking less action in other sectors.

3.3 We have already set out in paragraphs 1.3 to 1.6 above the action the Government is taking on the existing housing stock. There is also a great deal of continuing work, including the introduction of Energy Performance Certificates later this year. Budget 2007 has set out our intention that by the end of the decade all households will have been offered help with energy efficiency measures.[12]

3.4 It is also vitally important that new commercial development addresses the challenges posed by climate change. We believe that it should be technologically and economically possible for all new non-domestic buildings to achieve substantial reductions in carbon emissions over the next decade and anticipate that many such buildings may be able to achieve zero carbon on non-process related emissions. Buildings outside dense urban areas and those with low appliance energy requirements, such as warehouses, distribution centres and some retail outlets, should be able to be built to a zero carbon specification in a shorter time scale than other building types.

3.5 To this end, we are working closely with industry to learn the lessons from existing exemplar developments and houses that individual organisations have built, so we can fully understand the costs involved and the barriers to progress. We will use this knowledge to set in place a clear timetable and action plan to deliver substantial reductions in carbon emissions from new commercial buildings within the next 10 years.

3.6 We are also conducting a review of the sustainability of the existing non-domestic stock to identify the measures that can be taken to improve their performance, the barriers that prevent owners and occupiers taking action, and the most effective policy instruments that could be used to overcome these barriers.

3.7 In the meantime, we will be progressively introducing Energy Performance Certificates on completion and on sale of non-domestic buildings, from 6 April 2008. Also from that date a display energy certificate showing annual operational ratings, based on energy consumption, must be displayed in large public buildings.

[12] Budget 2007, *Protecting the Environment* chapter http://www.hm-treasury.gov.uk/media/F/D/bud07_chapter7_273.pdf

3.8 It was also announced in the Energy White Paper[13] that the government would introduce a mandatory UK cap and trade scheme, the Carbon Reduction Commitment (CRC), focused on large commercial and public sector organisations, to secure further savings of 4.4 $MtCO_2$ per year in 2020. Although applying to organisations rather than specifically to buildings, the CRC should give large non energy intensive organisations an incentive to reduce carbon emissions from their own built estate.

Another issue raised was around the coverage and definition of zero carbon

3.9 In the consultation paper *Building a Greener Future* we said that zero carbon means that a home should be zero carbon (net over the year) for all energy use in the home. This would include energy use from cooking, washing and electronic entertainment appliances as well as space heating, cooling, ventilation, lighting and hot water.

3.10 Many respondents argued that the way in which zero carbon is defined will have a major impact on the costs and deliverability of zero carbon homes within the timetable specified. This came across principally in responses to question 10, but related issues were also raised in the responses to questions 4, 8 and 11.

3.11 Several issues were raised by respondents. Some argued for a wider definition of zero carbon. It was suggested that we should seek to cover such issues as lifetime carbon impact of technologies (ie any carbon emissions associated with manufacture as well as use), transport emissions, and behaviour of households.

3.12 We do not believe a full consideration of embodied carbon is practical or realistic in the short-to-medium term. Evidence on the lifetime carbon costs of particular technologies is weak, and varies considerably depending on where and how they are manufactured.

3.13 Assumptions about household behaviour will be factored into the calculations we make – for example, the Code technical guidance[14] sets out how we would seek to estimate the likely carbon emissions from appliance use in the home. This is based on data we have on average energy use by households.

3.14 However, we do not think it is practical to measure actual appliance use in new homes once they are built for purposes of assessing compliance with the zero carbon standard. It is also something that is likely to change over time along with the size and age of the household. And measuring actual household energy use is likely to be considered both bureaucratic and intrusive. We believe it is more important that we ensure that, on average, the actual carbon emissions from new homes is zero in net terms over the year, taking account of typical behaviour, and couple this with policies to try to influence the actual behaviour of consumers and bring down the average energy use of appliances, as set out in the Energy White Paper.

