Carbon Price Floor: Support and certainty for low-carbon investment – Consultation response of the Scotch Whisky Association

Introduction

The Scotch Whisky Association[1] welcomes this important consultation on proposed changes to the Climate Change Levy (CCL) reliefs that are currently available to electricity generators.

The Scotch Whisky industry has taken an active role in reducing both energy use and greenhouse gas emissions. Through their participation in the spirit drinks sector's Climate Change Agreement (CCA), distillers have improved energy efficiency by 18% since the 1999 baseline and in doing so have met four stretching biennial energy efficiency targets. The industry has also set itself ambitious climate change targets under the umbrella of our award-wining Environmental Strategy[2]. The targets relating to energy efficiency, mitigating greenhouse gas emissions and substituting fossil fuels are challenging and will require significant investment, coupled with an understanding policy framework.

Distillers have a long history of investing in energy saving projects. In the CCA target reviews, held in 2004 and 2008, we were able to point to over £27m of investment made by distillers specifically to meet their stretching energy-efficiency CCA targets. The industry is currently investing over £400m in new plant, much of which will help mitigate climate change, including significant investments in renewable energy projects.

Comments on the proposals

We are concerned on the potential increased cost the carbon support price (CSP) will add to electricity. UK businesses are likely to face the cost of the CCL on the electricity they purchase, cost pass through of large generators EU ETS costs, and the additional likely cost pass through of the CSP. We are also concerned on the impact the proposal will have more generally on the competitiveness of UK business. Increasing the cost of production in the UK reduces the competitiveness of successful export driven sectors such as Scotch Whisky. Scotch Whisky is one of the UK's leading exports. In 2009, Scotch Whisky contributed over £3.13 billion to the UK balance of trade (exports to 200 global markets earned £99 every second). Despite these impressive figures the sector is highly exposed to international competition and vulnerable to carbon leakage. Scotch Whisky is a GI (geographical indicated) spirit drink – it may only be produced in Scotland, just as Cognac may only be produced in the Cognac region of France. It would be inequitable if Scotch Whisky distillers

[1] The Scotch Whisky Association (SWA) is the trade association representing 90% of the Scotch Whisky industry. SWA members are distillers, blenders, bottlers and those engaged in the wholesale and export trade in Scotch Whisky.

[2] Scotch Whisky Industry Environmental Strategy (scroll down page to Environmental Strategy section)

were to face further increased costs whilst the production of other competing drinks moves overseas where costs may be lower. Despite being tied to Scotland, the industry is still at risk of carbon leakage if consumers switch to other products which do not face the same cost increases. We note with interest in the impact assessment that The Department for Business, Innovation and Skills and DECC are working on a joint project to investigate the cumulative impact of energy and climate change policies on energy intensive industries. We would be delighted to participate in that research.

Our understanding is that the proposal, to implement the CSP, will only apply to fossil fuels that are used to generate electricity, and not to other energy sources, such as by-products, that may be used to generate electricity or heat. Clearly it would be wrong to apply the CSP to renewable forms of energy, such as distillery by-products which are used to generate electricity or heat. Please advise if our understanding is not correct.

We are not convinced that the proposed mechanism will create business certainty. Presumably the rate of the CSP will need to be fixed in advance. However, the mechanism as we understand is to effectively 'top up' the EU ETS price to a target price as suggested in chart 4.A. As other charts in the consultation paper show, the cost of EU ETS allowances has fluctuated dramatically. If the CSP is to generate certainty in the price of carbon, it will need to be flexible enough to be either increased or decreased according to the level of the EU ETS price.

The proposals are likely to have a significant impact on businesses which generate electricity at efficient Combined Heat and Power (CHP) plants, as they will be exposed to the CSP tax. Currently, operators who generate electricity at Good Quality CHP installations are eligible to benefit from a 100% rebate from the CCL on the CHP input fuels.

CHP has helped the UK to mitigate its carbon emissions as the technology delivers both electricity and usable heat in an energy efficient process. Installing a CHP plant requires considerable investment. One member company has made a significant multi-million pound investment in a Good Quality CHP plant at one of its sites. At the same site the company has also made a significant investment in a large anaerobic digester which converts spent wash from the distilling process into zero carbon electricity. Despite these investments in technologies which have helped to decarbonise the UK's electricity supply, companies such as this will be heavily penalised. Clearly this is wrong. One perverse consequence of the CSP is that operators of CHP plants may choose to produce less electricity or even shut the plants down if the financial metrics change. Such a scenario will make it more difficult for the UK to meet its binding climate change targets.

The table below shows how the proposals might affect a company operating a CHP plant (figures are illustrative only). It is assumed that the rate of the CSP is tied to the current rate of the CCL. The proposals appear to increase that company's tax burden by almost £0.25m per annum.

	Current	Proposed
CHP input fuel (natural gas)	150,000,000 kWh	150,000,000 kWh
Rate of CCL rebate	100%	-
Rate of Carbon Support Price	-	0.164 pence per kWh
Cost of tax	**£0**	**£246,000**

The imposition of such a significant additional tax burden is likely to affect the pay-back assumptions that informed the decisions to invest in CHP. Changing the goalposts now is

unfair on those companies who took early action to mitigate their emissions by investing in CHP. As already suggested, depending on the rate of the CSP tax, operators may shut down their CHP plants. Business needs certainty when making large investments in new technologies. In continually changing the policy landscape, there is a real danger that companies might be put off making investments in low carbon technologies.

What is not clear in the consultation is that if a CHP plant is located at a facility that is covered by a Climate Change Agreement, whether the company will be able to benefit from a reduced rate of the CSP. We believe that if the CSP is introduced, sites which are covered by a CCA (or alternative measure – see below) should be able to benefit from a similar rebate from the CSP.

The timing of the proposed change unfortunately coincides with the planned expiry of the Climate Change Agreements (31 March 2013). At the moment the Government has not committed to extending the CCAs (or introducing an alternative replacement scheme) beyond 2013, although we do expect a consultation later this year. As things stand, distillers who operate CHP plants face a significant increase in their tax burden if the CCL rebate is removed and if the CSP is introduced as planned on 1 April 2013.

We believe that if a CSP is to be introduced, scope should be built in to exempt operators of CHP plants who export electricity to the grid and whose prime business interest is not in the generation of electricity. A simple way to determine this is to introduce an exemption for operators of Good Quality CHP plants whose electricity exports are less than, say, 50% of the energy outputs of the CHP plant. Under this proposal the following GQCHP plant would be exempt from the CSP:

Heat (used on site):	100,000,000 kWh
Heat (exported):	0 kWh
Electricity (used on-site):	30,000,000 kWh
Electricity (exported):	20,000,000 kWh
Total energy from CHP:	**150,000,000 kWh**
Total energy exported:	13%

Data to determine the above is readily available.

Comments on the consultation questions

Investment

3.A1 What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

We expect that the carbon price in 2020 and 2030 to be considerably higher than the current price of carbon traded on EU ETS.

3.A2 If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

This would probably help to increase investment in low-carbon electricity generation. However, as our earlier comments suggest, we are concerned that the ever-changing policy landscape has not created business certainty. For

example the decision to retain Carbon Reduction Commitment (CRC) Energy Efficiency Scheme revenues instead of being recycled back to participants as originally promised. If a CSP is to be introduced the overall target price for carbon should be set in advance. The CSP would then need to be adjusted to take into account the fluctuations in the EU ETS price to ensure that the overall cost of carbon does not escalate. Revenues raised from the CSP tax should be used exclusively to provide financial incentives for businesses to invest in low carbon energy.

3.A3 How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

Probably no more so than if introduced under another mechanism as levels of taxes are prone to change.

3.A4 In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

Yes. Grid access needs to improved, particularly in more remote areas. Whilst we welcome the upgrade to the Beauly to Denny transmission line, many distilleries are located in remote areas where the electricity grid is not sufficient in many cases to allow industrial generators to export surplus electricity. Clearly this needs addressing if decentralised low carbon electricity generation is to increase.

Types of generator

4.C1 Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

No. Businesses which operate GQCHP plants and auto generators should be exempted from the CSP. Although they generate electricity and may export some to the grid, those companies are not primarily electricity generators, and they have made significant investments in CHP technology. Depending on the level of the tax, companies my chose to reduce the amount of energy generated or even close their CHP plant. This will remove a certain amount of energy efficient electricity generation capacity from the UK's electricity supply. The consequence of this is that green house gas emissions may increase if those companies then buy in grid electricity and burn gas to generate heat.

4.C2 Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

Yes. Our suggestion is to exempt GQCHP from the CSP. If this is not to be considered our proposal (see above) is to exempt GQCHP plants from the CSP if the electricity exported is less than, say, 50% of the total energy (heat and electricity) generated by the CHP plant.

The Scotch Whisky Association
11 February 2011

Carbon Price Support – SSE response

1. Executive Summary

SSE believes that strengthening the long-term carbon price signal is an important element of EMR. In particular, visibility on the carbon price beyond 2020 is needed, given the uncertainty over the status of the EU ETS after that date, and the timing of investments. In designing Carbon Price Support (CPS), HMT and DECC need to ensure that it:

(i) is set to deliver a 'bankable' carbon price trajectory. This means the tax should be adjusted so the overall carbon price (EUA and CPS) is never outside a narrow range, and the trajectory needs to be set for a long period in advance. This is similar to the approach suggested by the Prime Minister for the fuel price escalator and moves away from a tax which can be changed every year at the complete discretion of Treasury, which is not a viable basis for investment and is not bankable. In this way, it is vital that HMT finds a method to 'fetter its discretion' on setting the tax levels and the overall trajectory;

(ii) increases investment but does not unnecessarily raise customers' bills or distort the market through undue windfall gains and losses to existing generation. Between 2013 and 2020 the trajectory should be set to 'guarantee' prices currently expected from the EU ETS are realised (i.e. the tax will only be activated if EUA prices fall below expected levels). In 2020, when the majority of low carbon capacity is likely to start operation. In 2020 a total carbon price in the range £20-£30/tonne is likely to be appropriate.; and

(iii) does not result in UK carbon prices being substantially higher than prices in mainland Europe. This would place UK generators and major users at a significant cost disadvantage and result in a significant increase in interconnector imports[1].

Providing these conditions are met, SSE believes CPS can help enhance investment and ensure the merit order favours low carbon.

In relation to Electricity Market Reform (EMR), SSE believes a robust carbon price and a reward for capacity are important in meeting climate change and energy security goals cost-effectively. In this way, SSE is supportive of CPS and a general capacity mechanism as market-based methods of reforming the market.

However, DECC's proposals for Contracts for Differences (CfDs) and a targeted capacity intervention would represent a very high level of central control over the electricity market. Very little scope for market decision-making and competitive differentiation would remain and policy risk would increase substantially. As a result, the motivation for the private sector to invest, particularly in the development stage of large projects, would be considerably

[1] For example, a carbon price differential of around £5-£10/tonne would theoretically make it more cost-effective to build a CCGT abroad with a corresponding interconnector, rather than build a CCGT domestically.

undermined and many of the key benefits of liberalised markets (competitive pressure on costs; innovation; responsiveness to shocks and uncertainty) would be lost.

Assessing the impacts of CPS in isolation is very difficult due to the interaction with other EMR reform options. Given that the timetable for deciding and implementing EMR reforms has been pushed back, there is also a strong case for doing likewise to the CPS implementation to ensure it is complementary and consistent.

