Summary: Intervention & Options

Department /Agency:	Title:	
HM Treasury/HMRC	Impact Assessment of proposals to amend the climate change levy and fuel duty to support incentives for low-carbon electricty generation	
Stage: Consultation	**Version:** 1	**Date:** 16 December 2010
Related Publications:		

Available to view or download at:

http://www.hm-treasury.gov.uk/d/consult_carbon_price_support_ia.pdf

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What is the problem under consideration? Why is government intervention necessary?

The price of carbon faced by the power sector affects investment decisions in low-carbon technology. Greater low-carbon investment for electricity generation is required to meet the UK's carbon emissions reduction targets and ensure security of supply.

The carbon price, however, has not been high enough or stable enough to provide certainty to encourage this additional investment in low-carbon technology.

Government intervention is necessary to provide more certainty and stability to investors by supporting the carbon price through reform of the climate change levy (CCL) and fuel duty.

What are the policy objectives and the intended effects?

The main objective of providing greater support and certainty to the UK carbon price is to help increase the incentives for investment in low-carbon generation in order to decarbonise the UK power sector.

What policy options have been considered? Please justify any preferred option.

Option 1: To introduce a minimum price for carbon on the fossil fuels supplied to all types of UK electricity generators at rates based upon the fuel's carbon content; and achieving this through reform of CCL and fuel duty. This is the preferred option.

Option 2: Do nothing. Uncertainty around the carbon price would continue to hinder investment in low-carbon generation technologies. This would likely lead to higher long-term electricity prices and put at risk the Government's ability to meet UK emission targets and security of supply objectives.

When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?

HMRC will conduct a post-implementation review within 3-5 years of implementation.

Ministerial Sign-off For consultation stage Impact Assessments:

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:

Date: 15th December 2010

Summary: Analysis & Evidence

Policy Option: 1	Description: To amend existing CCL exemptions and the system of reclaiming fuel duty so that the way fossil fuels supplied to electricity generators are taxed supports the carbon price.

COSTS

ANNUAL COSTS		
One-off (Transition)	**Yrs**	
£ 1.3m	1	
Average Annual Cost (excluding one-off)		
£ 0.2bn to £1.4bn	18	

Description and scale of **key monetised costs** by 'main affected groups' Familiarisation costs of changes to CCL and fuel duty. A small number of suppliers of fossil fuels to electricity generators might have to register for CCL. Suppliers might need to amend their accounting systems and invoices to account for the new rates of CCL. CCL supplier certificates might be required to ensure the correct amount of CCL is charged by suppliers. Between 2013 and 2030 resource costs are estimated to range between £2.1 billion and £16.3 billion.

Total Cost (PV) **£ 2.1bn to £16.3bn**

Other **key non-monetised costs** by 'main affected groups'

HMRC costs are estimated to be minimal and are a routine part of its normal business activity.

BENEFITS

ANNUAL BENEFITS		
One-off	**Yrs**	
£ nil	1	
Average Annual Benefit (excluding one-off)		
£ 0.5bn to £1.4bn	18	

Description and scale of **key monetised benefits** by 'main affected groups' Between 2013 and 2030, the total emissions savings for the traded sector range between £4.9 billion (scenario one) and £12.5 billion (scenario three) depending on the level of carbon price support. Emissions savings are valued at the Government's central estimate of traded carbon values and discounted. The discounted value for improvements in air quality throughout this period range between £0.4 billion (scenario one) and £2.1 billion (scenario three).

Total Benefit (PV) **£5.3bn to £14.6bn**

Other **key non-monetised benefits** by 'main affected groups'

The following have not been quantified: expected emission savings within the non-traded sector; long-term security of supply benefits; and potentially lower electricity prices over the long term. The flow of Exchequer impacts would be a transfer from private to public sectors and so is not presented as a benefit or cost.

Key Assumptions/Sensitivities/Risks The carbon price forecast is uncertain, especially in the long term, and therefore the estimated carbon benefits which factor in these prices are also uncertain. Similarly, the estimated resource costs are also uncertain as they depend on the projected generation mix resulting from investment decisions and from uncertain technology costs and fossil fuel prices.

Price Base Year 2009	Time Period Years 2013-2030	**Net Benefit Range** (NPV) **£ +3.2bn to -1.7bn**	**NET BENEFIT** (NPV Best estimate) **£ N/A**

What is the geographic coverage of the policy/option?			UK	
On what date will the policy be implemented?			1 April 2013	
Which organisation(s) will enforce the policy?			HMRC	
What is the total annual cost of enforcement for these organisations?			£ N/A	
Does enforcement comply with Hampton principles?			N/A	
Will implementation go beyond minimum EU requirements?			Yes	
What is the value of the proposed offsetting measure per year?			£ N/A	
What is the value of changes in greenhouse gas emissions?			£ 0.5bn to £1.2bn p.a.	
Will the proposal have a significant impact on competition?			No	
Annual cost (£-£) per organisation (excluding one-off)	Micro **n/a**	Small **£800**	Medium **£1,200**	Large **£8,500**
Are any of these organisations exempt?	No	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)

Increase of £48,000 Decrease of £ **Net Impact** **£48,000 increase**

Key: **Annual costs and benefits: Constant Prices** **(Net) Present Value**

Evidence Base (for summary sheets)

1. INTRODUCTION

The Issue

1 The Coalition's Programme for Government committed it to introduce a floor price for carbon. This is one of a number of initiatives designed to encourage greater investment in low-carbon electricity generation.

2 The June 2010 Budget built on this commitment. The Chancellor announced that HM Treasury and HM Revenue and Customs (HMRC) would jointly publish proposals in the autumn to reform the climate change levy (CCL) so as to provide more certainty and support to the carbon price and that, subject to consultation on these proposals, the Government would bring forward the relevant clauses in Finance Bill 2011.

3 This commitment sits alongside a number of other commitments, published today, to reform the electricity market in the UK in order to support the private sector investment needed to meet the Government's decarbonisation and security of supply objectives. This Impact Assessment and accompanying consultation document, which consider supporting the carbon price in isolation, should be seen as part of this wider package.

Policy objectives and intended effects

4 The desired outcome of providing support to the carbon price is to encourage greater investment in low-carbon electricity generation to meet the UK's carbon emissions reduction targets[1]. This would be part of a package of wider market reforms. Supporting the carbon price in the UK electricity sector helps increase incentives for investment in low-carbon generation by:

- signalling the Government's commitment to a low-carbon transition;
- reducing the uncertainty of revenue and investment risk uncertainty; and
- increasing the costs of high carbon emitting technologies relative to more carbon efficient technologies.

Why has the Government decided to intervene in this policy area?

5 To meet the UK's emissions targets a major expansion in low-carbon electricity generation is required. Currently, low-carbon technologies are typically more expensive than conventional fossil-fuel generation technologies on a cost per output generated basis. This is because the upfront capital and construction costs tend to be higher; however, marginal costs once the plant is operational are much lower. Moreover, a number of low-carbon technologies have yet to be built in the UK on a commercial basis. This makes their costs not only higher than conventional generation but also more uncertain, thereby increasing investment risks and the subsequent cost of capital.

6 Policies such as the Renewables Obligation, the European Union Emissions Trading System (EU ETS) and CCL exemption for electricity generated from renewable sources already provide investment incentives for low-carbon generation. However, additional measures will be required to deliver the level of investment required to decarbonise the power sector in the future.

[1] The Government is committed legally to reduce UK greenhouse gas emissions by at least 80 per cent in 2050 (from 1990 levels), and for 15 per cent of UK energy to come from renewable sources by 2020.

7 A range of factors affect investment decisions. One of these is the carbon price. The EU ETS is designed to address the negative externality of carbon dioxide (CO_2) emissions and factor the price of carbon into the development and operation of electricity generation assets. While there is evidence that investors are beginning to factor the carbon price into investment decisions[2], there is uncertainty about how carbon prices will evolve and a question about whether the carbon price delivered through the EU ETS is strong and stable enough to drive the decarbonisation required.

8 There are significant variations in carbon price forecasts to 2020. While the carbon price remains less volatile than other commodities, it contains a number of inherent uncertainties that are not shared by fossil fuels. These are primarily regulatory. For example, the EU is considering if the EU's 2020 emissions reduction target should be tightened by increasing the greenhouse gas target from a 20 per cent to 30 per cent reduction, based on 1990 levels. This could have a significant impact on future carbon prices[3] and the allocation of emissions to specific industrial sectors. As such, businesses and investors face a degree of regulatory uncertainty about future carbon prices, which might undermine long-term price signals and incentives. Therefore, there is a rationale for Government to intervene to provide greater support and certainty to the carbon price.

9 Carbon price support is likely to be insufficient on its own to encourage the total amount of low-carbon investment required to decarbonise the power sector. Therefore, the Government has also published a consultation on wider reforms to the electricity market. This will consider the role of wider reforms including carbon price support.

2. OPTIONS

Option 1 – Government's lead proposal

10 The Government's lead option to achieve its objective of providing support and certainty to the carbon price is to:

- remove existing CCL exemptions on fossil fuels used in UK electricity generation; and
- reduce the amount of fuel duty that can be reclaimed when oil is used to generate electricity.

CCL

11 CCL becomes chargeable when a taxable commodity is supplied to a consumer. Persons registered for the levy are required to submit a CCL 100 Climate Change Levy Return (or the Welsh language version CCL100W) and pay the tax due. Supplies to households are excluded from CCL, and to minimise administrative burdens on energy suppliers, supplies of small quantities[4] are always considered to be for domestic use.

12 New rates of CCL, to be known as the carbon price support rates, will be applied to fossil fuels (other than oils) used in UK electricity generation based upon the carbon content of the fuel.