3.15 Some respondents also argued that energy use from appliances should be entirely excluded from the definition of zero carbon. We believe this would equate to an unacceptable watering down of the proposals. Appliances make up a significant

[13] *Meeting the Energy Challenge: A White Paper on Energy* (May 2007) http://www.dti.gov.uk/energy/whitepaper/page39534.html

[14] *Code for Sustainable Homes* http://www.communities.gov.uk/index.asp?id=1506120

proportion of energy use in new homes – currently about 40 per cent to 50 per cent. We do, however, recognise that we need to encourage faster action in this area, to reduce the energy used by households for appliances. The Energy White Paper set out several areas where we will take stringent action, including driving higher energy standards for products and phasing out the use of energy inefficient light bulbs. As these measures can be demonstrated to reduce actual energy use in the home, the associated emissions will also fall.

3.16 However, even if we are successful in reducing the energy use in the home, we recognise that including energy use from appliances in the definition of zero carbon means that housebuilders will need to look into zero and low carbon sources of electricity supply, an area currently outside Building Regulations. This is a new area for most developers, both in terms of technical skills and the understanding of the regulatory system. It is also important that we consider the implications of zero carbon homes for wider energy policy. We will analyse the wider energy policy implications, including the impacts on the competitive market.

3.17 The Energy White Paper announced new arrangements intended to simplify the current regulatory system, arising from the joint Department for Business, Enterprise and Regulatory Reform (BERR)/Ofgem *Review of Distributed Generation*. And all six major energy suppliers have committed to publishing clear and transparent tariffs for exported electricity, so that households that generate their energy and export some to the grid, can be clear about the financial benefit. As announced in the December 2006 Pre-Budget Report, legislation in the Finance Bill 2007 will ensure that, where private householders install microgeneration technology in their home for the purpose of generating power for their personal use, any payments they receive from the sale of surplus power or Renewable Obligation Certificates to an energy company are not subject to income tax. BERR have also funded the development of an industry led scheme to certify installers and manufacturers of microgeneration equipment. BERR have also established a new Distributed Energy Unit to monitor the development of these technologies and identify and remove any further barriers to distributed energy.

3.18 Zero carbon homes will also require new partnership working between housebuilders and energy companies. As a member of the Taskforce, the UK Business Council for Sustainable Energy has set up a group that brings together the UK's major energy companies to assess how they can fully engage with the opportunities created for them by zero carbon homes, both directly and in partnership with the house building industry.

3.19 Furthermore, including emissions from energy use associated with domestic appliances in the home will require modification to the existing Standard Assessment Procedure (SAP) for measuring the energy performance of the home. SAP in its existing form does not adequately take account of these emissions, nor does it provide for proper accounting for the range of technologies that will reduce them.

3.20 However, SAP can be modified, and we think it is the right tool to assess these technologies, and we want to start now on a process which fully involves the development and construction industries to develop an approach to improving SAP which is fair, comprehensive and transparent. To this end, the Department, jointly with the Construction Products Association, has established a Technical Working Group on SAP Modification, which will report to Ministers early in 2008 on the modifications to SAP that are required.

3.21 Another issue that was raised by several respondents was whether zero carbon had to be achieved at the level of individual dwellings or at the development level. We are clear that solutions to zero carbon for the 2016 target are acceptable at the development level. Even the current version of SAP allows for development-wide solutions such as district heating. In the future modifications we make to SAP we want to ensure that it allows for all appropriate development-wide solutions. So for example, if a development was served by a wind turbine that provided renewable energy to the whole development, that should be an acceptable way to achieve zero carbon, and SAP should reflect that. We think these types of solutions are acceptable for any type of technology (approved by SAP) that has a physical connection to the development, even if the technology is partly or wholly located away from the development site itself, as is often the case for district heating/combined heat and power (CHP).

A key issue in this context is whether zero carbon energy needs to be connected to the development

3.22 A more difficult issue that has been raised by consultees is whether solutions that deliver zero or low carbon energy away from the development should also be allowed to score towards meeting the zero carbon target. This can be referred to as 'carbon offsetting'.

3.23 A majority of respondents (around 70 per cent of those who responded to Q10) felt that offsetting should be allowed in some circumstances. Reasons given for this include arguments that it would bring down the cost of achieving zero carbon, and could allow carbon reductions to be achieved more cost-effectively across the economy as a whole. However, a small number of respondents (around 20 per cent of those who responded to Q10) felt that these types of more flexible solutions should not be allowed, and that zero carbon should only be achieved through measures located on the housing development site, or with a direct physical connection to it.

