

Energy Review
Overarching Initial Regulatory Impact Assessment
July 2006

Energy Review Initial RIA

1. Title of Proposal

The Energy Review. This Initial RIA provides an initial assessment of the impacts of the overall package of policy proposals put forward in the Energy Review (Annex 1).

Where appropriate, all the measures will be subject to individual RIAs as part of the normal policy development process, and each will include an analysis of the economic, social and environmental costs and benefits associated with the policy. A separate Initial RIA will be published on the Statement of Need for nuclear power generation as an annex to the Energy Review Document.

The proposals will be developed through further analysis and consultation with stakeholders and may lead to a number of regulatory measures including primary and secondary legislation.

The package includes :

- a. Measures that have already been announced and where policy development is underway.
- b. Newly announced measures where we are making firm proposals now or consulting on specific proposals ('a closed consultation').
- c. Other measures where we are:
 - Proposing to conduct an open consultation on the case for action and/or the options available or;
 - We need to carry out further policy development before proposals are brought forward or;
 - Have no regulatory impact.

A number of the measures fall into areas of devolved responsibility where it will be for the devolved administrations to consider how best to take matters forward.

2. Purpose and Intended Effect

To assess progress against the 2003 Energy White Paper Goals and bring forward policy proposals.

2.1. Background

In November 2005 the Government announced a review of progress against the UK's medium and long-term energy policy goals in the 2003 Energy White Paper. The Energy Review team, led by the Minister for Energy Malcolm Wicks, was asked by the Prime Minister and Secretary of State for Trade & Industry to bring forward energy policy proposals in summer 2006. The Energy Review Report sets out the conclusions of the Review and the next steps we need to take to ensure that we are on track to deliver our policy goals. This overarching Initial RIA describes the impact of the package of proposals put forward in that report and describes the regulatory impact of firm proposals and proposals where we are proposing to conduct a closed consultation.

2.2. Energy White Paper and progress towards our goals

In the 2003 Energy White Paper we set out four long-term goals for energy policy. These were to:

- *Put ourselves on a path to cut the UK's CO₂ emissions by some 60% by about 2050, with real progress by 2020;*
- *Maintain the reliability of energy supplies;*
- *Promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and*
- *Ensure that every home is adequately and affordably heated.*

These goals remain the objectives of our energy policy.

There has been good progress against all of these goals:

- **We will meet our Kyoto target but further action is needed to meet our 2050 and 2020 goals** - On present policies, the UK is on course to exceed its target under the first commitment period of the Kyoto Protocol, to cut greenhouse gas emissions by 12.5% on 1990 levels throughout the period 2008-2012. Strong economic growth has led to higher energy consumption. This growth combined with higher levels of electricity generation from coal has led to higher carbon emissions in the UK. So we now need to take further action to help us move towards the goal of cutting carbon emissions by 60% by 2050.
- **We are entering a new era for our energy supplies.** The North Sea has given us self-sufficiency in oil and gas, but this is now changing. In the future we will increasingly depend on gas imports to meet demand and by the end of the decade we will become a net importer of oil. These developments are unfolding against a backdrop of rising global demand for energy as India, China and other countries rapidly grow their economies
- **We have competitive markets but face reliance on markets that are not** - Over the past decade, the UK has benefited from the most competitive gas and electricity markets in the EU and G7 with prices in the UK decreasing substantially since energy market liberalisation. But as we increasingly become a net importer of energy, we may be affected by the interaction of the UK's liberalised energy market with the less liberalised energy markets in the rest of the EU.
- **Fuel poverty remains a challenge** - Between 1996 and 2003, we saw considerable progress in tackling fuel poverty with the number of UK households in fuel poverty falling from 5 million to around 1.5 million. Rising fuel prices mean that fuel poverty remains a major long-term challenge.

2.3. Rationale for Government Intervention

Government intervention may be necessary to help make markets take account of, and efficiently respond to, our energy policy goals. The use of economic instruments, such as

taxes and trading schemes, to incentivise behaviour that protects or improves the environment, and to deter actions that are damaging to the environment, is one option to enable environmental goals to be achieved at the lowest cost and in the most efficient way. Over the past decade, Government has introduced a range of economic instruments in pursuit of environmental objectives, and we will continue to explore options for introducing new ones, taking account of all economic, social and environmental objectives.

2.4. Carbon Reduction

The only way we will limit the rise in carbon emissions is if industry and individuals take account of the costs associated with the emissions for which they are responsible. All the world's governments have a major role in creating the framework to enable a value to be placed on carbon that provides a financial incentive for businesses and households to take account of the carbon impact of their activities.

More effort is needed to meet our goal of 60% cut in CO2 emissions by 2005:

- We will meet our Kyoto targets on greenhouse gases as a whole, but by 2020 our CO2 emissions are projected to be only slightly down on current levels.
- Internationally, we need to recognise that UK carbon dioxide emissions represent only 2% of the global total. Although we can try and influence others through our actions, we cannot solve the issue of climate change on our own.
- All national governments must take action to reduce carbon emissions if we are to successfully tackle climate change. And the UK wants to continue to take a lead, where we can do so in a cost-effective way. To do this we need to put our economy on a path to becoming less carbon intensive. We can do this by using fewer of the products and services that use energy - by reducing our demand for them and improving their efficiency - and by changing the way we produce energy so that more of it comes from sources that are low carbon.

The market failures in action against climate change are well documented and well understood. Producers do not bear the full costs associated with carbon dioxide emissions and therefore emit more than the socially optimal level. Consumers may value carbon; however there are information and co-ordination failures which prevent consumers acting in ways which reduce carbon emissions. In order to correct these market failures it is therefore essential for the government to intervene and facilitate the reduction of carbon emissions. Furthermore, due to the global nature of the problem of climate change negotiations to reduce carbon emission must occur at EU and international levels which clearly requires government action and leadership.

2.4.1. Energy Efficiency

Saving energy is key to meeting our long-term energy challenges. It can help us reduce carbon emissions, which is vital if we are to tackle climate change. At the same time, by allowing us to use less energy for the same level of output – whether in industrial productivity or heating our homes – it can contribute to the security of our energy supply, to our economic growth (by lower bills to firms and consumers) and to tackling fuel poverty. So energy efficiency is integral to our overall policy.

We have already put measures in place to promote energy efficiency. By 2010, those measures will reduce the UK's carbon dioxide emissions by over 7% compared to 1990 levels.¹

But more needs to be done. Most energy use remains highly inefficient. For example, an average home requires four times as much energy to heat it as the average new home. And on current projections, if we do nothing, energy use and carbon emissions will rise after 2010. This reflects the fact that: economic growth is anticipated to increase energy demand; without further action, as current nuclear generation capacity is lost, it may be replaced by higher-carbon sources; and many energy efficiency policies are currently only committed until 2010/2013. A strong policy framework will be needed for the longer term, and these proposals begin that work.

The energy market itself has a key role to play. The current market is very much focused on the delivery of units of energy; profits come from increasing sales. We need to ensure that the regulatory and market framework for energy is in line with the objectives of energy saving and reduced emissions, and so stimulate a market for the supply of energy services – warmth, light and power rather than energy per se.

Estimates of the rate of return for energy efficiency investment show positive rates of return, however some households do not undertake these measures. The main obstacles to the take up of energy efficiency are lack of information about costs and benefits, absence of appropriate incentives, and lack of motivation among consumers. There is a market failure in terms of an information failure as consumers find it difficult to evaluate claims for energy efficiency investments especially technical material. Consumers may also have poor foresight in terms of evaluating the benefits of energy efficiency investments and are therefore reluctant to make initial capital investments especially if payback periods appear relatively long or uncertain. Government is well placed to tackle this market failure through the provision of information and clearer incentives to make better use of energy.²

2.4.2. *Reliable Energy Supplies*

The challenges of reducing emissions and ensuring security of supply are closely linked. Security of supply requires that we have good access to available fuel supplies, the infrastructure in place to transport them to centres of demand and effective markets so that supply meets demand in the most efficient way. Many of the measures already described for tackling carbon emissions also contribute to the healthy diversity of energy sources that is necessary for meeting the energy security challenge.

There are two main security of supply challenges for the UK:

- Managing increased dependence on oil and gas imports; and
- Ensuring that the market delivers substantial and timely investment in generating plant and networks so that households and businesses have the electricity they need at affordable prices.

We will import much more of our energy in future years from different parts of the world:

¹ Action set out in the Energy White Paper, the Energy Efficiency Action Plan and both the 2000 and 2006 Climate Change Programmes, will deliver a reduction in the UK's carbon dioxide emissions of 16% below 1990 levels. 40% of this improvement will be from energy efficiency measures

² For further details see <http://www.defra.gov.uk/environment/energy/eeir/pdf/oxera-report.pdf> for background paper to Energy Efficiency Innovation Review

- Although we have good made progress on renewables we will become more reliant on gas to meet our heating and electricity generation needs. We became a net importer of gas in 2004 and it is estimated that we could be dependent on import for around 80% of our gas in 2020.

Our imports will often come via less liberalised energy markets

Over the past decade, the UK has benefited from the most competitive gas and electricity markets in the EU and G7 with prices in the UK decreasing substantially since energy market liberalisation. However as the UK increasingly becomes a net importer of energy, we may be affected by the interaction of the UK's liberalised energy market with the less liberalized energy markets in the rest of the EU.

The UK suffered some very high prices this past winter. Despite this, flows through the UK-Belgium gas interconnector averaged 60% of total capacity which indicated that the EU market was not responding to price signals as would be expected in a competitive market. We asked the Commission to investigate, specifically to establish whether this may have been due to abusive behaviour or distortions in the wider EU gas market. We are awaiting the results of the Commission's inquiry.

Two recent reports from the European Commission on the functioning of EU electricity and gas markets identified serious problems: the high degree of market concentration; vertical integration being used as a barrier to new entrants; the lack of market integration; the lack of transparency; and the lack of well functioning and transparent market mechanisms for setting prices. These problems have led to significant extra costs for UK consumers

The government clearly has a role in tackling this market failure, as action needs to be taken to influence other European governments to improve market frameworks.

Investment in generating plants and networks is necessary

- Around 25% to 30% of our electricity generation capacity will need to be replaced by 2020 as old nuclear stations close and some coal plant closes because of EU emission restrictions. Ageing power lines (distribution and transmission networks) will also need investment.

