

Saving energy

Using energy more efficiently is a cost effective way of cutting carbon dioxide emissions. It can also improve productivity and can contribute to the security of our energy supplies by reducing our reliance on imported energy and ensuring we make maximum use of our own and global energy resources. Improving the energy efficiency of homes can also reduce energy bills and help ensure that the most vulnerable can afford to heat their homes.

2.1 This chapter sets out how we will:

- help businesses and households understand the link between their own actions and climate change and how they can become more energy efficient — ensuring they have the support and information they need to make the right choices;
- provide greater incentives for energy suppliers to deliver energy efficiency improvements in the home and for businesses to invest in energy efficiency measures;
- use the Government's procurement power to stimulate the energy, buildings and products markets to deliver more energy efficient, lower carbon solutions to our future energy needs; and
- stimulate innovation and competition in the supply chain by setting out now the future energy performance standards we expect of our homes, buildings and the products used in them. (Energy efficiency in transport is covered in chapter 7).

2.2 The Devolved Administrations have an important role to play in respect of energy efficiency. In line with the devolution settlements in Scotland, Wales and Northern Ireland, all proposals in this chapter which touch on devolved matters will be progressed in accordance with the principles set out in the Memorandum of Understanding.

2.3 Increased energy efficiency has already made a significant contribution to our energy and climate change goals. Existing energy saving policies and measures from our Energy Efficiency Action Plan³⁰ and the Climate Change Programme Review³¹ will stimulate energy efficiency in businesses, the public sector and households and will together reduce carbon emissions by up to 10 million tonnes of carbon (MtC), accounting for 40% of total UK carbon savings by 2010. By 2020, we expect these policies to deliver around 12–13 MtC reduction in carbon emissions compared to business as usual.

30 Defra (2004) Energy Efficiency: The Government's Plan for Action. Cm6168.

31 Defra (2006) Climate Change. The UK Programme 2006. Cm 6764



FIGURE 2.1 CARBON EMISSIONS FROM THE UK ECONOMY (NETCEN 2004, INCLUDES INTERNATIONAL AVIATION AND SHIPPING) 168.3 MTC PER YEAR
Source: NETCEN 2004

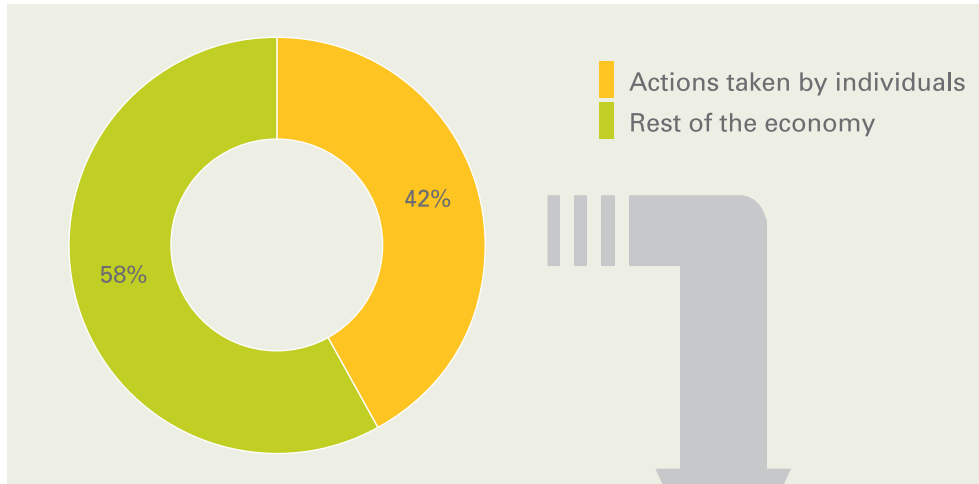
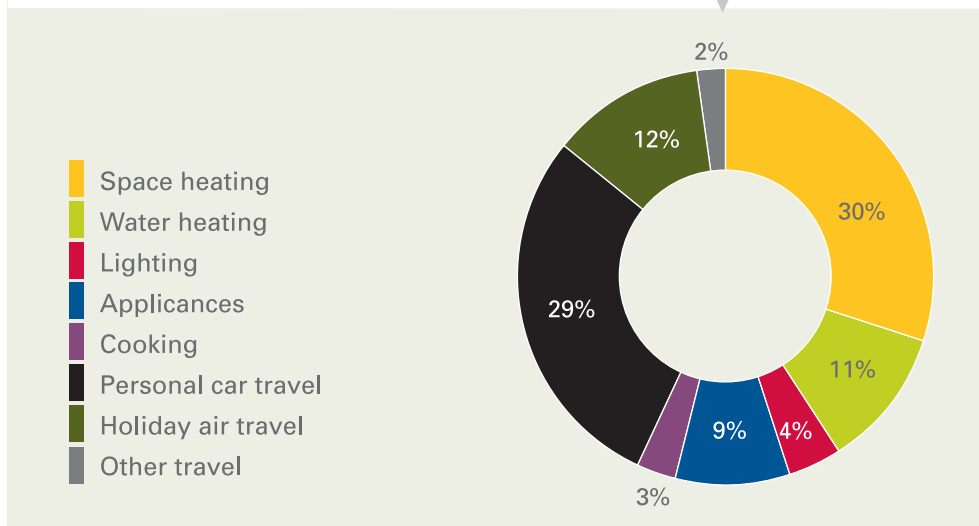


FIGURE 2.2 INDIVIDUAL ANNUAL CARBON EMISSIONS, AVERAGE PER CAPITA CARBON EMISSIONS IN 2005: 1.16 TONNES OF CARBON PER YEAR



Source: Defra

In the home, three-quarters of carbon dioxide emissions come from the energy used for heating and providing hot water and a fifth from lighting and appliances. Domestic energy consumption has been increasing slowly but steadily since the 1970s largely as a result of the spread of installed central heating and the increase in the number of energy-using goods (see also Figure 2.2). As a result of Government action, through measures such as the Energy Efficiency Commitment and improvements to building standards, we expect domestic energy consumption and carbon emissions to fall by 2010. However, if we are to see a large enough reduction in carbon emissions from this sector in order to help meet our 2020 and 2050 goals, we need to continue action beyond 2010 to improve energy efficiency.

Energy Efficiency: the potential

2.4 In the Energy Review Report we estimated that there is the potential to make further cost effective cuts in our carbon emissions through energy efficiency. As technologies develop, the non-energy intensive business sector could save up to 5 MtC and the public sector 1 MtC by 2020 through adoption of cost-effective energy efficiency improvements. The Carbon Trust estimates that businesses in the UK waste some 10–20% of the energy they buy through poor control of heating, air conditioning and ventilation and through leaving lights and appliances on when not in use.

2.5 Collectively, individuals are responsible for over 40% of the UK's energy use and carbon dioxide emissions (see Figure 2.1). The Energy Saving Trust estimates that at home we waste over £900 million per year by leaving appliances on when not in use. Our analysis for the Energy Review Report indicated that through energy efficiency and behavioural measures to reduce waste, households could save a further 9 MtC a year by 2020 and cut their energy bills at the same time.

2.6 Improving energy efficiency requires everyone – individuals, businesses and Government to take action. Individuals and businesses can play their part in reducing the waste of energy, by investing in energy efficiency measures for the home and workplace and by choosing to purchase more energy efficient buildings and products. Government will encourage and enable action by businesses and individuals by providing the right information and ensuring that the regulatory framework is in place to incentivise action and to deliver continuing improvements to the energy efficiency of buildings and products.

Energy efficiency: the barriers

2.7 Our analysis for the Energy Efficiency Innovation Review³² suggests that there are several key barriers currently hindering greater take up of energy efficiency amongst both businesses and individuals. Issues of behaviour and motivation are significant barriers to investment in large organisations; energy saving is rarely core business. For small and medium-sized enterprises (SMEs), hidden costs, such as management time, are a common barrier. For the manufacturing sector finance is an important issue while in the commercial sector, where use of energy in buildings predominates, lack of information, split incentives (e.g. between the landlord who would make the investment and the tenant who would benefit) and motivation are key barriers. For the individual, lack of information and motivation are primary barriers.

2.8 To achieve the potential energy savings that we have identified requires a mix of policies designed to stimulate change to:

- create incentives and reduce barriers to greater energy efficiency by businesses, individuals and government;
- support more energy efficient choices through improved awareness,



- information and services which can deliver energy efficiency; and
- focus the Government's procurement power to help deliver greater energy efficiency in buildings and products and to support our ambition for greater use of renewable power.

2.9 For the long-term we set out our commitment to:

- raise the energy efficiency standards of our future building stock and of the products we buy.

Saving energy – business

2.10 As part of our drive to reduce carbon emissions, the Government is committed to providing a clear, flexible and stable policy framework within which businesses can make cost-effective long-term planning and investment decisions. This is why, on 13 March 2007, the Government published its draft Climate Change Bill which sets out clearly our long-term targets to reduce carbon emissions. We are also committed to ensuring that emissions reductions are delivered in the most cost-effective manner possible. We believe that the use of carbon pricing and emissions trading, such as through the EU ETS, provides a cost effective means of delivering carbon savings. In keeping with the Government's better regulation agenda, we are undertaking a review of our major climate change policies to ensure that they continue to be effective and that the regulatory burden on business is kept to a minimum.

2.11 Business commitments to tackling climate change are growing, with more companies making voluntary climate change agreements and public statements of action to achieve low carbon or carbon neutral businesses. The UK Corporate Leaders' Group on Climate Change have argued that investing in a low-carbon future should be "a strategic business objective for UK plc as a whole". On 24 April 2007, the Climate Group launched a campaign with business leaders, communities and Government; "We're in this together"³³ details businesses' commitments to provide practical ways for individuals to reduce their carbon footprint.

2.12 Industrial energy consumption has fallen by 47% since 1970 and by 14% since 1990. In contrast, demand for energy by the service sector has increased³⁴. Since 1980, electricity and gas consumption in the services sector have both increased by about 80%³⁵.