13 The Government proposes to achieve this by removing or amending CCL exemptions in Schedule 6 to the Finance Act 2000:

- supplies of taxable commodities to electricity producers (paragraph 14); and
- supplies to a combined heat and power (CHP) station (paragraph 15).

[2] New Energy Finance, *Impact of the EU ETS on power sector investments - a survey of European utilities,* 14 December 2009.
[3] European Commission, COM (2010) 265 publication suggested €30 t/CO_2 under a cap consistent with a 30 percent greenhouse gas reduction target.
[4] An example of a supply of a small quantity would be no more than one tonne of coal or coke held out for sale as domestic fuel.

14 The Government will bring forward proposals for legislation to introduce the new carbon price support rates and will also need to propose amendments to other primary or secondary CCL legislation in order to achieve the desired objective.

Fuel duty

15 Oil is not subject to CCL but is liable to fuel duty in the UK under the Hydrocarbon Oil Duties Act 1979. The producer is required to account for duty on oils when they leave the refinery. Consequently, oils used for generating electricity are delivered to the generator with duty paid. The generator may then apply to HMRC for repayment of this duty and in doing so must provide proof that the oil has been used to generate electricity, therefore, oils used in electricity production are, in effect, exempt from duty.

16 The Government intends to continue to tax oils under the fuel duty regime. Taxing oils used in electricity generation would be achieved by reducing the amount of duty that can be reclaimed by the generator when oil is used for this purpose. The amount of the duty repayment would, as for the carbon price support rates for CCL, correlate to the carbon content of the fuel.

Indicative scenarios

17 In order to assess the impacts of the Government's proposal, three indicative scenarios have been compared against a baseline ('do nothing approach'). Under existing assumptions and policies, the three scenarios and baseline are described below and illustrated in Chart 1 (all figures are in real 2009 prices). For simplicity, linear trends are assumed between the 2013 starting levels of carbon price support and the 2020 levels.

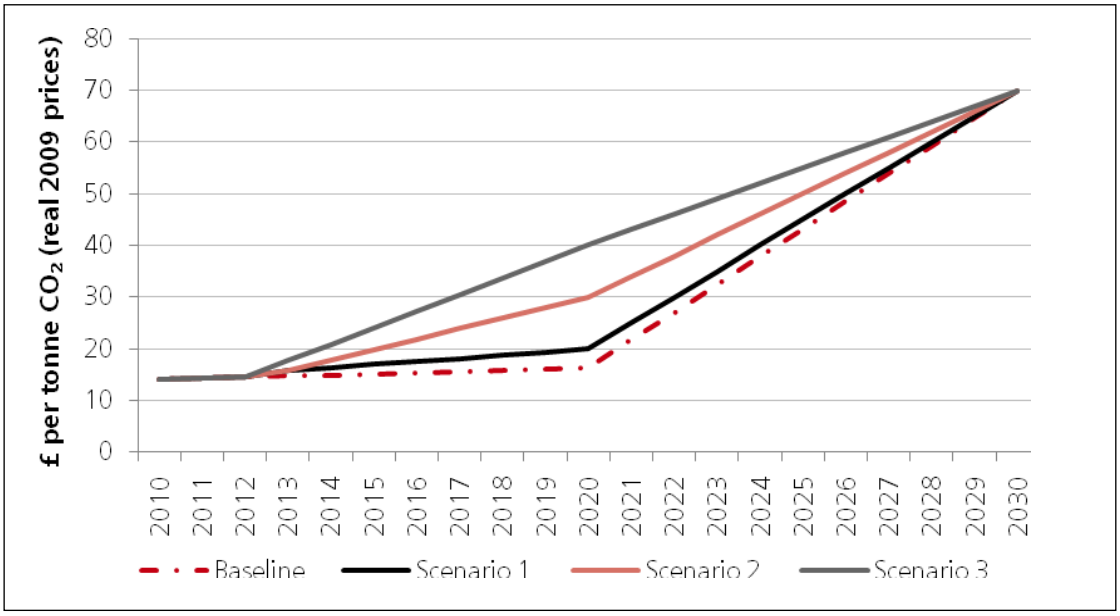
- Baseline: the EU ETS price rises in line with the Department of Energy and Climate Change's (DECC) current published projections under a 20 per cent emissions reduction target reaching £16.3/tCO_2 in 2020. Post 2020, the price increases at a constant rate to reach £70/tCO_2 in 2030, an illustrative price consistent with global prices needed to limit the increase in temperature to an expected 2° Celsius.

- Scenario one: carbon price support starting at £1/tCO_2 on top of the prevailing EU ETS price in 2013, with this support rising to target a combined carbon price (support plus EU ETS) of £20/tCO_2 in 2020 and £70/tCO_2 in 2030.

- Scenario two: carbon price support starting at £1/tCO_2 on top of the prevailing EU ETS price in 2013, with this support rising to target a combined carbon price (support plus EU ETS) of £30/tCO_2 in 2020 and £70/tCO_2 in 2030.

- Scenario three: carbon price support starting at £3/tCO_2 on top of the prevailing EU ETS price in 2013, with this support rising to target a combined carbon price (support plus EU ETS) of £40/tCO_2 in 2020 and £70/tCO_2 in 2030.

Chart 1: Indicative carbon price support scenarios and baseline



Source: Department of Energy and Climate Change, 2010

Rates

18 In order to raise the effective carbon price faced by the EU ETS participants from the prevailing market prices to the target levels, the carbon price support rates on fossil fuels used in electricity generation could be set to reflect these price differences. These carbon-based rates are then converted to energy-based rates using the standard emission factors for different fuels, in pence per KWh and mass.

19 The three indicative carbon price trajectories (£20, £30 and £40/t CO_2 in 2020) that converge on a single long-term price of £70/t CO_2 in 2030 have been assessed against a baseline scenario. These scenarios have been used to provide a sense of the additional liability. They do not represent the Government's definitive or preferred options.

20 Tables 1 and 2 provide the carbon price support rates for the main commodities used in electricity generation for the various indicative carbon price levels; £1, £3, £5 and £10 per tonne of CO_2. These are illustrative rates (effective rates of tax for input fuels). In practice, the Government would provide the corresponding tax rates implied by the targeted carbon price level based on the average carbon content of each taxable commodity supplied for generation.

Table 1: Indicative carbon price support rates for the main fuels used in electricity generation: Unit rates in energy

Carbon price:	Gas (p/KWh)	Coal (p/KWh)	Fuel Oil (p/KWh)	Gas Oil (p/KWh)
£1/tCO_2	0.018	0.031	0.027	0.025
£3/tCO_2	0.055	0.092	0.080	0.076
£5/tCO_2	0.092	0.154	0.133	0.126
£10/tCO_2	0.184	0.308	0.265	0.252

Table 2: Indicative carbon price support rates for the main fuels used in electricity generation: Unit rates in mass

Carbon price:	Gas (p/therm)	Coal (p/Kg)	Fuel Oil (p/litre)	Gas Oil (p/litre)
£1/tCO_2	0.538	0.230	0.314	0.276
£3/tCO_2	1.614	0.690	0.943	0.829
£5/tCO_2	2.690	1.151	1.572	1.381
£10/tCO_2	5.380	2.301	3.144	2.762

21 There are uncertainties surrounding the calculation of future tax rates in the various scenarios. The above rates are presented here to illustrate the methodology. Any revision to the forecast carbon prices would result in significant changes to the rates.

22 Carbon price forecasting is inherently uncertain and any estimate of Exchequer revenue impacts would depend upon the future EU ETS traded carbon price relative to the price targeted through carbon price support. In scenario one, for example, an illustrative revenue path could be in the order of £200 million in 2013-14 to £400 million in 2015-16, though this would depend on the underlying traded carbon price, including whether or not the EU agreed to tighten the ETS cap. A tighter EU ETS cap would increase the carbon price and reduce carbon price support rates and revenues. This illustrative revenue forecast incorporates the behavioural effect - the change in consumption of fossil fuels by electricity generators - as a result of the carbon price support.

Option 2 – do nothing

23 Around £110 billion of investment is likely to be required in low-carbon electricity generation capacity, transmission and back-up by 2020 (DECC, 2010), with a similar amount likely to be required in the 2020s. Current market arrangements, including the investment incentives provided by the carbon price, are unlikely to bring forward this level of investment. This investment is necessary to reduce greenhouse gas emissions, ensure energy security as a significant proportion of existing power stations are closing and to enable the economy to benefit from new low-carbon technologies.

24 Without intervention, the market is unlikely to decide to invest sufficiently in low-carbon technologies to replace the existing capacity and to meet future growth in demand. As such, doing nothing would increase the risks of the UK being unable to meet its emissions reduction target over the long term.

3. COSTS & BENEFITS

Option 1- amendment of existing exemptions in CCL and fuel duty

25 The Government's lead option to achieve its objective is to amend selected CCL exemptions and to reduce the amount of fuel duty that can be reclaimed when oil is used to generate electricity.

Number of businesses affected

CCL

26 Suppliers of gas, solid fuels or liquefied petroleum gas (LPG) to a generator for use in electricity generation would no longer be exempt from CCL. If not already registered for CCL,

the suppliers making those supplies and generators importing such fossil fuels from other EU Member States for use in generation would need to register and account for CCL on those supplies. Generators importing fossil fuels from outside the EU would have the choice of either accounting for CCL at the time of importation or registering for CCL and accounting for the levy through their CCL return.

27 HMRC estimates that the number of new registrations arising as a result of these proposals would be small since most of the suppliers of coal, gas or LPG to electricity producers will already be making supplies of taxable commodities and would be registered for CCL.

Fuel duty

28 The Government intends to continue to allow generators to reclaim duty paid on oils under the fuel duty regime. To ensure consistency with the fossil fuels taxed under CCL, the amount of fuel duty that can be reclaimed for oils used in electricity generation would be reduced from its current level. This proposal would not necessitate any additional claims, as it would, in effect, simply be a rate change. Up to 50 businesses reclaim duty from HMRC each year on oil used in electricity generation.