Markets may fail to deliver reliable energy supplies. Co-ordination failures and the inability of individuals in the market to assess high impact, low probability events as well the undervaluation of the costs associated with interruptions in energy supplies can lead to sub-optimal levels of investment. Government is best placed to deal with such market failures and to take action where it is cost-effective to do so.

While there is no immediate problem, there is a risk of reductions in capacity margins around 2016 and the amount of spare capacity on the system in the longer run is likely to stabilise at levels that are lower than those seen today/historically

- Generators/investors do not have perfect foresight, unlimited capital and/or fully rational, risk-neutral decision making: in many cases, they will prefer to 'wait and see' until margins are high enough for them to be more confident that new investment will be value creating
- Moreover, given the volatility in electricity demand (and, to a lesser degree, supply), the value of capacity scarcity shows up in very high prices in relatively few hours

during the year and, as such, may be 'insufficient' to pull forward substantial amounts of new generation investment. This would result in a substantially heightened probability of interruptions/energy unserved post 2016

3. Energy Review Consultation

3.1. *Within Government*

- The Review has been delivered by a cross-departmental team (staff from DTI, HMT, Defra, DCLG, DFT and Prime Minister's Strategy Unit)
- There has been extensive departmental engagement with input from an Advisory Board of senior officials. Analysis has been conducted with input from relevant departments and a peer review group of internal and external experts.

3.2. *Public consultation*

As part of the Energy Review, the Government launched the Energy Review consultation on 23rd January 2006. The accompanying document: *Our Energy Challenge: Securing clean, affordable energy for the long-term* sought views on the measures needed by 2020 and beyond, to meet the energy goals set out in the 2003 Energy White Paper. The consultation document invited responses to be made on six key areas of energy policy: meeting carbon goals, reliable energy supplies, nuclear new build, low carbon technologies, fuel poverty and international action.

The consultation took place over three months, finishing on 14th April 2006. During that time we received a total of 5,338 written responses to the consultation. A summary of the consultation responses has been published on the DTI website.

The written consultation exercise was supplemented by a programme of stakeholder events and meetings

There will be further consultation on policy proposals as they are developed. This consultation will be reflected in the RIAs for individual policy proposals.

4. Options

4.1. **Option 1 - Do Nothing Scenario**

The Do Nothing scenario assumes the continuation of existing policies.

There are a number of paths consistent with delivering secure affordable supplies consistent with our carbon goal for the long term. Factors which shape these are:

- **The actions of others** - our 2050 carbon goal is couched in terms of a contribution to international action to deliver the carbon savings required to make a real impact on climate change. Commitment by others is vital for tackling the global problem of carbon dioxide emissions and climate change; if we act alone we risk undermining the competitiveness of our economy. The speed with which we move to a low carbon economy will also be determined by the actions of energy supplier countries to extract reserves in a timely and efficient manner which will affect the availability and price of fossil fuels.
- **Market developments** (e.g. fossil fuel prices) – have encouraged coal use in electricity generation but could in the longer-term result in reduced energy

consumption; high carbon prices could incentivise faster development of non-fossil fuel, low carbon technologies.

- **Technological developments** - Given the potential for technological development over the longer term to help us deliver our goals at a lower cost than today, we have always been mindful that a straight-line path to our 2050 carbon goal may not be the most cost-effective path.

4.1.1. Carbon Emissions

Our analysis shows that on present policies we are not on a path consistent with our 2050 carbon emissions goal. Despite significant progress, further action will be required if we are to meet it. We have not been as successful at saving carbon as envisaged in the 2003 Energy White Paper mainly because:

- Economic growth and hence energy demand have been stronger than expected
- Fossil fuel prices have been higher than expected and have favoured coal fired electricity generation

The chart below shows baseline emissions to 2050 under the “do nothing” scenario.

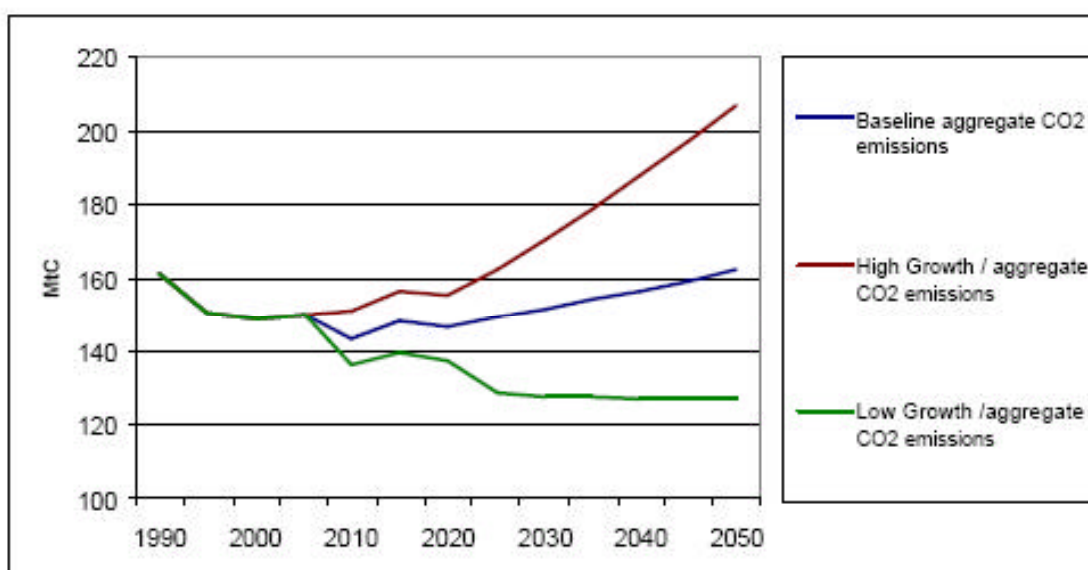


Chart 1: Emissions projections under three do nothing scenarios

Without further government action we will not meet this target or be on track to meet our 2050 target. At the same time the scientific evidence for climate change, caused largely by increased greenhouse gas emissions, has continued to strengthen. Without urgent action, a damaging rise in temperature is likely.

But the UK is responsible for only 2% of global emissions. Influencing the international agenda particularly on what should follow the Kyoto Protocol after 2012 is crucially important. The UK have shown leadership in the area of action on climate change and doing nothing may weaken our position for greater negotiations on international action.

All national governments must take action to reduce carbon emissions if we are to successfully tackle climate change. And the UK wants to continue to take a lead, particularly where we can do so in a cost-effective way. To do this we need to put our

economy on a path to becoming less carbon intensive. We can do this by using fewer of the products and services that use energy - by reducing our demand for them and improving their efficiency - and by changing the way we produce energy so that more of it comes from sources that are low carbon.

Full analysis on the do nothing case for carbon can be found at <http://www.dti.gov.uk/files/file31861.pdf> a supporting document to The Energy Review – The Energy Challenge. Also see rationale for original Defra climate change programme <http://www.defra.gov.uk/ENVIRONMENT/climatechange/uk/ukccp/pdf/ukccp06-ria.pdf>

4.1.2. Reliable Energy Supplies

The challenges of reducing carbon emissions and ensuring security of supply are closely linked. Security of supply requires that we have good access to available fuel supplies, the infrastructure in place to transport them to centres of demand and effective markets so that supply meets demand in the most efficient way.

There are two main security of supply challenges for the UK:

- Managing increased dependence on oil and gas imports; and
- Ensuring that the market delivers substantial and timely investment in electricity generating capacity and networks so that households and businesses have the electricity they need at affordable prices.

4.2. Option 2 - Implement the Energy Review proposals at Annex 1.

The Energy Review Document sets out a comprehensive programme of Government action. Of those measures that have not previously been announced, a small number of measures are firm at this stage. In the majority of cases further work will be carried out and RIA s developed as appropriate.

On energy demand the overall package includes measures already announced, measures that set out longer-term commitment to current policy – e.g. work on a Supplier Obligation post-2011 and Climate Change Agreements. For other measures (e.g. in-house displays) there are no firm proposals at present pending the outcome of work that has already been announced.

On the supply side the overall package of measures is designed to facilitate investment in plant and other infrastructure through a more certain and transparent market- based policy framework. This includes regulatory simplification to improve the operation of planning and other consents and licensing processes.

The proposed package includes:

- a. Measures that have already been announced and where policy development is underway. These include:
 - A package of proposals being taken forward by DCLG on the Code for Sustainable Homes, Building Regulations and planning.

- Measures being taken forward by Defra already announced in CCPR including work on improved billing and metering.
 - Moves to raise the Renewable Transport Fuel Obligation beyond 5%
 - In some cases we are re-confirming existing government policy e.g. the statement of need for renewable generation.
- b. Newly announced measures which will come into effect without further consultation or where we will be consulting on specific proposals. Namely:
- Better billing. We are proposing to mandate historic information on bills following analysis and stakeholder consultation that has already been undertaken. The Cost Benefit Analysis is at Annex 2.
 - Renewable Obligation. We propose to consult on whether and how we might “band” the Obligation to provide differentiated levels of support to different renewable technologies. Any change would not be introduced until 2009 or 2010. The Cost Benefit Analysis is at Annex 3.
 - Reforms to the Planning and Consents Regime. There are a number of specific proposals, some that will be implemented immediately, others will require further work later this year before they can be fully developed and proposed.
 - The RIA at Annex 4 deals with the proposed policy framework for new nuclear power generation. The Government has also asked HSE to take forward proposals to introduce a pre-licensing design authorisation procedure for new nuclear power generation.³
- c. Other measures where we are:
- Proposing to conduct an open consultation on the case for action and/or the options available or;
 - We need to carry out further policy development before proposals are brought forward or;
 - Have no regulatory impact.

These measures will be subject to further policy development including further consultation, where appropriate.

The proposals are a significant step in the right direction, getting us on course to achieve real progress in emissions reductions by 2020 and on the right path to achieving our goal of cutting the UK's CO₂ emissions by some 60% by about 2050. The Review provides a framework for long-term policy; it is not the last step. We will develop and implement further measures in the years ahead and strengthen the use of policy measures already in place. Tackling climate change requires action across all departments, achieving carbon reductions through different technologies and across all sectors of the economy towards our 2050 goal.