2. Consultation Questions

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

Estimating the likely carbon price between 2020 and 2030 is very difficult because there are many uncertainties, not least whether the EU ETS will still exist in that period. However, the range of possible carbon prices is a major feature in all investment decisions and SSE aims to ensure investment plans are robust to different carbon price scenarios. In this way, greater certainty around the likely carbon price can help to de-risk investment decisions.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Yes, assuming greater certainty could be achieved, investment could be enhanced depending on the level of CPS. For technologies where a higher proportion of the revenues are coming from subsidy rather than the wholesale market (e.g. offshore wind) the carbon price risk is less of an issue for investment.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

If, as proposed, it were a tax which can be changed from year to year then investors will attribute very little certainty to the support mechanism.

To provide certainty, HMT needs to find some way to 'tie its hands'. For example, it could delegate tax setting to an independent body or put the carbon tax setting mechanism into legislation and, as far as is possible, make this legally binding across terms of parliament. Contractual approaches to delivering a carbon floor (such as a contract for differences around the *carbon price*) may also be preferable to a discretionary tax as these can have a stronger and more enduring legal basis.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

Yes, a general capacity mechanism is required to ensure sufficient investment in flexible generation (and other demand side security of supply measures). The current market

framework is already deficient in rewarding investment in system reliability, as large sections of the market can effectively avoid long-term costs of providing this 'insurance' by contracting on a short-term basis (i.e. there is not a fully developed market for reliability). As the level of inflexible plant on the system increases (i.e. wind and nuclear), these problems will be exacerbated, with thermal plant becoming increasingly reliant on infrequent and uncertain price spikes to pay back investment. Combined with uncertainty around market reform, there are now serious concerns over whether sufficient investment in firm capacity will come forward over the coming decade.

Crucially, the mechanism must cover all capacity, including demand side resource. Any mechanism which attempts to pay only a subset of capacity (e.g. only peaking or new) will simply increase risks for all other types of investment. The 'targeted mechanism' proposal could be highly damaging. With the potential for centrally-tendered plant (and uncertainty around the timing and volume of this) market-based investment would be sterilised. Developers would be concerned that if they did invest this would be 'crowded-out' by tendered plant and hence would hold back investment or may even strategically defer investment in the hope of securing a tender. Tenders of new plant would also force premature closure of existing plant – raising the overall costs of securing an adequate capacity margin. This would all lead to a 'slippery-slope' - where an increasing amount of plant is tendered for and the role of the market eroded.

Conversely, a general capacity payment could substantially de-risk investment in capacity, reduce costs of finance and bring forward the most cost-effective forms of capacity. Therefore, costs facing the consumer would be limited to what is needed to pay the unavoidable 'insurance premium' that is needed to provide sufficient capacity to balance the system on a daily, monthly and annual basis.

Administration

4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

There will be significant changes to tax administration, pricing, trading and settlement systems resulting from the introduction of CPS. These are manageable providing sufficient detail of the proposed changes is given at least two to three years in advance of implementation. Therefore, to implement the CPS by 2013, the details of the tax (in particular the trajectory and the tax-setting mechanism) must be defined this year. This notice period is particularly important in avoiding disruption to fixed price power contracts, which are commonly signed over a period of two years.

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

See above.

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

The main costs relate to potential IT changes or additional administration costs incurred by the business area(s) affected such as energy trading. These will be dependant upon the details of any changes, or additional obligations, arising from the introduction of Carbon Price Support.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

Yes, it should be clearly set as a carbon price support with all generators treated according to the carbon they emit. If the CPS is set on any basis other than carbon (or if exemptions are given), the policy will be distortive and less cost-effective in reducing carbon emissions.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

A high carbon price on electricity could, in the absence of a carbon price on heat/gas supply create some small distortions in incentives for CHP. Therefore a direct method of addressing this issue would be to impose a carbon signal on heat.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Yes, CCS should be given relief to the extent that carbon emissions are avoided. For the CCS demonstration projects, given that the annual tonnage of CO2 stored is likely to be carefully monitored/reported and receive a payment, it may be most efficient to link tax relief to this.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

This is a serious issue as it provides additional competition for generators in UK (i.e. it gives generators outside the UK a competitive advantage – which will reduce the market for UK generation and will ultimately reduce security and economic advantages of UK generation. Therefore there is a limit to how much higher the CPS level can rise above the EU ETS price before causing significant trade distortion. In theory, a carbon price differential of around £5-£10/tonne would make it more cost-effective to build a CCGT abroad with a corresponding interconnector, rather than build a CCGT domestically. Efforts to strengthen the EU ETS therefore remain crucial to minimising distortion and ensuring a harmonised carbon price across the EU.

4.D2: What impact might the proposals have on trading arrangements for electricity?

This proposal is consistent with trading arrangements under BETTA. However. if the CPS level is raised too high, too early it could create significant issues for PPA and STOR contracts which do not include provisions to adjust for the introduction of a carbon tax. This provides another reason why the CPS level should be at nominal levels until 2020 (see question 4.F3).

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

The carbon price levels in Northern Ireland and the Republic of Ireland should be harmonised to avoid trade distortion in the Single Electricity Market (SEM). This could be achieved, for example, by the Republic of Ireland government levying an equivalent CPS mechanism.

It is also important that generators are allowed to factor in the additional carbon costs into their SEM bids.

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

The target price trajectory should be fixed and set in advance to 2030.The carbon price support rate should be achieved by setting the tax level annually with reference to the forward EU ETS price for the subsequent year such that the overall price (EU ETS and tax) achieves the trajectory

However, as previously argued, the key issue remains how to ensure this level is 'bankable' and that HMT sticks to the long-term trajectory set out.

4.E2: Which mechanism, or alternative approach, would you most support and why?

See above, this approach is equivalent to the third option: "rates set annually based on a carbon market index".

4.E3: What impact would the proposals have on you carbon trading arrangements?

The impact on carbon trading arrangements depends largely on the extent to which the market expects HMT to ensure the overall carbon price is kept to the defined trajectory. To the extent the market believes that HMT will adhere to the trajectory, the need to find a hedge for future carbon price (e.g. by purchasing future EUAs) may be reduced.

However, if there is no fixed trajectory, it is likely the market will still perceive significant carbon price risk and therefore firms will continue to try to hedge EU ETS prices and generators may also need to charge a small premium to compensate for risks around the future CPS level.

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

Yes, visibility on the carbon price in the 2020s is a useful signal. However, the main challenge is in providing confidence that these target levels will be delivered.

A total carbon price level in the range £20-£30/tonne in 2020 is consistent with meeting carbon targets and at the same time should ensure the differential between UK and EU carbon price does not become so large as to cause serious trade distortions. By 2030, a carbon price of £70 is broadly consistent with meeting carbon targets in a market where *future* investment is driven by the carbon price alone. However this depends on a number of uncertain variables the most important of which are future technology costs and the mix of generation price setting technologies on the generation mix.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

See above. A system of CfDs/Premium FITs for all low carbon generation (as proposed in the EMR consultation) may lower the need for carbon prices to support these investments. However, the more these technologies are supported by a carbon price rather than subsidies (which could be more distorting) the better the market will function.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

We support introduction of the mechanism at a very low level in 2013 to start building up confidence in the mechanism. However, as far as nuclear and CCS investment is concerned, 2020 is the key point at which substantial carbon price support is needed. If the carbon price support is raised too high, too early it will simply result in significant windfalls losses and gains with no significant impact on low carbon investment. Therefore, between 2013 and 2020 the CPS level should be set to 'guarantee' the trajectory currently expected from the EU ETS is realised (i.e. the tax will only be activated if EUA prices fall below expected levels).

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

This depends very much on the level and what other policies are implemented as part of EMR. However, irrespective of the level, it is unlikely to have a significant impact on new investment before 2020.

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

Coal plants and older gas plants are likely to be retired earlier and, depending on relative gas and coal prices, it should encourage some coal to gas switching in the UK (however, this

may be matched by gas to coal switching elsewhere in Europe in response to a falling EU ETS price). If levels are raised too early it may cause early retirements without compensating new investment, thus exacerbating security of supply risks. In these circumstances, to ensure security of supply, it would be imperative that a general capacity mechanism was introduced.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

See question 4F.3. The 2020-2030 period is when the most low carbon investment will be commissioning and where there is a need for carbon price visibility. A high CPS level before 2020 will not enhance investment and will simply create windfall gain/losses to generators whilst unnecessarily raising consumer bills.

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

The proposals are unlikely to have any impact on SSE's low carbon investment before 2020, however they may well result in earlier retirement of higher carbon elements of our portfolio. Providing the CPS is introduced at a low level, the impact on SSE profitability is likely to be broadly neutral in the short term. In the longer term, the impacts on profitability depend on future investments. It should be noted that some firms would see large windfall gains from a CPS level introduced too high, too early and this has potential to distort generation and, possibly, supply markets.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

Providing the carbon price is not raised too quickly (see 4.F3), there is no need to make any adjustments for existing generators.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

SSE aims to manage risk in the short to medium term through risk managed trading. Long term risks are managed by strategic portfolio management, but SSE will remain exposed to some long term risks such as the value of generating capacity and fuel price differentials. The risks of changes to carbon prices are managed by aiming to have a diverse portfolio.

5.D2: What difference will supporting the carbon price make to your business?

If a mechanism which delivers a 'bankable' carbon price can be realised, the CPS could reduce the risks around investment and ensure the merit order favours low carbon. However, with the current proposal of a discretionary tax, there is a risk CPS will not create certainty around the carbon price and thus may have limited impacts on investment.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

The extent to which additional carbon costs are passed on to consumers depends on the balance of gas and coal at the margins of electricity generation as well as the pricing dynamics in the supply market. It is clear that some generators will not be able to pass on a large portion of their cost increase to consumers.

If the CPS is raised too high, too early there is the potential that windfall gains for some firms could also result in distortions to supply markets.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

See question 5.D1.

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

See Question 5.C1.

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11 February 2011

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Dear Mr Shaw

CONSULTATION ON THE CARBON FLOOR PRICE

Thank you for providing the Scottish Environment Protection Agency (SEPA) with the opportunity to comment on the above consultation document.

SEPA is supportive of the need to provide stronger signals about carbon value to enable a transition to a low-carbon economy.

I write to advise you that SEPA will be submitting detailed comments on the carbon price alongside its response to the Electricity Market Reform (EMR) consultation as carbon pricing constitutes an important pillar of the EMR. SEPA is therefore not submitting detailed comments to this consultation.

As a public body committed to openness and transparency, SEPA feels it is appropriate that this response be placed on the public record. If you require further clarification on any aspect of this correspondence, please contact [redacted]

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The Scottish Government

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10 February 2011

Dear Mr Shaw,

Carbon Price Support

1. I am writing to set out the initial Scottish Government view on the HM Treasury and HM Revenue and Customs consultation document Carbon Price Support.

2. Scotland has some of the best energy resources in Europe with as much as a quarter of Europe's offshore wind and tidal energy resource and an estimated 10% of its capacity for wave power. A major UK Offshore Valuation Study published in partnership with industry and Government colleagues in May 2010 estimated Scotland's practical offshore renewables resource at 206GW (almost 40% of the overall UK total).