Electricity generators

29 The proposals would affect all electricity generators that use fossil fuels to generate electricity. There are approximately 80 fossil fuel electricity generators with a capacity of over 1 MW (Digest of UK Energy Statistics, May 2010[5]) and 70 medium and small fossil fuel generators embedded into the National Grid (National Grid, 2010[6]), excluding CHPs. There are approximately 1,400 CHP generators in the UK of which 77 per cent use fossil fuels. In addition, there are a large number of smaller electricity generators which might be used permanently or as back-up generators on which no accurate data is held.

Administrative burdens and overall compliance costs for businesses

30 Businesses affected by the proposed changes will incur both one-off transitional costs and continuing costs. Compliance costs and administration burden costs included in this Impact Assessment are our best estimates of costs for typical efficient and compliant businesses. Therefore, we recognise that there will be businesses whose costs are higher or lower than the ones quoted in this document, owing to variations from business to business. Administration burdens are measured by the Standard Cost Model (SCM) (see Annex A). All estimates of costs and benefits quoted are in 2009 prices in order to be consistent with other estimates of costs and benefits within this Impact Assessment.

One-off costs

31 Businesses required to register with HMRC for CCL, as a result of these proposals, and those 245 businesses already registered, would incur compliance costs and administrative burdens as measured by the SCM. These include the one-off costs of familiarisation with the proposed changes and other transitional costs. Up to 50 businesses reclaiming fuel duty on oil used in electricity generation would also need to familiarise themselves with the reduced levels they can claim.

32 The expected one-off compliance and administration costs fall into the following categories:

- a) familiarisation;

[5] *Digest of UK Energy Statistics*, May 2010 http://www.decc.gov.uk/assets/decc/Statistics/source/electricity/dukes5_11.xls
[6] *National Grid 2020*, http://www.nationalgrid.com/NR/rdonlyres/E2823539-1062-4E0B-8B87-B62C52E2FE4A/41473/NETSSYS2010AppendixF.xls

- b) application to register for CCL;
- c) system changes and invoice or energy bill amendments - new rates of CCL; and
- d) CCL supplier certificate requirements - if the carbon price support rates differ from the main CCL rates.

Familiarisation

33 This category considers the time spent by businesses on reading about and understanding the nature of the changes. Those businesses that might need to consider whether they would be required to register for CCL might spend more time than those affected by rate changes only. Businesses that become subject to one or more of the carbon price support rates would need to complete new or replacement PP11 supplier certificates and PP10 supporting analysis forms. Some businesses may consider consulting advisers or other specialists who may add to costs but, for the purposes of this Impact Assessment, such costs are excluded.

34 Overall, the in-house familiarisation cost for a small business is estimated to be less than £100 rising to £500 for a typical larger business.

35 In total, the cost of all in-house one-off familiarisation activities is estimated to be around £90,000 based upon 245 CCL registered businesses and an estimated 100 unregistered businesses that might be affected by these proposals at a rate of £250 per business.

Application to register for CCL

36 The SCM estimates the cost of registering for CCL to be less than £25 per business. In total the administration cost of businesses registering for CCL is estimated to be less than £1,250 based upon an estimated 50 per cent of those 100 unregistered businesses that might be affected being required to register for CCL.

System changes and invoice or energy bill amendments - new rates of CCL

37 To prepare for the carbon price support mechanism, those businesses already registered for CCL and newly registered businesses might need to amend their accounting systems and invoices or energy bills. In particular, a small number of businesses that are energy suppliers of taxable commodities to both electricity generators and other business consumers might need to ensure that their existing accounting systems can process the new carbon price support rates alongside the existing CCL rates.

38 The cost of system changes and invoice or energy bill amendments will vary considerably depending upon the size and complexity of the accounting system and whether the changes are managed in-house or outsourced. Some large utility energy supplies might incur system change costs of up to £50,000 but these costs are difficult to estimate accurately. System changes (assuming replacement systems are not required) include upgrade costs which might also require systematic testing. Smaller businesses are likely to incur substantially lower costs but these might still be significant sums in proportion to their business costs. In total the cost of all system and invoice changes are estimated to be around £1.1 million based upon an estimated ten large suppliers incurring costs of up to £50,000, 15 medium-sized suppliers incurring up to £20,000 and 155 smaller suppliers incurring costs of up to £2,000 each.

CCL supplier certificate requirements

39 Electricity generators, CHPs and auto-generators might need to inform their energy supplier of the carbon price support rates to ensure the supplier charges the correct amount of CCL to them on their invoices or energy bills. This Impact Assessment assumes that this task would be completed using the existing or an amended supplier certificate process. If this process is not considered suitable, alternatives will be explored through this consultation. In certain cases, HMRC has agreed with the trade bodies representing LPG and solid fuel wholesale suppliers that customers may certify relief on these taxable commodities in a less formal way. These agreements might also need to be reviewed.

40 For each taxable commodity, the onus is primarily on the customer seeking the relief to have it applied correctly to their invoice or energy bill and do so by giving a PP11 supplier certificate to their energy suppliers and a copy of the PP11 and a PP10 supporting analysis form to HMRC. The energy supplier would need to amend their customer accounts in order to charge the effective carbon price support rates of CCL and must give HMRC a summary of PP11 certificates received within 90 days of their receipt.

41 It is assumed that the carbon price support rates applicable on supplies of taxable commodities to electricity generators would not be the same as existing CCL rates on supplies to consumers. Unless another alternative proposal is adopted, it would be necessary for generators of electricity in the UK to use the supplier certificate process and comply with the regulations governing its use. It would be necessary for HMRC to redesign these certificates in order to accommodate the proposals. Some generators (for example, electricity power operators and CHP stations) would need to submit amended certificates whilst other generators, including auto-generators, would in most cases have to complete certificates for the first time.

42 Total CCL relief certificate administration costs as a result of the proposed changes are estimated to be £75,000 based upon it costing £50 for 1,500 electricity generators (excluding back-up type generators).

43 The total administration burden for energy suppliers to amend their customer accounts with the carbon price support rates and provide a summary of these to HMRC is estimated to be less than £2,000 based upon 1,500 accounts taking around five minutes to amend at an hourly rate of £15 per hour.

HMRC costs

44 HMRC would incur costs implementing and publicising the changes. Public notices would need to be updated and guidance for businesses and HMRC would need to be written before the changes are implemented. Publication costs would be incurred although HMRC may minimise costs by publishing via the internet and making hard copies available only upon request.

45 New applications for CCL registration would need to be processed and input to the CCL accounting system to ensure CCL returns are issued and payments processed. HMRC might incur costs ensuring that its accounting system could fully support the expected additional registrations and processes, which ensure correct data capture and analysis.

46 New and replacement PP11/10 forms would need to be processed and captured by HMRC. The design of the PP11/10 forms might also require additional data fields to identify the new rates and energy consumption.

47 The total HMRC one-off costs are estimated to be minimal and would be funded from within its existing budget, since they form part of HMRC's routine business of policy development.

Table 3: Summary of estimated administration and compliance one-off costs for businesses (excluding HMRC)

Administrative one-off costs for businesses	Cost
Familiarisation	£90,000
CCL registration	£1,250
Accounting and invoice changes	£1,110,000
Relief certificates	£75,000
Energy suppliers - processing relief certificates	£2,000
Total	£1,278,250

Average annual continuing costs

48 Businesses that have registered for CCL because of the proposed changes would incur continuing administration burdens as a result of complying with the CCL obligations such as record keeping, submitting CCL returns and paying their CCL liabilities.

49 The continuing CCL administration burden (excluding the climate change levy accounting document (CCLAD) obligation) for an average small business is almost £1,000 per year, rising to £1,200 per year for a medium-sized business and £8,500 per year for a large energy utility. This administration burden includes annual information technology (IT) costs: if these are excluded the annual administrative burden for businesses is between £300 per year for a small business and £400 per year for a large business. Of the expected new registrations, few large suppliers are unregistered and others should not incur the administration burdens of a large business. The CCLAD obligation imposes a requirement to include specific information on an invoice or energy bill. Those newly registered businesses that supply taxable commodities to electricity generators will incur a CCLAD administration burden of approximately 20 pence per invoice or energy bill issued. Total administration continuing costs, including IT costs, are estimated to around £60,000 based upon an estimated 50 new registrations at an average annual cost of a medium-sized business of £1,200.

50 Businesses required to complete the PP11/10 forms and comply with the regulations governing their use are required to review their declarations annually and, if necessary, inform HMRC of any under or over payments of CCL. It is not expected that changes as a result of the proposals would affect the annual review and therefore the cost of this is estimated to be minimal. Similarly the cost to energy suppliers informing HMRC of the claimant's relief would be minimal.

51 HMRC would incur continuing costs as a result of the additional CCL registrations and PP11/10 forms which would involve the processing of returns and compliance activities. However, it is expected that these costs would be met from existing resources.

Net Resource costs

52 The proposed measure is expected to bring forward more low-carbon generation capacity (see the 'impacts on electricity sector investment' section). Most low-carbon generation technologies are currently more expensive (on a total cost per unit of electricity generated) than conventional technologies that burn fossil fuels. Therefore, increasing the amount of low-carbon generation increases the total cost of generating electricity in the short and medium-term, though it may help reduce costs in the longer-term. This represents an increased resource cost to society. Indicative estimates of these increased resource costs to

2030 for each scenario are made by DECC/Redpoint Energy and given in the Table 4. The average annual savings for the period 2013-2030 would be between £0.2 billion and £1.4 billion (not discounted).