2.13 Many firms recognise the benefits that investment in energy efficiency can bring, through lower costs, improved competitiveness and improved social and corporate standing. However, short-term cost considerations, lack of information and market failures can act as barriers to investment.

2.14 To overcome these, the Government recognises that it has a role to play: firstly, by creating the right incentives for long-term investment in cost-effective energy efficiency measures; secondly, by raising awareness, and

³³ <http://www.together.com/>

³⁴ The service sector includes both commercial and public services

³⁵ DTI (2006) Digest of UK Energy Statistics. <http://www.dtistats.net/energystats/dukes06.pdf>

enabling business to make more energy efficient choices through provision of better information on energy use and climate change; and thirdly, by setting now the future regulatory framework that will drive improvements in the energy efficiency of commercial buildings and products.

Creating incentives to reduce emissions

2.15 The Climate Change Levy (CCL) was introduced in 2001 to encourage businesses to reduce energy demand. Subsequently the EU made it a requirement for all Member States to tax the business use of energy. To maintain the levy's environmental impact, from 1 April 2007 CCL rates are being increased on a yearly basis in line with inflation.

2.16 We now have Climate Change Agreements with over 50 industrial sectors. The current agreements will run until 2013. Participants receive an 80% discount from the Climate Change Levy, provided that they meet either their carbon emissions or energy efficiency targets. To ensure these targets remain challenging but realistic, they are periodically reviewed and the current 2010 targets will be reviewed in 2008. Subject to State Aid approval, participants meeting their 2010 targets will continue to receive the CCL discount until March 2013.

2.17 These existing measures have been instrumental in tackling emissions from the energy intensive industrial sectors but do not effectively target carbon emission reductions from the wider business and public sectors. The Energy Efficiency Innovation Review demonstrated that there are significant opportunities in the large non-energy intensive sectors to improve energy efficiency which are not currently being exploited.

The Carbon Reduction Commitment

2.18 In the Energy Review Report, Government committed to deliver carbon savings of 1.2 MtC per year by 2020 from large commercial and public sector organisations.

2.19 Our consultation on potential measures for achieving these reductions³⁶ indicated strong support for a mandatory rather than a voluntary measure. Government has therefore decided to implement a UK mandatory cap and trade scheme, the Carbon Reduction Commitment (CRC), to secure the 1.2 MtC per year in 2020³⁷. We will seek enabling powers under the draft Climate Change Bill to introduce these new trading arrangements.

2.20 To minimise administrative burdens, a key issue raised during the consultation process, we will focus the scheme on large organisations for whom energy efficiency benefits would outweigh administrative costs.

³⁶ Our analysis supporting this consultation together with consultation responses can be found at: <http://www.defra.gov.uk/environment/climatechange/trading/index.htm>

³⁷ We will deliver the total savings of 1.2MtC through a combination of the CRC, delivering 1MtC and the Energy Performance of Buildings Directive which will deliver around 0.2MtC.



CRC will therefore target emissions from energy use only by organisations whose mandatory half hourly metered electricity consumption is greater than 6000 MWh per year. This would generally capture organisations with annual electricity bills above £500,000.

2.21 Government proposes that CRC will target both carbon emissions from direct energy use as well as indirect carbon emissions (i.e. from electricity). To avoid overlap with existing measures, the CRC would target neither emissions covered by the Climate Change Agreements nor direct emissions covered by the EU Emissions Trading Scheme. In addition, organisations with over 25% of their energy use emissions in Climate Change Agreements would be completely exempt.

2.22 To further minimise administrative burdens, CRC allowances will be issued to participants via an auction process. Participants will be able to determine their own emissions targets within the scheme. CRC will also allow self-certification of monitoring, reporting and verification of energy use and emissions, backed by an independent risk-based audit regime.

2.23 CRC will be broadly revenue neutral to the Exchequer. The auction revenue will be recycled to participants by means of a simple, direct, annual payment proportional to average annual emissions since the start of the scheme, with a bonus/penalty depending on the organisation's position in a CRC league table.

2.24 In order to ease participants into the new regime, and to allow Government to establish more accurate data on emissions across the target sector, CRC will feature an introductory phase, with a simple fixed-price sale of allowances. In addition, the Government proposes a safety valve to avoid spikes in the price of allowances. The Commitment will feature a moderated buy-only link to the EU ETS, through which the CRC participants will be able to buy allowances at the higher of the prevailing EU ETS price and a minimum CRC floor price. There will be no link between CRC and the existing voluntary UK Emissions Trading Scheme/Climate Change Agreement market.

2.25 In order to ensure delivery of a cost-effective, workable scheme, Government recognises the importance of further consultation with interested parties. We will therefore publish in June a consultation on the detail of how the proposed CRC can best be implemented.

2.26 In relation to coverage and delivery, key areas for further consideration will include: the definition of an organisation within CRC; rules to exempt small sources of emissions; the approach to monitoring, reporting and verification/audit; and for local authorities, the treatment of street lighting within CRC.

2.27 In terms of market design, areas for further consultation include auction and league table design – which government recognises is a key issue. We will also consult on the length of the gap between auction payment and revenue recycling in recognition of concerns raised during the consultation. Analysis indicates that retaining at least a six month gap is necessary to maintain the signalling effect of the CRC auction.

2.28 We will use the experience we gain from the first phase of the CRC to determine whether, over time, it would be cost effective and proportionate to extend the scheme to organisations with lower energy consumption.

Improving information

2.29 Businesses require tailored and specific information on how best to invest in energy efficiency. Government therefore intends to improve the information made available to businesses on how to improve the energy efficiency of their premises and on their energy usage.

2.30 We will consult later this year on the requirement to display Energy Performance Certificates in business premises in England and Wales. These Certificates will provide an energy rating (from A to G) for these buildings and will set out what steps can be taken to improve their energy efficiency. The information will be an important aid to businesses in meeting their climate change commitments, whether regulatory, such as through the EU ETS or the new CRC, or through voluntary action.

2.31 Government is also working with a range of interested parties to consider how we can improve the wider sustainability of our existing building stock, reducing water requirements as well as energy requirements, for example. We are also working to identify other measures that will reduce the carbon emissions of existing non-domestic buildings, by raising awareness of the ways to improve energy efficiency and by encouraging the take up of energy efficiency measures in workplaces (see Box 2.1).

BOX 2.1 RAISING AWARENESS AT WORK

The Carbon Trust, a Government funded organisation, has worked with Comet Group plc to achieve significant energy savings through staff training and awareness across its 10,000 employees in 260 stores, offices and distribution centres. Together, a core training programme and energy efficiency video were created. The modular training programme was designed to adapt to different building types and varying levels of staff requirements. Examination of half hourly energy data from each store provided the measurement of success achieved through increased awareness. This low cost activity delivered annual savings of over 3,000 tonnes of carbon.



Energy metering in the business sector

2.32 Advanced meters which provide readings on either an automatic half-hourly basis for electricity or on a daily basis for gas are already mandatory for large users of energy. This kind of information, combined with energy saving advice, enables businesses to make informed decisions about investment in energy efficiency and recent evidence supports this (see Box 2.2). Increasingly, suppliers and metering companies are offering such services to smaller energy users.

BOX 2.2 ADVANCED METERING FOR SMEs – A TRIAL BY THE CARBON TRUST

The Carbon Trust conducted a trial of “smart” electricity, gas and water meters with over 580 smaller businesses, providing them with new meters or clip-on devices to record and transmit their energy data. (For a full report see: <http://www.carbontrust.co.uk/default.htm>)

The businesses received accurate and frequent information about energy consumption for at least one year. A proportion also received e-mail, telephone or on-site energy efficiency advice. Over the year, potential carbon savings of 12%, on average, were identified; of these about 3% were realised by those receiving half-hourly data only, but over 7% by those also getting e-mail advice.

The Carbon Trust’s analysis suggests that smart metering would be cost-effective for firms with profile class 5–8³⁸ electricity meters and their equivalents in gas. The sectors with the greatest carbon saving potential are wholesale/retail, manufacturing and financial & business services. Firms with multiple sites can achieve lower costs and greater savings than others. Payback periods for single site SMEs are around four years for gas meters, but longer for electricity meters.

2.33 Government will therefore consult this year on a proposal that energy suppliers should extend to all but the smallest business users in Great Britain and those larger businesses not already subject to half hourly metering, advanced and smart metering services within the next five years. This could achieve annual savings of 0.1–0.2 MtC per year by 2020. We will explore with interested parties what further help should be given to businesses to maximise the use of advanced metering and the savings that can flow from it.

³⁸ Below the mandatory half-hourly electricity metering market (that is, those with maximum electricity demand below 100kWh) suppliers allocate business customers to six profile classes 3-8, based on their electricity consumption. Most business customers fall in classes 3 (with a standard “domestic” meter) and 4 (with an Economy 7-type meter). The electricity consumption of these businesses thus closely resembles that of domestic customers. We propose to exclude business customers with profile class 3 and 4 electricity meters and those non-daily read gas customers whose consumption is less than 73,200 kWh per year.

2.34 The Government will also consider with interested parties what advanced metering services (or other means of providing real time information) might be appropriate for the smallest business users and, if necessary, what might be done to bring about their deployment.

2.35 The Gas and Electricity Markets Authority (GEMA) has statutory responsibilities for ensuring the accuracy and performance of gas and electricity meters. We propose to transfer these responsibilities to the National Weights and Measures Laboratory (NWML), an executive agency of the DTI, when a suitable legislative opportunity arises. This will simplify the regulatory framework by giving a single UK point of contact, through NWML, for business on all the technical aspects of measuring instruments, including meters.