3. In Scotland we have 7GW of renewable energy capacity installed, under construction or consented. We are on track to hit our Scottish Government target of 31% of electricity consumed in Scotland provided by renewable energy by 2011, and we are confident of delivering 80% by 2020. In the North Sea, Scotland has the largest potential offshore CO_2 storage hub in the European Union. Our Draft Electricity Generation Policy Statement, published in November last year, therefore sets the evidence base for low carbon electricity in Scotland to meet the 80% renewables target, backed up by a minimum of 2.5GW from new or upgraded thermal plant, progressively fitted with carbon capture and storage by 2030 – and integrating energy efficiency and reducing overall energy demand. It is clear that renewable energy from Scotland will play the crucial role in helping the UK progress towards meeting its renewable energy target and delivering our low carbon renewable energy future. Moreover investment in Carbon Capture and Storage, both through the demonstration projects and on a more sustainable basis for the future, needs to be built in to the system now so the right signals for investment are given.

4. The nature of the UK and EU energy balance, the reliance at UK and European level on imports of energy and the requirement to decarbonise energy provides opportunities for Scotland. The EU North Sea Grid Co-ordinator, Georg Adamowitsch in this 3rd annual report highlights the challenges for a EU wide integrated offshore gird network connection, and highlights renewable energy from Scotland as a resource of EU significance:

"Scotland is a fine example of how different offshore technologies (wind parks, wave and tidal technology, onshore potentials, various wind potentials) can be combined to form a coherent approach. To be able to use all these elements as part of a European sustainable energy policy, these Scottish renewables have to be connected to an integrated European grid."

5. The Scottish Government vision is for Scotland to play its part in developing onshore and offshore grid connections to the rest of the UK and to European partners – to put in place the key building blocks to export energy from Scotland to national electricity grids in the UK and Europe. We are therefore working closely with our UK and EU counterparts, with Ofgem, National Grid and Scottish Transmission System Operators to ensure energy from Scotland plays its part in meeting renewable energy, carbon reduction and climate change targets set by Governments at Scottish and UK level and by the EU.

6. The Scottish Government believes that a carbon price support mechanism could strengthen low carbon price signals for renewable generators. It could also drive action to reduce the level of UK source emissions meaning that UK generators need to purchase fewer EU Emissions Trading System Allowances. The key will be to ensure that market signals for renewables are strong enough and that any carbon price support mechanism is coherent with the other strands of reform proposals set out in DECCs Electricity Market Reform (EMR) consultation published in December 2010 for feed in tariffs, an Emissions Performance Standard and possible capacity payments.

7. We are working with DECC colleagues on the EMR consultation. We are also working closely on the other major strands of regulatory reform that are currently live – namely the DECC-led rreview of the roles and functions of Ofgem and review transmission charging (Project Transmit) by Ofgem and looking at the long standing issue of locational charging.

8. The issue of a carbon price support mechanism is inextricably linked to this wider suite of reforms. The lack of specificity at this stage in the EMR consultation (including on carbon price support) makes it difficult to consider exactly how a carbon price support mechanism would work in practice.

9. I will therefore limit my response to a number of areas of principle and we will provide a more detailed and holistic response to the EMR consultation in due course.

A clear price support mechanism for carbon

10. We welcome the principle of delivering support and certainty for low-carbon electricity investment and encouraging investment in low-carbon electricity generation through a clear and transparent price mechanism. Delivering the right GB electricity market, with the right regulatory framework and a clear carbon price support mechanism, are the key to maximising Scotland's energy potential, with the right support mechanisms for renewables and Carbon Capture and Storage.

11. In principle, the Scottish Government supports long term price certainty in the context of a regulatory framework in the UK market that facilitates, rather than acts as a barrier to low carbon energy in the areas of highest resource. The level at which any carbon tax is set will be crucial.

12. It will be important to ensure that revenue accrued from a carbon price support mechanism is applied for the purpose it is intended – i.e. to support for low carbon transition. It will also be important that assurances are given on the longevity or duration of any such taxation scheme, to avoid possible arbitrary changes to the scheme by future administrations that could undermine its effectiveness or impact on sector confidence.

13. The transition to any carbon price support mechanism will be crucial. It will be important to assess and fully understand how any such tax will impact on investment planning for existing fossil fuel generating plant. We would be concerned if an unintended consequence were to accelerate closure of existing plant, without proper regard to implications for security of electricity supplies.

Implications for Combined Heat and Power plant and for Carbon Capture and Storage

14. For us, it will be particularly important to understand and mitigate any potential implications for Combined Heat and Power plant and for Carbon Capture and Storage development and deployment. Unless provision in made in any carbon price support mechanisms to take account of heat delivered and recycled from unabated coal plant, carbon pricing could make CHP undeliverable.

15. It will also be important to ensure partial and guaranteed relief from a proposed carbon price support levy for coal and gas plant developing CCS demonstration facilities, partial CCS retrofit and for the longer term investment in full CCS, where decisions will have to start to be taken this decade. The mechanism also needs to be designed to complement the proposed capacity payment for non-CCS fitted peaking plant. It is unclear at present how such plants will be treated under the EMR proposals.

Revenue distribution

16. It will be imperative for Scotland to receive a fair and proper share of taxation revenue from any tax on fossil fuels to strengthen carbon price signals. As you will be aware Scottish Government Ministers have longstanding and deeply held views about HM Treasury willingness to disburse funds to Scotland. Scottish Ministers continue to argue for Fossil Fuel Levy funds to be made immediately available to Scotland, and in full, to accelerate renewables development in Scotland. We are also in discussion with Treasury about their decision to abandon the agreement to recycle the revenue generated by the Carbon Reduction Commitment, with consequent costs to Scotland.

17. The implementation mechanism for a carbon price support mechanism is unclear. The DECC Electricity Market Reform (EMR) feed in tariff/contact for difference proposals could introduce an additional administrative and regulatory body. It is not clear how such a body would operate, particularly in terms of factors such as the redistribution of revenues from electricity prices and/or carbon price support tax. Clarity on the detail and remit of any central body or alternative mechanisms for redistribution of carbon price support funds is necessary. The Scottish Government would expect to be included in the consideration of the remit for any central body to ensure all revenues are distributed in a way that does not discriminate against Scotland or Scottish consumers, and in a manner that is consistent with our powers under the devolution settlement.

Unintended consequences

18. There is the possibility that the EMR may be used by the UK to demonstrate EU-wide leadership. But taxing UK carbon based generators and over selling of Emissions Performance Standards permits could make UK based generation more expensive relative to generation in other EU Member States. An unintended consequence of a carbon price support mechanism could be to risk cheap imports of carbon generated energy from Europe. In a competitive and global investment market, it could lead investment capital to look for lower risk, higher return investment opportunities in energy markets outside the UK. This would need to be carefully considered, as will the competitiveness implications under the EU treaties.

Leadership in its climate change objectives - EU Emissions Trading Scheme

19. On climate change, the Scottish Government is committed to playing a leading role in global actions to reduce emissions, both capturing the economic benefits of the move to a low carbon economy, and helping to avoid dangerous climate change. We therefore recognise and strongly support the move to low carbon generation in the UK (although we do not see a need to include nuclear power in the long term future generating mix in Scotland).

20. The Scottish and UK Government share a common position on the need for the EU to show international leadership in its climate change objectives, and a willingness to work together to get the messages over to our key contacts in a coordinated way. Getting the EU to move to a 30% target for emissions reductions, and tightening the EU Emissions Trading Scheme (ETS) cap accordingly would show that leadership, and aid Scotland and the UK in achieving our climate change objectives.

21. We support the principles and mechanisms of the EU ETS and see it as a keystone in incentivising the move to low carbon generation. Using the ETS would have the advantage of avoiding any competition issues within the EU. The limits placed on EU ETS allowances should be commensurate with a temperature rise of no more than 2° Celsius (issuing fewer allowances at EU level could avoid the need to introduce a further specific UK generation 'tax').

22. Like the UK Government the Scottish Government remains committed to supporting a move in the EU to adopt a 30% emission reduction target. This will demonstrate leadership in the effort to limit the global temperature rise.

23. That said, we recognise that the circumstances faced by the UK and the need to provide greater certainty for a smooth transition of the UK power sector to a low carbon base, and further that this need extends out beyond the current limits of the ETS timetable. Acknowledging current EU ETS prices, should the UK see the need to impose additional generating levies to provide greater certainty to stimulate investment in low carbon generation we are clear that these incentives should not unfairly favour one generation type over another – i.e. nuclear.

24. And finally, any impact from such measures on the ETS, as a largely devolved matter, should be discussed between Whitehall and Scottish Government officials, commensurate with the Protocol we have agreed with Treasury and DECC.

25. I trust these comments are helpful. I would be happy to discuss them in more detail if this would assist. We will be providing a more detailed response to the DECC EMR consultation in due course.

[redacted]

CARBON PRICE FLOOR: SUPPORT AND CERTAINTY FOR LOW-CARBON INVESTMENT

RESPONSE BY SCOTTISHPOWER

Summary

Effectiveness of the CO_2 floor proposal

A strong carbon price, if implemented at a European or global scale, should be the most efficient way to cut carbon emissions because it allows markets to seek out the most cost effective options in the most cost effective locations and divert resources accordingly. However, the characteristics of a UK-only carbon price support mechanism, applied in a situation where specific technologies are being targeted for investment, are very different. It is therefore appropriate to start with the question of whether a UK-only carbon price floor will indeed provide support and certainty for the desired low-carbon investment

Our view is that Carbon Price Support (CPS) as currently proposed would be unlikely to achieve this objective if operated in the UK alone and/or in the context of the Government's EMR proposals. Our reasons for this view are as follows:

Interaction with EMR proposals

Under the Government's currently favoured proposals for bringing forward low carbon investment, such projects will benefit from a feed-in tariff implemented through contracts for differences. This feed-in tariff will substantially define the revenues for the project. In large part, it will displace the market price for electricity (including any impact from the carbon price floor) in the economics of new low-carbon investments, meaning that even a successful floor price will only have a marginal impact on the business case for low-carbon investment.

Bankability of UK carbon price

The intention of CPS is to provide certainty to investors on the long term value of carbon. However, it does not seem feasible to create a bankable guarantee of the future carbon price by a UK-only intervention of this type. This is not only because of the difficulty of enacting any degree of multi-year certainty about taxation levels (the fate of the fuel duty escalator being a case in point) but because there are inherent limitations to how far the UK carbon price can diverge from the carbon price in the rest of the EU for any period of time.

Divergence between UK and EU ETS carbon prices is limited by two factors:

(a) *arbitrage in electricity generation.* Generators on continental Europe, who will not be liable to the CPS surcharge, will have a cost advantage in selling into the UK market. This would initially be constrained by existing spare generation and interconnection capacity, but at higher levels of divergence, it would be more profitable to build new CCGTs in Zeebrugge than in the UK and expand interconnection capacity. We estimate that a divergence of around £10-£15/tonne CO_2 would be sufficient to cause large scale arbitrage. We doubt that this would be acceptable in policy terms and, to the extent that plant outside the scope of the CPS mechanism was price setting, it would render the CPS ineffective; and

(b) *impacts on UK consumers, especially energy intensive industry.* It is difficult for us to quantify the additional burden that energy intensive industry can bear without unacceptable loss of competitiveness. However, some indication can be gained by considering the existing Climate Change Levy tax. That tax is at a rate of around

£5/MWh, but energy intensive users benefit from Climate Change Agreements which generally reduce the rate to £1/MWh. This suggests that a cost of the order of £1/MWh is bearable, but £5/MWh is not. The cost of CPS would be additional to the existing CCL cost, so we think a cost of around £1.50 to £3/MWh is probably the practical maximum, roughly equivalent to £5-£10/tonne CO_2. We are not aware of any practicable mechanism to shield large industrial users from the worst of the impact of CPS in the way that has been achieved for the CCL.