5. Costs and benefits

5.1. Overview of Energy Review Proposals

³ <http://www.hse.gov.uk/consult/condocs/energyreview.htm>

If all our proposals were implemented (the option at Para 4.2), we believe that the UK would be much better able to respond to the increased risks associated with the move to increased UK gas import dependence and the need for substantial new investment in electricity generation.

Carbon emissions could be between 19.5 and 25.3 million tonnes lower in 2020 than our current projection. That's a cut of 13-17% on what we anticipate our 2020 emissions would be otherwise - and roughly equivalent to the carbon emissions put out today by Greece. This would make a significant contribution to the progress we need to make towards our 2050 carbon goal.

In taking this work forward we will continue to consider the regulatory impact our proposals will have on different groups and sectors within our society. These include companies and organisations that will play a direct role in helping us deliver our objectives – energy suppliers, regulators, and local and regional authorities, for example – as well as businesses and individuals who will be impacted by new requirements arising from our proposals – product manufacturers, retailers, and homeowners for example.

The Government is clear in its determination to achieve its energy policy objectives through an approach that is consistent with the principles of good regulation. Over the coming months, we will work to refine our estimates of the benefits the measures in this Review are expected to deliver and the policy and administrative costs that will arise. Only measures that are well-targeted, reasonable and proportionate will be implemented. We will assess this on a case-by-case basis, while having regard to the collective regulatory impact on business and other stakeholders.

This Initial RIA sets out, in line with the guidance, what we know at this stage about the costs and benefits. The overall impact of the package will depend on the detailed options developed within each of the proposals, in particular those which will follow further consultation.

5.2. Sectors and groups affected:

All sectors of the economy are affected by the Review including the energy industry (generators, fuel suppliers etc.), large, medium and small businesses and energy consumers.

Within the business sector the groups affected are likely to be electricity generators, and the large energy intensive industries. Energy suppliers may also be affected by the third phase of the Energy Efficiency Commitment and any changes to the standards for metering and billing. These could in turn affect private individuals and businesses through changes to electricity prices and fuel bills.

Within the transport sector the groups affected would be those in the road fuel supply sector, including fuel producers, blenders, and retailers, as well as car manufacturers involved in the second round of voluntary agreements. The proposals relating to a renewable transport fuels obligation would in turn impact upon groups within the agricultural sector growing energy crops.

In the public sector the programme is likely to affect the central Government estate and other public sector buildings such as schools and hospitals.

Measures on energy efficiency in buildings (Code for Sustainable Homes and Building Regulations) will affect the construction industry and property developers.

5.3. Costs and Benefits

Outline of the cost benefit approach adopted by the Energy Review

The cost benefit analysis of options in the Energy Review aimed to assess the direct effects of various policies. The information that the cost benefit analysis provided helped policy makers to decide whether an individual option should be a part of a package of options.

The approach adopted by analysts conducting cost benefit analysis built on that provided in the Green Book⁴ (<http://greenbook.treasury.gov.uk>) and Regulatory Impact Assessment (RIA) guidance. The Climate Change Programme Review (CCPR) guidance⁵, which has been agreed by analysts across government, was also used, particularly with regards to carbon savings arising from options.

However, as the Energy Review focused on the possible benefits options could offer against all of the Energy White Paper (EWP) goals of carbon abatement, security of supply, competitive markets and fuel poverty, these had to be taken in account when conducting the analysis.

This approach aimed to ensure consistency across appraisals of policies by different analysts, so that comparisons between options could be drawn.

All of the cost benefit analysis carried out for the Energy Review was peer reviewed. This review process was conducted by chief economists from DTI, DEFRA, DfT and HMT and drew on the specialist knowledge of external experts. The peer review group was also supported by an interdepartmental group of analysts who were able to study the cost benefit analysis and feed comments to the main panel. The peer reviewing of analysis ensured that all the cost benefit analysis carried out was fit for purpose. It also ensured that the analysis was based on a consistent set of assumptions and any residual uncertainties were clearly identified. This process meant that analysis looking at a diverse range of options and sectors could be compared and the results used to inform policy decisions.

6. Impact of the Review - Overview

6.1. Impact on carbon emissions

The Review proposals together with other proposals announced since publication of the new Climate Change Programme in March this year will save 19.5-25.3 million tonnes of carbon (MtC) by 2020.

The table below sets out the carbon impact of each measure; a range is quoted to reflect uncertainty over the timing and effectiveness of the new policies.

Carbon impact of Energy Review and other measures announced since the 2006 Climate Change Programme Review

⁴ See <http://greenbook.treasury.gov.uk>

⁵ See <http://www.defra.gov.uk/environment/climatechange/uk/ukccp/pdf/greengas-policyevaluation.pdf>

	MtC abated in 2020
Already Announced	
EU Emissions Trading Scheme ²	8
More energy efficient products ³	2.0
Renewable Transport Fuels Obligation ⁵	0.3 – 1.1
Successor to EU voluntary agreements on new car fuel efficiency	1.8 – 2.1
†Continuation of building regulations 2005 ⁷	2.5 – 3.0
Carbon neutral government ⁸	0 – 0.8
Carbon neutral developments ⁹	0 – 0.4
New Firm Proposals & Closed Consultation	
Better Billing	0 - 0.1
Changes to the Renewables Obligation ¹	0.7 – 1.5
Nuclear new build ⁴	0 – 1.1
Other Measures	
New measure for achieving carbon savings from large non-energy intensive organisations	1.2
Continued commitment on energy suppliers to 2020 ⁶	3.0 – 4.0
Total	19.5 – 25.3

1– These carbon savings are additional to those from the existing Renewables Obligation and derive solely from the proposed changes to the Obligation

2 – This value is based on the proposed reduction in carbon allocation in phase 2 of the EU ETS.

3 – Products policy is delivered by a package of measures, including, labeling, minimum standards and voluntary agreements. This 2MtC savings is net of products delivered via EEC or the new measures for achieving carbon savings from large non-energy intensive organisations

4 –The scale of new nuclear capacity and the timing of its commissioning will depend on commercial investment decisions. For illustrative purposes this table assumes that between 0 and 1.6 gigawatts of new capacity are in operation by 2020

5 – These estimates assume that the level of the Renewable Transport Fuels Obligation rises to 10% by 2015. This figure is used merely for illustrative purposes and does not prejudice later UK decision on the appropriate future level of the obligation

6 – Government is committed to maintaining a household obligation on suppliers in some form until at least 2020. The level of ambition from 2011 should at least be equal to that under EEC3, delivering a minimum of 3-4 MtC by 2020

7 – The figures here are for contributions from Building Regulations for 2010-2020 and have not been included in our baseline assumptions. The figures reflect the additional savings from new building, refurbishments and boiler and window replacements between 2011-2020 due to Building Regulations

8 – Policy was announced by Defra in June 2006

9 – Policy was announced by DCLG in May 2006

There are further measures which could save significant amounts of carbon. First, it is already a UK objective to include aviation in the EU ETS. Second, the UK has asked the European Commission to seriously consider including surface transport in the EU Emissions Trading Scheme. This could save 4-7 million tonnes of carbon by 2020 in the UK⁶. Carbon capture and storage could in principle bring further savings. If a 500MW demonstration project of coal plant with CCS went ahead, this could save 0.3MtC in 2020. We are also working to remove regulatory and other barriers to CCS, and if CCS ultimately proved commercially viable very significant carbon savings might become possible beyond 2020. Beyond 2020, if further nuclear power stations are built we could save 0.7Mt of carbon for each gigawatt of capacity installed⁷.

There are a number of other factors which will affect the progress we make in achieving carbon savings over the next two decades, including:

⁶ This assumes that there is 10-20% under allocation to this sector in 2020

⁷ Assumes 1GW of CCGT capacity is displaced

- Fossil fuel and carbon prices as well as attitudes to climate change could have a significant impact on emissions. High fossil fuel prices could result in reduced energy consumption; high carbon prices could incentivise a faster rate of low carbon technology development; consumer demand could stimulate the market for environmentally friendly goods and services.
- Other potential developments may have a positive impact on emissions. For example life extensions for existing nuclear plants, early applications of carbon capture and storage or a higher penetration of distributed generation technologies.
- Clarifying our carbon framework and our position on renewables and nuclear will improve the investment environment, helping to build investor confidence in taking long term decisions which are consistent with our goals.

In the 2003 Energy White Paper, projections showed UK carbon emissions reaching 135 million tonnes of carbon (MtC) in 2020. We said that in order to demonstrate our leadership in tackling climate change and make real progress towards our 2050 carbon reduction goal we would need to make a reduction in emissions by 15-25MtC to 110-120MtC by 2020.

However, since 2003, emissions have risen on the back of strong economic growth and higher fossil fuel prices that have been favourable to coal-fired power generation. New projections for the Energy Review suggest that UK carbon emissions will reach 146MtC by 2020 on the basis of current policies. So we would now need to make bigger cuts in emissions of 25-35MtC in order to reduce emissions to 110-120MtC by 2020.

The Government is committed to keeping under review progress towards our climate change goals and reporting on this annually to Parliament.

6.2. Impact on security of supply

6.2.1. Framework for electricity generation

There has been much focus in the Review on removing barriers to investment in low carbon technologies. We are also reinforcing our commitment to a carbon price, taking steps to enable nuclear new build and boost renewables. These measures should increase the proportion of low carbon technologies in the electricity generation mix and tend to reduce the share of gas-fired generation in the mix.

If we assume that our proposals incentivise low carbon electricity generation which will lead to the displacement of gas fired power generation, they would reduce the share of gas in our generation mix by up to 10% and reduce gas consumption in the 2020s by around 5 billion cubic meters (bcm) per year. This would be part of the overall savings in gas consumption referred to below.

6.2.2. Gas security of supply

The Review identified increasing reliance on gas (at a time of falling UK Continental Shelf (UKCS) production) as one of the main energy policy challenges faced by the UK. It will be for producers and consumers to decide how much gas is consumed in the UK. However, assessing the impact of proposals in terms of reduced gas consumption is one way of measuring their impact on security of supply.

The Energy Review proposals could reduce gas consumption by around 12 to 20 bcm by 2020, which currently represents about 11-17% of our expected 2020 consumption.