Table 4: Present value of net increase in resource costs (excluding costs of carbon) of electricity generation: £billion (real 2009 prices)

Time Period (Years)	Scenario one	Scenario two	Scenario three
2013-2030	£2.1bn	£6.1bn	£16.3bn

Source: Department of Energy and Climate Change/Redpoint Energy, 2010

Benefits (to society): traded sector

53 Potential benefits of the proposal, through encouraging more investment in low-carbon generation technologies, include emission savings from the power sector, improved air quality, stimulating technological innovations and spillover effects and reducing longer-term costs of meeting our climate change targets.

54 This section provides initial estimates for some of these benefits, namely carbon savings and air quality impacts, following standard valuation approaches in the Government guidance[7].

55 The large majority (around 98 per cent) of emissions associated with UK electricity generation is covered by the EU ETS, the 'traded sector'. The introduction of UK carbon price support for those electricity generating plants whose emissions are covered by the EU ETS would not directly impact on the Government's ability to meet its carbon budgets, since the effective cap for UK emissions within the EU ETS will not change, but should help meet the UK's long-term emissions reduction target. For example, by encouraging investment in low-carbon generation technologies with long operating lives which in the future might help facilitate the decarbonisation of the heat and transport sectors through increased electrification.

56 Increased decarbonisation of the UK electricity sector would also reduce the amount of EU Allowances (EUAs) purchased by UK generators. Over the period to 2030, carbon price support is expected to reduce emissions from UK electricity generation by a total of 162 million tonnes of carbon dioxide ($MtCO_2$) in scenario one, 261 $MtCO_2$ in scenario two and 536 $MtCO_2$ in scenario three, compared with the baseline. These reductions, when valued at the traded carbon prices, give the monetary value of the reduction in the purchase of EUAs. Valuing the emission reductions to 2030 at the Government's central estimate of traded carbon value and discounting at Green Book rates gives a saving of between £4.9 billion and £12.5 billion in purchases of EUAs (2009 prices). This methodology is consistent with HM Treasury and DECC guidance on valuing emission savings. The average annual savings for the period 2013-2030 would be between £0.5 billion and £1.2 billion (not discounted).

57 The emission savings and their valuation for each of the scenarios across given years up until 2030 are illustrated in Table 5. Valuation of emission savings for 2013, 2020 and 2030 are in real 2009 prices.

[7] *Valuation of energy use and greenhouse gas emissions for appraisal and evaluation*, HMT & DECC, June 2010

Table 5: Value of UK emissions savings: £ billion (real 2009 prices)

		2013	2020	2030	2013-30	2013-30 (PV)
	Carbon Price (£/tCO_2)	14.7	16.31	70	-	-
Scenario one	Emissions Savings (mt/CO_2)	2	-1	30	162	162
	Valuation (£bn)	0	0	2.1	9.1	4.9
Scenario two	Emissions Savings (mt/CO_2)	2	2	31	261	261
	Valuation (£bn)	0	0	2.2	12.8	7.2
Scenario three	Emissions Savings (mt/CO_2)	6	25	38	536	536
	Valuation (£bn)	0.1	0.4	2.7	21.3	12.5

Source: Department of Energy and Climate Change, 2010

58 In addition, a reduction in the use of fossil fuels used for electricity generation would have benefits for air quality. Table 6 provides an estimate.

Table 6: Present value of benefits for air quality: £billion (real 2009 prices)

Time period	Scenario one	Scenario two	Scenario three
2013-2030	£0.4bn	£0.9bn	£2.1bn

Source: Department of Energy and Climate Change and Department for Environment, Food and Rural Affairs, 2010

Non-traded sector

59 Some of the electricity generated in the UK is by plants not covered by the EU ETS and the associated emissions are therefore part of the 'non-traded' sector – i.e. on-site electricity generation by non-EU ETS operators. The carbon price support mechanism would increase the cost of fossil fuels used to generate electricity in the non-traded sector and lead to a reduction in emissions. The non-traded electricity sector is only responsible for around 2Mt/CO2e[8], although this is expected to more than double in the future. However, it is uncertain how these small individual plants would respond and an assessment of the potential reduction in emissions has not been undertaken.

Summary of costs and benefits

60 The individual costs, benefits and Net Present Value for each of the three scenarios across the period are summarised in Table 7. The average annual cost ranges from between £0.2bn to £1.5bn (not discounted) and the average annual benefit ranges from between £0.6bn to £1.4bn (not discounted).

[8] Equivalent carbon dioxide

Table 7: Summary of costs and benefits (2013 to 2030): £billion (real 2009 prices)

	Scenario one	Scenario two	Scenario three
Benefits			
Carbon Savings	£4.9bn	£7.2bn	£12.5bn
Air Quality	£0.4bn	£0.9bn	£2.1bn
Costs			
Resource Costs	£2.1bn	£6.1bn	£16.3bn
Administrative Burden	£0.0bn	£0.0bn	£0.0bn
Net Present Value[9] (Benefits-Costs)	**£3.2bn**	**£1.9bn**	**-£1.7bn**

Impacts on electricity sector investment

61 The impact of supporting the carbon price depends not only on the level of support given, but also crucially on the amount of certainty it provides to investors.

62 In the baseline there is assumed to be considerable uncertainty around the carbon price. Investors are assumed to base their decisions on flat-lining the carbon price at the level prevailing in the year when they make investment decisions. The carbon price support scenarios not only increase the total carbon price but are also assumed to provide greater certainty. Investors are assumed to base their decisions on the combined carbon price level over the five years from the time of the investment decision (after which it is flat-lined).

63 To assess the potential impacts the level of carbon price support is likely to have on investment decisions in the electricity market, analysis has been undertaken using a dynamic model of the Great Britain electricity market developed by Redpoint Energy which simulates investment and generation behaviour. Investment decisions are based on comparing the risk-adjusted long-run marginal costs of all generating technologies by investor type with the expected revenues. This is a simplification of how investment decisions are made in reality and the results presented below should be regarded as purely illustrative of how supporting the carbon price might impact the amount of low-carbon investment.

64 The level of renewable support provided through the Renewables Obligation is set at a level to deliver around 30 per cent renewable electricity generation by 2020 in the baseline – a level consistent with meeting the UK's 2020 renewable energy target - and an indicative level of 35 per cent by 2030. Renewable support is kept at the baseline level across all carbon price support scenarios, meaning that greater amounts of renewable capacity are delivered in the carbon price support scenarios.

65 The assumptions for other key variables affecting investment, namely levelised costs, electricity demand and fossil fuel prices, are consistent with those used for DECC's June 2010 Updated Emissions Projections[10]. Changing these assumptions would have an impact on the modelling results. For example, assuming lower fossil fuel prices would reduce the amount of low-carbon investment (and vice-versa).

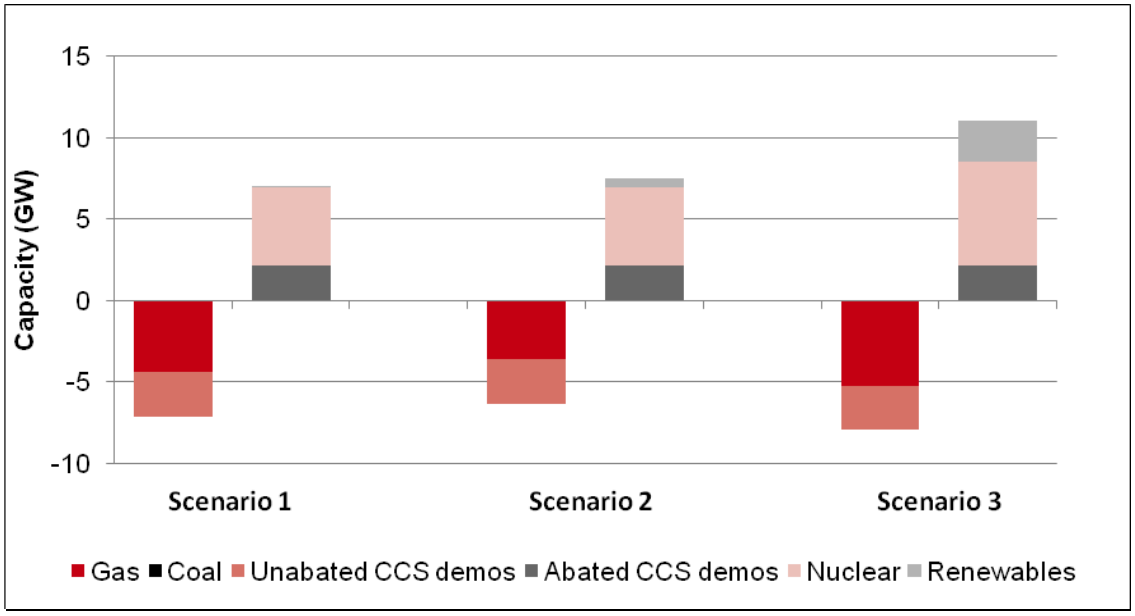
66 The difference in the amount of capacity in each scenario compared with the baseline in 2030 is shown in Chart 2. The impact of the higher and more certain carbon price is to bring forward more low-carbon capacity (renewables, carbon capture storage (CCS) and nuclear). This amount increases the higher the level of carbon price support. In scenario one there is an additional 7.0 gigawatts (GW) of low-carbon capacity by 2030 compared with

[9] Individual costs and benefits may not total the Net Present Value due to the way numbers have been rounded
[10] http://www.decc.gov.uk/en/content/cms/statistics/projections/projections.aspx

the baseline. This rises to 7.5GW in scenario two and 11.1GW in scenario three. In all three carbon price support scenarios the unabated parts of CCS demonstration plants become economic to retrofit with CCS in the 2020s but this does not happen in the baseline.

67 As a result of these increases in low-carbon investment, the average amount of emissions produced per unit of electricity generated falls from 207gCO_2/kilowatt hour (kWh) in 2030 in the baseline to 126gCO_2/kWh in scenario one, then 124gCO_2/kWh in scenario two and 105gCO_2/kWh in scenario three. This compares with around 486gCO_2/kWh in 2010.