We therefore think that that maximum medium term sustainable divergence between the UK carbon price for generators and the ETS price is probably in the range £5-£10/tonne. This means that any trajectory set for the carbon price based on a UK-only instrument can only be relied upon if it does not diverge by more than £5-£10/tonne from the EU ETS price. As the long term future EU ETS price is not known, investors cannot factor a UK-only carbon price floor into their calculations with adequate assurance.

Role of the carbon price in long term price formation

Our final concern about the effectiveness of the carbon floor price as an investment signal relates to the diminishing role that carbon emitting generation will have in the electricity mix. Targets of a carbon intensity for the power sector of the order of 50-100g/kWh have been mooted for 2030. Depending on the carbon intensity of the plants that are setting the price for most of the time, this suggests that the carbon price will have a diminishing impact on the wholesale price well within the payback period of investments commissioned around 2020. Even taking quite a conservative view of the impacts of this effect, the role of the carbon price in the economics of low carbon investments could be half or less of the amount usually modelled.

Conclusion on investment and comments on other possible objectives

In the light of the above issues, we do not consider that the CPS proposals, if they are implemented, would be likely to have any substantial positive impact on the economics of proposed new low-carbon generation in the UK.

We have identified a number of other possible objectives for a carbon tax:

(a) *revenue raising* – we think this is of questionable validity under the Energy Products Directive and of low efficiency in any event (see “impact on efficiency” below)

(b) *promoting operational fuel switching* – to the extent that the CO_2 price floor promotes fuel switching which is not economic under the EU ETS price alone, it will release surplus allowances from the UK generation sector into the rest of EU ETS. This will reduce the cost of emissions elsewhere in Europe or in other sectors, leading in all probability to an equal and opposite increase in emissions elsewhere as well as reducing wider confidence in the EU ETS signal. If there is no UK investment brought forward, the effect would be that UK customers would be supporting oversees emitters

(c) *mitigating the imputed tax and spending for the proposed contracts for differences* – the CO_2 floor would indeed make these contracts appear to be cheaper. However, given that the imputed public spending is balanced by imputed taxation, we wonder how far it is appropriate to raise consumer prices for what would in the end be a presentational advantage.

We think that none of these indicates a strong justification for any carbon tax, or if one is introduced, justifies setting it at any high level.

Possible costs of the CPS Proposal

The factors which would suggest caution in setting the level of the tax should it be implemented, especially in the period prior to 2025, include:

Impact for UK business and consumers

Businesses and households are already facing pressure as a result of the current economic climate. Additional costs could impact UK competitiveness and UK consumers, especially those facing fuel poverty, and therefore cannot be justified unless they are actually required.

The consultation document suggests that wholesale power prices, and therefore consumer bills, will fall as a result of the carbon price support. However, this view is predicated both upon CPS being effective in bringing forward low carbon generation, and upon particular views about future fossil fuel and EU ETS prices and about the method of price formation in a market with a high proportion of low carbon generation. We think that the first of these is incorrect and the second highly uncertain and therefore consider that only the direct price increase arising from CPS can be reliably considered.

CPS is several times more expensive for consumers as way of supporting investment in low carbon technologies than a feed-in tariff. This is because CPS works by raising the costs of non-low carbon plant, so that this is reflected in wholesale prices generally, rather than specifically supporting the relatively small part of the market that is new low carbon generation.

We recognise the imperative to act to tackle the problem of global climate change and the economic rationale of moving briskly to cut emissions as presented in the Stern Report (2006). These benefits need to be understood and appreciated by customers, who are likely to face significant near term cost increases. However, we should be striving to seek out efficient solutions which mitigate these impacts to the extent possible.

Impact on security of supply and CCS demonstration

The move to a low carbon generation system will involve a major transformation in our system for electricity production which will take many years to complete. Throughout this period, it will be necessary to ensure that security of supply is not threatened.

In Great Britain, we currently have some 27GW of existing coal-fired plant which plays a crucial role in providing firm and flexible generation for the system. Some 9GW will close by 2015 under the Large Combustion Plants Directive, leaving some 18GW which will need to make decisions as to whether to opt out of the Industrial Emissions Directive (IED), or opt in and make investments in NOX abatement technology. If it opts out, plant must accept a limited running hours regime and final closure by 2023. In practice, we think the running hours would be largely exhausted by around 2020.

Our view is that most of the 18GW of coal plant will be needed well into the 2020s, so that it can be progressively replaced by low carbon alternatives supplemented by enhanced demand side management options. We are concerned that a high price of carbon will cause most or all of this capacity to opt out of the IED and therefore close before low carbon alternatives are available to replace it. In particular, any scenario materially higher than scenario 1 (£20/tonne by 2020) risks energy security by impacting the business case for the environmental compliance investments needed at the 18GW of existing coal plant, including the power station at Longannet which is intended to host the UK's first CCS demonstration.

Impact on the market

A carbon tax would strongly benefit particular existing market participants – especially the existing UK nuclear fleet – and there is a risk that this could distort competition elsewhere in the energy market. Clearly, this issue becomes more acute the higher the tax level is.

A separate market impact arises in respect of wholesale market liquidity. It is not possible for generators to sell forward power with any assurance without knowing the cost of the major inputs. In practice this means that generators try to purchase their fuel and carbon permits at the same time as they sell forward power. If they are unable to do this, they are essentially carrying an open position on the commodities involved and this will significantly restrict their ability to trade.

It does not seem practicable to address this by incorporating a carbon tax adjustment into the price of electricity sales contracts. If this were attempted, it would be necessary to have separate pricing of futures electricity contracts according to the method of generation because differing sources would be differently impacted by a change in the carbon tax. This would fragment liquidity. It would also expose buyers to the possibility that a tax change made their past purchase decision inappropriate.

We attach a note by Nera which assesses some of the impacts of the floor price on trading and basis risk.

Impact on efficiency

A carbon tax would be likely to cost consumers more through higher prices than it would raise in revenues. This is because the price will rise for all consumers as a result of the wholesale price rising, but only some plant will pay the tax. Leaving aside the Energy Products Directive aspect of whether revenue raising is an appropriate objective of the tax, we think that it is likely to be economically inefficient as a revenue raising option.

Conclusions on the CPS proposal

We think that it will be difficult to set a mechanism for the CPS that back-calculates to a target final CO_2 price, as the level of the tax might end up very high and possibly unsustainable, depending on movements in EU ETS prices. The uncertainty would also be likely to impact liquidity in the market.

We therefore suggest that the CPS, if it is implemented, starts at a level of £1 per tonne, with a possible increase to £2/tonne in around 2018. To go beyond these levels risks serious unintended consequences for decarbonisation, secure electricity supplies and affordability for UK business and consumer.

Finally, as a general point, we start from the general position that markets are the most efficient mechanism to reward investment and allocate resources. The Electricity Market Reform process and any carbon price floor will dramatically increase the extent of Government involvement in energy markets, in order to achieve certain policy objectives. This has the potential to create political risks which may in turn impact investment incentives. It will be of the utmost importance, if investor confidence is to be maintained, that changes should not be made that adversely affect plants for which investment decisions have already been made. We doubt that the floor price can be robust against this objective.

The next section of this response provides our comments in relation to each of the questions asked.

Response To Individual Questions

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

The graph on page 15 of the consultation document provides a wide range of carbon price assumptions in 2020. Our forecast price at 2020 falls in the lower end of this range. Prices above this level i.e. mid to high range could lead to the premature closure of existing coal plant, which is currently required for security of supply.

As outlined in our summary above, the effectiveness of the carbon floor price as an investment signal will be affected by the diminishing role that carbon emitting generation will have in the electricity mix. Targets of carbon intensity for the power sector of the order of 50-100g/kWh have been mooted for 2030. Depending on the carbon intensity of the plants that are setting the price for most of the time, this suggests that the carbon price will have a diminishing impact on the wholesale price well within the payback period of investments commissioned around 2020. Even taking quite a conservative view of the impacts of this effect, the role of the carbon price in the economics of low carbon investments could be half or less of the amount usually modelled.

In our opinion, the UK Government's preferred measure outlined in the EMR (i.e. long term contractual arrangements through a CfD) will, if implemented, substantially define the revenues for low carbon projects. It would in large measure displace the market price for electricity (including any impact from the carbon price floor) in the economics of new low-carbon investments. Accordingly, even a successful floor price would only have a marginal impact on the business case for low-carbon investment.

3.A2: If investors have greater certainty in the long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

As mentioned in the previous answer, the Government's proposed system of feed-in tariffs for low carbon generation would, if implemented, largely displace the carbon price in the economics of low-carbon generation. The role of the carbon price will also be affected by the progressive decarbonisation of the power supply system, as discussed above.

Accordingly, greater certainty of the long-term price of carbon, even if this could be achieved by a UK-only instrument, may well not increase investment in low-carbon generation to any material extent.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

We think that investors will find it difficult to attribute much certainty to any UK-based carbon support system because there are constraints in how far the UK carbon price can diverge from the EU ETS price. We think these constraints may bite at a divergence of around £5-£10 per tonne for the reasons given in the summary above. As the future EU ETS price is not known, we do not see how a UK-only mechanism can set a credible future path for carbon prices.

This uncertainty is compounded by the use of the tax system, under which multi-year commitments can easily be altered. The fate of the fuel-duty escalator is a case in point.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

Yes. Given that CPS is likely to have little beneficial impact on low carbon investment for the reasons given in our summary above, further reform is necessary. The EMR provides an opportunity to achieve this, in conjunction with Ofgem's Project Transmit (which will be important in relation to onshore wind deployment and the demonstration of CCS technology).

Administration

4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

We are unable to determine what changes will be required to our internal procedures and accounting systems at this point in time, as there is insufficient detail around how the carbon support tax will be collected. However, we have provided some suggestions on how the administration of the CPS could be implemented, that could result in the least changes required to existing systems;

- Natural gas, coal and oil are all internationally and domestically traded commodities. They may change hands on a number of occasions between first entering the UK and finally being used. At the time a trade is undertaken, it is not known where or for what purpose the commodity will finally be used. It is our belief that a system of self assessment could be used to bring the CPS (CCL) to account as the fossil fuel is used in the generation process and to this end, we would suggest that the current system for CCL should not be changed and that most power generators would remain exempt from being charged CCL by their fuel suppliers.

- Most, if not all, large generators and many small generators are already registered in the CCL system as deemed suppliers and collect CCL on their direct supplies to end users. Large generators also have to be registered and account for their emissions under EU ETS and a similar requirement will soon be in place for many small generators in the CRC EES.

- The administration of CPS would be greatly simplified if the process used to arrive at verified emissions under the EU ETS was used to establish liability to CPS. In a similar manner to self-assessment of corporation tax, the generator would make a quarterly payment on account of the estimated liability to CPS, which could be adjusted if major changes in fuel mix or fuel consumption occurred in the year. At the year end, the fuel consumptions used to establish verified emissions under EU ETS would be used to establish the final liability to the CPS for the year and a reconciliation payment made.