Saving energy – households

2.36 We have already achieved a great deal to help households through policies such as the Energy Efficiency Commitment, Warm Front³⁹ and Decent Homes to deliver energy efficiency improvements to homes in the UK. As a result of Government policy, about half of all homes have benefited from some form of energy efficiency intervention. But there are around eight million homes in the UK that could still benefit from cavity wall insulation⁴⁰. This type of energy efficiency measure pays for itself in less than three years through reduced energy bills and together with other cost-effective measures, such as loft insulation, and more energy-efficient boilers, which we estimate could potentially reduce carbon emissions by up to 9 MtC per year by 2020.

2.37 Government has an important role to play in helping individuals make choices that save energy and reduce their carbon footprint (see Box 2.3): by providing support and assistance to individuals looking to make greener lifestyle choices; by providing information on energy use and its impact on carbon emissions; and by ensuring that the regulatory framework is in place to deliver improvements to the buildings, products and services that individuals can buy.

39 See <http://www.defra.gov.uk/environment/energy/eec/index.htm> and <http://www.defra.gov.uk/environment/energy/hees/index.htm>

40 Review of the Sustainability of Existing Buildings: http://www.communities.gov.uk/pub/373/TheEnergyEfficiencyofDwellingsInitialAnalysis_id1504373.pdf



BOX 2.3 INDIVIDUAL ACTION

The Government's proposals in this White Paper for supporting individuals to take action are:

We will provide greater support and assistance to individuals by:

- ensuring greater availability to the householder of energy saving measures from energy suppliers through the Carbon Emission Reduction Target;
- extending until 2020 the obligation on suppliers to help make households more energy efficient; and
- improving advice and help to households in reducing emissions.

We will improve awareness of climate change and information on energy use by:

- enabling individuals to measure their carbon footprint through an on-line CO₂ calculator;
- requiring Energy Performance Certificates, which provide information on the energy performance of homes and buildings and the steps that can be taken to improve that performance and reduce energy bills;
- providing historical information on energy bills, requiring energy suppliers to provide free electricity displays and expecting smart electricity and gas meters to be installed within every home over the next decade, all of which will help give households the information they need to save energy.

We will set out now the standards we expect in the future for our homes and the products we use in them:

- driving higher energy efficiency standards for the products we use at home and at work;
- phasing out the use of energy inefficient light bulbs;
- raising building standards to make homes zero carbon – through greater use of energy efficiency and low and zero carbon forms of energy; and
- introducing an ambitious new Planning Policy Statement on Climate Change to help support the development of communities which can make use of low-carbon and renewable sources of energy.

And we will:

- lower the planning barriers to the installation of microgeneration in the home (see chapter 3);
- ensure energy generating householders (i.e. through microgeneration) are rewarded for electricity they sell back to the grid (see chapter 3);
- remove barriers to supplying distributed energy through more flexible market and licensing arrangements (see chapter 3);
- make it easier to find information and advice on distributed generation of energy (see chapter 3); and
- provide advice on smarter driving and new car purchases (see chapter 7).

Improving support and assistance

2.38 We want to see all homes achieve their cost-effective energy efficiency potential. Our intention is that by the end of the next decade, all householders will have been offered help to adopt energy efficiency measures. We will do this through an ambitious programme: increasing the level of delivery by the energy suppliers of energy efficiency measures into the home under the Carbon Emission Reduction Target; extending our obligation on suppliers until at least 2020; raising awareness of climate change and providing households with the information and advice they need through improvements to billing and metering and through Energy Performance Certificates, to improve the energy efficiency of their homes.

Energy Efficiency Commitment/Carbon Emission Reduction Target

2.39 The Energy Efficiency Commitment (EEC) is a key success of the Government's energy efficiency policies to date. This Commitment requires electricity and gas suppliers in Great Britain to achieve targets for the promotion and delivery of energy efficiency into their customers' homes. They can choose from a range of measures in order to deliver their obligation; for example, some have met 20% of their obligation by installing loft or cavity wall insulation while others have met 70% of their target in this way. EEC has also encouraged innovative approaches to the delivery of energy efficiency, including partnerships with Local Authorities, charities and community groups and has provided incentives for the deployment of new innovative energy efficient technologies.

2.40 The EEC has had a range of social benefits, supporting Local Authority objectives under Decent Homes and the Home Energy Conservation Act (see section 2.1 on fuel poverty). Whilst it does not have a specific fuel poverty objective, it does require suppliers to direct 50% of energy savings towards a priority group of low-income customers. Evaluation of the first phase of the EEC suggests that this priority group benefited from reduced energy bills and increased comfort, worth around £1.8 billion.

2.41 EEC phase 1 (which ran from 2002–2005) stimulated about £600 million of investment in energy efficiency and delivered net benefits to householders in excess of £3 billion (see Table 2.1). EEC 2 (2005–2008) requires broadly double the level of activity of EEC 1 and is expected to deliver 0.5 MtC annually in 2010.

2.42 The Climate Change and Sustainable Energy Act 2006 allows the Government to expand the range of measures that can be used by energy suppliers to deliver their commitments under EEC. Following our initial consultation, in July 2006, on the shape of EEC phase 3⁴¹, we launch alongside this White Paper our statutory consultation on a new Carbon Emission Reduction Target (CERT) for energy suppliers for the period 2008–2011. The CERT will replace EEC. It has the same underlying framework and purpose as the EEC, but with an expanded range of measures, including microgeneration



TABLE 2.1: EXPECTED CARBON SAVINGS FROM THE ENERGY EFFICIENCY COMMITMENT/ CARBON EMISSION REDUCTION TARGET, 2002 – 2011

	Expected Carbon savings in 2010 (MtC/y)	
	Original	Revised ⁴²
EEC1 (2002–2005)	0.36	0.3
EEC2 (2005–2008)	0.62	0.5
CERT (2008–2011)	0.9–1.2	1.1 ⁴³

and behavioural measures, within the scheme. It also proposes an increased carbon target on energy suppliers, effectively requiring them to double their current effort, significantly increasing activity in well established markets like insulation and encouraging a big push into new markets like microgeneration. Because of the scale of CERT, even more customers are likely to benefit both directly and indirectly from supplier activity.

2.43 The legislation for CERT is expected to be in force by the end of 2007, allowing Ofgem and energy suppliers to prepare for its start in April 2008.

2.44 To facilitate a smooth transition from EEC2 to CERT, we have already published the carbon savings to be attributed to energy efficiency measures allowed under CERT⁴⁴. We will also allow energy suppliers to start work on their CERT targets early and allow unlimited carry-over of over achievements against their current EEC2 targets.

2.45 The Government has also decided to commence the relevant provisions of the Climate Change and Sustainable Energy Act. This has allowed the Government to include in the statutory consultation on CERT the use of behavioural measures and all forms of microgeneration.

A supplier obligation

2.46 The Government is committed to continuing to deliver carbon savings from the domestic sector using some form of supplier obligation until at least 2020, delivering an annual saving of 3–4 MtC by 2020. As the most cost-effective opportunities to improve energy efficiency are taken up over time, realising energy efficiency savings will become increasingly expensive and difficult to achieve. If we are to continue to deliver carbon savings from households, we need to bring about a change in consumers’ approach to energy use.

2.47 We believe that harnessing the opportunities to bring about this change will require a transformation of the market for the supply of domestic energy. Suppliers and customers need to have a shared incentive to reduce domestic emissions, and to work in partnership to achieve this.

42 The savings for EEC1 and EEC2 have been reduced slightly following recent research showing that the actual energy savings achieved as a result of insulation are lower than previously assumed.

43 Not final: subject to the outcome of statutory consultation.

44 <http://www.defra.gov.uk/environment/energy/eec/pdf/illustrativemix-final2007.pdf>

2.48 Creating this shared incentive will require an innovative policy, which changes the way the supplier views their relationship with the end consumer. Rather than selling units of energy, the suppliers' focus needs to shift to the marketing of energy services. By harnessing opportunities to change householders' behaviour, it will be possible to achieve substantial carbon and energy savings whilst maintaining the level of "energy service" enjoyed by customers. This is possible because customers demand energy for the services it provides: heat, light and power for electrical appliances, rather than demanding energy *per se*.

2.49 Encouraging suppliers to make this shift from compliance with the regulatory requirement to implement energy saving measures, as under EEC, to a model where securing carbon savings offers profitable opportunities will be challenging, and cannot be made in one step. It will require suppliers to develop alternative business models, earning profits through a combination of low carbon measures, related services and sales of energy.

2.50 CERT is a first step towards creating such a marketplace, with its rewards for innovative approaches and domestic microgeneration. The continued obligation on suppliers to 2020 will provide a further incentive to move in this direction, whilst the Carbon Reduction Commitment (CRC) will provide incentives for similar market developments in the commercial sector.

2.51 Market transformation will also require changes to other aspects of energy markets. Steps to improve billing, and over time to roll out smart meters to domestic customers, set out in this White Paper, will improve the opportunities for suppliers to develop alternative business models. Equally, energy services relationships are likely to involve longer-term contracts between suppliers and customers. Such contracts will be further facilitated by Ofgem's proposed removal, in the context of the Supply Licence Review, of the "28 Day Rule"⁴⁵. Removing this rule will make it possible for suppliers to offer more innovative contracts to customers, for example "packages" whereby the supplier makes investments in the customer's home in return for the customer committing to a fixed term contract.

2.52 We are in the process of evaluating the costs and benefits of the various options for a supplier obligation which would further support this market transformation by providing stronger incentives for energy suppliers to reduce the carbon emissions of their customers. The options under consideration include setting supplier targets in terms of absolute reductions in carbon or delivered energy as discussed in the Energy Review Report, as well as alternatives such as a further evolution of the measures-based approach as under EEC and CERT.

2.53 The emerging evidence shows that there are pros and cons for each approach. A cap and trade demand reduction obligation would give suppliers greater flexibility over the measures they choose to deploy and would improve

⁴⁵ This rule requires that all domestic supply contracts must be capable of being terminated with 28 days notice, and so may act as barrier to contracts where suppliers make up-front investments in their customers' homes with the intention of recouping this investment over time.



their incentives to innovate. However it may not promote take-up of those opportunities to cut household carbon emissions that would be most cost-effective over the long-term. EEC has proven strengths, which could be built on by an evolution of a “measures-based” approach. These include a focus on measures with longer-term benefits and the opportunities it offers for suppliers to engage with local authorities, appliance retailers and others in addition to their own customers.