Chart 2: Change in capacity mix compared with the baseline in 2030



Source: Redpoint Energy, 2010

68 The amount of gas and coal capacity is lower in the carbon price support scenarios than the baseline in 2030. Coal capacity includes unabated parts of the CCS demonstration plants because it is economically viable to retrofit CCS to some of the originally unabated capacity.

69 In addition, a rise in the carbon price induces a change in the operation of coal and gas-fired plants. Electricity output increasingly switches from coal to less carbon intensive gas-fired generation as the level of carbon price support increases.

Cost of capital

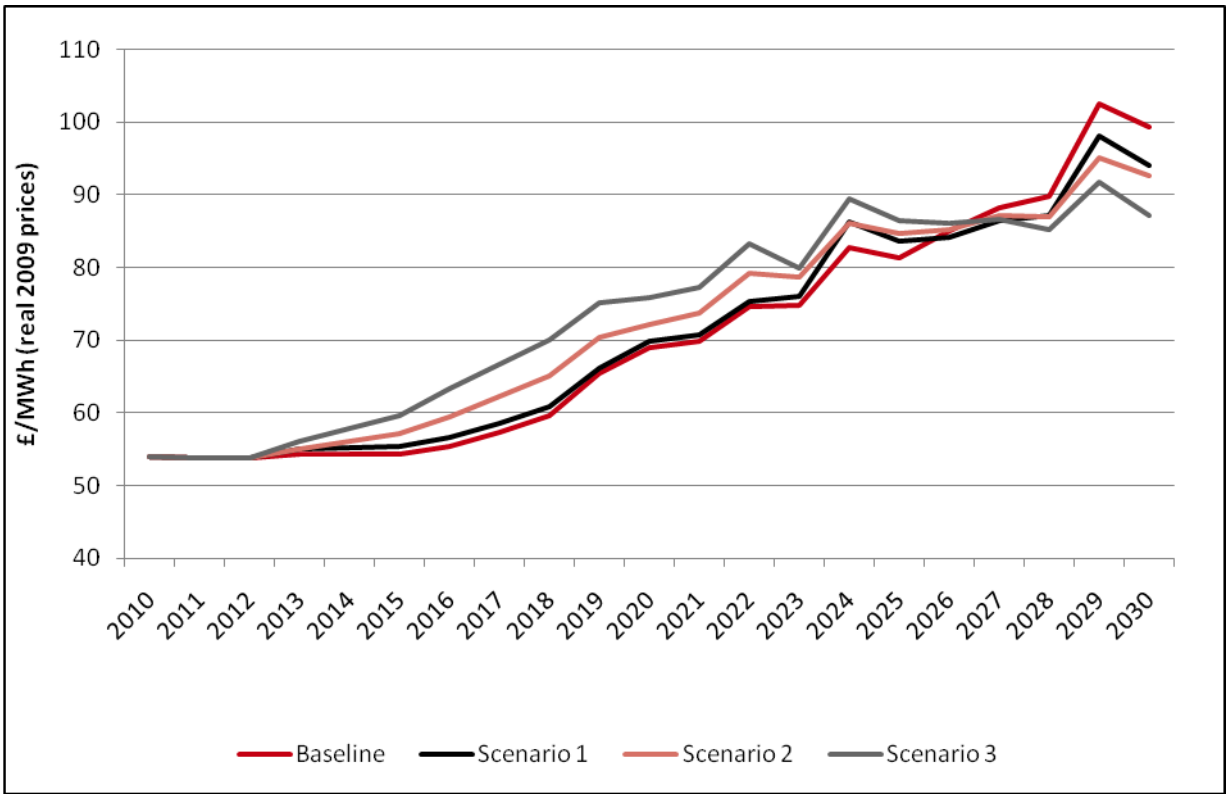
70 The increased investment in low-carbon generation is driven by expectations of higher business revenues, as a result of the higher carbon prices increasing electricity prices. In addition, more certainty of the carbon price and therefore electricity prices are assumed. This reduces revenue uncertainty, so the risk premium is also reduced, therefore lowering the implied cost of capital (hurdle rate) for all technologies (including conventional plants). However, the impact varies across technologies depending on the proportion that the electricity price accounts for of total revenues. For example, in the modelling, carbon price support is assumed to reduce the cost of capital for a biomass plant by 0.3 percentage points and a coal plant with CCS by 0.5 percentage points.

4. WIDER POLICY IMPACTS

Wholesale electricity prices

71 In the Redpoint model the baseload electricity price is a sum of the electricity system short-run marginal cost (which is driven largely by the cost of gas generation but also partly by the cost of gas or coal generation) and an uplift, to reflect the amount of 'spare' capacity (measured by the capacity margin). Chart 3 shows the average (time-weighted baseload) wholesale electricity price under the different scenarios and the baseline.

Chart 3: Time weighted baseload electricity prices (£/MWh, real 2009 prices)



Source: Redpoint Energy, 2010

72 Under the baseline scenario, the wholesale electricity price increases over time to reflect rising fossil fuel prices (particularly gas) and rising carbon prices. Up until 2020, electricity prices in the carbon price support scenarios follow a similar trend as the baseline, but electricity prices are higher as a result of the increased carbon costs for gas and coal plants.

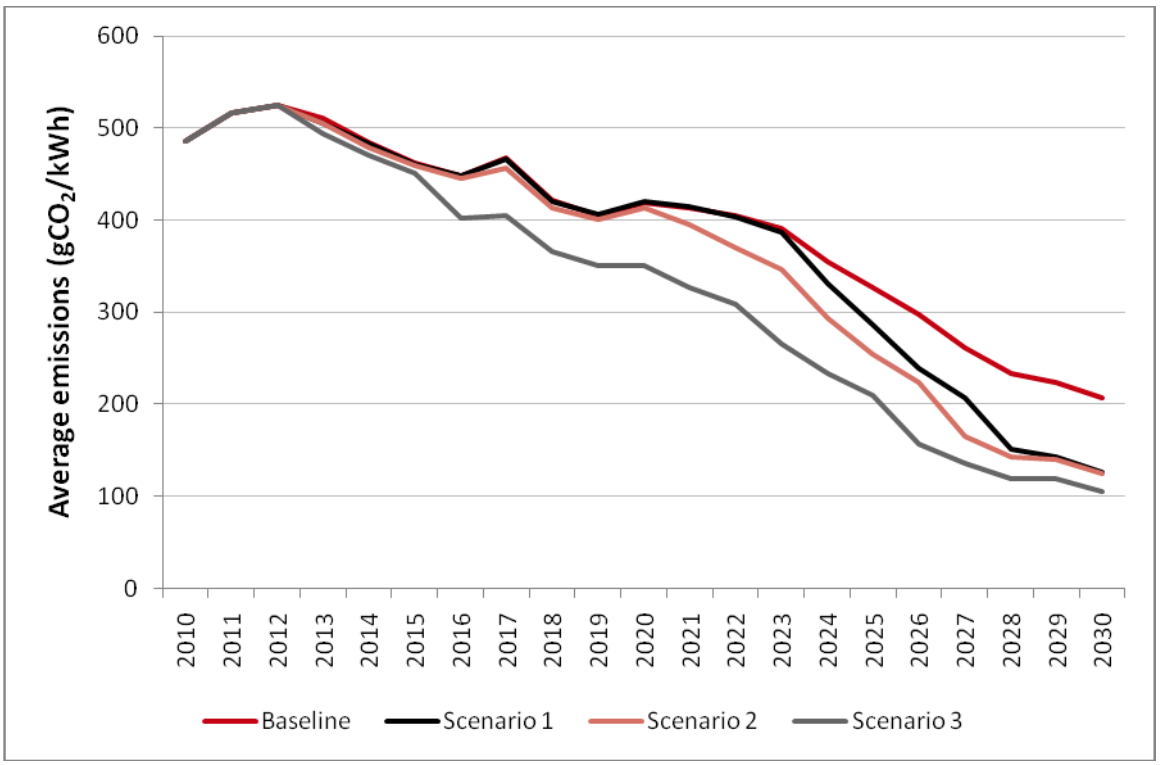
73 In the 2020s, wholesale electricity prices tend to flatten out in the carbon price support scenarios, although prices fluctuate from year to year. By contrast wholesale electricity prices continue to increase in the baseline. As a result, by 2030 prices are higher in the baseline than the carbon price support scenarios.

74 By the late 2020s, there is an increasing amount of low-carbon electricity being generated. This will put downward pressure on wholesale electricity prices. As a result, the overall impact of the carbon price support policy on electricity prices is lower as fewer generators are subject to the carbon price support mechanism. This downward pressure on electricity prices might, in time, reduce incentives for investment in low-carbon electricity generation, which is one of the reasons why the Government is also considering wider reform to the electricity market.

Emissions intensity

75 The average emissions intensity of total electricity generation for the baseline compared with each of the three scenarios is illustrated in Chart 4. In the baseline, average emissions intensity falls from over 500gCO_2/kWh in the early 2010s to around 200gCO_2/kWh by 2030 as coal generation declines and low-carbon generation increases. In scenarios one, two and three emissions intensity falls more sharply than the baseline as a result of greater investment in low-carbon generation technology and, in scenario three, increased switching from coal to gas generation during the 2010s. The greater the level of carbon price support the lower the emissions intensity in 2030, with the result that in scenario three intensity falls to around 105gCO_2/kWh by 2030.

Chart 4: Average emissions intensity of total electricity generation



Source: Redpoint Energy, 2010

Distributional impacts – Businesses

76 Estimates of the impact of carbon price support scenarios on an average medium-sized non-domestic user's electricity bill in 2013, 2016, 2020, 2025 and 2030, in absolute terms and as a percentage change from the baseline electricity bill[11], are set out in Table 8. As with household distributional impacts, this analysis assumes that all carbon price support costs are passed on by electricity generators and the costs of all other policies are unchanged from the baseline scenario[12]. It is also based on DECC's central fossil fuel price assumptions[13].