- Applying the CPS at any point other than final consumption would lead to great complication due to the need to have rebate systems in place for stocks, on which CPS had been paid, that were subsequently delivered to other energy sectors. It would also lead to a greater than necessary increase in generators' costs due to having paid the CPS on fuel stocks rather than on fuel actually used.

- Owners/operators of small generators (e.g. small CHP plants) outside the scope of either EU ETS or CRC EES who are not deemed suppliers would find it simpler to continue to submit a variation of the PP11 exemption form. Instead of this giving total exemption from CCL for power generation, it would declare the proportion of fuel subject to CPS with the balance being subject to the CCL liability or exemptions of the remaining fuel use. A small adjustment to the suppliers' systems would be required to accommodate the additional CCL rate.

4.B2: **How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?**

If the tax was implemented as described above, we believe system changes could be completed in less than six months. Any other mode of implementation is likely to require considerable system alterations.

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

It is not possible to determine the costs of system changes at this point in time, however, implementation as described under 4.B1 above, may be the most economical.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

In broad terms, we think that if a CPS is enacted, it should not alter the current treatment for CHP – i.e. that the level of support implicit in the current CCL regime should be maintained. We think that CPS may eat into the current level of support because CHP stations typically produce less electricity per unit of fuel input than an electricity-only station, because more of the energy is offtaken as heat. Accordingly, CHP stations will get less additional income from the higher wholesale price than electricity-only stations using the same amount of fuel and paying the same amount of tax.

We think some form of adjustment to address this factor may be appropriate.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

We agree that tax relief should be considered for power stations with CCS. This relief should be based on the principle that CO_2 captured and stored will not be emitted to the atmosphere. Operators will be able to quantify the amount of fuel burned and levels of CO_2 captured, meaning tax relief based on carbon emission reduction will be practicable. Therefore the ratio between the CO_2 captured and the CO_2 emitted from combustion of the fuel would be the relief rate. This relief formula could work for all fuels and capture ratios and avoid any issues over operational standards.

Imports and Exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

The Government's proposals for the treatment of import and export electricity, has the potential to present distortions in the market (UK and EU) and impact profitability for UK generators. As we suggest earlier, there appears to be a maximum level inherent in the tax whereby arbitrage opportunities will present themselves, and development and operation of plant will be more attractive outwith the UK, albeit with the burden of interconnector costs.

The CPS will increase the cost of carbon emissions (and wholesale electricity price) in the UK compared with the cost in the rest of Europe. If the UK CO_2 price were sustained at a level more than around £10-£15/tonne CO_2 above the EU ETS price, then we judge that the gap would become sufficient to bring forward additional interconnection capacity, allowing for unconstrained substitution of new UK generation capacity with imports from continental Europe. We think that this would be unsustainable on grounds of energy policy and, if such plant in time became price setting, then the carbon price floor would be directly undermined.

CPS is likely to be adverse for electricity exporters, and if the divergence with the EU ETS is substantial, lock them out of European markets.

4.D2: What impact might the proposals have on trading arrangements for electricity?

As discussed in the summary above, there is a real risk that CPS might have a severe negative impact on liquidity in power futures markets. If the mechanism is not introduced in a way that can guarantee a clear stable relationship with EU ETS carbon prices from three to five years out through delivery, liquidity along the curve would be badly damaged. This is because there would be no clear basis on which future powers sales could be priced without taking a position on future taxation policy. It does not seem to be feasible to pass the risk to the buyer contractually, as this would complicate trading and fragment the market and liquidity by fuel type of the original generation.

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

The SEM is a unique market in that it operates across two separate legal jurisdictions with generators in Northern Ireland and the Republic of Ireland directly competing with each other. The proposals are therefore likely to present distortions as it will only be applied to Northern Ireland generation.

Carbon price support mechanism:

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

The intention of CPS is to provide long term certainty to investors on the long term value of carbon. However, it does not seem feasible to create a bankable guarantee of the future carbon price by this method. This is not only because of the difficulty of enacting any degree of multi-year certainty about taxation levels (the fate of the fuel duty escalator being a case in point) but because there are inherent limitations to how far the UK carbon price can diverge from the carbon price in the rest of the EU for any period of time. We judge that limit to be around £5-£10/tonne CO_2, based principally on industrial competitiveness impacts. As the future path of the EU ETS price is not known, we question whether Government can realistically signal a firm future path for the UK carbon price.

If CPS is enacted we think it may be best to start with a low level of around £1/tonne, possibly increasing it to £2/tonne around 2018.

4.E2: Which mechanism (outlined above), or alternative approach, would you most support and why?

We do not think any of the options will be effective in improving the investment climate for new low carbon generation. Moreover, most if not all of them will cause significant problems for liquidity in the power market, as discussed in our response to the next question and in NERA's attached paper.

The third option could be workable, if five year clarity is guaranteed and any changes avoided. However, we question whether any guarantee of the future price will be clear enough to prevent concerns that the tax might change with the consequent reduction of liquidity in the forward curve, where there are already regulatory concerns.

4.E3: What impact would the proposals have on your carbon trading arrangements?

There are 3 options proposed to give greater transparency to how long term carbon floor price mechanism. One of these, is a **rate escalator** which sets levels to achieve a specific carbon price trajectory over the life of a Parliament. Under this option, it is unclear when this rate escalator would be set to provide clarity on the tax inclusive carbon price. Also it is not known on what carbon price the rate escalator would be based, or if it would be based on an average over a defined period or if it would be set post event. In our view, therefore, this method would fall into options 1 or 3 listed below and would be exposed to the problems that they suffer from.

Under the scenario of annual adjusted **CCL rates and fuel duty rebates** it is unclear when these levels would become known to provide certainty to the market. This has similar issues to the previous option regarding clarity as it is unknown on what carbon prices that the CCL rates would be set on. Or again if this would be done post event, it is our view, that this method would also fall into option 1 below.

Under the approach of setting a **rate annually based on a carbon market index**, although it stated that this would be averaged over a specific annual or biennial period, it is not known when this period would occur and how using this average of future carbon prices would be used to set the rate. Again, this method would be exposed to the potential problems which have been listed in option 1 or 3 below.

1. Post event truing up to a known value would likely lead us into entering into an option, which removed any risk from our trading, with an establishment like a bank. The strike price would be equal to the combined value of EUETS and the tax. If managed in the correct manner the bank is likely to make a profit from this option (they could pay us to take this option to take on the risk). This could lead to little, or in some circumstances, no tax revenues. As more credits will be bought during auctions truing up to a known value will create clear distortions in bidding behaviour from UK participants to achieve a risk free price. The electricity customer will pay more for its electricity and trading establishments could profit. There would be a lack of incentive to secure the lowest price in the market.

2. Post event truing up to an unknown value would not work; we would need to know the combined value of tax and EU ETS before dispatching our plant otherwise the desired switching of fuel will not be observed. Estimating the unknown value will not suffice in terms of risk management.

3. If an absolute tax rate was set in advance (we believe it needs to be 5 years) there is a risk that market participants will pay above or below the government's desired trajectory.

There is clear distortion to the value of interconnector flows. Given the reduction in demand in the UK for credits, all things being equal this will lower the price to the remainder of the EU. In turn this will render non-UK fossil plant more profitable in the UK during more periods of the day than in the absence of this proposed policy. The short term effect will be that any existing interconnectors are more likely to flow in only one direction. As already suggested there will be a level at which this becomes unsustainable and will distort security of supply investments, as it may be better to locate new generation elsewhere. There would be no EU carbon benefit, UK bills would be higher, and security of supply concerns heightened.

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If, so, at what level?

Again we point out that there is a point where we believe the level of the carbon tax would become unsustainable in terms of arbitrage and competitiveness. With this in mind and the fact that EU ETS policy is unknown beyond 2030 and large uncertainties exist to 2020 (we welcome the debate in moving to a 30% target), there is too much uncertainty to target carbon prices – at least at this point in time.

Furthermore, it does not seem sensible to try to set a carbon price trajectory in the absence of the EMR outcome. For example, the Government's proposed feed-in tariff and CFD approach would largely negate any impact of the long term wholesale price (including any carbon floor) on the economics of new low-carbon generation. The wider EMR process offers the opportunity to package the most effective mechanisms together to deliver security of supply and decarbonisation, whilst limiting the cost to consumers.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

We think that it will be difficult to set a mechanism for the CPS that back-calculates to a target final CO_2 price, as the level of the tax might end up very high and possibly unsustainable, depending on movements in EU ETS prices. The uncertainty would also be likely to impact liquidity in the market. We therefore suggest that the CPS, if it is implemented, starts at a level of £1 per tonne, with a possible increase to £2/tonne in around 2018. To go beyond these levels risks serious unintended consequences for decarbonisation, secure electricity supplies and affordability for UK businesses and consumers.

The UK Government's preferred measure outlined in the EMR i.e. long term contractual arrangements through a CfD will if implemented, provide more certainty for low carbon investment and, is more likely to accelerate the development on new low carbon generation, than a carbon floor. Under this outcome it would appear a price close to that of the EU ETS will limit distortions between the UK and Europe, and allow the UK power sector to continue to trade competitively.

We think that any trajectory significantly higher than scenario 1 (£20/tonne by 2020) would be likely to cause significant problems, including for security of supply, competitiveness and our ability to offer the Government a CCS demonstration at Longannet.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

The CPS if implemented should be set at a low level from the outset (we suggest £1/tonne CO_2 until 2018 perhaps rising to £2/tonne thereafter), rather than trying to create a mechanism that back-calculates to a target final CO_2 price, which might end up with much higher taxes as well as impacting liquidity in the market. If the rate is implemented too high too soon we strongly believe that this could lead to serious unintended consequences for decarbonisation, secure electricity supplies and affordability for UK businesses and consumers.

Also, given the risks that have to be managed and the need to maintain liquidity, it would be desirable to provide clarity of what a carbon floor will be in-5 years time (2016).

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

We have outlined our concerns about the effectiveness of the proposed carbon floor price as an investment signal for low large scale low carbon investment in the summary above.

We believe that it will be difficult to deliver a bankable carbon floor price on a UK-only basis, whether or not the Government proceeds with its favoured EMR option of a feed in tariff with contracts for differences, which would largely negate any remaining impact the proposed CPS might have.

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

In our opinion, carbon price support will have limited impact on accelerating low carbon generation investment. However, it could have a detrimental impact on security of supply, by unduly accelerating the closure of existing coal plant, if the initial level and trajectories are set too high too soon.

Setting the level too high too soon could also lead to other serious unintended consequences for UK competitiveness and consumers. Businesses and households are already facing pressure as a result of the UK's current economic climate. Increased electricity costs, which cannot be justified by increased low carbon generation because of other constraints affecting deployment within the timeframe, are therefore likely to be unpopular. If the differential is too large between UK CO_2 prices and those in EU ETS, UK competitiveness may be unacceptably damaged.

5.B3: How should carbon price support be structured to support investment in electricity generation while limiting impacts on the wholesale electricity price?

Given that the way CPS works is to increase the costs of non-low carbon generators, so as to increase wholesale prices generally, we do not understand how it can increase returns to low-carbon generators without commensurate increases in the wholesale price. A feed-in tariff is however a much cheaper option because it specifically supports the relatively small part of the market that is new low carbon generation.