2.54 We intend to reach a clear conclusion on the direction for the post-2011 supplier obligation in 2008. As part of this process a call for evidence will be issued in summer 2007 to enable interested parties to offer their views at an early stage in the policy development process.

BOX 2.4 PERSONAL CARBON ALLOWANCES

The concept of a personal carbon allowance is one of a number of potential long-term ideas undergoing academic research in the UK. Under such a scheme, individuals would manage their own carbon emissions; a national emissions cap would be set, and emissions rights (in the form of carbon credits) would be allocated across the population as a whole. Individuals would surrender their carbon credits upon the purchase of, for example, electricity, gas or transport fuel. Those who need or want to emit more than their allowance would have to buy allowances from those who emit less. Over time, the overall emissions cap (and hence individual allocations) could be reduced in line with international or nationally adopted agreements.

Following the Energy Review Report, the Government commissioned an initial scoping study from the Centre for Sustainable Energy into the feasibility of using personal carbon allowances. Their main findings were that:

- by having an overall cap on carbon, a personal carbon allowance could guarantee a certain reduction in domestic carbon emissions;
- it is unlikely that such an allowance could work in isolation from other policies;
- such a scheme might have the potential to achieve emissions savings in a fairer way than a carbon tax; and
- there is little evidence currently available about key wider issues critical to the success of a personal carbon allowance such as public and political feasibility, technical feasibility, cost, and relative effectiveness.

The Government believes that the current system of taxation strikes the right balance between protecting the environment, protecting the most vulnerable in society and maintaining sound public finances. There remain many high-level questions about whether a personal carbon allowance scheme could be proportionate, effective, socially equitable and financially viable, particularly when compared or combined with existing policies and other options for controlling carbon emissions; whether it could be a

BOX 2.4 continued

practical and feasible option; how such a scheme might work in practice; and whether it would avoid placing undue burdens on individuals. The Government is therefore undertaking a programme of work intending to look into these issues in more detail.

Raising awareness and improving information

2.55 Government is working with the wider public sector, business and voluntary organisations to ensure that consumers are given the right advice and support to understand the impact they have on the environment and allow them to make better, more environmentally friendly lifestyle choices. In particular, the Government is committed to working with Ofgem and the Energy Saving Trust (EST) to ensure consumers have accessible, transparent and user friendly information on the “green electricity” tariffs available to them.

Raising awareness of climate change

2.56 As a key part of our work, the Government is helping individuals understand the link between their own actions, carbon dioxide emissions and climate change. Through the EST we are already engaging with one million households annually, providing advice on energy efficiency and carbon emissions reductions. We are going further: a Government-wide communication campaign, called “Act on CO₂”, is already underway, including events such as a Citizens’ Summit on Climate Change and on-line, press and TV advertising. A web-based CO₂ calculator will be launched shortly together with a new short film and an educational brochure.

2.57 The CO₂ calculator, produced in partnership with the EST (which will be available at [http://www.direct.gov.uk/actonCO₂](http://www.direct.gov.uk/actonCO2)), provides individuals and households with a profile of their direct CO₂ emissions, based on their lifestyle. The calculator gives tailored recommendations about how these can be reduced. The short film describes the link between individual action and CO₂ emissions and will be distributed through channels such as community groups. To stimulate young people to discuss climate change and global warming, we have sent a pack containing the film, together with Al Gore’s film, “An Inconvenient Truth” and other resources to all secondary schools in England.

2.58 To give greater clarity and assurance to consumers who decide to offset their carbon emissions the Government also consulted on a voluntary Code of Best Practice for carbon offsetting. In order to meet the terms of the proposed code, companies marketing offsetting products would need to fulfil certain criteria, including use of credits from the regulated market (such as those approved by the UN) and provision of specified information to the consumer. We intend to launch the Code by the end of 2007.



2.59 Community level organisations have the potential to play an important role in communicating climate change and in helping their communities make real and lasting changes to their day-to-day lives. Government needs to understand what mobilises individuals to take action and what role community organisations can play in that. In the Energy Review Report, we committed to undertake a study looking at the role of “community level” approaches to mobilising individuals and the role of local authorities in particular, in making them work effectively. Initial findings by the Centre for Sustainable Energy and Community Development Exchange⁴⁶ imply that effective community initiatives are likely to be a necessary component of a coherent national approach to tackling climate change.

Improving information on energy use

2.60 Ensuring householders have direct access to information about their energy use within their homes will enable consumers to manage that use and reduce their carbon emissions. Following our consultation on billing and metering⁴⁷, the Government intends to roll forward a package of measures in Great Britain which will change the way in which energy use is communicated to customers.

2.61 The Government believes that additional information on bills or statements can help customers reduce their energy consumption. We propose that historic information, preferably in graphical form, which compares energy usage in one quarter with the same period in the previous year, should be provided on domestic customers’ energy bills or statements, or, for those customers with internet-based contracts, electronically. We will work with gas and electricity suppliers to incorporate this requirement within supply licences. This measure will deliver annual carbon savings of up to 0.2 MtC by 2020.

2.62 In the Energy Review Report we also said that we would consult on the frequency at which customers are provided with accurate bills and the Government has investigated the levels of actual meter readings. Ofgem advises that, on average, over 87% of customers in the domestic sector receive at least one bill based on an actual meter-read each year. Initiatives such as the Billing Codes of Practice introduced by energy suppliers, together with existing distribution industry codes, are intended to maintain these levels. The Government does not, therefore, propose any further action in this area at this time.

46 For detail see <http://www.defra.gov.uk/environment/climatechange/uk/individual/index.htm>

47 DTI (2006) *Energy Billing and Metering: Changing Customer Behaviour*.
<http://www.dti.gov.uk/files/file35042.pdf>

BOX 2.5 THE ENERGY DEMAND RESEARCH PROJECT

The Energy Demand Research Project, co-funded by the Government and industry, will involve several thousand households receiving smart meters or feedback devices, displaying real-time energy use. The project, managed by Ofgem on the Government's behalf, will trial different ways of improving billing and metering. The trials will provide information on reductions in energy use that consumers make in response to different forms of feedback about energy usage and will test consumer response to time of use tariffs that encourage energy use to be switched away from peak periods. The latter has the potential to deliver savings by reducing the need for investment in new energy infrastructure to meet peak demand. Final details of the project are currently being negotiated with participating companies, following which the trials will commence swiftly. The project will run for two years, with regular reports on emerging findings and will inform the further development of policy on smart meters and associated feedback devices.

2.63 Suppliers are already rolling out advanced meters in the business sector and are considering the business case for smart meters in the domestic market. The evidence coming from the trials of smart meters and real-time displays (see Box 2.5) will underpin future decisions on smart meter deployment.

2.64 Our expectation is that, within the next 10 years, all domestic energy customers will have smart meters with visual displays of real-time information that allow communication between the meter, the energy supplier and the customer. The display will provide customers with readily accessible information about their energy usage. The Government will work with suppliers, Ofgem and other interested parties in these developments, including through our Energy Demand Research Project. We expect suppliers to roll out smart meters when it is cost-effective to do so and within the timescales we have set.

2.65 Through smart meters, readings can be taken remotely, ensuring that all bills are accurate. Meters can be remotely switched between credit and prepayment, reducing supplier and customer costs. Electricity suppliers will be able to offer new products that may incentivise customers to use less energy at peak times or to use less energy overall.

2.66 We welcome the progress being made by suppliers, with the support of Ofgem, to remove barriers to the roll out of smart metering. Suppliers and manufacturers are also examining the scope for developing communication systems that can be shared between electricity and gas meters, as well as the scope for commercial arrangements to share both communications systems and data between companies.

2.67 In the Energy Review Report, Government stated its intention to discuss with Ofgem, the energy suppliers and interested parties how best to roll out rapidly the provision of real-time electricity displays. Government believes displays should be provided with smart meters in the longer-term, and has considered their role in the shorter-term.



2.68 We believe that customers who are interested in real-time electricity displays should have ready access to them. Whilst the displays are available through retailers, energy suppliers may be in a better position to deliver them cost-effectively to customers, and some suppliers are doing so on a small scale.

2.69 We therefore propose that, from May 2008 and where technically feasible, every household having an electricity meter replaced and every newly built domestic property will be given a real-time electricity display, free of charge. The display must show real-time information about electricity consumption and cost and meet a minimum performance requirement of 95% accuracy in the normal range of energy use by a household.

2.70 In addition, from as soon as possible in 2008 to March 2010, any household requesting a real-time display for their electricity meter should be given one free of charge by their energy supplier. We estimate annual carbon savings from these cost-effective short-term measures of up to 0.3 MtC by 2020. The Government will also consider how to incentivise innovation in relation to household displays of gas consumption and cost.

2.71 Government also supports energy supplier initiatives to offer customers information through transmitting energy use data via digital technology to a television, mobile telephone or personal computer. We will discuss with interested parties what part Government can play beyond the work that is already in hand.

2.72 The Government will consult on the implementation of these proposals in the context of our ambition to see a roll out of smart meters within ten years. The provision of real-time displays with smart meters has the potential to transform how households manage their energy use. Our objective is to see households have access to this new technology as soon as possible to enable them to control their emissions.

2.73 We estimate that these proposals for billing and real-time displays will deliver annual savings of up to 0.4 MtC by 2010, in line with the Government's commitment under the Climate Change Programme; and up to 0.5 MtC by 2020.

2.74 It is possible that some of our metering and billing proposals set out in this White Paper will be taken forward in the context of the implementation of the Energy Services Directive.

Delivering lower carbon homes

2.75 Government believes that empowering and encouraging homeowners to identify potential energy and carbon saving opportunities can increase the uptake of energy efficiency and microgeneration measures.