77 The higher the level of the carbon price support the larger the impact on electricity bills. However, in the late 2020s the impact on bills is negative – i.e. electricity bills are lower in the carbon price support scenarios than in the baseline scenario. This is because the

[11] The policies assumed to be active and unchanged across all scenarios are the climate change levy, Renewables Obligation, EU Emissions Trading System, Products Policy, carbon capture and storage levy, feed-in-tariffs, carbon reduction commitment and climate change agreements. This analysis does not include any other changes to policies resulting from announcements in the Spending Review.

[12] In reality we might expect the cost of certain policies designed to encourage investment in low-carbon electricity generation, such as the Renewables Obligation and carbon capture and storage levy, to fall under higher carbon prices, counteracting some of the direct impact of this policy on energy bills.

[13] http://www.decc.gov.uk/assets/decc/statistics/projections/file51365.pdf

increased amount of low-carbon generation, which has very low short-run marginal costs, puts downward pressure on wholesale electricity prices.

Table 8 Impact on average medium-sized non-domestic user's electricity bill [14] (real 2009 prices)

Year	Scenario one	Scenario two	Scenario three
2013	1%	1%	2%
2016	1%	4%	8%
2020	1%	3%	6%
2025	2%	2%	4%
2030	-3%	-4%	-8%

Source: Department of Energy and Climate Change, 2010

78 Other things being equal, the average medium-sized non-domestic user's annual electricity bill is estimated to increase by between 1 per cent and 2 per cent in 2013, moving to between 1 per cent and 6 per cent in 2020, compared with the baseline. However, by 2030 bills are estimated to be between 3 per cent and 8 per cent lower than in the baseline scenario. The increase in prices above the baseline falls from around 2018 as a greater proportion of low-carbon generation begins to influence the wholesale price.

Carbon leakage and competitiveness

79 A key concern when considering the impact on businesses is competitiveness and the risk of carbon leakage – the relocation of investment or production to countries without carbon constraints – resulting in an overall increase in global emissions and a loss of employment and economic activity for the carbon constrained economy. The impacts on competition from supporting the carbon price are likely to be more severe for energy (specifically electricity) intensive sectors and particularly those that are trade intensive and therefore subject to a high degree of international competition.

80 The published evidence on carbon leakage for the costs of the EU ETS suggests that it is a significant issue for a limited number of sectors. A range of consultants and academics have considered this question (for example, Climate Strategies[15], Oko Institute[16]), and have come to the same conclusion.

81 Carbon leakage can occur as a result of either direct emissions (an installation's own process and combustion emissions) or indirect emissions (the carbon cost that passes through to end consumers in electricity prices). The carbon price support scenarios might lead to increases in average non-domestic retail electricity prices of between 1-2 per cent in 2013 and 1-6 per cent in 2020. This is likely to have a significant impact on a small, but important number of energy intensive sectors in the UK.

82 The Department for Business, Innovation and Skills and DECC are working on a joint project looking at the cumulative impact of energy and climate change policies on energy intensive industries in the UK. The research will be used to advise Ministers on how to decarbonise the economy while maintaining the competitiveness of these industries.

[14] Non-domestic energy consumers include industry, transport, public administration, commercial and agricultural industries. A medium-sized gas user is defined by an annual consumption of between 2,778 and 27,777MWh of gas. A medium-sized electricity user is defined by an annual consumption of between 2,000 and 19,999MWh of electricity. The mid-points of these ranges have been used for this analysis.

[15] *Leakage in a world of unequal carbon prices*, Climate Strategies, Droge et al (2009); *Differentiation and Dynamics of EU ETS Industrial Competitiveness Impacts*, Climate Strategies, Hourcade et al (2007.

[16] *Impacts of the EU Emissions Trading Scheme on the Industrial Competitiveness in Germany*, Oko Institute, Graichen et al (2008).

Sectoral impact

83 Based on initial analysis of energy and trade intensity, the Government considers that the sectors most impacted by carbon price support, taking into account the existing CCL, are as follows:

- aluminium production;
- cement production;
- chemicals-industrial gases, fertilisers;
- clays and kaolin;
- glass manufacture;
- iron and steel manufacture;
- lime production;
- malt production;
- non-woven textiles; and
- paper manufacture and woodboard manufacture.[17]

84 There might be a reduction in profit margins for these sectors, assuming businesses cannot pass on the extra electricity costs they face and have to absorb them entirely. In reality, businesses are likely to pass on some of these costs to consumers and the effect on their profit margins might be smaller.

85 The three carbon price scenarios will have varying impacts on electricity prices faced by industry. Electricity prices increase from the baseline levels in most years then decrease in later years.

86 The extent to which the operating costs and profits are likely to be affected by the proposed policy change depends on market and industry structures. Wider impacts concerning competitiveness, imports and exports are discussed in further detail below.

Fuel switching

87 Other things being equal, an increase in the cost of electricity from fossil fuels relative to other sources of energy supply could encourage some switching where the alternative source of energy is considered more economic. Where this involves switching to the direct use of fossil fuels for users who are not part of the EU ETS, then this will increase emissions in the non-traded sector. For example, companies (in the paper, print, publication and textiles industries) that require bulk heat for drying in their processes and currently use electricity to produce this heat, might be incentivised to switch to using gas to generate this heat, particularly over the long term. There are also implications for the take-up of low-carbon technologies that require electricity supply for their operation – for example, ground source heat pumps and electric vehicles.

Imports and exports

88 The importation and exportation of electricity is limited by the current capacity of interconnections to around 3 per cent of total UK generation capacity[18]. In practice, the majority of imported electricity is derived from nuclear power stations in northern France (via

[17] It is recognised these are distinct sectors, however there is some similarity in their use of raw materials and woodboards are a very small sector, therefore for the purpose of this list, they have been grouped together.

[18] In 2009, net imports of electricity accounted for less than 1 per cent of total UK electricity supply.

a 2000MW interconnector). There is a further interconnector for electricity traded between Northern Ireland and Ireland (600MW), which currently results in a net export of electricity to Ireland[19]. Since 1 November 2007, there has been a single electricity market in Ireland and Northern Ireland with the trading of wholesale electricity carried out on an All-Island basis. By 2012, interconnection capacity for the UK electricity market is expected to increase by around 1500MW, with new links to the Netherlands and Ireland. By 2020, capacity could increase by a further 4000MW.

89 Supporting the carbon price would increase costs for UK electricity generators using fossil fuels and increase UK wholesale electricity prices, relative to outside the UK. Other things being equal, this would increase the incentive for importing electricity into the UK and reduce incentives to export electricity outside the UK. The higher the level of carbon price support the stronger these incentives. However, we do not envisage that increasing the proportion of electricity imported into the UK through supporting the carbon price would have significant implications for the operation of the UK electricity market or for the security of UK electricity supply.

Distributional impacts – Individuals and Households

Electricity bills

90 Estimates of the impact of the carbon price support scenarios on an average household electricity bill (see Annexes for the definition) in 2013, 2016, 2020, 2025 and 2030 (inclusive of VAT at 5 per cent) are shown in Table 9. This analysis assumes that the costs of all other policies (such as the Renewables Obligation) are unchanged from the baseline. In reality, supporting the carbon price would lower the cost of some other policies designed to support low-carbon investment, thereby reducing the overall impact on bills. This is because when the electricity price is higher, technologies such as renewables need a lower level of support through other mechanisms, such as the Renewables Obligation. As with the impact on non-domestic users, the higher the level of carbon price support the greater the impact on household electricity bills and this impact becomes negative in the late 2020s as increasing amount of low-carbon generation puts downward pressure on wholesale electricity prices (compared with the baseline scenario).

Table 9: Potential impact on average household annual electricity bill (in real 2009 prices) (£ per year)

Year	Scenario one	Scenario two	Scenario three
2013	1% (£2)	1% (£2)	2% (£7)
2016	1% (£4)	3% (£14)	6% (£28)
2020	1% (£3)	2% (£11)	5% (£23)
2025	1% (£8)	2% (£12)	3% (£18)
2030	-3% (-£20)	-4% (-£26)	-7% (-£48)

Source: Department of Energy and Climate Change, 2010

91 Other things being equal, average household annual electricity bills increase by between £2 (1 per cent) and £7 (2 per cent) in 2013, rising to between £3 (1 per cent) and £23 (5 per cent) in 2020 compared with the baseline scenario. The impact on bills is lower from 2020

[19] There is also a 500MW interconnector that links Scotland to Northern Ireland.