We think that it will be difficult to set a mechanism for the CPS that back-calculates to a target final CO_2 price, as the level of the tax might end up very high and possibly unsustainable, depending on movements in EUETS prices. The uncertainty would also be likely to impact liquidity in the market.

We therefore suggest that the CPS, if it is implemented, starts at a level of £1 per tonne, with a possible increase to £2/tonne in around 2018. To go beyond these levels risks serious unintended consequences for decarbonisation, secure electricity supplies and affordability for UK business and consumer.

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

We believe the profitability of any company with carbon intensity above that of the average will be impacted negatively. We believe investments that will be needed to bridge to a decarbonised world could come under threat.

A particular concern for us will be the environmental improvement investments that are needed at Longannet. A high carbon floor price could adversely affect their viability and therefore our ability to offer the Government a solution for CCS demonstration at the site.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

A carbon tax would strongly benefit particular existing market participants – especially the existing UK nuclear fleet – and there is a risk that this could distort competition elsewhere in the energy market. Clearly, this issue becomes more acute the higher the tax level is.

EMR in the wider contexts provides an opportunity to package the most effective mechanisms together to deliver security of supply and decarbonisation, whilst limiting the cost to consumers

There are obvious concerns for UK competitiveness, and there could be a damaging impact on energy security by impacting the business case for the environmental compliance investments needed at some 18GW of existing thermal plant, including the power station at Longannet which is intended to host the UK's first CCS demonstration.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

We have a business strategy in place to manage the fluctuations in the wholesale electricity price. Currently renewables and uncontrollable generation make up a small part of our overall portfolio (given the nature of our company this will change over time). As such our current asset exposure is to the value of spreads rather than electricity prices. The current market and arrangements allow us to manage risks around these spreads, as we can trade all elements of our input costs and returns.

5.D2: What difference will supporting the carbon price make to your business?

We are concerned that the uneven impact on the various market players could adversely affect competition elsewhere in the market. In addition, CPS could impact on the investment decisions we need to make around environmental improvements required by the IED for our Longannet plant. CPS could also bring a number of administrative burdens as well as difficulty maintaining liquidity in the power futures market.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

Energy companies are likely to seek to pass on the full cost of the carbon price support in terms of its overall effect on wholesale prices to the consumer. The effect on the wholesale price will very much depend on which plants are at the margin, which will be significantly affected by relative gas and coal costs.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

Energy companies are likely to pass the full cost to supply customers including the cost of energy.

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

Energy companies are likely to pass the cost of energy supplied on to the customer so we would not expect significant impacts on Retail profit margins. However, as Energy companies offer fixed retail price contracts for several years ahead, index rates will need to be known several years in advance to ensure they can be captured into the fixed rate tariffs.

The timing and implementation of the tax could therefore lead to an impact to margins in the first few years after implementation. Those with higher carbon intensities will be more heavily impacted, with obvious windfall gains for the existing nuclear fleet.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D*?*

We think that the impact analysis is largely invalidated because it does not properly test the question of whether the intended investments in low carbon generation will be encouraged. Our analysis suggests that this is unlikely to be the case because the price floor would be largely over-ridden by the Government's currently preferred EMR implementation option and because we believe that it will not be possible to set a bankable UK-only mechanism because of the risk of divergence with future EU ETS prices.

Beyond this fundamental point, we would also make the following observations:

The demand modelled throughout the analysis supporting this consultation is considerably lower than that in any of the successful pathways presented by DECC in their recent 2050 work. We appreciate the timing of DECC's work has been an obstacle, however, the work carried out around this consultation, when compared to DECC's, clearly highlights the need for joined up thinking between the growth in demand and supply side technologies. It also demonstrates the need for a scenario approach to this work; it is easy to be critical of a single point view in modelling of this type. This could be avoided if analysis covered different views. Given the scale of change EMR will bring, and what's at stake for industries involved, we would have expected analysis at this stage to be more in depth. Of particular note we would expect further analysis regarding how CPS should interact with other EMR mechanisms to provide the best all round sustainable solution to the consumer.

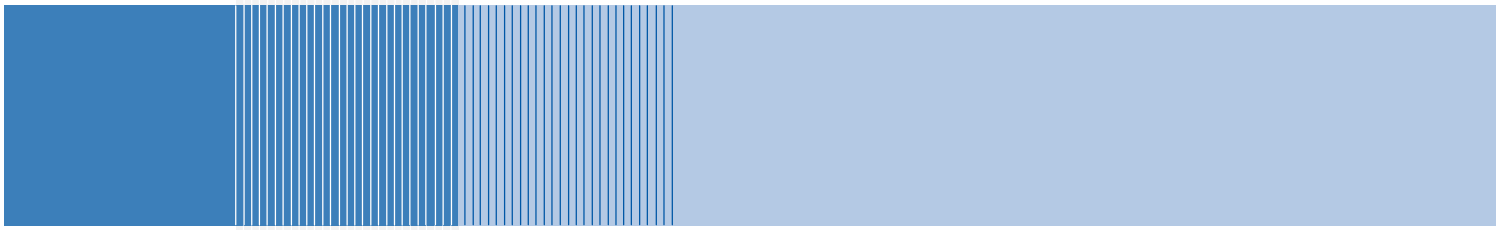
The analysis carried out that supports the consultation demonstrates why the carbon floor price alone does not really de-risk some of the major investment decisions the industry faces. The analysis demonstrates by 2030 that as supply decarbonises the wholesale market due to short run marginal cost (SRMC) consideration will come down (we believe this would have to be coupled with a capacity mechanism for back up generation). If we are to reach Government decarbonisation targets there will come a time in the early to mid 30's where carbon prices will have little influence on wholesale power prices. Given some major scale low carbon generation is set to come on in the early to mid 20's with a life expecting well beyond 40 years, the support even a successful carbon floor price (if one could be created) would offer appears, on the back of some outlooks, to be very limited. EMR offers the opportunity to package the most effective mechanisms together to deliver security of supply and decarbonisation, whilst limiting the cost to consumers. Given our response and our comments around unintended consequences, we question the level of role the carbon floor price should play.

ScottishPower
February 2011

14 February 2011

Carbon Price Support and Hedging Risks for Energy Traders

A Report for Scottish Power



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Executive Summary

Scottish Power asked NERA to analyse trading risks and the implications for generators ability to hedge, given various definitions of the carbon price floor and the associated tax. First, I define the risk that generators face and then, I give examples intended to provide a rigorous basis for firm statements. In summary, my conclusions are the following:

- If the government set the carbon tax *ex post* (in order to ensure it equalled the exact difference between the carbon price floor and the average price of EUAs over the previous year, or any other period), generators would not know precisely what costs they faced when selling electricity contracts in advance.
- The uncertainty of *ex post* taxation would expose traders to an unhedgeable risk that would endanger the financial security of individual companies and harm the liquidity of electricity contract markets.
- If the government set the carbon tax *ex ante* (so that generators knew what tax rate was applicable in any tax year), the total cost of carbon would vary slightly, but generators would at least be able to fix all the costs they incur when signing an electricity contract. That would make the carbon tax a hedgeable cost.
- However, the cost of the carbon tax would only be hedgeable from the date on which it was announced. Trades in forward contracts undertaken before then would still be exposed to risk. This risk would give generators an incentive to delay trading until the tax had been announced.
- Unless the government is prepared to announce an *ex ante* tax well in advance of the tax year to which it applies, uncertainty over the tax rate will encourage delays in trading and harm the liquidity of electricity contract markets.

The solutions to these problems lie in some combination of the following:

- setting a relatively low carbon tax;
- holding the carbon tax stable or within set bounds for several years at a time; and
- announcing the carbon tax a long time in advance of the tax year to which it applies.

Any scheme that does not have one or more of these features will endanger the financial security of individual companies and/or harm the liquidity of electricity contract markets.

1. Variable Taxes and the Risk Faced by Generators

The government is proposing to set a minimum price for carbon (a carbon price floor) with the intention of increasing revenues for low-carbon generation and reducing the uncertainty associated with the current price of EUAs. The carbon price floor requires that generators will pay a total carbon price (for CO_2 emissions) equal to the EUA price plus a variable tax. The variable tax will in principle be set equal to the difference between the carbon price floor and the EUA price, i.e.:

Variable tax = maximum of 0 and (Carbon Price Floor – EUA price)

However, implementation of this rather simple idea requires some detailed definitions. Firstly, the government has to decide on the level of the carbon price floor; it might reflect its estimate of the marginal social cost of emitting one tonne of CO_2, but in practice will be dictated by a number of concerns, such as the impact on prices and consumers. For the purposes of this note, we will assume that the carbon price floor is exogenous.

Secondly, the government will have to decide how to calculate the EUA price that it will deduct from the carbon price floor when determining the level of the tax. Appendix A shows how this EUA price would have to be calculated (and therefore what the variable tax level would be) to ensure that generators actually pay the floor price. In practice, the total costs of CO_2 emissions incurred by an individual generator in the period *p* will equal the carbon price floor (times the generator's CO_2 emissions in the period *p*) if, *and only if*, the notional EUA price is equal to the average price of the EUAs actually purchased by that generator over the same period

Since this condition is not likely to hold (unless the government adopts each generator's own average price as the basis for collecting the tax), generators face a risk that the total cost of emitting CO_2 will be higher or lower than the carbon floor price. This risk has implications for the efficiency and liquidity of electricity market trade. To minimise these effects, the government would need to minimise the degree of uncertainty over the tax, as far in advance as possible.

The following sections examine numerical examples which illustrate the source and nature of the problem, and how generators might react.

2. Numerical Example of Basis Risk

The following numerical example illustrates the basis risk faced by generators. Assume that the government sets the carbon floor price for year *p* at £25/tCO_2 and that its estimate of the EUA price is £15/tCO_2. The variable tax set for year *p* will be £10/tCO_2. Assume further that generator *i* that emits 1,000 tonnes of CO_2 during the whole year and buys them in equal instalments in each quarter (sub-period). The following table shows this pattern of purchases, together with the actual market prices in each quarter. The market prices equal the government estimate of the EUA price on average.

Table 2.1
EUA Purchasing Cost that Matches the Notional EUA Price

Subperiod		1	2	3	4	Average
EUAs bought by *i*	tCO2	250	250	250	250	
Market price in *t*	£/tCO2	11.00	13.00	17.00	19.00	**15.00**
Tax rate	£/tCO2					**10.00**
Total avg. cost for *i*	£/tCO2					**25.00**

This table shows that, with this even pattern of purchases, the cost for generator *i* is equal to the carbon price floor. However, if the generator were to change this pattern, for whatever reason, the total cost of emissions may rise or fall, given a tax rate of £10/CO_2. This is exemplified in Table 2.2, where the changes are highlighted in black.

Table 2.2
EUA Purchasing Cost that Exceeds the Notional EUA Price

Subperiod		1	2	3	4	Average
EUAs bought by *i*	tCO2	100	250	250	400	
Market price in *t*	£/tCO2	11.00	13.00	17.00	19.00	**16.20**
Tax rate	£/tCO2					**10.00**
Total avg. cost for *i*	£/tCO2					**26.20**

In this example, generator *i* gradually increases its estimate of its output in quarter 4. It still emits 1,000 tonnes of CO_2 in the year but buys only 100 allowances in the first quarter (when the price is low) and then has to buy greater quantities in later quarters (when the price is higher). Overall, its average cost of buying EUAs for quarter 4 is £16.20/tCO_2. Given a preset tax rate of £10/tCO_2, the generator's average total cost of CO_2 emissions is £26.20/tCO_2.