2.76 To realise this, Government is committed to increasing the provision of support to householders in England and Wales, to make the process of improving the energy efficiency of homes as clear and as easy as possible.

2.77 By requiring all homes put on the market to have an energy rating – similar to the ratings domestic appliances already get – Energy Performance Certificates will give all buyers and renters of homes transparent, accurate information on the energy running costs of their homes, and practical advice on how to improve it, helping them cut their fuel bills and their carbon emissions. The Certificates will apply to new buildings and the sale and rent of existing buildings. Together with the display of certificates in larger public buildings, required under the EU Energy Performance of Buildings Directive, this policy will deliver annual carbon savings of between 0.6 – 1.6 MtC per year by 2020.

2.78 Certificates in themselves are not enough. We are aware of the importance of giving householders the support they need to make the changes recommended within Energy Performance Certificates. Working with Energy Saving Trust and other key participants, we are exploring how we can provide a better service for households that brings together in one place advice on approved local suppliers, information about grants available, advice on microgeneration, as well as signposting householders to other initiatives such as the recently expanded Warm Zones and help from energy suppliers under EEC/CERT.

2.79 The Government has already introduced a reduced rate of VAT for the professional installation of a range of energy saving materials and microgeneration technologies within residential properties. To provide a further incentive to householders, the Government is urging the European Commission and European Finance Ministers to introduce a reduced rate of VAT for energy saving materials for DIY installation.

2.80 Based on our discussions with major banks and building societies, the Government anticipates that these measures, have the potential to create a market for “green” financial products designed to help householders invest in energy efficiency measures and microgeneration.

Saving energy in the public sector

2.81 The public sector generates a fifth of UK Gross Value Added (a measure of economic output), employs a fifth of the UK workforce, and produces 3% of UK carbon dioxide emissions from buildings and official travel.

2.82 Reducing these emissions will not only ensure the public sector plays its role in addressing climate change but also offers the prospect of better value for money for the taxpayer through decreased costs and enhanced public service delivery. Government leadership in this area is also critical to the success of the measures targeting action by consumers and business, and Government can help stimulate the market for more energy efficient buildings, goods and services by using its purchasing power to lever improved standards. Recent reports from the Sustainable Development Commission⁴⁸ and the National Audit Office⁴⁹ illustrate the need for us to do better.

48 See <http://www.sd-commission.org.uk/sdig2006/>

49 NAO (2007) Building for the Future: sustainable construction and refurbishment. HC 324 Session 2006-2007



2.83 In June 2006, targets for the Government estate were announced alongside the report of the Sustainable Procurement Task Force⁵⁰. These targets include commitments by each Department to:

- reduce carbon emissions from their offices by 12.5% by 2010/2011 and by 30% by 2020, relative to 1999/2000 levels, and achieve a carbon neutral central Government office estate by 2012;
- increase energy efficiency per m² by 15% by 2010 and 30% by 2020, relative to 1999/2000 levels;
- reduce carbon emissions from road vehicles used for Government administrative operations by 15% by 2010/2011, relative to 2005/2006 levels.

2.84 The recently published UK Government Sustainable Procurement Action Plan and the HMT report on Transforming Government Procurement form the Government's response to the Task Force. The Action Plan sets out our goal for a low carbon, more resource efficient public sector and our plans for reaching this goal. This includes meeting updated and extended procurement standards for an increased range of products and an ongoing requirement to meet the Office of Government Commerce's common minimum standards for the built environment. These standards incorporate the earlier commitment to procure buildings for the central Government estate in the top quartile of energy performance⁵¹. Progress against the commitments for the Government estate will be scrutinised and reported on by the Sustainable Development Commission.

2.85 Subject to any future investigations by the National Audit Office or Environmental Audit Committee, we will invite the Sustainable Development Commission to conduct a health-check review of our plans and progress in 2008.

2.86 As well as using new and updated efficiency standards in our own procurement activities, Government will promote them to others in the public and private sectors. We will publish, by spring 2008, guidelines setting out criteria for energy efficiency and energy savings to be used by the public sector in its procurement procedures. By providing a ready market for more efficient goods, we aim to stimulate competition amongst manufacturers to bring forward more efficient goods and services. We will also work across Government to address the opportunities that collaboration can bring for more effective electricity and gas procurement.

2.87 The Government and the public sector can show leadership by performing well under existing and new policy frameworks, such as the EU ETS and the Carbon Reduction Commitment. These apply to large public sector organisations, such as large Local Authorities, Universities, Hospitals and central Government Departments.

2.88 The CRC will help the central Government Department estates to achieve their 30% emissions reduction target by 2020, and will complement the 2012 carbon neutral target. Reducing absolute emissions would reduce

50 Defra (2006) Procuring the Future, Sustainable Procurement National Action Plan: Recommendations from the Sustainable Procurement Task Force.

51 Defra (2004) Energy Efficiency: The Government's Plan for Action. April 2004. Cm 6168

the amount of carbon offsetting that may be required to achieve carbon neutral status. The CRC scheme will give due credit for the use of on-site renewables.

2.89 The Government is already rebuilding and refurbishing every secondary school in the country. As part of this programme, it will put £110 million over the next three years towards testing a bold aim of even higher standards for new and refurbished schools; to reduce their carbon emissions through a combination of energy efficiency, use of renewable energy and offsetting.

2.90 We will also make it a requirement that all future Service Families Accommodation in the UK should meet Rating 3 of the Code for Sustainable Homes. We expect that this would apply to all future contracts let by 2008 at the latest.

2.91 In addition, from April 2008, buildings greater than 1,000m² occupied by public authorities and by institutions providing public services e.g. government offices, hospitals, schools, museums and libraries, will be required to display a certificate showing an energy rating for the building and the steps that can be taken to improve its energy performance. This measure is expected to deliver annual carbon savings of about 0.2 MtC by 2020. We are committed to widening the requirement to all public and private sector buildings where it can be demonstrated that this is cost-effective to do so and will consult on this later this year.

2.92 Our measures will have a direct impact on how the Government spends around £60 billion of its annual budget on procurement of goods and services. Overall, our measures to save energy in the public sector will result in annual savings of between 0.7-1.2 MtC per year by 2020.

Setting the standards for the future

2.93 Government has an important role to play in setting out clear milestones for the future, particularly for improving the energy efficiency of products and buildings. By consulting on our intended policy framework now, we can ensure that the construction industry, product manufacturers and retailers are able to plan to deliver our goals over the next 10–20 years.

Raising products standards

2.94 From their manufacture, through their use and final disposal, consumer goods account for a considerable proportion of the energy that we use in the UK. Minimising the amount of energy and resources consumed during each product's life cycle, through improved design, is therefore critical to the delivery of our policy to cut carbon emissions and to achieve our wider policy objectives for more sustainable consumption and production.

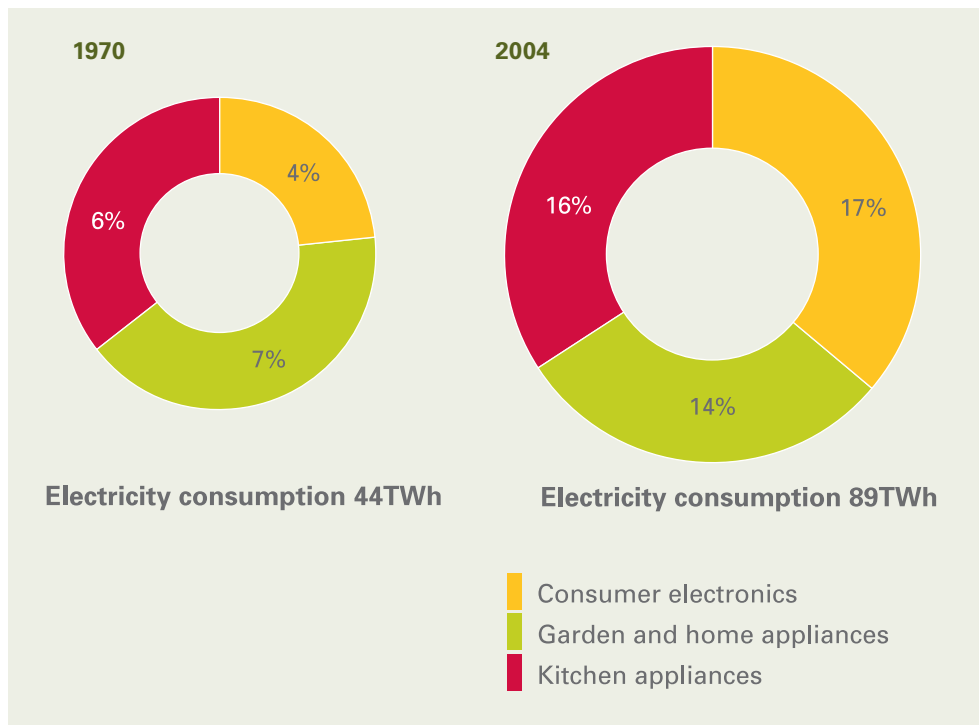
2.95 In the average home the number of energy using appliances has more than doubled since the 1970s (see Figure 2.3) and we expect this trend to continue. Without steps to improve their energy efficiency, by 2010 their total UK energy consumption could exceed 100 TWh.



2.96 Our current analysis suggests that by raising product standards we could reduce annual emissions by between 1–3 MtC by 2020. To do this will require a range of measures and approaches, including: international agreements; European and domestic legislation; and voluntary action through the supply chain to enhance markets for more cost-effective energy efficient goods and services.

2.97 We will focus our efforts on the major energy using products such as motors, lights, household appliances, electronics and air conditioning. These are internationally traded goods. So, while the Government will take steps domestically to improve take up of energy efficient products, we need to work internationally and through the EU to stimulate global innovation and competition to raise standards and to bring greater choice and efficient products to UK consumers.