Our proposals also improve the framework for investment in the UK Continental Shelf (UKCS), potentially delivering significantly higher oil and gas production – up to an extra 1 million barrels of oil equivalent (boe) a day in 2020 – and reducing our import requirement. About half of this extra production would be gas and half would be oil. The resulting cut in gas imports would be over and above the reduction explained in the previous paragraph.

Moreover, we are consulting on the effectiveness of our current framework for gas security of supply to assess whether it is sufficiently robust to the risks associated with the move to increased UK gas import dependence.

6.3. Impact on competitive markets

In recognition of our increasing reliance on global energy markets, we are pursuing a strong international agenda to promote more open and competitive markets. And we will continue our drive for EU energy markets liberalisation and integration, working with the European Commission to enforce and strengthen internal market legislation and to make full use of European competition rules to tackle anti-competitive practices. This will help improve the effectiveness and transparency of international energy markets and address anti-competitive behaviour in Europe, ensuring more reliable UK access to energy markets.

At home, our proposals demonstrate our continued commitment to competitive energy markets; in clarifying our position on nuclear new build, renewables and our carbon framework we are reducing uncertainty, improving the environment for investors. We are also improving the information available for investors, users of energy and government so that both investment and policy decisions are based on the most robust available information.

6.4. Impact on energy prices

Carbon abatement can be costly and can increase energy prices. Acting internationally is the best way to minimise these impacts. The existence of the EU ETS is having an impact on electricity prices in the UK –and elsewhere - because electricity generators will factor in the cost of carbon allowances. The size of this impact depends on the scale of effort to deliver carbon savings across the EU and the related abatement costs. At the current EU ETS carbon price of around €15, the impact on electricity prices could reach around 20% for industrial and 10% for household consumers. The overall effect will also depend upon the response of energy demand.

We have taken cost effectiveness into account in developing policies to reduce carbon and improve security of supply, and have examined how to reduce barriers of using current policies to deliver greater carbon savings at little or no extra cost. We therefore expect the impact on energy bills to be small. We will undertake a full analysis of the impact of our proposals in the forthcoming white paper.

Recent analysis has identified that in the medium term, the costs of mitigating climate change are likely to be of the order of 1% of global GDP, with some studies pointing to

ancillary benefits from improved efficiency and more innovation, so that the cost may eventually be much less than this.⁸

6.5. Impact on fuel poverty

Rising fuel prices mean that fuel poverty remains a major long-term challenge. But our package of measures does not greatly add to this challenge. We can and will take steps to better target existing support: by getting details of the help that is available to those who need it most; ensuring energy is competitively priced; and enhancing energy efficiency.

6.6. Public Finance Costs.

Some measures in the proposals may have public expenditure implications. These will be set out in the relevant RIA where appropriate.

6.7. Public sector costs.

The proposals include measures to raise energy efficiency standards in public buildings and other measures where the public sector is expected to show a lead. These proposals are likely to carry costs in the short-term, but show benefits over the medium to long-term

7. Small Firms Impact Test

No Small Firms Impact Test has yet been carried out. A number of SMEs and representative bodies responded to the consultation exercise and participated in stakeholder events.

The Energy Review received responses from the Small Business Council, and advisory group to government on small business issues and from The Federation of Small Businesses a representative body for small business with 196,000 members. The key concern shared by both was the unpredictable effect of energy policy on energy prices. Both organisations urged the government to take into consideration the special position of small business users of energy, highlighting a current lack of awareness amongst small businesses of sustainable energy efficiency and existing fiscal incentives. There was strong support for tax exemptions and other positive incentives to encourage businesses to apply energy efficiency measures, including a significant increase in interest-free loans for energy efficiency investment. The Federation for Small Businesses opposed environmental taxation.

The importance of working with the EU and other countries to manage energy issues was stressed; however the UK should offer strong leadership in policy terms to safeguard UK interests.

On the supply side, there was support for diverse energy sources and long-term incentives to develop a mixed portfolio of renewables technologies. There was an emphasis on the need to balance this with a secure and affordable means of meeting energy demands. Wind power should be revised downwards. Furthermore, there should be clarification of the accountabilities of key stakeholders such as DTI, Ofgem and business.

⁸ Work carried out for 'The Government's Review of the Economics of Climate Change – led by Sir Nick Stern and due to report Autumn 2006

New nuclear build was considered to have a number of advantages. However, there were some concerns over waste management and the length of time the nuclear option would take to implement. The exploration of a broad range of supply measures in the interim was fully supported.

Other issues raised included the following:

- Investment in R&D was considered critical and the FSB urged support for small firms in this regard.
- There should be a long-term objective to decrease the reliance on imported gas. It was considered a priority to create a significant and urgent increase in gas storage capacity.

Small Firms Impact Assessments will be carried out for individual proposals as they are developed.

8. Competition assessment

Overall the energy review firm proposals are not expected to raise competition concerns and a competition filter analysis has been undertaken to assess the main proposals.

Better billing will be an obligation which falls on all electricity suppliers, both existing and new entrants. The costs of better billing are likely to be small and will be passed on to consumers, therefore this proposal is unlikely to raise any competition issues.

The RO affects all electricity suppliers alike. The cost of complying with the RO falls on electricity suppliers, and hence consumers – both industrial and domestic. Currently, the RO is expected to add up to around £1 billion to electricity consumers' bill by 2010. Our proposals do not add further to these costs. They may, however, slightly increase the administrative cost of the RO, and hence the fee charged by Ofgem, who administer the Obligation.

For changes to planning regulation a competition assessment will be carried out as the proposal is developed. There are not likely to be competition issues as all large energy infrastructure projects will benefit.

Delivery of the proposals will be consistent with our market-based approach to energy policy.

Competition issues will be considered in more detail following consultations and once greater consideration is given on the way in which the individual policies in the programme will be designed and implemented.

9. Enforcement, sanctions and monitoring

Enforcement measures will be developed in accordance with the principles of the Hampton Review. The enforcement of individual policy measures included in the Energy Review and the possible sanctions will be detailed in their RIAs, to be published as appropriate in due course by relevant departments.

10. Post-implementation review

The Secretary of State for Trade and Industry will continue to provide an Annual Report to Parliament on progress against the Energy White Paper goals.

11. Summary

Summary costs and benefits table

Options	Costs	Benefits
Do nothing	<p>More effort is needed to meet our goal of 60% cut in CO2 emissions by 2050. Without further government action we will not meet this target or be on track to meet this target by 2020. The environmental costs of this are difficult to quantify, but extend beyond the additional carbon emissions. The UK have shown leadership in the area of action on climate change and doing nothing may weaken our position for greater negotiations on international action.</p> <p>There is a risk of periods of higher energy prices or energy price volatility due to the market failures associated with investment (i.e. delayed investment due to uncertainty about the market framework and also because of the existence of regulatory barriers).</p>	No mitigation costs to business, consumers or the exchequer.
Implement the firm proposals of the Energy Review and carry out further work and consultation in key areas identified in the review	<p>In changing planning regulations there will be some small administrative expenditure required by government.</p>	<p>There will be environmental benefits from this option, in the region of 19.5 – 25.3 MtC saved in 2020.</p> <p>There is also greater certainty for investors as the Review sets out the government’s position for the long term. This should lead to greater investment and security of supply</p> <p>There will also be reduced costs to business, investors, government and individuals through improvements to planning regulations.</p>

	<p>Better billing will cost consumers around 17p per year on household energy bills.</p> <p>Further policy which results from further consultation and analysis may lead to costs for business, the exchequer and consumers.</p>	<p>Consumers benefit through better billing as they are provided with greater information about their energy use.</p> <p>Changes to the Renewables obligation should enable a greater range of technologies to come forward.</p> <p>Improved market framework - clarifying government position on renewables, nuclear and reinforcing our commitment to a robust carbon market framework. We also remove regulatory barriers, e.g. planning (for electricity and gas infrastructure), and other barriers to the development of nuclear, CCS and renewables.</p>
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Annex 1

PROPOSALS ALREADY ANNOUNCED

<p>Energy Efficiency & Distributed Generation</p>	<p>Government will move towards requiring new developments in England and Wales to be carbon neutral by</p> <ul style="list-style-type: none"> i) Setting stretching energy efficiency levels for the Code for Sustainable Homes ii) Making clear that these will govern the future direction of Building Regulations iii) Reviewing the Building Regulations guidance to improve compliance with them iv) Requiring all Government-funded housing to meet at least Level 3 of the Code v) Introducing energy performance certificates for new and existing houses vi) Developing a new Planning Policy Statement on Climate Change vii) Strongly urging local planning authorities to set ambitious policies on renewable energy 	
	<p>We will achieve carbon neutrality in the central government estate by 2012 (as described in Chapter 2).</p>	
	<p>Government will consult on changes to the Planning system with a view to making it easier for householders to install microgeneration equipment on existing houses by removing the need to submit a planning application.</p>	
	<p>Government will work to remove the least energy efficient products from the market and to build markets for the best by setting a firm agenda to progressively raise standards, so stimulating innovation and competition in the supply chain.</p>	
	<p>1. We will launch a statutory consultation next spring on phase 3 of the Energy Efficiency Commitment. Prior to this we will hold an</p>	

	informal consultation this summer to explore whether we can extend the range of measures allowed under EEC. We will consider whether to make changes to EEC that could allow all forms of microgeneration to be eligible under the Scheme.	
	We will undertake a feasibility study into the Thames Gateway becoming a low carbon development area within a decade, and whether and how fast we can move towards zero carbon thereafter	
	We will expect all planning authorities to include policies in their development plans that require a percentage of energy in new developments to come from on-site renewables, where viable..	
	We will set out proposals that provide a framework to encourage all planning authorities to take action on climate change, in the Local Government White Paper later this year.	
	We will shortly announce a new statutory duty on the GLA on climate change. This should give a further boost to the growth of distributed generation in the capital. This will be the conclusion of policy development already announced.	
	We have decided to introduce changes to allowance allocations that will result in more favourable treatment for CHP in Phase 2 of the European Emissions Trading Scheme than in Phase 1. Announcements will be made in due course. This will be the conclusion of policy development already announced.	
Electricity Generation CCS	<ul style="list-style-type: none"> • The Government will continue to work with international partners to amend international legal frameworks to provide the legal basis for CCS. • The work of the CCS Regulatory Task Force will continue in consultation with industry and other stakeholders in order to clarify and develop proposals on appropriate regulations both to facilitate CCS and to ensure the environmental integrity of CCS activities. • The Government will continue working with international partners to develop CCS's potential, including through the recently announced joint UK-Norway project on enabling CCS 	