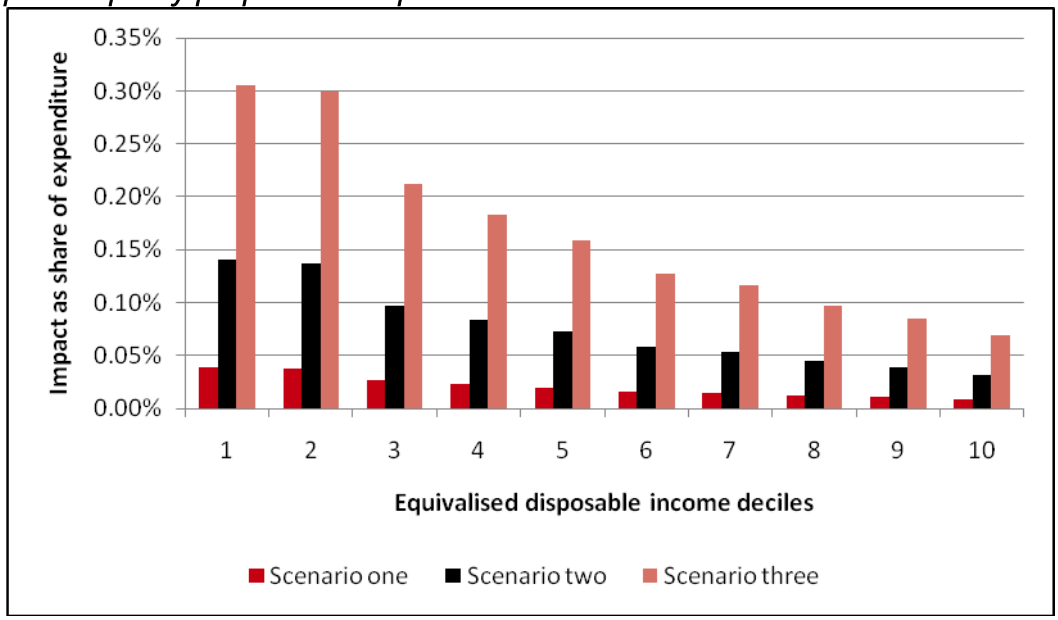
because of the profile of wholesale electricity prices in Chart 3. To put this into context, retail electricity prices have risen on average by 7 per cent since April 2010.

92 Post 2020, the impact on retail electricity bills is more uncertain, but the electricity wholesale prices in Chart 3 suggest that, relative to the baseline, the impact of the carbon price support scenarios would mean lower household electricity bills from the mid-2020s compared with the baseline scenario. By 2030, bills could be between £20 (3 per cent) and £48 (7 per cent) lower than in the baseline.

93 Distributional analysis gives a better idea of the affordability of the impact for different households by looking at the increase in the energy bill as a percentage of expenditure (in addition to the absolute and percentage increase in the bill). Households with higher levels of electricity consumption will face a larger bill increase from the same increase in price. However, poorer households, although facing a lower absolute increase in their electricity bill due to lower levels of consumption, will expend a larger proportion of their expenditure on electricity compared with the baseline.

94 Distributional analysis of expenditure shows that in 2020 the average household in the bottom two income deciles is estimated to spend an extra 0.04 per cent of its expenditure on electricity in scenario one compared with the baseline (Chart 5). By contrast, the average household in the top income decile is estimated to spend an extra 0.01 per cent of its expenditure on electricity after taking into account other climate change policies.

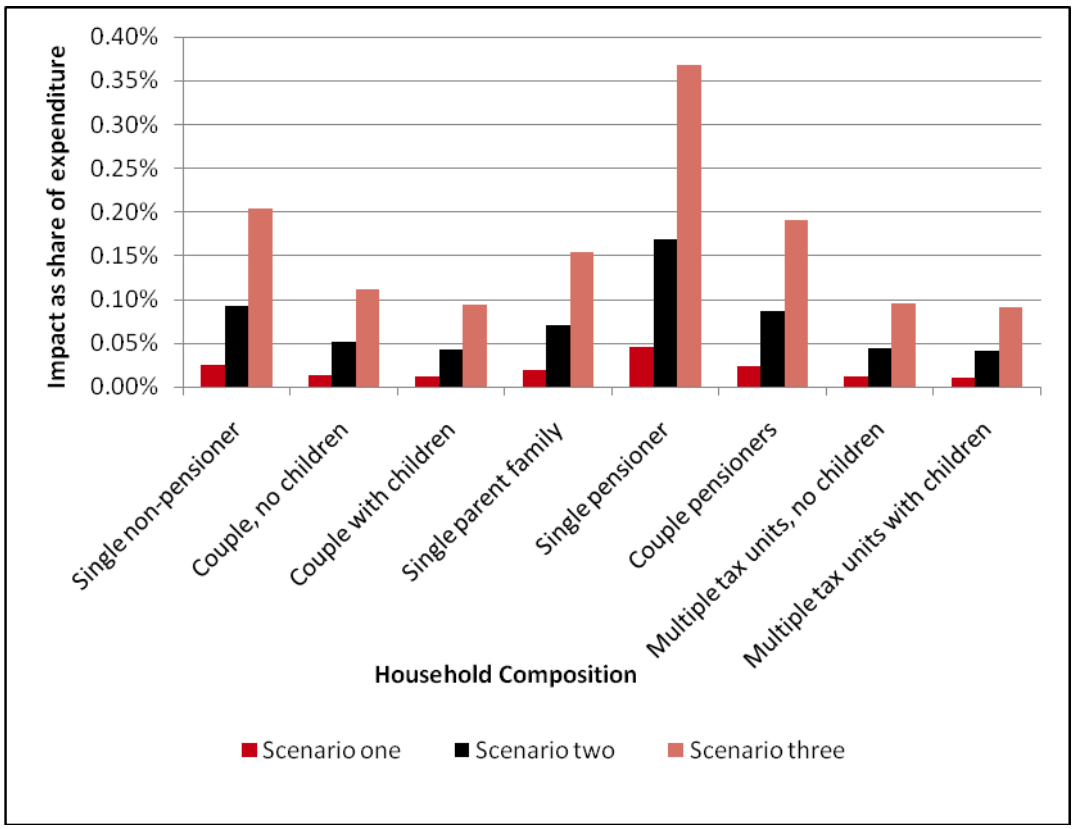
Chart 5: Impact of policy proposal on expenditure across income deciles in 2020



Source: Department of Energy and Climate Change, 2010

95 The bills impact in 2020 across different household compositions is shown in Chart 6. The impact in terms of share of expenditure spent on electricity is greatest for single pensioners who would spend an extra 0.05 per cent of their expenditure on electricity in scenario one, 0.17 per cent in scenario two and 0.37 per cent in scenario three. These levels will vary for different households.

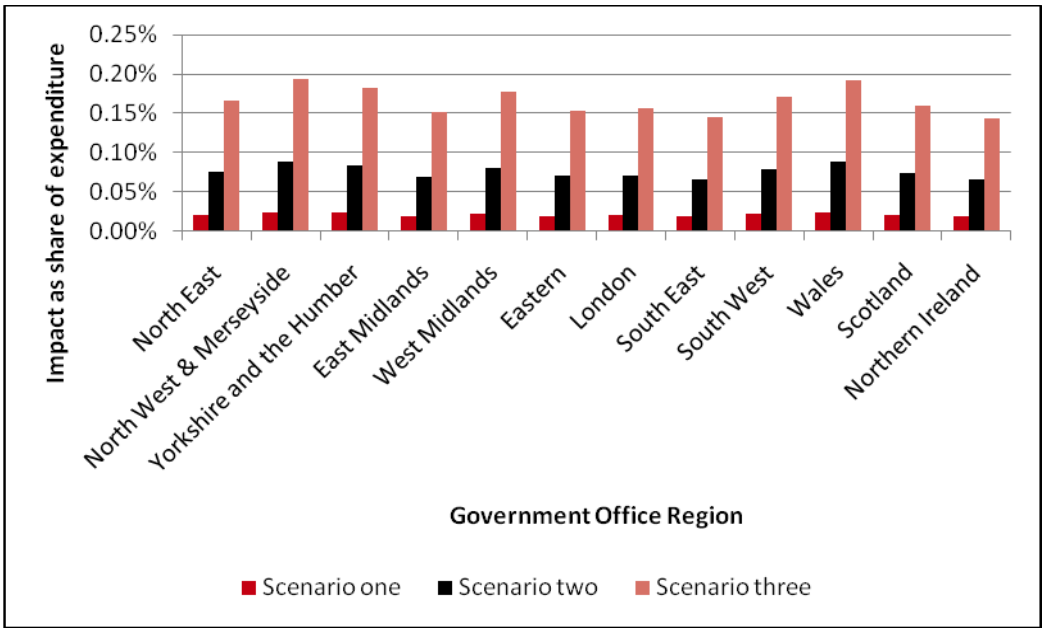
Chart 6: Impact on bills in 2020 across households



Source: Department of Energy and Climate Change, 2010

96 The impact, in terms of share of expenditure spent on electricity in 2020 varies across regions. The greatest bills impact would occur in Wales and North West & Merseyside where households would spend an extra 0.02 per cent of their expenditure on electricity in scenario one, 0.09 per cent in scenario two and 0.19 per cent in scenario three.

Chart 7: Impact on electricity expenditure in 2020 across regions



Source: Department of Energy and Climate Change, 2010

Fuel poverty

97 Estimates of the impact on fuel poverty, as defined for the purposes of the Warm Homes and Energy Conservation Act 2000, in England under each scenario in 2013, 2016 and 2020 are shown in Table 10. The number of households in fuel poverty in England is currently projected to be 4 million in 2010 (DECC, Fuel Poverty Statistics, 2010). Fuel poverty is defined as households who spend at least 10 per cent of their income on fuel in order to achieve an adequate standard of warmth (21˚ Celsius in the main living area, 18˚ Celsius elsewhere).

Table 10: Increase in fuel poverty (number of households) in England per year

	Scenario one	Scenario two	Scenario three
2013	10,000 – 20,000	10,000 – 20,000	30,000 – 60,000
2016	20,000 – 40,000	80,000 – 110,000	140,000 –225,000
2020	10,000 – 20,000	50,000 – 90,000	100,000 – 200,000

Source: Department of Energy and Climate Change, 2010

98 The above table shows the impacts of the carbon price support mechanism but does not take into account potential reductions in fuel poverty from other Government policies. The Government is committed to reducing fuel poverty and supporting vulnerable consumers, as far as is reasonably practicable, as well as ensuring secure and affordable energy supplies. On its own, an increased wholesale electricity price would tend to increase the risk of fuel poverty for some households. But it is important to consider the effects of Government's policies as a whole against these aims, rather than each in isolation.