FIGURE 2.3 ELECTRICAL PRODUCTS IN THE UK HOME AND THEIR TOTAL UK ELECTRICITY CONSUMPTION, 1970 AND 2004



Source: Energy Saving Trust report, *Rise of the machines*

2.98 Working through the International Task Force on Sustainable Products we will deliver on our Gleneagles G8 commitments to promote international cooperation on product labelling and standards and help develop practical standards to reduce stand-by power and to implement the International Energy Agency's (IEA) 1 Watt initiative.

2.99 The European directive on the Eco-Design of Energy-using Products (the EuP directive) will deliver mandatory measures to improve the energy efficiency of a range of products. Our immediate priorities in Europe are to press for rapid delivery of mandatory measures to improve energy efficiency and to reduce stand-by power and improve lighting standards. While we welcome the European Commission's stated intention to work towards regulating against inefficient bulbs by 2010, with a phase out over the following years, we intend to take action in the UK in advance of this.

2.100 We are working closely with UK manufacturers, retailers and trade associations to be the first European country to phase out inefficient GLS bulbs for the majority of domestic use, where an efficient alternative exists, by 2011. This will reduce annual UK carbon emissions by up to 1.2 MtC by 2020 and lead to a saving of around £30 on the average household energy bill. To encourage the purchase of low energy light bulbs, the Government has written to the European Commission and European Finance Ministers to recommend the introduction of a reduced rate of VAT for energy-efficient products.

2.101 Domestically we will also deliver changes to the UK market for other energy using products. As announced in the Budget in 2006, we will do this by working with the UK supply chain and seek commitments from manufacturers, retailers and service providers to deliver more efficient goods and services. We have met with the major UK retailers of electronic and electrical goods; all have agreed to look in more detail at the energy consumption of the products they are selling and at the scope for action. Many retailers are already responding to this challenge by raising the issues with their own suppliers and with firm commitments to encourage more efficient lighting and other products.

2.102 To support this work, Government, through our Market Transformation Programme (MTP), will publish a series of consultation papers setting out our analysis of how the performance of energy using products will need to improve over the next 10–20 years, including proposals for product standards and targets to phase out the least efficient products. These standards will, for example, guide our priorities for European action and for commitments we are seeking from UK business. These will be updated annually. We are publishing alongside this White Paper our first consultation paper, which focuses on the consumer electronics sector. This sets out how we expect the performance of major consumer electronics available in the UK to improve over the next 13 years including televisions, video players/recorders, digital TV adapters (set-top boxes) and external power supplies/battery chargers. If the proposals set out in the consultation paper were implemented this could save up to 1.6 MtC per year by 2020 if all products were to meet earliest best practice levels of performance. For example, through promoting technological improvement we are aiming to reduce the stand by power requirement of new TVs by 85% by 2015, compared to today's average.



BOX 2.6 MEETING PRODUCT STANDARDS

As part of our work with retailers and manufacturers we have been exploring how we might translate the sometimes complex sets of technical standards and energy efficiency targets into an understandable and practical business planning tool. We are examining the development of an “online calculator” (<http://www.mtprog.com>). This could be used by retailers, manufacturers and others to test, easily, if individual energy-using products or their range of products will meet the Government’s published indicative product standards (e.g. for stand-by power and energy efficiency).

The calculator could be used to examine the scope for changing performance specifications or sales volumes in order to improve the overall carbon footprint of the range of products supplied. The calculator might also provide a convenient way for retailers and manufacturers to provide information to Government about their achievements and future plans to raise product standards.

Raising building standards

2.103 Changes to Building Regulations in England and Wales in 2006 have achieved a 70% improvement in the energy efficiency of new houses compared to pre-1990 standards. At 2006 prices, the average 2-bedroomed semi-detached house built in 1970 would cost £515 per year to heat and emit 1.2MtC/yr compared to a house built to 2006 Building Regulations which would cost £85 per year and emit only 0.2MtC/yr. Of the UK’s carbon emissions, 45% are from buildings, with housing making up 27% and the non-domestic sector 18%, so tackling their emissions will make a significant impact on our carbon goals. We need to ensure that developments in the future are as energy efficient as possible; this includes the estimated nine million new homes to be built between now and 2050⁵².

Delivering zero carbon homes

2.104 In the consultation “Building a Greener Future: *Towards Zero Carbon Development*”⁵³, we propose future changes to Building Regulations such that by 2016, all new homes built in England will have to be zero carbon. This means that, over a year, the net carbon emissions from all energy use in the home would be zero (heating, lighting, hot water, and all appliances), achieved by improving the energy performance of the home and increasing the use of renewable and low carbon sources of energy, either installed in the individual home or supplied to an entire development.

⁵² Source:

http://www.communities.gov.uk/pub/173/BuildingaGreenerFutureTowardsZeroCarbonDevelopment_id1505173.pdf

⁵³ <http://www.communities.gov.uk/index.asp?id=1505157>.

2.105 The consultation document proposed interim steps to be set out in progressive changes to Building Regulations; by 2010, all new homes would show a 25% improvement in energy performance compared to current Building Regulations and, by 2013, a 44% improvement. Our initial estimates are that these measures could reduce annual emissions by between 1.1 and 1.2 million tonnes of carbon (MtC) by 2020.

2.106 The Government is currently considering responses to the consultation and intends to announce its policy on the timetable for zero carbon housing later this year. We will consult on the details of the next set of changes to Part L of the Building Regulations in 2008.

2.107 The Code for Sustainable Homes⁵⁴ provides a single national standard to guide industry in the design and construction of sustainable homes, considering not just energy but water, materials, waste and ecology. It is a means of driving continuous improvement, greater innovation and exemplary achievement in home building. The Code sets out what is expected to be required to meet future Building Regulations.

2.108 There are six star ratings in the Code (see Table 2.2), each with mandatory minimum standards for energy efficiency and water efficiency. Code Rating 3 should be achievable via energy efficiency improvements to the design, construction and fabric of the building. To go beyond that rating would require not only improved energy efficiency but also some form of low or zero carbon energy generation, either within individual buildings (e.g. dedicated solar water heating) or provided to whole developments through a shared source of low carbon generation (e.g. wind turbines), thus helping the deployment of low carbon technologies and encouraging greater distributed forms of energy generation (see chapter 3). A 6-star home would be a completely zero carbon home.

TABLE 2.2: MINIMUM ENERGY/CARBON STANDARDS IN THE CODE FOR SUSTAINABLE HOMES

Code Star Rating	Standard (percentage better than Part L 2006 ⁵⁵)
1	10
2	18
3	25
4	44
5	100 ⁵⁶
6	A zero carbon home ⁵⁷

54 Code for Sustainable Homes - A step-change in sustainable home building practice" Communities and Local Government - December 2006.
<http://www.planningportal.gov.uk/england/professionals/en/1115314116927.html>.

55 Building Regulations: Approved Document L (2006) - "Conservation of Fuel and Power."
http://www.communities.gov.uk/pub/339/ApprovedDocumentL2AConservationoffuelandpowerNewbuildingsotherhandwellings2006n_id1164339.pdf.

56 Zero emissions in relation to Building Regulations, i.e. zero emissions from heating, hot water, ventilation and lighting.

57 A completely zero carbon home, i.e. zero net emissions of carbon dioxide from all energy use in the home including from appliances.



2.109 The Budget in 2007 announced that from 1 October 2007 all new homes meeting the zero carbon standard costing up to £500,000 will pay no stamp duty, and zero-carbon homes costing in excess of £500,000 will receive a reduction in their stamp duty bill of £15,000. The criteria for eligibility for the stamp duty exemption were published in the Budget⁵⁸.

2.110 The Government will use the Code to support housing developments which are under our own control. In particular:

- we will now make it a condition of Government funding that all new homes built by registered social landlords and other developers and all new homes developed by English Partnerships will comply with Rating 3 of the Code for Sustainable Homes;
- we will require that the 2012 Olympic Village will meet at least Rating 3 of the Code; and
- the Communities and Local Government Carbon Challenge (Design for Manufacture II) will focus on delivering over 1,000 homes on an initial five sites owned by English Partnerships, achieving low or zero carbon status as well as enhanced environmental standards (Rating 5 of the Code for Sustainable Homes). It will also take forward the standards of the earlier Design for Manufacture competition.

2.111 Government is considering whether, from April 2008, all new homes should be required to have a rating against the Code. This would provide a rating of the overall sustainability of the home and would, as a component, use the energy assessment carried out to determine the rating of the home for an Energy Performance Certificate. We will consult on specific proposals by the end of 2007.

2.112 If Building Regulations are to have an impact on carbon emissions then it is important there is a high level of compliance. Amendments were made in April 2006 to the regulations to simplify procedures. In parallel, over the 2005/2006 period, the Government delivered the largest ever training and dissemination programme to improve awareness, understanding, and compliance with new Building Regulations.

2.113 We will review implementation within three years. This will allow for a sufficient population of buildings to be constructed to the new standards. In the interim we will obtain feedback from building control bodies and other stakeholders on the new compliance package and consider how best to assess the impacts they have had.

2.114 Furthermore, we intend to introduce an extended time limit, via a new Building Regulation, which will allow local authorities more time for prosecutions against breaches of those parts of Buildings Regulations dealing with energy efficiency aspects. We will consult on these proposals later this year.

⁵⁸ Budget note 26, http://www.hm-treasury.gov.uk/media/757/0A/bud07_budgetnotes_381.pdf

Delivering low and zero carbon communities

2.115 Delivering low and zero carbon homes requires not just changes to and enforcement of Building Regulations. Our consultation on a draft Planning Policy Statement (PPS): *Planning and Climate Change*⁵⁹, sets out a clear and challenging role for regional and local planning authorities in England to help develop communities with lower carbon emissions, focusing on reducing the need for travel and making best use of low carbon and renewable energy. The Government is currently considering responses to the Planning and Climate Change consultation, and will publish the final PPS this year.