	<p>in the North Sea.</p> <p>The Government will continue to push for the recognition of CCS within the EU ETS.</p>	
Transport	<p>Government intends the level of the Renewable Transport Fuel Obligation to rise above 5% after 2010/11 provided robust carbon saving and sustainability assurance schemes can be developed, technical vehicle and fuel standards are adequate and costs to consumers are acceptable.</p> <p>2.</p>	
	<p>Government will engage with key stakeholders, the European Commission and other EU member states to ensure that the potential for future inclusion of emissions from surface transport in the EU Emissions Trading Scheme (ETS) is given serious consideration.</p>	
	<p>Government reaffirms its support for the inclusion of aviation in the EU ETS and continues to take a leading role in its promotion. It continues to explore options for the use of other economic instruments and reserves the right to act alone or bilaterally if progress towards agreements at international level proves too slow.</p>	
	<p>Government will ensure renewables are firmly embedded in the forthcoming Planning Policy Statement on Climate Change. Government will work with the Devolved Administrations on equivalent guidance across the UK;</p>	

NEW PROPOSALS IN ENERGY REVIEW WHERE NO FURTHER CONSULTATION IS PLANNED

Energy Efficiency & Distributed Generation	<p>The Government proposes that it will mandate, from 2007 onwards, improvements in the information provided in domestic customers' energy bills, requiring bills to provide comparative historic energy use in graphical form (showing a customer how much energy they have used over previous periods), supported by information in energy efficiency.</p>	<p>Not in the summary list of proposals</p>
Electricity generation - nuclear	<p>Government has asked HSE to take forward proposals to introduce</p>	

	a pre-licensing, design authorisation procedure, and the Environment Agency to introduce a similar system of pre-authorisation.	
Planning for large energy infrastructure	Government is publishing today a statement of need on renewables, restating our commitment;	
	Government will publish new guidance in England and Wales on CHP, later in 2006, for applications under s36 Electricity Act. It will provide more information on developers' obligations to give full consideration of opportunities to develop CHP;	
	Government is committed to appointing a high-powered inspector for the most complex and controversial energy proposals;	

PROPOSALS FOR CLOSED CONSULTATION

Electricity generation renewables	Extending Obligation levels to 20% (when justified by growth in renewable generation) – this will be made cost-neutral to the consumer by freezing the buyout price from 2015; Consulting on amending the RO to remove risk of oversupply of ROCs; And consulting on possible adjustments to the RO (“banding”) to provide greater support to emerging technologies and reduced support for more economic technologies.	
Electricity Generation - Nuclear	Government is setting out a proposed framework for the consideration of the issues relevant to new nuclear build and the context in which planning inquiries should be held. This framework would be set out in a White Paper to be published around the turn of the year. To support preparation of this White Paper, Government is consulting on the proposals outlined in the Initial RIA at Annex 4.	
Planning for large energy infrastructure	Government will consult on new guidance in England and Wales on the consenting arrangements for reinforcements to existing overhead power lines later in 2006; and	
	Government will publish generic guidance in England and Wales on s36 Electricity Act, including information on co-operation between developers and the transmission companies about joining-up on applications;	
	Government will introduce new inquiry rules for applications under	

the Electricity Act, in Spring 2007;

PROPOSALS FOR FURTHER POLICY DEVELOPMENT INCLUDING OPEN CONSULTATION AND PROPOSALS WITHOUT REGULATORY IMPLICATIONS

<p><i>Valuing Carbon</i></p>	<p>Government will aim to secure EU agreement to a number of changes to help strengthen the EU ETS post-2012. These include:</p> <ul style="list-style-type: none"> • Providing greater clarity on when and how caps/limits on emissions will be decided in future. • Simplifying and harmonising the Scheme, particularly the way that allowances are distributed, so that there are clear and strong incentives to invest in low carbon technology, and to prevent distortions to the EU internal market. • Ensuring the market functions more efficiently. • Considering whether more sectors – and more greenhouse gases – should be included in order to maximise opportunities for significant, cost-effective carbon savings. <p>Thinking globally to develop a more liquid and efficient market.</p>	
	<p>Government is committed to there being a continuing carbon price signal which investors take into account when making decisions. This is particularly important given the scale of new investment required in UK electricity generation capacity. The EU ETS is here to stay beyond 2012 and will remain the key mechanism for providing this signal, and Government will continue to work with its international partners to strengthen the Scheme to make it more effective. We will keep open the option of further measures to reinforce the operation of the EU ETS in the UK should this be necessary to provide greater certainty to investors.</p>	
	<p>We are proposing to establish a new Office of Climate Change, which will monitor progress towards our carbon goals and ensure coherence of action across Government departments to achieve</p>	

	them.	
Energy Efficiency & Distributed Generation	Government is committed to maintaining a household obligation in some form until at least 2020	
	Government is considering a move to a supplier obligation to replace the current EEC once phase 3 expires in 2011. In the longer term, government will work with a wide range of industry and consumer groups to consider whether EEC3 could be replaced with an obligation on suppliers to cap growth of emissions from the household sector. Distributed energy and energy efficiency options investments will be the most common way of achieving this goal.	
	We intend to discuss with Ofgem, the energy suppliers and interested stakeholders on how best to rapidly roll out the provision of real-time displays which provide instant energy consumption and cost information on electricity use.	
	We will consult with stakeholders what further useful comparative benchmarking information (on household bills) can be provided and how we can cost-effectively improve the frequency at which customers are provided with accurate bills.	
	Government will examine the scope for more sophisticated monitoring of energy usage, its costs and benefits through the forthcoming trials of domestic smart meters and other forms of feedback about electricity and gas consumption.	
	Government will also work with the relevant stakeholders to address the barriers to improved metering and billing in the business sector, including the possibility of introducing smart metering.	
	Government proposes to consult later this year on the introduction of a new measure for the large non-energy intensive industries which lie outside the EU ETS and Climate Change Agreements. We will consult on a range of options to improve energy efficiency in the large commercial sector. This consultation will also consider whether larger Local Authorities and public bodies should be included in these measures. If included, this would provide a direct financial incentive on these bodies to invest in low carbon heat and electricity technologies in their own buildings.	
	Government will consider, in good time before the expiry of the current agreements, the future of the Climate Change Agreements	

	and how we can take the objectives forward.	
	<p>Government and Ofgem will lead a comprehensive review of the incentives and barriers that impact on distributed electricity generation including CHP. This Review will report in the first half of 2007. Its scope will include, but not be limited to:</p> <ul style="list-style-type: none"> • The economic and other incentives on suppliers to buy electricity from distributed generators;⁹ • The economic and other incentives on DNOs to connect new generators and to invest in upgrading distribution networks in order to accommodate increasing amounts of distributed generation; • The incentives on DNOs to engage in innovation aimed at minimising the costs and capturing the benefits of distributed generation; • Options for resolving potential barriers to the sale of electricity by small generators, for example: <ul style="list-style-type: none"> 3. . licensing procedures (including exemptions); . technical standards for connection and for network operation 	
	The Climate Change and Sustainable Energy Act 2006 empowers government to require all energy suppliers, through licence modifications, to offer to acquire exported electricity. The Secretary of State has to make a decision whether to use these powers twelve months after commencement, that is, in the second half of 2007. If energy suppliers do not develop a system to acquire electricity from microgenerators, Government will intervene	
	Government will undertake a wide-ranging review of the long-term potential and challenges of distributed generation, including Combined Heat and Power, as an alternative or large-scale supplement to centralized generation. Incorporating a range of scientific, technical, economic and behavioural issues, it will be	

⁹ eg the impact of the Balancing and Settlement Code on rewarding exported electricity

	taken forward as part of a Foresight Project looking at sustainable energy management in the built environment, by the Office of Science and Innovation.	
	The Microgeneration Strategy will be implemented aggressively by government, and the powers acquired by government under the Climate Change and Sustainable Energy Act 2006 will be exercised where appropriate.	
Oil, Gas and Coal	<p>Government will work with industry to boost investment in the UK Continental Shelf (UKCS) over the next 10 to 15 years irrespective of oil and gas prices:</p> <ul style="list-style-type: none"> ○ Maximising investment in already producing fields. ○ Establishing a Taskforce for meeting infrastructure needs to the west of Shetland. ○ Supporting the development of a dynamic commercial framework. ○ Ensuring appropriate technological development. 	
	The Government will be convening a Coal Forum to bring together coal producers, coal-fired generators and other interested parties to help them to find solutions to secure the long-term future of coal-fired generation and UK coal production.	
	Government will consult in Autumn on the streamlining and simplification of the planning process for gas supply infrastructure projects.	
	<ul style="list-style-type: none"> • Government will introduce new arrangements for the provision of forward-looking energy market information and analysis relating to security of supply. 	
	Government will consult in the Autumn with both industry and consumers on the effectiveness of current gas security of supply arrangements.	
Electricity generation renewables	Provide new funding for renewables through the Environmental Transformation Fund	
	<ul style="list-style-type: none"> • Work with industry, Ofgem and the National Grid to accelerate access to the electricity grid for renewable electricity generators 	

	Work with the Devolved Administrations to ensure that across the UK, planning systems for renewables projects can reduce delays and uncertainty for developers and others, while maintaining the openness, fairness and accountability of the current system	
Electricity generation – Clean Coal	The Carbon Abatement Technology demonstration programme will formally launch its first call for proposals in September 2006, with a first call worth £10 million which will focus on the pre-commercial demonstration of key components and systems to support carbon abatement technologies.	
Electricity Generation - CCS	The Government believes that the next stage would be a commercial demonstration of CCS, if it proved to be cost-effective. More work on the costs of such demonstration projects will be undertaken, and a further statement will be made at the Pre-Budget Report.	
Electricity Generation Nuclear	<ul style="list-style-type: none"> ○ We will undertake further assessment which will help developers in identifying the most suitable sites. It will be up to the potential participants of new build to discuss with the owners appropriate access to suitable sites. Government will monitor whether an appropriate market in suitable sites is developing. 	
	<p>Government will engage with industry and other experts to develop arrangements for managing the costs of decommissioning and long term waste management based on the principles set out in this text.</p> <p>Government intends to appoint an individual with senior management or financial experience of major capital investment projects to lead the development of arrangements for the costs associated with new build decommissioning and waste management. This individual, who will be supported by officials from the DTI, will lead discussions with industry on these topics and make proposals, based on the principles set out below. Further details on the work programme and timetable will be published by the time of the White Paper.</p>	

Transport	Government will develop a Transport Innovation Strategy in close collaboration with the ongoing energy innovation framework and the National Institute of Energy Technologies. This will comprehensively review current policies and explore others, such as second generation biofuels and hydrogen, where necessary.	
	Government has embarked upon a programme to enhance consumer information on transport emissions and climate change. This will be informed by continuing current research into public attitudes and behaviours towards climate change and transport.	
	The Government will continue to work with the European Commission and relevant stakeholders in developing successor arrangements to the current Voluntary Agreements on new car fuel efficiency when those Agreements expire in 2008/09. This must include consideration of all options, including mandatory targets with trading.	Pre-existing commitment on Vas – options opened up to include mandatory – no conclusion reached.
Planning for large energy infrastructure	Government is committing now to introducing fundamental change to the planning system for major energy projects once the findings of the other Reviews (Eddington Study and Barker Review) are clear, later this year.	