The opposite case is shown in Table 2.3, i.e. the generator's expectation of its output in quarter 4 declines over time and so it reduces its purchase of EUAs. The different purchasing pattern reduces the generator's average total cost of CO_2 emissions below the carbon price floor, given the tax rate.

Table 2.3
EUA Purchasing Cost that Falls Below the Notional EUA Price

Subperiod		1	2	3	4	Average
EUAs bought by *i*	tCO2	400	250	250	100	
Market price in *t*	£/tCO2	11.00	13.00	17.00	19.00	**13.80**
Tax rate	£/tCO2					**10.00**
Total avg. cost for *i*	£/tCO2					**23.80**

3. Basis Risk (in Calculating the Tax)

These examples (and the algebra in Appendix A) show the existence of a "basis" risk, i.e. risk that the basis for estimating the variable tax may differ from the basis on which generators actually purchase EUAs. Generators may try to hedge this risk by replicating the pattern of purchases implicit in the method used by the government to set the notional EUAs price. But this is not easily achieved.

The examples above are useful for clarifying this point. Assume, as in Table 2.1, that the government says that it will set the notional EUAs price equal to the simple average of prices for year *p*. Knowing this, a generator will start in quarter 1 by buying 25% of the allowances required by expected output in quarter 4 (i.e. 100 tCO_2, see Table 2.2). However, if its expected output in quarter 4 increases, as Table 2.2 shows, the generator must buy many more EUAs in quarters 2, 3, and 4 than in quarter 1. Thus, given the assumed price pattern, even if the generator tried to replicate the government approach, its costs would actually be higher than the deduction used to calculate the tax.

As noted above, this risk arises even when the notional EUAs price and, hence, the variable tax are set *ex post*. There is no perfect hedge if the generator is not able to estimate correctly the required quantity that has to be purchased in each moment at the start of the year.

The government might possibly give the generator a tax allowance equal to the actual costs of buying EUAs that it has incurred. In this case, the variable tax would be set *ex ante* equal to the carbon price floor, and then the generator would have to prove its actual costs of purchasing EUAs. This cost would be deducted from its liability for the tax.

This method would remove all risks faced by the generator, but, at the same time, it would also remove all the incentives for generators to adopt an efficient trading strategy while buying EUAs. It may also be difficult to identify which EUAs are associated with actual emissions (as opposed to being bought and sold by a trading function to make a profit).

4. Hedging (and Anticipating the Tax)

Generators typically want to hedge their positions in the market, i.e. they want to sell electricity for a given delivery period in the future, and to buy fuel and EUAs at the same time so that the margin on the deal is fixed. However, if there is uncertainty about the level of the carbon tax that will apply during the delivery period, the generator would be unable to hedge its position. This problem is illustrated by the following examples.

In all scenarios the generator decides the sale of its expected output for quarter 4 (Q4) in the previous three quarters and in Q4 (i.e. it sells expected Q4 output in Q1, Q2, Q3, and Q4). For simplicity, assume that in each quarter the generator aims to sell an equal share of unsold Q4 output. For instance, if the expected Q4 output is 100 MWh, then in Q1 it will sign contracts deliverable in Q4 for 25 MWh (i.e. one quarter of 100 MWh). If its expected Q4 output then rises to 175 MWh, leaving 150 MWh unsold, it will try to sell 50 MWh (i.e. one third of 150 MWh) in Q2, and also in Q3 and Q4 (unless its expected Q4 output changes again). Furthermore, it will sign a forward contract for fuel and it will buy EUAs in the spot market to fulfil the output requirements that stem from each sale. In this example, for the sake of simplicity, I assume that the generator sells its output at a price equal to its variable costs.[1]

The assumptions used throughout the scenarios are summarised in Table 4.1. The fuel price for Q4 is fixed at £20/MWh(th) in every quarter. The EUA spot price is £16/tCO_2 in Q1-2, and £14/tCO_2 in Q3-4. The plant has an efficiency of 49.13% and an emissions rate of 0.365 tCO_2/MWh (standard rates for a modern CCGT). The scenarios also assume a Carbon Price Floor of £20/tCO_2, which is known in advance.

Table 4.1
Common Assumptions

Quarter		Q1	Q2	Q3	Q4	Average
Fuel forward price (Q4)	£/MWh(th)	20.00	20.00	20.00	20.00	
EUA spot price	£/tCO2	16.00	16.00	14.00	14.00	15.00

4.1. Tax Is Known *Ex Ante* and/or Equal to the Ex Post Tax

The first example illustrates the concept of hedging. In this example, the tax that will accrue in Q4 for output in Q4 is known ex ante and/or is equal to the ex post tax of £5/tCO_2. Table 4.2 shows that the expected Q4 output is 100 MWh, and the generator signs contracts in each quarter for 25 MWh. It sells the electricity at a price equal to its variable cost, i.e. fuel, EUA spot purchases, and tax, taking account of the efficiency and emissions rates.

[1] For the purposes of these examples, we don't include other variable costs, such as O&M, other taxes, etc.

Table 4.2
Tax Known Ex Ante And Equal To The Ex Post Tax

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	100	100	
Sales of Q4 output	MWh	25	25	25	25	
Carbon tax in Q4	£/tCO2	5.00	5.00	5.00	5.00	
Electricity price	**£/MWh(e)**	**48.37**	**48.37**	**47.64**	**47.64**	
Revenues	£	1,209	1,209	1,191	1,191	**4,801**
Total costs	£	-1,164	-1,164	-1,145	-1,328	**-4,801**
Fuel	£	-1,018	-1,018	-1,018	-1,018	**-4,071**
EUA spot	£	-146	-146	-128	-128	**-548**
Carbon tax	£	0	0	0	-183	**-183**
Margin	**£**	**46**	**46**	**46**	**-137(*)**	**0**

(*) Margin on Q4 is negative (in all scenarios) because it is the quarter when the generator pays the carbon tax.

Table 4.2 also shows revenues and costs in this case. The income is energy sold in each quarter *times* the prices set by the generator; fuel costs are the amount of fuel purchased times its price in each quarter; the same goes for EUAs. In turn, the carbon tax costs are calculated as the CO_2 emitted in Q4 times the tax in place at that moment. Given that the price equals variable costs, and that the tax is known in advance, the generator is able to fix a margin equal to zero. A zero margin is not a normal outcome of trading, but it represents the benchmark in this example that means the generator has hedged its risks.

4.2. Change in Expected Output

The following scenario describes a situation where the expected output for Q4 changes. The generator learns in Q3 that its expected output in Q4 has doubled to 200 MWh. The generator therefore increases its sales of Q4 contracts in Q3 and Q4 to match its expected output. Table 4.3 shows this new pattern of trading (in black). The generator is able to keep a margin of zero (calculated as in Section 0). This result is possible because the tax that the generator will pay in Q4 is still known in advance, as was the case in the previous section (i.e. the generator need not adapt its expectations about the tax rate in Q4).

Table 4.3
Change In Expected Output (Tax Known Ex Ante And Fixed)

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	200	200	
Sales of Q4 output	MWh	25	25	75	75	
Carbon tax in Q4	£/tCO2	5.00	5.00	5.00	5.00	
Margin	**£**	**46**	**46**	**137**	**-228**	**0**

Note: Detailed calculations are omitted since they follow the same pattern as in the previous table.

4.3. Tax is Fixed *Ex Post*, Annually

The following three scenarios assume that the tax is set by the government ex post, and that there is a change in expectations regarding the tax level by the generator in Q3. The dotted line in the tables below shows a change in expectations by the generator about the tax level that will finally apply.

4.3.1. Tax set *ex post* is higher than expected

Assume that the generator expects, during Q1 and Q2, that the tax for Q4 will be £4/tCO_2. Its expectation is the difference between the Carbon Price Floor of £20/tCO_2 and the *current* EUA spot price of £16/tCO_2. It then signs forward contracts adding this figure to the fuel and EUA costs.

In Q3 and Q4, however, the EUA spot price falls to £14/tCO_2 (see Table 4.1), and the generator now believes that the tax will be set by taking account of a reference price equal to the average of the EUA spot price for the whole period, i.e. the expected tax equals £5/tCO_2, the Carbon Floor Price of £20/tCO_2 minus the average spot price of £15/tCO_2. Table 4.4 shows that the generator cannot hedge against this risk and ends up with a loss.

Table 4.4
Tax Set *Ex Post* Is Higher Than Expected At First

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	100	100	
Sales of Q4 output	MWh	25	25	25	25	
Carbon tax in Q4	£/tCO2	4.00	4.00	5.00	5.00	
Margin	**£**	**36**	**36**	**46**	**-137**	**-18**

4.3.2. Tax set *ex post* is lower than expected

The reverse of the above scenario is shown in Table 4.6. The generator had expected the tax to be £6/tCO_2 in Q4 (maybe because it decided to look at EUA futures prices of £14/tCO_2), but, as explained, it changed its expectations in Q3 to the level defined by the average of the EUA spot price. The expected tax rate is therefore £5/tCO_2 for Q3 and Q4 (shown in black). Assume that the tax set ex post equals the latter expectation, as above. In this case the generator makes a profit. Thus, the risk is two-sided, meaning that hedging is not possible with the trading strategy contained in these tables.

Table 4.5
Tax Set *Ex Post* Is Lower Than Expected At First

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	100	100	
Sales of Q4 output	MWh	25	25	25	25	
Carbon tax in Q4	£/tCO2	6.00	6.00	5.00	5.00	
Margin	**£**	**55**	**55**	**46**	**-137**	**18**

4.3.3. Incentives to delay trading

Any generator will try to reduce its exposure to risk, if possible. The generator shown here could do so by changing its trading strategy, to delay trading, i.e. the generator will refrain from signing Q4 contracts until it has more information about the tax applicable in Q4. This trading strategy is shown in Table 4.6, where sales in Q1 and Q2 are zero. In Q3 and Q4, the generator signs contracts and therefore it can fully hedge the risk (given that the ex post tax is equal to its latest expectation).

This behaviour will lead to lower liquidity in the market until the generators have more information about the government's decision.

Table 4.6
Incentives To Delay Trading Due to the Tax Being Set *Ex Post*

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	100	100	
Sales of Q4 output	MWh	0	0	50	50	
Carbon tax in Q4	£/tCO2	4.00	4.00	5.00	5.00	
Margin	**£**	**0**	**0**	**91**	**-91**	**0**

4.4. Tax Is Fixed *Ex Ante*, But Changes Annually

Section 0 showed that a tax known in advance allowed the generator to hedge its position fully, whereas a tax fixed ex post did not. The following three scenarios assume that the period Q1 to Q4 spans two tax years, and that the tax applicable in Q4 is not known until Q3. The dotted line in the tables below marks the date when the government sets the new tax rate for Q4. In these examples, generators face the same forms of basis risk, even though the carbon tax is announced at the start of a tax year, for as long as the tax is not known.