3.24 Of those respondents who supported flexible solutions, many argued that it should only be allowed in certain restrictive circumstances, for example where a development was below a certain size. Others suggested that it might only be used for emissions associated with appliance use in the home – so that everything possible should have been done to improve the fabric and heating/hot water systems of the home, before any offsetting of residual emissions was allowed. Another suggestion was that offsetting should be limited to a particular geographical area, national or regional, or particular technologies, eg renewables.

3.25 A related issue raised was that of additionality. There were concerns expressed that any zero carbon solution should result in carbon reductions that were genuinely additional, ie not replacing measures that were likely to have occurred anyway. For example, hypothetical wind turbines located away from a housing development but built to 'offset' its emissions might have been built regardless, because of incentives offered by other government policies (such as the Renewables Obligation).

3.26 The issue of the definition of zero carbon has also been discussed in the 2016 Taskforce. Like the consultation responses, opinions were divided as to the extent to which offsetting should be an acceptable solution to achieving zero carbon. However, most members agreed that it should be allowed under restrictive circumstances, provided it is possible to devise a method of accurately assessing additionality.

3.27 We have carefully considered the views of respondents and of the Taskforce on the issue of definition of zero carbon. We have reached the conclusions set out below:

3.28 We believe that emissions from all energy use – including from appliances and cooking - in the home should be considered. We also believe that emissions from energy use should be zero in net terms across the year. This means that some use of fossil fuels or electricity from the grid should be permitted, provided this is offset by an equivalent 'export' of low or zero carbon energy.

3.29 We believe that the zero carbon standard should be applied at the development level, rather than on every individual home, so developers are able to use a range of technologies, such as district heating, or wind turbines, that can provide for low or zero carbon energy to a whole development.

3.30 We have listened carefully to views expressed about allowing for alternative energy or emissions reduction solutions not connected directly to the development in the way we define zero carbon. The costs and benefits of different options for allowing or excluding offsetting, outlined in the regulatory impact assessment, need to be carefully considered. We accept also that there may be certain circumstances or particular sites where it may be difficult for developers to achieve zero carbon. We recognise the challenges that small urban infill sites can pose, where it might be more effective or necessary to support offsetting elsewhere, and where rigid application of on-site zero carbon could potentially create perverse incentives for small infill sites to be left vacant. However, evidence is already showing that the range of appropriate technologies is growing over time, and the costs falling. We expect much better evidence to emerge over the next few years about what can be achieved, and at what cost. We think, therefore, it is right to return to the issue of offsetting when we have more evidence to determine the right approach.

3.31 Our policy of a time-limited stamp duty land tax (SDLT) relief for new zero-carbon homes will provide a way of stimulating the innovation needed to develop what is currently a niche market into the mass market. The Code technical guidance[15] and the regulations which provide for the circumstances in which SDLT relief can be claimed, will set out our first detailed definition of zero carbon. HMT have published their draft regulations for informal consultation and have said they will review the definition of zero carbon contained within them, in the light of representations made. In October 2007 HMT will publish the final regulations, and the Code technical guidance will be revised to reflect that.

3.32 These definitions will be invaluable in laying the groundwork and building up the evidence base to inform our approach to determining the definition of zero carbon that will be used for Building Regulations in 2016. As new evidence emerges about costs and practicalities, and as technologies develop, we will develop the definition of zero carbon for the purposes of Building Regulations, after full consultation and

[15] *Code for Sustainable Homes* http://www.communities.gov.uk/index.asp?id=1506120

within a sensible time-frame that will allow the industry to adjust before the planned changes in 2016. In that context, we will examine whether, and to what extent, there is a case for offsetting as a mechanism to meet the carbon standard. We will also consider the implications of different options for allowing or excluding offsetting for wider energy policy, including impacts on energy security and the competitive market.

Many respondents raised concerns about whether building standards should be set at the national or local level

3.33 Many respondents had strong views about the appropriate level at which Building Regulations should be set. At the moment, Building Regulations set national building standards for energy efficiency. But local authorities have planning powers, and they are increasingly using these planning powers to set more environmentally demanding building standards at the local level.