Annex 2

Cost Benefit Analysis of Improved household electricity and gas billing

Introduction

Better Billing

We are proposing to mandate the provision of historic information on household bills.

Benefits of this policy will depend on the behavioural impact of greater information. Studies have shown that householders are more likely to invest in energy efficiency and to reduce the waste of energy by changing their behaviour when they are provided with specific and relevant information on their energy use within their bills, including energy efficiency advice¹⁰. The greatest effects are seen when historic information on their energy use is combined with more frequent and accurate bills. Studies report persistent savings of up to 12% per year on energy use. Even if households only reduce their energy use by 0.25%, this will save 0.08MtC by 2010 and just under 0.1 MtC by 2020.

This proposal will lead to one off costs to energy suppliers, as some will need to make changes to billing systems, and small ongoing costs in order to comply with the obligation. These costs will impact both new entrants and existing suppliers and so are not expected to raise competition issues. It is assumed that suppliers will pass these costs onto consumers, therefore the proposal would add 10-20p to the cost of a household energy bill over the first year.

A 10% discount rate is used as a commercial rate that an energy supplier would be subject to when making an investment.

17. This CBA assesses the impact of providing in-direct feedback on energy bills to households about their own historical energy consumption and how it compares with other households. The premise is that such information would help households have a greater awareness of their energy consumption and enable more efficient use of energy.

Key Assumptions

18. The assumptions used in the CBA are based on an independent evaluation by consultants. Key assumptions are:
 - The average unit price of energy (ex VAT) and a forecast out to the end of the evaluation period – 2050 – is in line with DTI updated central scenario energy projections
 - The benefits are assumed to last for a period of 20 years from the start of the policy.
 - The value of energy saved is based on the average wholesale energy component of the retail tariff drawn from an historical Ofgem study that estimated the various

¹⁰ A summary of the various studies can be found in: Darby S. (2006) The effectiveness of feedback on energy consumption. A review for Defra of the literature on metering, billing and direct displays. Final report.

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elements of the retail tariff. A sensitivity around this, based on the retail tariff, is also estimated.

- Energy savings of improved billing are assumed to accrue only to credit and not prepayment meters.
- It is assumed that all new connections have a credit meter installed. In addition the number of prepayment meters has been assumed to remain constant over the evaluation period. In practice a proportion of customers each year will be switching between credit and prepayment meters
- The annual cost of improved billing has been assumed to be £0.17 per customer per fuel type which has been annuitised over 5 years at a 10% cost of capital. It is assumed that this level of expenditure will be required to update the bills every five years
- Average CO2 savings are based on assuming the average generation mix of the electricity system is displaced as a result of reductions in consumption. This assumption will tend to overstate the level of carbon reduction in the longer term where the marginal generation is assumed to be gas fired CCGT. CO2 emissions saved have been valued at the central Social Cost of Carbon price of £23/tCO2 in 2005.
- Energy demand is assumed to be constant over the evaluation period. This could increase or decrease results depending on how the energy savings are assumed to apply.
- Costs such as the loss of VAT to the exchequer or the loss of margin to firms have not been included.

Table 2: General calculation assumptions

Assumption	Elec Credit	Elec PPM	Gas Credit	Gas PPM
Average unit price of energy p/kWh	8.23	8.23	2.17	2.17
Average energy component of retail tariff	35%	35%	50%	50%
Meters installed in GB millions	21.50	3.50	19.00	2.00
Annual growth in installed GB million meters pa	0.15	-	0.15	-
<i>Average electricity consumption kWh</i>	4,290	4,290	20,500	20,500
<i>Carbon emissions factor tC/MWh</i>	0.117	0.117	0.052	0.052

Energy reduction scenarios

19. A literature review of metering, billing and direct displays conducted by Sarah Darby on behalf of Defra¹¹ was the starting point for forming scenarios of the potential energy savings that could be achieved.

¹¹ Sarah Darby 'The effectiveness of feedback on energy consumption. A review of the literature on metering, billing and direct displays. April 2006. Published on the Defra website at <http://www.defra.gov.uk/environment/energy/research/pdf/energyconsump-feedback.pdf>

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20. Although there are many studies included in this analysis, none is directly applicable to the introduction of better billing in the UK context. The studies often combine a number of other energy efficiency measures implemented at the same time as providing improved billing information and it is therefore difficult to single out the specific impact of these measures. In addition, differences in climates in other countries, and problems of small trial sizes and self-selecting response groups means assumptions about UK response are highly uncertain.
21. Therefore, three sensitivities were used to illustrate the likely costs and benefits if that level of energy reduction could take place. These are given below.

Table 3: Hypothetical sustained energy reduction scenarios

% reduction in energy consumption	Low	Central	High
Improved billing	0%	0.25%	0.5%

Results

22. The central energy reduction case of 0.25% yields a net present value of £654m from improved billing which falls to -£45m when the additional costs of billing do not generate a response from customers, assuming the wholesale energy cost. The central case increases to £1,264m when 0.5% savings are assumed on the annual energy consumption of customers. The breakdown of the benefits and costs is set out in table 3 below.
23. The table also shows the sensitivity of valuing the energy saved at the full retail tariff. This increases the central case NPV to £1,204m.

Table 4: Improved billing CBA results

NPV £m	Low £m	Central £m	High £m
Consumption savings	0%	0.25%	0.5%
Electricity			
Avoided energy cost	0	171	343
Reduced carbon	0	71	143
Total elec benefits	0	243	485
Gas			
Avoided energy cost	0	277	553
Reduced carbon	0	135	270
Total gas benefits	0	412	823
Total benefits	0	654	1,309
Total costs	45	45	45
NPV (evaluated at avoided wholesale)	-45	609	1,264

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energy cost)			
NPV (evaluated at full retail tariff)	-45	1,204	2,453
Reduced carbon MtC 2010	0	0.08	0.16

Annex 3

Reforming the Renewables Obligation Cost Benefit Analysis

Introduction

47. The Renewables Obligation (RO)¹² was introduced in April 2002 to provide a flexible, market based mechanism to support the development of renewable technologies. It places an obligation on electricity producers to supply a specified and increasing proportion of their annual sales from electricity supplied from renewable sources. All qualifying renewables generators receive Renewables Obligation Certificates for each MWh of electricity produced. Electricity suppliers can use these ROCs/SROCs as proof of their compliance with the RO.

48. The Energy Review has proposed a package of changes to the structure of the RO, designed to increase investment, at no additional cost to the consumer. These include:

- Extending the level of the Obligation to 20% on a “headroom basis” (i.e. keeping the level of the Obligation at least 1% point above the level of ROC generation);
- Removing the RPI link from the buy-out price in the Obligation from 2015 onwards (i.e. letting the real terms value of the buy-out price fall gradually from 2015 onwards);
- Introducing a mechanism to ensure that ROC prices do not crash if there is ROC generation in excess of the 20% Obligation level;
- Banding the RO to provide multiples of ROCs for emerging technologies such as tidal power and fractions of ROCs for more economic technologies for example on-shore wind.

49. The following analysis looks at the impact of these changes on the level of renewables generation, and on resource costs and consumer costs.

50. The Energy Review also proposes measures to tackle planning barriers to reduce delays and uncertainties to developers. There will also be funding available for renewable technologies through the Environmental Transformation Fund. These measures have not been included in the cost-benefit analysis below. But initial analysis suggests that these could further increase the level of renewables generation.

Key Assumptions

51. This package of measures was modelled by independent consultants, Oxera, who have a comprehensive model of the RO. The Oxera model estimates the future level of ROC prices, based on the structure of the RO, which determines the level of renewables generation. The impact of the package of changes was compared with a base case scenario of no change to current policy.

¹² There are three separate obligations covering England and Wales, Scotland and Northern Ireland. ROCs, SROCs and NIROCs are fully tradeable across the UK.

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52. The Oxera model incorporates estimates of the potential and cost of renewables energy from research by Enviro (2005)¹³. The model also incorporates assumptions as to the maximum build rates of onshore and offshore wind to reflect potential planning consent time lags; learning curve effects which reflect the anticipated evolution of technology costs over time; a limit to the amount of biomass and co-firing to reflect a possible supply side constraint on the amount of available biomass; and electricity prices.

53. Maximum build rates were based on BWEA¹⁴ assumptions as to the maximum build of wind generation. The model was run using three electricity price scenarios: low, central and high prices, reflecting UEP and Oxera assumptions about future generation costs.

54. In modelling the changes to the RO, a number of assumptions were made about the impact that the changes would have in practice:

- It was assumed that the guarantee of headroom in the obligation up to 20% would reduce the risk for renewables developers, and increase the share of the buyout fund passed through to generators. It was also assumed that the cost and discount rates for onshore and offshore wind would be lower under the headroom option than in the base case.
- Under the de-linking option, we assumed that the link between inflation and the buyout price was broken from 2015/16 onwards.
- The banding option adjusts the number of ROCs per MWh that are given to new projects built in 2009 or later. It assumes that projects built previously retain full ROC rights.