99 The Spending Review committed the Government to a substantial and coherent set of measures to address fuel poverty. Social Price Support is being expanded and put on a mandatory basis to assist vulnerable households with their energy bills and will be worth £310 million a year by 2014-15. The Energy Company Obligation will supersede the Carbon Emissions Reduction Target scheme and work alongside the Green Deal to focus additional support on those most vulnerable to fuel poverty. Without any action, the Government could not meet its objectives for secure and low-carbon energy or for protecting consumers and those vulnerable to fuel poverty. Through implementing both the measures put forward in this consultation and those being introduced to address fuel poverty, the Government can make progress on both objectives.

Interactions with other policies

100 Analysis is needed to assess the interaction of supporting the carbon price with other policies and reforms that are also seeking to improve the investment case for low-carbon energy technologies, as well as those aimed at improving energy efficiency and also security of supply. In particular, the Government is considering how this policy interacts with the wider set of reform options in the electricity market reform consultation (including feed-in tariffs for low-carbon generation, emissions performance standards and security of supply guarantees). The Government is publishing a consultation on these reforms alongside the carbon price support consultation and this will include such an assessment.

101 Combining a carbon price support mechanism with other policies, such as feed-in tariffs, could reduce the overall costs to the economy of supporting additional low-carbon generation investment. As such, some of the impacts outlined in the above sections could be smaller in a combined package of options. This issue is explored in more detail in the consultation on wider electricity market reforms.

EU ETS carbon price

102 If the EU adopts a 30 per cent EU ETS emission cap (from the current 20 per cent), the carbon price will increase. This would have implications for the rates at which fossil fuels used to generate electricity could be taxed under the proposal in this consultation in order to maintain a 'target price' for carbon.

Climate change agreements

103 The Government announced in its Annual Energy Statement that it is reviewing the future of climate change agreements which currently grant an 80 per cent (65 per cent from 1 April 2011) reduction on CCL if eligible sectors meet energy efficiency targets agreed with the Government. The review will take account of the carbon price support proposals made in this consultation paper and the responses to consultation. More details will be published in due course.

5. SPECIFIC IMPACT ASSESSMENTS

Competition assessment

104 The proposals relate to all UK electricity generators (whether existing or new) and do not directly limit their number or range.

105 The proposals would increase the cost of fossil fuels, according to their carbon content, used to generate electricity in the UK. While the proposals would apply equally to all electricity generators, this would change the costs of some existing electricity generators compared with others, depending on their mix of electricity generating technologies. However, given that generating companies typically have a mixed generation portfolio and that the option to invest in alternative forms of generation is open to them, the proposal should neither limit their number or their ability to compete. Indeed, providing greater certainty over the future carbon price should make new entry into the generation market easier by reducing the cost of capital and expanding the range of finance available.

106 The proposals would also raise electricity prices for UK businesses that consume electricity. For most businesses/sectors the increase in costs will be a small proportion of total costs and should not therefore limit their number or ability to compete. For those sectors where electricity costs are a significant proportion of total costs, all businesses in the sector have the same opportunities to reduce the impact of the proposal on their costs. The proposal should not therefore limit their ability to compete with each other.

107 The proposals do not involve a change to the mechanisms through which electricity is bought or sold and should not therefore reduce the incentives for UK electricity generators to compete with each other. Imports of electricity may become more competitive and some consumers may switch to using other fuels. However, the impact on competition is unlikely to be appreciable due to the modest share of the market these are ever likely to represent.

Small firms impact test

108 Some small businesses might be affected by the proposals, as the transitional compliance costs might represent a slightly higher burden relative to larger businesses as a percentage of their fixed operating costs. However, arrangements for smaller businesses should be less complex than those of larger businesses. This should mean that less time is spent on the transitional compliance burdens and therefore we would not expect them to incur any material disadvantage implementing this change relative to larger businesses.

109 See distributional impact analysis (section 76 – 89) for potential impacts on electricity bills.

Legal aid

110 No new criminal sanctions or civil penalties would be introduced as a result of this change. Businesses registered for CCL and relief recipients would be required to comply with the existing CCL legislation and regulations.

Sustainable development

111 We expect that this change will contribute to the Government's commitment to sustainable development, which consists of five principles:

- living within environmental limits;
- ensuring a strong, healthy and just society;
- achieving a sustainable economy;
- promoting good governance; and
- using sound science responsibly.

Carbon assessment

112 See paragraphs 53-58.

Other environment

113 A reduction in the use of fossil fuels used for electricity generation would have benefits for air quality. The discounted value for improvements in air quality throughout 2013-2030 range between £0.4 billion in scenario one and £2.1 billion in scenario three (see Table 6). The proposal would have little other overall environmental impact although the transitional costs might generate a small amount of paper waste and additional atmospheric emissions from the paper consumption and transport requirements.

Health impact

114 The reform would not be expected to have any negative impact on health, well-being or health inequalities. An improvement in air quality is likely to have a positive health impact, the extent of which has not been quantified.

Race, disability and gender equality

115 The proposed changes to the CCL exemptions and amount of fuel duty reclaimable would impact directly upon fossil fuel suppliers and electricity generators. The distributional analysis in this Impact Assessment (section 90 – 99) illustrates the impact upon bills and specifically fuel poverty. An initial assessment of relevance ascertained that additional Equality Impact Assessment work needs to be carried out and a full Equality Impact Assessment will be prepared and published following this consultation.

116 The Government is committed to focusing the available resources where they will be most effective in tackling the problems underlying fuel poverty. The Spending Review announced the intention to initiate an independent review of the fuel poverty target and definition before the end of the year.

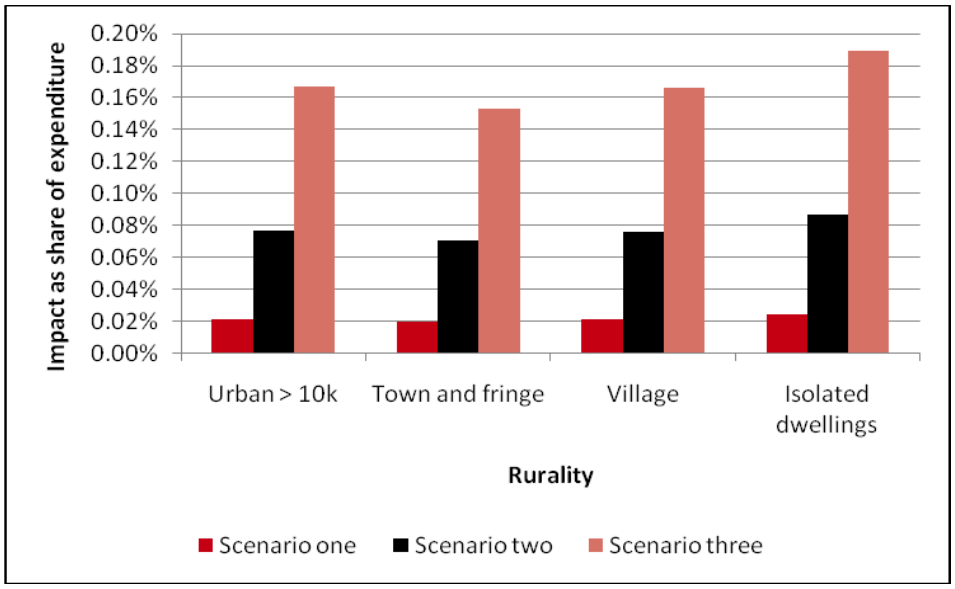
Human rights

117 After initial screening, we identify that the new process does not impact upon human rights.

Rural proofing

118 The impact of electricity bills as a share of expenditure categorised by rurality for each of the scenarios in 2020 is presented in Chart 8. The greatest impact would occur in isolated dwellings where households would spend 0.02 per cent of expenditure on electricity in scenario one, 0.09 per cent in scenario two and 0.19 per cent in scenario three.

Chart 8: Impact on electricity expenditure by dwelling



Source: Department of Energy and Climate Change, 2010

Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.

Type of testing undertaken	*Results in Evidence Base?*	*Results annexed?*
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	Yes	No

Annexes

Annex A: The 'Standard Cost Model' (SCM)

1) The 'Standard Cost Model' (SCM) has been used to derive an estimate of the costs to business of complying with obligations to disclose information to HMRC or to third parties. The SCM considers which activities a business has to undertake to comply with HMRC obligations and requirements, how many businesses have to comply, and how often they need to comply. The SCM considers the burdens which apply to different sizes of business and whether they outsource their compliance activities. It also differentiates between businesses which use e-solutions and those which do not.

2) The SCM estimates the costs of using agents and other external providers; the costs of undertaking work in-house, using a pre-defined set of activities; and the costs of actually transmitting the information. The SCM does not consider one-off costs or the transitional costs arising from a change in policy. The SCM does not consider costs which a business would have incurred anyway had the relevant HMRC obligation or requirement not existed. It considers the costs which apply to a normally efficient business. The SCM does not consider any wider compliance cost issues, such as the costs of business uncertainty or cash flow costs. The SCM figures in this Impact Assessment are based on wage rates, prices and populations which existed in May 2005 and uplifted to 2009 prices.

Annex B: Distributional Impact Analysis: Methodology

1) The absolute bill impact for the distributional analysis was estimated as the change in wholesale prices due to the carbon price support (including the carbon price component) multiplied by final electricity consumption (and 5 per cent VAT for domestic customers).

Assumptions

2) The analysis:

- was based on DECC's fossil fuel price scenario consistent with an oil price of around $80 per barrel in 2020; and
- assumes no elasticity impacts – i.e. it does not include a second round effect of reduced electricity consumption as a result of higher prices.

Average household definition

3) For the estimated impacts on average households electricity bills, the 'average household' is not a definition related to anything other than energy consumption. Total electricity consumption from the Digest of United Kingdom Energy Statistics (DUKES) has been divided by the number of households to get average consumption per household before applying the impacts of policies.