3.34 Views were sought in the *Building a Greener Future* consultation paper about the most appropriate level at which building standards should be set. Respondents expressed views in their responses to questions 3, 5, 6 12 and 13. On the whole, respondents favoured – by about 5 to 1 of those who answered – a system whereby building standards were set at the national level, but where local authorities were free to promote low and zero carbon energy supply at the local level.

3.35 Respondents also agreed – by a majority of around 2 to 1 of those who answered – that national standards were a more effective way to achieve our goals of delivering new homes and reducing emissions from the housing stock. 11 per cent said they believed that a combination of local and national standards was the best way forward. Local authorities made up a more than a third of respondents overall, so were well represented.

3.36 Some respondents felt that the proliferation of different local standards would mean that tougher national standards were more difficult to meet, as it prevented developers realising the full economies of scale associated with a single national standard. Concerns about local authorities' ability to develop, assess and enforce their own standards were also raised. A particular concern was raised about local authorities that were seeking to promote technology-specific standards, rather than specifying an environmental outcome and allowing developers to find the best way to meet it.

3.37 Others felt strongly that preventing local authorities from setting their own standards would stifle innovation, and prevent local authorities from responding to local circumstances.

3.38 In *Building a Greener Future* and the draft *Planning Policy Statement: Planning and Climate Change* that was published alongside it, we set out a proposed compromise. This suggested that where there are demonstrable and locally specific opportunities for requiring particular levels of building performance through the planning system these should be set out in advance in a development plan document. In so doing, local authorities would need to have regard to a number of considerations, including whether the proposed approach is consistent with securing the expected supply and pace of housing development shown in the housing trajectory required by *Planning Policy Statement 3*.

3.39 The consultation process, and the deliberations of the Taskforce, have resulted in a great variety of different reactions to this compromise proposal. We have listened carefully to views expressed. Most respondents wanted clear national standards with little local variation, however a significant minority wanted flexibility for local authorities to set their own standards.

3.40 We believe that there is considerable value in a strong national framework but that this needs to be balanced with appropriate local flexibility. And we are setting a high set of national standards to cut carbon emissions through our Code for Sustainable Homes, reinforced by our ambitious timetable to tighten the standards in 2010, 2013 and 2016. Indeed we are the first country to set such an ambitious target. Setting these standards, and the timetable, gives us a real opportunity to drive innovation and technological development.

3.41 Opportunities for local flexibility need to be balanced against our objectives for increasing housing supply, affordable homes, and the infrastructure needed to support communities. As this is an important area to get right we are setting out our conclusions in this document so far on the consultation responses. However, we intend to discuss this approach further with stakeholders in advance of publishing later this year the final *Planning Policy Statement: Planning and Climate Change* which will set out the detailed position. We recognise also that our approach may need to be tailored to suit the circumstances in London, given the Mayor's powers in relation to planning and the status of the London Plan, and this will be considered with the Mayor as we finalise the Planning Policy Statement.

3.42 We think that national standards for reducing carbon emissions from homes should be set through building regulations, supported through the planning system We do not believe that local authorities should each set separate building standards, with different preferred technologies or environmental measures. Nor do we think each local authority should set its own ad hoc timetable through the planning system to reach zero carbon emissions for new homes, especially given the level of ambition built into the national framework. This would make it harder for industry to invest in supply chains with confidence or get the economies of scale to make new technologies cost effective. It would also jeopardise our parallel commitment to increase the level of house building and deliver the affordable homes the country needs.

3.43 However, there are circumstances in which we do believe local authorities could drive things further and faster, in particular where local authorities can demonstrate that there are clear local opportunities to use renewable or low carbon energy, perhaps through decentralised systems. Indeed local councils can themselves play a critical role in establishing such opportunities. For example, local authorities like Woking are working to support local decentralised energy schemes which can help deliver real reductions in carbon emissions at an earlier stage.