Impact on Renewables Generation

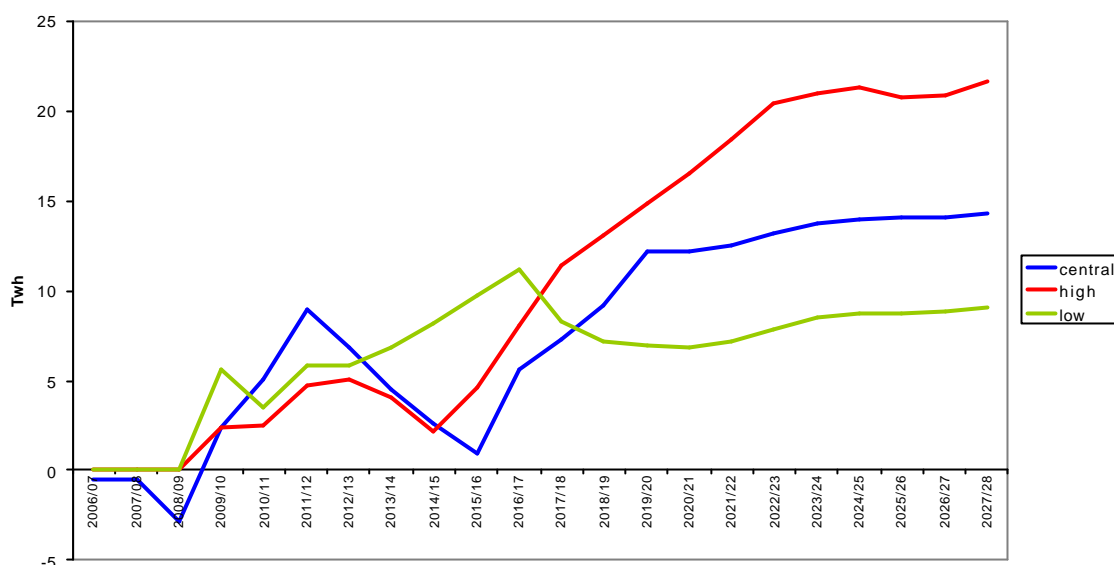
55. Under all electricity price scenarios, the change to the RO has a long term positive impact on the overall level of renewables generation. The profile of extra RO eligible generation over time is shown in Figure 1 below. In particular the change increases the volume of output of offshore wind. Carbon saved over the lifetime of the policies ranges from 13MtC in the low scenario, to 37MtC in the high electricity price scenario measured against a counterfactual of gas CCGT generation.

Figure 1: Increases in the Level of Renewables Generation, resulting from the proposed change to the RO, under low, central and high electricity price scenarios.

¹³ Enviro (2005) 'The Costs of Supplying Renewable Energy'. A copy can be obtained at <http://www.dti.gov.uk/renewables/renew2.2.5.htm>

¹⁴ <http://www.bwea.com/energyreview/AppAOnshore.pdf>

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Cost – Benefit Analysis

56. The CBA estimated the impact on a number of cost measures:

- The NPV resource cost. This is the cost to the economy of producing electricity through renewables technologies as opposed to the current mix of generation technologies.
- The cost to firms of the RO. This is defined as the cost to generators plus the benefit to suppliers. Where the cost to generators is the resource cost minus electricity sales plus the ROC purchase cost. Suppliers benefit is the value of ROCs.
- The cost to consumers of the RO. This is defined as the obligation level multiplied by the buyout price. This is the same as the total support given to RO-eligible generators.
- The 'deadweight' element of the RO is the amount of support given to RO-eligible generators in excess of the cost of that generation. This is a measure of transfer from consumers to producers of renewables generation.
- The exchequer impact on CCL revenues. Since renewables generation is exempt from CCL, additional renewables generation would reduce CCL revenue to the exchequer. No other exchequer impacts such as VAT, tax receipts, have been modelled.
- The cost per tonne of carbon. This is the NPV resource cost divided by the amount of carbon saved. This is estimated across all RO-eligible technologies as a whole.

57. The impact of the package of changes on these measures is shown in the table below. All estimates have been discounted according to HMT green book guidance and are given in 2005 prices. The figures represent the change in costs compared to the current cost of the RO under the three electricity price scenarios.

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Table 9: Cost Benefit Analysis of Changes to the Renewables Obligation

Electricity Price Assumption	Change in Lifetime NPV £m						Change in Lifetime Carbon Saved MtC	NPV resource cost per tonne of carbon £/tC
	Firms	Consumer	Exchequer	Deadweight	Resource cost, not including carbon	Resource cost including SCC		
Low	-6,215	1,845	-270	8,060	-6,215	-5,380	13	470
Central	-5,720	1,845	-375	7,565	-5,720	-4,465	22	255
High	-4,570	2,260	-580	6,830	-470	-2,595	37	125

Key Findings

58. The results show that the changes to the RO lead to an increase in resource costs. This is due to the increased incentives for additional renewables generation afforded by the changes compared with the current policy. The increase in resource cost of the package ranges from £4570m to £6215m in present value terms over the lifetime of the technologies.

59. However, the measures reduce the total support given to RO-eligible generators largely due to the fall in the buy-out price, and banding of the ROCs. This results in a fall in the cost to consumers of between £1845m and £2260m and a reduction in the deadweight element of the RO of between £6830m and £8060m over the lifetime of the RO. This shows that the package improves the efficiency of the RO by targeting support on technologies that need additional support to bring them onto the market.

60. There is also a small additional exchequer cost, resulting from CCL forgone from increased renewables generation. The cost effectiveness of the RO, as indicated by the cost per tonne of carbon saved, ranges from £125/tC in the high electricity price scenario, to £470/tC in the low price scenario.

61. Costs in table 9 have been modelled over the lifetime of the renewables projects. Costs of renewables projects are annuitised over the lifetime of the projects. Most new build from the change occurs in the period 2015 to 2020, but the costs and benefits are assumed to continue into the future.

Caveats

62. There are a number of assumptions underlying the modelling which will have an impact on the results of the analysis, in particular:

- As demonstrated above, the electricity price assumptions have a significant impact on the effect of the package. Under the high electricity price scenario, the higher level and cost of the change in renewables generation is countered by higher cost of conventional generation, so that the overall resource cost is lower than under

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the low electricity price scenario. This leads to a lower cost per tonne of carbon saved.

- There is a large degree of uncertainty around the assumptions underlying the impact of introducing headroom. These will bear significantly on the estimated impact of this change.
- The model does not allow for behavioural impacts resulting from the announcement of banding the RO on the timing of investment decisions. This impact could be positive, negative or neutral.

The Policy Framework for Nuclear New Build
Initial Regulatory Impact Assessment

1. Purpose and Intended Effect of Measure

1.1 The Objective

The objective is to set out how the Government will establish the policy framework for new nuclear build. It is designed to provide clarity on how Government will engage the public on the important issues related to new nuclear power stations and set out its proposals for the issues on which the planning system, under section 36 of the Electricity Act, should focus.

The need to securing planning permission is a particular regulatory barrier for nuclear power stations. There are a large number of complex and controversial issues that need to be considered, although many of these are of a strategic national perspective or are the subject of consideration and monitoring by a number of independent regulators.

1.2 The Background

The Energy Review has looked again at the role of nuclear electricity generation. Nuclear currently provides around 20% of the country's electricity needs, but most of our existing nuclear power stations are scheduled to close over the coming twenty years or so. Having considered all of the relevant issues, the Government believes that nuclear has a role to play in the future UK generating mix because of its contribution to increased diversity of energy supplies and its role as a source of low-carbon generation.

The Energy Review has also been looking at the impact of the planning system on the UK energy sector and the ability of the market to deliver our Energy White Paper goals. Recent experience has shown that important, large energy infrastructure projects and in particular, nuclear power stations can suffer long delays in securing planning permission; for example the most recently constructed nuclear power station, Sizewell B, took approximately six years to secure planning permission. As well as affecting the timely delivery of projects in the shorter term, the uncertainty and delay created through the planning system could make the UK electricity sector less attractive for investors – potential developers of new nuclear plant have stated that because of the large upfront investment required to bring forward nuclear power stations and the significant risks in the planning and licensing phases, they would not bring forward any proposals under the current regime.

The Energy Review has also made other recommendations to reduce upfront risk and uncertainty more widely on planning, principally to update the inquiry rules to reflect current appropriate best practice (for example the Town and Country Planning (Major Infrastructure Project Inquiry Procedure) (England) Rules 2005).

1.3 Risk Assessment / Scale of the Problem

The current arrangements for handling nuclear power plant projects through public inquiries imposes significant costs on developers, central and local governments and on other participants in the system such as voluntary groups and non-governmental organisations. The costs involve include the costs of delays and deferral of the benefits of proposed investment (including the benefits of additional low carbon generation and more diverse supplies of energy). The cost of delays to inquiries can be substantial:

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- Fees and possible provision of accommodation for the inquiry, Inspector and secretariat;
- Participants travelling and overnight costs and loss of earnings;
- Reproduction and circulation of documents;
- Preparation of cases and other legal and professional costs, including expert witnesses; and
- Legal representation at the inquiry itself.

Delays at the planning stage can have significant knock-on effects – it is at this stage that developers incur significant expenditure. Industry estimates that the cost of delays and potential design changes at this late stage can be hundreds of millions.

2. Options

The Energy Review considered a number of options to help the UK meet its medium and long-term energy policy goals. As a source of low-carbon generation, that helps to increase the diversity of energy supplies, the Government has concluded that nuclear should play a role in the future generating mix. The arguments are set out in more detail in the Energy Review Publication.

Having concluded that nuclear should play a role, Government has considered whether it should undertake facilitative measures to enable new build to go ahead. On planning, Government has considered whether or not it would add any value to take a proactive role in setting a strategic policy context for all nuclear planning applications.

2.1 Do Nothing

The do-nothing option is to take no other action to tackle the potential delays and uncertainty for nuclear and allow all issues to be explored at every planning inquiry, regardless of whether they had previously been addressed.

Industry has reported that without action to reduce upfront risk in the planning sector, they would not bring forward any proposals for new nuclear build. Under the do-nothing option, it is therefore unlikely that the UK would have access to nuclear power as a tool to help the UK meet its medium and long term energy white paper goals.