2.116 To encourage investment and confidence in the potential building of low and zero carbon communities across the UK, the Government has commissioned a feasibility study. Using Thames Gateway as an exemplar, the study will look at the potential to turn the area into a low carbon/zero carbon development⁶⁰. The study will define what is meant by low and zero carbon for the Gateway and highlight the major role distributed power generation can play in achieving low carbon development.

2.117 The economies of scale afforded by this development provide the opportunity to go further and faster towards low carbon communities. The feasibility study should also highlight the opportunities for reducing emissions from existing buildings within the Gateway and for new environmental technologies and low carbon businesses.

2.118 A new programme of work is being initiated across Government, led by the Technology Strategy Board – the Innovation Platform on Low Impact Buildings – which will accelerate the development of cost-effective solutions to building zero carbon homes, and will tackle key challenges to upgrading of the existing stock; for example, there are seven million solid-walled homes in the UK which are technically difficult to insulate. This 5–7 year programme will support research where there are clear innovation gaps and will build on existing work, such as the EST's Best Practice Programme and microgeneration field trials. It will act as a technology accelerator by testing clusters of new technologies in a number of Government – funded demonstrator programmes, such as those run by English Partnerships and through measures such as public procurement, will create markets for successful commercialisation of these new technologies.

2.119 In tandem, the Office of Science and Innovation is running the Foresight Sustainable Energy Management and the Built Environment Project. This will explore the technological and social impact of future systems for low carbon generation of heat and power and their interaction with current energy systems⁶¹, with the aim of determining how the UK built environment can evolve over the next five decades towards sustainable, low carbon energy systems.

59 Draft Planning Policy Statement (PPS): Planning and Climate Change.

<http://www.communities.gov.uk/index.asp?id=1505140>

60 Thames Gateway Interim Plan: Policy Framework. <http://www.communities.gov.uk/index.asp?id=1504558>

61 More information is available at <http://www.foresight.gov.uk/Energy/Energy.html>.



Next Steps

2.120 Full implementation of all these measures would result in annual carbon savings of between 7.0–11.7 MtC by 2020, some 30–35% of the savings we expect from the measures set out in this White Paper. This represents a considerable proportion of the energy efficiency potential that we identified in the Energy Review Report. Policies such as zero carbon homes, the opening up of new energy services markets and the feed through of new technologies from our demonstration and research programmes will help not only to unlock the remaining potential but deliver further potential in the future.

2.121 The carbon savings achieved from the energy efficiency measures set out in this white paper comprise:

- 4.7–7.6 MtC from the household sector;
- 1.6–2.9 MtC from the business sector; and
- 0.7–1.2 MtC from the public sector.

2.122 In addition to the development of the policies we have set out in this chapter, in order to comply with the EU Energy End-Use Efficiency and Energy Services Directive, we will:

- produce a National Energy Efficiency Action Plan for submission to the European Commission by 30 June, setting out the policies and measures in place in the UK to deliver improvements in energy efficiency and meet the energy saving target in the Directive; and,
- look at the possible need for additional energy efficiency measures in the transport, business and household sectors, on which we expect to consult this summer.

Saving energy

Summary of measures

We will:

- **Drive energy saving behaviour in the large non-energy intensive sector through introduction of the Carbon Reduction Commitment;**
- **Drive further energy efficiency improvements in the home through a continued obligation on energy suppliers until at least 2020, with a Call for Evidence on how we can deliver this in summer 2007;**
- **Require Energy Performance Certificates for all buildings, to be sold or rented, providing an energy efficiency rating for the property;**
- **Improve information to the consumer on energy use in homes and businesses through improvements to energy metering and billing and the launch of an online CO₂ calculator;**
- **Between 2008-2010, require energy suppliers to provide a free real-time electricity display to all home owners who ask for one;**
- **Publish by spring 2008, public sector procurement criteria for energy efficiency and energy savings;**
- **Publish targets to drive the energy efficiency of products and services. The first of these, for consumer electronics, is published today;**
- **Work with manufacturers, retailers and service providers to obtain supply chain commitments to meet the targets;**

- **Ensure that all new Government funding for homes built by registered social landlords and other developers is made on the condition that they comply with Rating level 3 of the Code for Sustainable Homes;**
- **As of April this year, require that all new homes developed by English Partnerships or with direct funding from the Government's housing growth programmes comply with Rating level 3 of the Code for Sustainable Homes; and**
- **Decide by the end of this year on the date for all new homes to be zero carbon.**

Section 2.1 – Fuel Poverty

2.1.1 Every household in the UK should be able to heat and light their homes affordably. However, for some people, meeting this basic energy need accounts for a disproportionate amount of their income. The generally accepted definition of fuel poverty is when a household has to spend 10% or more of its income on energy to maintain a warm home. The root causes of fuel poverty are the cost of fuel, the income of the household and the energy efficiency of the home.

2.1.2 The Government's UK Fuel Poverty Strategy, published in November 2001 set out our targets on fuel poverty and how we would tackle the problem. We remain committed to enabling all households to afford to heat their home adequately.

2.1.3 This section sets out the progress which has been made to date to tackle fuel poverty and the scale of the problem which still exists in the UK. It also reports on progress since the Energy Review Report, as well as our short and medium term policies to tackle fuel poverty and reach those most in need.

2.1.4 The Government has contributed significant investment and put in place a range of policies which are having an increasing impact, namely:

- the Winter Fuel Payment for those over 60;
- the increased focus on Benefit Entitlement Checks in fuel poverty programmes, including effective interaction with the Pension Service;
- the personal tax package measures announced in the budget earlier this year will have taken up to 100,000 households out of fuel poverty in the UK;⁶²
- the Warm Front programme and its equivalents in the Devolved Administrations;
- the measures directed towards the Priority Group of vulnerable customers under the Energy Efficiency Commitment;
- the Decent Homes Standard; and
- the additional £300 million made available to fuel poverty programmes in the 2005 pre-budget report, taking funding in England alone to over £800 million over 2005–2008.



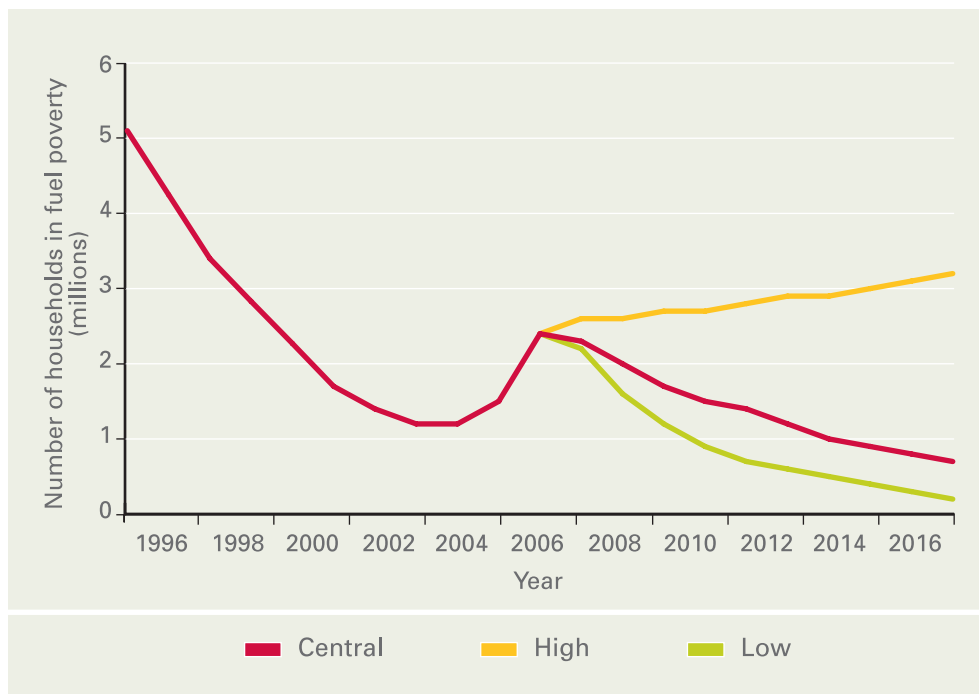
Progress To Date

2.1.5 Since 1996, we have made good progress towards our fuel poverty targets, having reduced the number of households in the UK in fuel poverty from around 6½ million in 1996 to around 2 million in 2004.

2.1.6 However, over the period 2004 to 2006, overall costs of fuel and light increased by 35%, while gas prices increased by 45% and electricity prices by 29% in real terms. These price increases represent significant challenges to our fuel poverty targets.

2.1.7 The increases are estimated to have driven up total fuel poverty levels by around 1.6 million households in England alone, with income improvements offsetting this by around 300,000 households and energy efficiency improvements by a further 100,000 households. This leads to an estimated additional 1.2 million households in fuel poverty in 2006 compared to 2004. The position, for England, between 1996 and 2016 is shown in Figure 2.1.1. On the central price/income scenario it is estimated that 1.5 million households will remain in fuel poverty in 2010 and 700,000 in 2016. This includes the effect of installing energy efficiency measures currently available under fuel poverty programmes. It is clear that households remaining in fuel poverty will need to receive additional assistance if we are to meet our targets.

FIGURE 2.1.1 HISTORIC AND PROJECTED NUMBERS OF HOUSEHOLDS IN FUEL POVERTY IN ENGLAND, 1996-2016



Source: DTI, 2007

- Positions in 2005 and 2006 are based on the modelling of the impact of income, energy prices movements and energy efficiency measures on the number of vulnerable households in fuel poverty.
- Positions from 2007 to 2016 are based on modelling and show central, low and high price scenarios. These are based on the fossil-fuel price assumptions published at the same time as the White Paper.

2.1.8 Other factors affecting progress include:

- households not taking up their entitlement to benefits or not coming forward for assistance;
- homes that are difficult to bring up to a sufficiently high level of energy efficiency in a cost effective manner; and
- difficulties in coordinating existing programmes that are delivering measures to households.

Work to address fuel poverty

2.1.9 In the Energy Review Report, we identified that we would take forward work to:

- get details of the help that is available to those who need it most;
- explore further ways to reduce household energy bills via energy efficiency measures;
- ensure that the energy a household consumes is competitively priced; and
- ensure households who are eligible for benefits are claiming them.