3.44 We want local authorities to take a proactive, strategic role in identifying local opportunities to promote renewable, low carbon and decentralised energy systems, consistent with ensuring a competitive market and affordable energy. They have an important role in bringing together interested parties and facilitating the establishment of decentralised energy systems. By innovating and helping deliver local sources of energy generation, local government can make a vital contribution to getting to our shared ambition of zero carbon.

3.45 Local authorities should have a strategy for securing decentralised and renewable or low carbon energy in new development. Where there are specific sites or development opportunities, local authorities should specify the proportion of renewable or low carbon energy, taking account of feasibility, viability and deliverability. They could also expect new developments to connect up with existing schemes where feasible and viable, or be developed with connection in mind where there is a clear strategy to develop new schemes. However, they need to demonstrate this through the planning system. Policies also must not prevent owners and occupiers befitting from the competitive energy market. We are looking further in the light of the consultation of the particular arrangements needed for eco-towns and new growth points, and also for areas where there are high levels of land value uplift and how this might interact with our proposals for capturing planning gain.

3.46 Any such higher standards for homes, however, need to be set using the Code for Sustainable Homes rather than any other criteria. It may be that a local authority could focus on the energy efficiency standards in the Code, or the whole Code.

3.47 They also need to be properly tested through the planning system rather than introduced on an ad hoc basis when individual planning applications come in. We will therefore expect the local approach to be set out in a development plan document, not a supplementary planning document, so as to allow full scrutiny including by an independent Inspector. We will want the most to be made of local development or site specific opportunities, but in a way that does not have any adverse impact on the development needs of communities, in particular on housing supply and affordability.

3.48 We will set out in the PPS, and supporting practice guidance, how these objectives can be achieved through the planning system. Local authorities and developers need to know what is expected of them and that everyone is playing to the same set of rules.

3.49 Where there is no plan in place, local authorities can negotiate with developers for higher standards or provision of renewable energy, but should not refuse planning permission solely on the grounds of failing to meet the higher standards or providing renewable or decentralised energy.

3.50 We also believe that local government has a key role in ensuring that communities and infrastructure are able to cope with the climate change already happening, and the impacts which can be anticipated over coming decades due to past emissions. This was a shared concern in many responses to our consultation, as was the need to sustain biodiversity. We agree, and in the final PPS we will reflect the central role of planning in shaping places that are resilient to climate change and habitats that sustain biodiversity.

We need to make sure we have the right skills to deliver…

3.51 Together with the Taskforce, we recognise that this agenda will require the development of new skills across the sectors involved, including housebuilders and local authorities.

3.52 The Local Government Association (LGA) has established a Climate Change Commission to advise on how local authorities could tackle and respond to climate change more effectively. It is clear that capacity and skills are a key element of the Commission's emerging framework for successful action, not least in relation to reducing carbon emissions from new and existing housing – two of the six areas where they are suggesting scope for immediate council action.

3.53 The Callcutt Review[16] is also working with Construction Skills, Home Builders Federation, Construction Products Association, National Centre for Excellence in Housing and BERR to highlight the skills needed in the housebuilding industry to make sure that housing supply targets are met whilst achieving the higher environmental standards set out in this document.

3.54 The Taskforce will bring this work together once it reaches its conclusions and decisions will be taken on the next steps needed to ensure that the right people have the necessary skills – and are working in the right ways – to deliver the required standards. Given its remit to deliver the skills and knowledge needed to make better places, the Academy for Sustainable Communities will have an important role to play in developing the necessary learning, awareness and shared understanding across the public and private sectors.

…and compliance and enforcement are key issues in this context

3.55 Respondents to the consultation raised the issue of ensuring Building Regulations are complied with, particularly Part L, which deals with the conservation of fuel and power. We recognise the need to improve compliance with Building Regulations as well as raising standards. We have been working with building control bodies and industry stakeholders since then to this end. There have been a number of training and dissemination initiatives, new publications, and new and more comprehensive competent person schemes that enable contractors to self-certify their work.

3.56 As part of the process of raising standards we are looking into how well the 2006 Part L amendments are bedding down. In November 2006 we held the first of a series of workshops with Building Control Officers and Approved Inspectors to understand their experience to date of compliance, and what further dissemination measures could be beneficial. We will continue this process and will be carrying out a survey of 2006 Part L implementation next year when a reasonable sample of buildings has been built following introduction of the new standards. This will inform the further amendments we know we need to make, and will complement the Review of Building Control where we are looking at a range of measures to help increase compliance with Building Regulations more generally.