2.2 Set Strategic National and Regulatory Framework for Nuclear

Government can set a clear policy context within which the issues relating to new build can be addressed. The first stage involves Government leading debates on the national questions relating to nuclear:

- Strategic need; and
- Health and Safety and Environmental Issues at a strategic level.

The second stage is for the regulators to exercise their statutory duties and ensure the safety, security, non-proliferation risks and potential radiological impacts are managed appropriately for any nuclear power stations.

The final stage is for the planning process, under section 36 of the Electricity Act to consider the suitability of specific proposals and mitigation of potential negative impacts.

3. Benefits

Although the specific benefits of any individual application would continue to be explored as part of the planning system, this proposal offers significant benefits by providing for a more efficient framework to discuss the relevant issues.

3.1 Economic

Providing more efficient processes:

It is expected that in setting the policy context for new nuclear proposals, it will be quicker and easier for the public to participate in the planning system (by providing the most appropriate opportunities to do so) and for the Secretary of State to make informed decisions. This will reduce the costs of participating in the planning process for all parties through shorter, more focussed inquiries. These sums can be significant; for example, industry estimates that the direct inquiry costs for the developer of Sizewell B were £30 million.

The proposal makes it clear that national strategic and regulatory issues should be discussed at an early stage, before any planning inquiries. As highlighted above, delays and uncertainty at this stage can be expensive. This “front-loading” of discussions would be of benefit to all participants.

Without any changes, planning inquiries would remain the major opportunity to address national strategic and regulatory issues that are generic to nuclear power. This would mean that all inquiries would cover the same ground. Based on the experience at Sizewell B, where only 30 of the 340 inquiry days were spent on local issues, the cost and time savings of setting the policy framework first could be significant.

It is important to note that the degree to which these benefits result in shorter inquiries will depend on the individual inspector running an inquiry and the extent to which they reflect the policy framework in their oversight of the inquiry.

Realising the benefits of nuclear:

By increasing the diversity of our energy supplies, and reducing our reliance on gas-fired generation at a time when we are becoming more dependent on imported gas, nuclear can play an important role in maintaining the reliability of our energy supplies. For every 1GW of nuclear capacity, the UK would reduce its gas demand by about 1.2bcm per year. Potential developers of nuclear power plants have stated, through the Energy Review consultation, that without action to provide more certainty in the planning process that they would not bring forward any proposals.

3.2 Environmental

Providing more efficient processes:

The policy will not have an adverse impact on environmental considerations. There will be no lesser scrutiny of environmental issues of all proposals by having the appropriate regulators focus on the considerations outside of the public inquiry process. The policy framework should enable the inquiry process to progress more smoothly and predictably with all parties having a clear understanding of their role, and that of others, in the inquiry process. We expect all nuclear proposals would continue to be accompanied by a full Environmental Impact Assessment to comply with the necessary European legislative requirements.

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Realising the benefits of nuclear:

Nuclear is one way to tackle the problem of climate change – for every 1GW installed in place of a gas plant; the UK's carbon emissions would be 0.7MtC lower. As highlighted above, by enabling nuclear power proposals to come forward, this allows the low-carbon benefits of nuclear to be realised.

3.3 Social

We do not expect there to be any significant impact on the social benefits in relation to new nuclear build, as result of the proposals.

4. Costs

4.1 To Government

There will be some administrative expenditure required by Government to undertake the necessary steps to set the strategic framework.

It is expected that, in time, as applications are processed through the system that the burdens on Government will be reduced through shorter planning inquiries. Shorter, more efficient inquiries, with more predictable timescales, will enable Government to better manage its resources in the part of the DTI that is responsible for processing applications under the Electricity Act. Inspectors should also be freed up more quickly to move on to other inquiries. However, because the scale of the cost savings are dependent both on the number of proposals for nuclear power stations that are considered by the planning system and the extent to which inspectors do not explore strategic and regulatory issues already addressed, it is not possible to put an exact figure on the cost savings.

4.2 To Regulators

It is expected that the regulators will incur fewer costs in exercising their duties. In the past, where regulatory issues such as the safety of a nuclear power plant, have been discussed in both the planning and licensing procedures concurrently, it has imposed a significant burden on the regulator. For example, at Sizewell B, the safety regulator had to make time for appearances at inquiries, and there protracted discussions as the design for the plant was modified. Addressing regulatory issues before planning inquiries will reduce the costs for the regulator during the planning and licensing phases.

4.3 To Applicants

It is anticipated that costs to the applicant will be reduced, as discussed above.

4.4 To Other Participants in Planning System

By avoiding a long and drawn out planning inquiry, and improving the scope for appropriate public engagement throughout all stages of the planning process (i.e. on strategic national framework, for example through Justification and on local, project-specific issues at the inquiry) it will reduce the cost of participating for objectors and local planning authorities. By focussing on the specific areas relevant to the planning inquiry there will be a better use of participants time.

5. Equality and Fairness

We do not expect there to be any significant race, health or rural impacts. The proposal does not reduce the level of regulatory scrutiny for health and safety issues, nor of

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discussions of potential siting for nuclear power stations, which have in the past been predominately in rural locations.

The proposal makes it clear that such issues, which are of a national strategic or regulatory nature, should be discussed at an early stage, before any planning inquiries, which can be an expensive process for all participants. This proposal in itself will not identify suitable locations for new nuclear build, or make an assessment of the health and safety considerations of nuclear power stations, rather that such a full assessments should be carried out in the future, prior to individual planning applications.

Where it was considered that health and safety and rural considerations were relevant matters to any public inquiry, the inspector will still be able to explore these issues. Under the proposed system all planning inquiry would explore the impact of the development on the local communities, as they would under the current system.

6. Small Business Impact Test

This policy is designed to reduce uncertainty and risk for developers of nuclear power stations by setting the strategic context for any planning inquiries. It is our considered view, based on discussions with industry through the Energy Review consultation, that such proposals would not be made by small business, because of the scale and cost of nuclear developments. We will be exploring this further with the Small Business Service.

7. Competition Assessment

These changes will affect the electricity generation sector only, and most likely, only the larger players that would be more likely to bring forward a nuclear proposal, because of its scale, as outlined above (although it is feasible that a larger consortium of smaller players might come together with a proposal). It should affect all the players equally, in that the policy relates to setting a strategic context for new build. It will also reduce the regulatory/planning barrier to developers engaging in new nuclear build, potentially opening the market to more players – there is currently only two nuclear operators in the UK. When implemented, the strategic policy framework will identify areas for future new build, although we expect that this will assist developers with siting decisions rather than stymie them. We do not consider that there will be any major competition detriments.

8. Enforcement and Sanctions

The policy framework will be implemented by the Government and by the independent regulators. There are no sanctions for non-compliance, although non-compliance would affect the Government's ability to achieve its energy white paper goals.

9. Monitoring and Review

The Department of Trade and Industry will, in conjunction with the Department for Communities and Local Government will monitor the efficiency of the new policy framework over a five-year period. Given the infrequency with which nuclear power projects are expected to be proposed by industry, it is thought that to monitor over a shorter period would not be useful. As part of the monitoring, the impact on resources over time for the different parties will be assessed and if necessary changes will be considered.

10. Consultation

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10.1 With Government

This policy proposal has been developed as part of the cross-Government Energy Review. The Review team has been made up of representative of the interested departments: Department of Trade and Industry, Department for Communities and Local Government, HM Treasury, Department for Environment, Food and Rural Affairs, Department for Transport and the Prime Minister's Strategy Unit. The comments of all departments have been taken into account in making this proposal.

10.2 Public Consultation

This policy proposal has been developed in the light of comments and evidence submitted as part of the Energy Review consultation. This consultation elicited over 5000 responses, although only a proportion discussed planning issues. Of the responses from the key stakeholders in the energy market (including the UK Business Council on Sustainable Energy, non-governmental organisations, major utility companies and regulators) there was almost universal recognition of the need to reform planning processes such that they aligned with policy objectives of reducing uncertainty, cost and time involved in applications across the energy sector.

¹⁵ Action set out in the Energy White Paper, the Energy Efficiency Action Plan and both the 2000 and 2006 Climate Change Programmes, will deliver a reduction in the UK's carbon dioxide emissions of 16% below 1990 levels. 40% of this improvement will be from energy efficiency measures

¹⁶ See <http://greenbook.treasury.gov.uk>

¹⁷ See <http://www.defra.gov.uk/environment/climatechange/uk/ukccp/pdf/greengas-policyevaluation.pdf>

¹⁸ This assumes that there is 10-20% under allocation to this sector in 2020

¹⁹ Assumes 1GW of CCGT capacity is displaced

²⁰ Work carried out for 'The Government's Review of the Economics of Climate Change – led by Sir Nick Stern and due to report Autumn 2006

²¹ A summary of the various studies can be found in: Darby S. (2006) The effectiveness of feedback on energy consumption. A review for Defra of the literature on metering, billing and direct displays. Final report.

²² Renewable Energy Country Attractiveness Indices, Ernst and Young LLP, Winter 2006

²³ The Town and Country Planning (Major Infrastructure Project Inquiries Procedure) (England) Rules 2005

²⁴ In the Sizewell B inquiry, the direct inquiry costs alone for the developer was £30 million – British Energy

²⁵ For example, by drawing on the Town and Country Planning (Major Infrastructure Project Inquiries Procedure) (England) Rules 2005

²⁶ UKWED, British Wind Energy Association

²⁷ eg the impact of the Balancing and Settlement Code on rewarding exported electricity

²⁸ Sarah Darby 'The effectiveness of feedback on energy consumption. A review of the literature on metering, billing and direct displays. April 2006. Published on the Defra website at <http://www.defra.gov.uk/environment/energy/research/pdf/energyconsump-feedback.pdf>

²⁹ Sarah Darby 'The effectiveness of feedback on energy consumption. A review of the literature on metering, billing and direct displays. April 2006. Published on the Defra website at <http://www.defra.gov.uk/environment/energy/research/pdf/energyconsump-feedback.pdf>

³⁰ There are three separate obligations covering England and Wales, Scotland and Northern Ireland. ROCs, SROCs and NIROCs are fully tradeable across the UK.

³¹ Enviro (2005) 'The Costs of Supplying Renewable Energy'. A copy can be obtained at <http://www.dti.gov.uk/renewables/renew2.2.5.htm>

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