2.1.10 We have acted on each of these commitments. Through industry and the Government working together, we delivered a targeted mail out which offered energy efficiency and income assistance to 100,000 Pension Credit recipients. We are now looking to take this forward for next winter and plan to re-evaluate the offer, widen the target group and integrate this activity within our wider programme of promoting winter warmth. (See Box 2.1.1)

BOX 2.1.1 PROMOTING WINTER WARMTH

Following on from the commitment we made in the Energy Review Report an Ofgem-led Steering Group was set up, comprising of suppliers, voluntary organisations and Government representatives to work with industry to encourage households with someone aged 70 or over in receipt of Pension Credit to take up energy efficiency measures.

The big six UK energy suppliers agreed to fund a pilot mail out to 100,000 households within the target group. The aim of this pilot was to test the feasibility of the Government and industry working together, to guarantee eligibility through utilising Pension Service data and ultimately, to maximise response rates and the eventual uptake of energy efficiency measures, with a view to further roll out should it prove of value to all parties.

The mail out, which encouraged recipients to call an energy advice line so that they could be offered free insulation as well as a benefits entitlement check to help maximise their income, commenced in November 2006. The pilot generated a good rate of responses, of 6.7%, with over 3% of households receiving an energy efficiency measure or a benefit entitlement check.

As a result, all parties have since agreed to review the scope for a wider roll out of this concept, acknowledging the real results that can be obtained by working together to meet common goals tangible benefits.



2.1.11 An additional £7.5 million was announced in the Pre-Budget Report 2006 to support the development of projects which use an area-based approach to identify the needs of each household in order to provide them with a co-ordinated and tailored set of advice and measures. This will complement our already very successful fuel poverty and carbon abatement schemes for the domestic sector, namely Warm Front, the devolved fuel poverty programmes and the Energy Efficiency Commitment. It is anticipated that this funding, which is being made available in 2007/2008, will build on the experience of many existing area-based approaches, including that of Warm Zones and will ultimately assist approximately 300,000 of the most vulnerable households, community by community.

2.1.12 The introduction of new technologies is also being taken forward through the main UK fuel poverty schemes. For example, Warm Front in England has mechanisms in place for assessing alternative (usually low carbon) technologies, which can then be brought into the portfolio of measures offered by the Scheme. Alongside this, the Low Carbon Buildings Programme is hoping to attract bids from social housing providers seeking to install microgeneration in order to further demonstrate their value, particularly for low income, hard to reach properties.

2.1.13 To ensure people are aware of the assistance that is available and that it better meets their needs, we will put in place a cross-Government communications campaign in time for winter 2007/2008, so that all the help currently available, be it energy efficiency, benefits advice, tariff advice or advice on how to stay healthy in winter is coordinated and easily accessible. We will also be taking forward the lessons learnt from the recent energy supplier funded mail out to pension credit households and exploring the use of wider DWP communication opportunities, such as the annual benefit up-rating letter to pensioners.

2.1.14 We want groups with different contacts and relationships to engage and help with this work. Key partners include voluntary groups such as Help the Aged and Age Concern, the fuel poverty charities such as National Energy Action and the National Right to Fuel Campaign, the energy supply companies (who established the Home Heat Helpline), the fuel poverty scheme managers and the Energy Saving Trust.

2.1.15 It is essential that we use all means possible to target help and support at those who need it most. We will therefore take forward action enabling the sharing of benefit data in clearly specified and controlled circumstances, if necessary by using legislation.

2.1.16 Our existing schemes continue to deliver significant support to a large number of households, with over 1.5 million households having been helped to date. To ensure we are providing help in all relevant areas we will be extending benefit entitlement checks to all households requiring one who come forward to Warm Front, rather than only those ineligible at application or whose home cannot be brought up to a high level of energy efficiency.

2.1.17 The next phase of the Energy Efficiency Commitment (now re-named CERT) is currently being considered. Access to benefit data would drive down costs to locate low income households regardless of the overall size of the

Commitment and that of the Priority Group. We are also considering a flexibility option to allow suppliers to have a reduced Priority Group share if they direct some more expensive measures at those households most likely to be fuel poor.

2.1.18 The scale of the future role of alternative technologies in terms of tackling fuel poverty is currently unclear. We will therefore continue to maximise the contribution of current cost-effective energy efficiency measures across all housing stock. We will work to further encourage more activity by Local Authorities to exceed the Decent Homes Standard and promote best practice. The evidence is already that many Authorities already routinely exceed the Standard.

2.1.19 As well as the funding for local area-based initiatives announced in the recent pre-budget report, other methods of encouraging Local Authority action are also under consideration. We are currently finalising a new model that will enable each Local Authority to see the baseline fuel poverty level in their area. We will be holding a launch event shortly with subsequent local events to publicise this work and to stimulate more action to tackle fuel poverty. The Home Energy Conservation Act Review and the Local Government Performance Framework also offers scope for additional activity in this area.

2.1.20 As demonstrated by the fuel poverty statistics, it will still remain the case that for the poorest consumers, energy prices remain unaffordable. The Winter Fuel Payment continues to help some with these costs.

2.1.21 We welcome the initiatives announced by energy companies that help their vulnerable customers to cope with high prices, and continue to encourage more companies to take action in this area. We note that the scale of these offerings varies between companies and we will be working with Ofgem to evaluate each company's Corporate Social Responsibility measures to see exactly how these compare, drawing attention to the most effective initiatives and highlighting where improvements are needed. We see the provision of assistance to help their most vulnerable customers as a key part of each company's Corporate Social Responsibility programmes, and will be looking for each company to put in place a proportional programme of assistance.

2.1.22 If no further action is undertaken by companies, we will consider whether to take the opportunity for legislation to enable the Secretary of State to require companies to have an adequate programme of support for their most vulnerable customers. In this context, we may consider the role of mandated minimum standards for social tariffs in the context of the review of the policy framework. We will work closely with the suppliers in taking this forward.

2.1.23 We will also be working with Ofgem and energywatch to look at how we can encourage some of the most vulnerable customers to realise the benefits that other consumers have seen since liberalisation of the energy market by switching supplier or payment method if appropriate.



2.1.24 Chapter 2 has set out our measures regarding new types of meters and their potential to offer additional information and enable customers to make choices about their consumption. Prepayment meters already allow customers to monitor their expenditure on fuel, but are often more expensive to use. Some companies have equalised their prepayment and standard credit tariffs, but others have not, and the cost differential between direct debit and prepayment meters (used by a relatively high proportion of low income households) is increasing, standing at around £120 for a combined gas and electricity bill in 2006 compared to £84 in 2005. While we recognise that prepayment meter customers do cost more to serve, we are concerned about these increases, and will look at whether there are ways to encourage best practice in protecting the most vulnerable consumers from the large differences in bills because of the payment method they use.

2.1.25 All companies have taken some steps so that prepayment customers are not unfairly disadvantaged by tariff changes as a result of delays in updating their meters. Ofgem has been working with suppliers to address the particular problems of the updating of prepayment token meters, but we will consider ways of reducing the costs associated with pre-payment meters more generally.

2.1.26 Gas remains the cheapest heating fuel. We have developed and tested a model for delivering cost-effective gas network connections to deprived communities and regional demonstration projects are going forward in North East England and Yorkshire and Humberside. Gas connection projects undertaken on a larger scale have the scope to make a significant contribution to addressing fuel poverty. We are, therefore, discussing with Ofgem the scope for incentivising gas network extensions through the gas distribution price control, which will operate from April 2008.

2.1.27 We are midway through a full examination of our policy framework for tackling fuel poverty, looking at the ways in which each of our measures can be enhanced so that their effectiveness can be improved. It is clear we cannot rely on one single approach to eradicate fuel poverty, but will need concerted efforts across all root causes.

2.1.28 The policies and measures outlined above will take around an additional 200,000 households out of fuel poverty by 2010; however the overall package and the long-term way forward will depend on the conclusion drawn after examination of our policy framework for tackling fuel poverty. Next steps will be set out in the UK Fuel Poverty Strategy Fifth Annual Progress report in summer 2007. The report will outline action taken by the Government on a range of factors impacting the fuel poor. It will provide further analysis of our current position and outline action required to deliver on our objectives.

Fuel Poverty

Summary of measures

We will:

- take a more localised approach – in regions, Local Authorities and individual communities – to tackling fuel poverty, actively generating referrals and delivering cost effective measures;
- provide a Benefit Entitlement Check to all households that require one who come forward to Warm Front;
- enable sharing of benefit information in clearly specified and controlled circumstances, allowing help to be more easily targeted at eligible households, if necessary taking forward legislation;
- issue guidance to encourage Local Authorities to exceed the Decent Homes Standard and use the model of fuel poverty at a local level as a stimulus for action;
- put in place an cross-Government communications campaign in time for next winter, so that all the help currently available, be it energy efficiency, benefits advice, tariff advice or advice on how to stay healthy in winter is coordinated and easily accessible;
- as part of this, use DWP mailings to promote fuel poverty programmes;
- work with energy companies and others to explore a further phase of the Winter Mail Out communication enabling assistance to be directed effectively towards those who need it most;
- work with Ofgem and energywatch to encourage vulnerable customers to use the energy market to get the best deal, where appropriate;
- work with Ofgem to determine the current levels of energy company Corporate Social Responsibility Activity. We hope this will encourage companies to do more in this area. If it does not, we will look to give the Secretary of State powers to require companies to have an adequate programme of support for their most vulnerable customers. We will also be looking at whether there are ways to encourage best practice in protecting the most vulnerable consumers from the large differences in bills because of the payment method they use;
- continue to work with Ofgem on the scope for the gas distribution price control to incentivise extension of the gas network to deprived communities; and
- continue to keep this policy framework under scrutiny and report on the way forward in the next Annual Fuel Poverty Progress Report, which is to be published this summer.