[16] *Callcutt Review*, www.callcuttreview.co.uk/default.jsp

Section 4: Costs and benefits

We have examined the costs and benefits of this approach

4.1 Assuming that our new build rates provide 200,000[17] dwellings a year (based on the Government's previously expected build rates), the profile of improvements in the new stock is expected to deliver estimated savings of 2.7 $MtCO_2$ by 2020 over and above projections of current standards. By 2050 it would be expected to save at least 15 $MtCO_2$ per annum. Emissions need to be reduced by around 92 $MtCO_2$ if the domestic sector takes a proportionate share of our national 60 per cent emissions reduction target[18] and in fact we may need to save more, around 110 $MtCO_2$, as energy demand is expected to rise, due to growing household numbers and appliance use. Our expected emissions savings by 2050 therefore represent nearly one-sixth of the required total domestic saving.

4.2 We have commissioned work[19] to develop the previous research commissioned by the Housing Corporation and English Partnerships on the costs of delivering energy improvements. As there are a number of ways that zero carbon homes can be delivered, the research has added further detail to the costs and benefits of meeting the 2010 and 2013 standards and has generated scenarios to illustrate a range of zero carbon outcomes. A Regulatory Impact Assessment with more detailed costs and benefits is published alongside this policy statement.

4.3 The impact of achieving the 25 per cent and 44 per cent improvements above the current Part L standard in 2010 and 2013 is estimated to have a net impact on the economy up to 2016 of around £1.9bn. These costs are based on assuming that developers choose technologies on the basis of minimising the capital costs of construction. However, if the impact of on going costs and benefits is taken into account in technology choices, then the overall cost to the economy is reduced to £0.85bn, which is nearly half of the £1.9bn cost. Under this scenario there is a slightly higher capital outlay (the percentage increase in Part L above 2006 in 2013 is 6.2 per cent compared with 5.4 per cent when the capital costs are minimised), but the difference in size of the ongoing benefits is clear.

4.4 Initial modelling of the potential impacts of zero carbon scenarios illustrate a wide range of net impacts, indicating a possible cost of between £1.7bn to £12bn over the period to 2025. This cost depends on how the standard is achieved, and particularly the level of low or zero carbon energy provided at the development level, and how costs fall over time as markets develop and learn to adapt. This range highlights the uncertainties remaining in delivering zero carbon homes. Assessment of the full costs and benefits of achieving zero carbon homes will therefore be kept under review at each phase of the timetable to zero carbon in 2016, as the detailed process for delivery through Building Regulations progresses.

[17] The Government has announced an increase in housing supply to 240,000 dwellings a year by 2016. This revised trajectory has not been modelled.

[18] Based on latest projections of residential sector emissions to 2050 (*UK Energy and CO_2 Emissions Projections*, July 2006, DTI) against a target at 60 per cent of the 1990 level.

[19] To be published – *The costs and benefits of the government's proposals to reduce the carbon footprint of new housing development*, Cyril Sweett, Faber Maunsell & Europe Economics, July 2007

4.5 The increase in cost arises from the construction costs of meeting the higher energy standards. The additional costs of achieving the 2010 standard are estimated at around three per cent above current 2006 Part L costs. To achieve the 44 per cent improvement in 2013 is likely to increase construction costs by around five per cent above Part L 2006.

4.6 At higher levels of the future energy standards, newer technologies and construction methods are likely to be required that have uncertain and, at present, relatively high costs. But there is already evidence, both in the UK and internationally, of low and zero carbon homes being built. And, over time, we expect costs to decrease. Initial estimates of the costs from 2016 indicate that the additional costs of achieving zero carbon could range from 1 to 19 per cent, depending again on the amount of low or zero carbon energy required to be provided on-site. If learning rates continue beyond 2016, the upper limit of costs is likely to fall further over time, so for example the overall cost above Part L could fall to 13-16 per cent by 2025.

4.7 The incidence of these additional construction costs will be affected by the timescale of development and the ability of developers to pass through costs, either to consumers or through land prices.

4.8 The additional costs of supplying low and zero carbon energy may drive housebuilders, especially on larger sites, to look to attract Energy Service Companies (ESCOs) to manage the on-site low or zero energy supply and make the initial investment. ESCOs are more likely to take into account the on-going running costs as they will need to be competitive with existing energy supply. This means developers will only need to consider choices around fabric standards.

Impact on housing supply and prices is small and short term

4.9 We commissioned academic analysis[20] to simulate the potential impacts on the housing market, particularly on the number of new homes constructed and house prices. Results from the modelling suggest that there would be a limited impact in terms of new housing supply and house prices, assuming a steady state in the market. For example, a 20% increase in costs was modelled and the effect was a less than 1% fall in supply and an increase in price of around £170 per home. The analysis considered that this effect might be short-term, as the regulations change, with output and prices returning quickly to previous levels. However, shocks to the market, for example through sudden regulatory changes, could be expected to have a much more significant impact, instead of the phased and measured approach we are proposing.

4.10 This outcome could be explained because the price of new housing is determined primarily in the second hand market, which might inhibit the ability of developers to pass on costs to buyers through a premium on new house prices, although it is important to note that some purchasers may well be willing to pay a premium initially for a high quality green new house.

[20] To be published – *Carbon Reduction Housing Market Simulations*, Prof Glen Bramley (Heriot-Watt University) and Dr Chris Leishman (Glasgow University), May 2007, based on an established model described in *Urban Studies* Vol. 42, No. 12, 2213–2244, (2005)

4.11 The second explanation for the modelling results is that recent research shows that the price elasticity of supply is very low, so developers continue to build the same number of units even if costs rise. In practice this would mean that most of the additional costs could be passed back through a reduction in land prices. The ability of developers to pass costs back in terms of reduced prices for land might not, however, be easily achievable in reality in the short term and any reduction in land values could affect the supply of land.

Impact on households

4.12 Achieving higher energy standards will help households reduce their fuel bills through both reduced consumption as a result of energy efficiency improvements to the building and potentially through lower fuel prices associated with low and zero energy sources. We estimate that with the effect of the 25 per cent and 44 per cent improvements, households could make savings of between £25 and £105 per year in 2010 and £25 and £146 in 2013. If zero carbon homes from 2016 are achieved with on-site renewable energy, households could save up to £360 per year.

4.13 On-going operational and maintenance costs of energy supply at the highest standards will depend on how they are delivered and to what extent the household is responsible for the costs. It is possible that some of the estimated savings could be captured by ESCOs through fuel bills, in order to operate a viable service and make a return on the capital investment.

Section 5: Conclusions

5.1 Domestic carbon emissions represent over a quarter of the UK's carbon emissions. In the consultation *Building a Greener Future*, we proposed an ambitious target to achieve zero carbon new homes by 2016, as a significant contribution to our goal to reduce overall carbon emissions by 60 per cent by 2050. The consultation responses broadly endorsed our approach, while raising a number of important issues, to which we have responded in this policy statement.

5.2 In this statement, we confirm our intention to achieve the target and the interim steps through the progressive tightening of the Building Regulations in 2010, 2013 and 2016. The accompanying *Forward Look* clarifies the changes that are likely to be needed to Building Regulations to bring about the 25 per cent and 44 per cent improvements in energy efficiency in 2010 and 2013.

5.3 The challenge of climate change has to be tackled alongside increasing housing supply and we have to be ready to put in place ambitious programmes if we are to succeed in achieving the substantial reductions in carbon emissions needed. The strategy and timetable set out in this statement, together with our proposed *Planning Policy Statement: Planning and Climate Change*, are ambitious, but we believe realistic and achievable.

5.4 But this is not simply a matter of government regulation. House builders, local authorities, the construction products industry, energy suppliers, non-governmental organisations and others all have to work together in partnership if the twin ambitions of increasing housing supply and raising environmental standards in housing are to be successfully achieved. We will be working with the 2016 Taskforce to ensure that our ambitious programme is now translated into action.