4.4.1. Tax set *ex ante* for Q3 and Q4 is higher than expected

Assume the generator knows *ex ante* the carbon tax for each year. This would seem to eliminate the risk in case 0 above. However, trading is not confined to tax years. In this example, Q4 may fall in a different tax year from the other quarters. In that case the tax applicable in Q4 may only become known at the start of Q3 (or even later). Before then, the generator must set prices based on its estimate of the tax in Q4. Let us say that the generator assumes in Q1 and Q2 that the current tax, £4/tCO_2, is the best estimate of the future tax. However, the government, for whatever reason (e.g. a change in the carbon price floor or a

fall in the EUA spot price) decides to increase the carbon tax. For example, assume that the government defines the new tax rate as the difference between the Carbon Price Floor of £20/tCO_2 and the *current* EUA spot price of £14/tCO_2, i.e. the tax rate for Q4 is set at £6/tCO_2 in the new tax year.

Table 4.7 shows that the generator cannot hedge its position and makes a loss. This occurs because the generator sold forward contracts with an expected tax rate of £4/tCO_2, but the actual rate it had to pay was £6/tCO_2 (highlighted in black in the table).

Table 4.7
Tax Set *Ex Ante* For Q3 And Q4 Is Higher Than Expected

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	100	100	
Sales of Q4 output	MWh	25	25	25	25	
Carbon tax in Q4	£/tCO2	4.00	4.00	6.00	6.00	
Margin	**£**	**36**	**36**	**55**	**-164**	**-36**

4.4.2. Tax set ex ante for Q3 and Q4 is lower than expected

The converse example is shown in Table 4.8. The government sets the tax for Q4 at £2/tCO_2, because EUA spot prices have increased to £18/tCO_2, but only announces the new rate at the start of Q3. The generator now makes a profit, but together these examples show the generator is still exposed to risk if it trades across tax years.

Table 4.8
Tax Set *Ex Ante* For Q3 And Q4 Is Lower Than Expected

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	100	100	
Sales of Q4 output	MWh	25	25	25	25	
Carbon tax in Q4	£/tCO2	4.00	4.00	2.00	2.00	
Margin	**£**	**36**	**36**	**18**	**-55**	**36**

4.4.3. Incentives to delay trading

Once again, the generator could adopt a different trading strategy and wait until the government announces the tax for Q3 and Q4. Table 4.9 shows this case. The generator avoids signing forward contracts for Q4 in Q1 and Q2. Assume as in 4.4.1, that the government sets a tax rate of £6/tCO_2 based on a Carbon Price Floor of £20/tCO_2 and the current EUA spot price of £14/tCO_2. Once the tax is announced, the generator sells half of its expected Q4 production in each of Q3 and Q4, and forms its prices based on the actual tax. This leads to a margin of zero, i.e. full hedging, as shown below.

The example shows that there is an incentive for generators to wait until the tax rate is announced, concentrating the liquidity of the market close to the delivery periods.

Table 4.9
Incentives To Delay Trading Due To A Tax Change Within The Trading Period

Quarter		Q1	Q2	Q3	Q4	Totals
Expected output in Q4	MWh	100	100	100	100	
Sales of Q4 output	MWh	0	0	25	25	
Carbon tax in Q4	£/tCO2	4.00	4.00	6.00	6.00	
Margin	**£**	**0**	**0**	**110**	**-110**	**0**

5. Conclusions

The examples set out above shows that CO_2 emitting generators are exposed to basis risk for as long as the carbon tax is uncertain. This uncertainty can arise either because the tax is announced *ex post*, or because it is announced *ex ante* but has not been announced at the time of the trade.

If this risk is significant, it may cause severe financial problems for generators that trade in advance on the basis of an estimated carbon tax which turns out to be wrong. The solution for generators may be to delay trading for as long as possible, in the limit until the tax is known. Such a reaction would harm liquidity in forward markets for electricity contracts.

If the government decides to pursue a carbon tax based around a carbon price floor, the solutions to these problems lie in some combination of the following:

- setting a relatively low carbon tax;
- holding the carbon tax stable or within set bounds for several years at a time; and
- announcing the carbon tax a long time in advance of the tax year to which it applies.

Any scheme that does not have one or more of these features will endanger the financial security of individual companies and/or harm the liquidity of electricity contract markets.

Appendix A. Formulaic Definition of Carbon Costs and Risks

For the period *p* (e.g. a year) the government will set the carbon price floor F_p and the notional EUA Price E_p (both in £/tCO_2). The period *p* includes a series of shorter sub-periods *t*, which can be thought of as days, i.e. the sub-periods for which individual EUA prices are normally quoted. (EUAs are traded continuously, so sub-periods could be shorter than a day, or longer, but published indices tend to be daily.) The actual price of EUAs in each one of these sub-periods is the result of supply and demand in the market.

We can define the variable tax per tonne of CO_2 emissions, T_p, for period *p* in terms of this notation:

$$T_p = \max(0, F_p - E_p)$$

As stated above, the tax is part of the total cost of CO_2 emissions that the generators will now face. The total cost (in £) borne by a generator *i*, in period *p*, is the amount paid to buy allowances in the market ($M_{p,i}$, market cost) and the amount paid in taxes ($L_{p,i}$, levy), that is:

$$TotalCost_{p,i} = M_{p,i} + L_{p,i}$$

where,

$$M_{p,i} = \sum_t X_{t,i}.P_t$$

$X_{t,i}$ is the allowances, in terms of tonnes of CO_2, bought by generator *i* in the subperiod *t*, and,

P_t is the EUAs market price for subperiod t (in £/tCO_2).

and,

$$L_{p,i} = X_i.T_p = \sum_t X_{t,i}.T_p$$

$X_i = \sum_t X_{t,i}$ is the total tonnes of CO_2 emitted (and allowances bought)[2] by generator *i* in the period *p*,

Replacing terms in the total cost formula gives:

$$TotalCost_{p,i} = \sum_t X_{t,i}.P_t + \sum_t X_{t,i}.T_p$$

[2] The generator is required to submit allowances sufficient to cover all its CO_2 emissions in a year, but it does not matter in fulfilling this obligation, in which subperiod (or period) the allowances are bought. For this exercise, we assume that the allowances are bought within the same period (i.e. year), as if no allowances were carried forward from one year to the next, or (alternatively) as if any such allowances were recorded as a sale on 31 December and a purchase on 1 January, both at the current market price.

Replacing the variable tax with its definition (assuming that T_p is greater than zero):

$$TotalCost_{p,i} = \sum_t X_{t,i}.P_t + \sum_t X_{t,i.}\left(F_p - E_p\right)$$

This leads to the following expression for a generator's total cost of CO_2 emissions:

$$TotalCost_{p,i} = \sum_t X_{t,i}.P_t + \sum_t X_{t,i}.F_p - \sum_t X_{t,i}.E_p$$

From this formula, it follows that the total costs of CO_2 emissions for generator *i* in period *p* will equal the carbon price floor (times the amount of tonnes emitted in the period *p*) if, ***and only if,*** the notional EUA price E_p is equal to the average price of EUAs actually purchased by generator *i* over the same period *p*, that is, if E_p is defined as:

$$E_p = \frac{\sum_t X_{t,i}.P_t}{\sum_t X_{t,i}}$$

Only in this case will the average cost of CO_2 emissions for generator *i* equal the floor price F_p. Since this condition is not likely to hold (unless the rule adopts each generator's own average price as the definition of E_p), generators face a risk that the total cost of emitting CO_2 will be higher or lower than the carbon floor price.

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SCOTTISH renewables
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11 February 2011

Dear Mr. Shaw

Carbon Price Floor: support and certainty for low carbon technology

Scottish Renewables is the representative voice for the renewable energy industry in Scotland, influencing the legislative, regulatory and financial framework to deliver the best possible conditions for the industry's growth on behalf of over 300 member organisations[1].

The renewables industry is playing a crucial role in the UK's efforts to tackle climate change and increase the country's energy security, and must continue to do so in order to meet our renewable energy and greenhouse gas emission reduction targets.

Scottish Renewables support strengthening the long-term carbon price signal for the purposes of enhancing investment in renewable generation. However, government must fully integrate these proposals with the electricity market reform package to ensure the intended consequences of support and certainty for low carbon investment are met.

[1] For more information please visit www.scottishrenewables.com

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The general intention of the Electricity Market Reform package and its interrelation with the proposal for a carbon floor price is to ensure electricity is generated cleanly by promoting low carbon technologies and paving a clear pathway for investment in them. In this sense, we recognise the imperative to enable a market for nuclear and Carbon Capture & Storage. Further, we acknowledge that long term certainty in the price of carbon is required to encourage further investment in low carbon power generation.

In order to meet climate change targets, the UK in particular needs to attract £110 billion of investment in renewable technologies. When setting this figure within a European context, whereby over £1trillion of investment is required, it is clear that the UK investment environment must be attractive in order for the renewables industry to secure these scarce financial resources. Setting a carbon floor price which incentivises nuclear and CCS technologies should not be to the detriment of current levels of investment in renewables, but should aim to accelerate it.

The relevance of a carbon price within the context of a Contract for Difference is unclear because renewables generators do not directly benefit from an increase in the wholesale price. The carbon floor price proposals should ensure that they address the intended consequence of increasing investment in renewables and avoid unnecessary increases in consumer bills.

Setting a carbon floor price does not directly address the significant barriers to investment in renewable energy, particularly offshore wind, where significant deployment is essential to reach UK and EU targets.

The renewable energy sector requires a stable policy framework and an integrated approach towards carbon pricing, low carbon support, security of supply, planning reform, and transmission issues. Consistency and longevity of policy are critical to give companies the confidence to invest.

We hope you find these comments helpful, and if we can help by clarifying any of the points made, please get in touch.

SRG SCOTTISH RESOURCES GROUP™

10th February 2010

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Dear Sir

Carbon price floor: support and certainty for low-carbon investment – consultation

Scottish Resources Group (SRG) is the largest surface miner and the second largest producer of coal (underground and surface mined) in the UK. We employ over 1000 personnel, mainly in relatively deprived rural areas where few other job opportunities exist, and where the substantial wage levels associated with the skills, make a substantial contribution to both local community and the Exchequer.

SRG is a member of The Confederation of UK Coal Producers (CoalPro) and supports the separate submission made in relation to this consultation. SRG supports the premise that CoalPro is pro-coal on the basis that it is a source of safe and reliable energy, available in bulk when needed and reasonably immune from outside influences.

We have concentrated on general comments which we believe are vitally important if the UK is to maintain a safe, secure, reliable and diverse portfolio of fuels to ensure that its electricity supplies are consistently available and reasonably immune from interruption (e.g. weather variation and political intervention on piped gas supplies). Answers to the individual questions in the consultation document are set out later in this response.

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Importance of Coal

Whilst unfashionable to refer to the importance of coal, it is nevertheless fact that in 2009, 49 million tonnes of coal were used to generate electricity for the Nation's needs and in 2010, 45 million tonnes were consumed to the end of November 2010 i.e. still about 49 or 50mt for the full year. Consistently throughout the winter months, coal has been responsible for between 40% and 50% of the UK's electricity needs. By way of example, at the time of writing (8th February 1300hrs) 41.8% of UK electricity is being generated from coal and 0.9% from wind.

The Renewable Energy Foundation recently (Feb. 2011) referred to the low load factors on wind turbines across Europe and apart from commenting on such variability, stated that "Such figures confirm theoretical arguments that regardless of the size of the wind fleet the United Kingdom will never be able to reduce its conventional generation fleet below peak load plus a margin of approximately 10%."

Importance of Indigenous Coal Production

Indigenous coal production is vital for security and stability of supply and is key to ensuring that the Nation not only has a reliable source of heat and power but is reasonably well insured against the risks of disruption. The ability to reliably generate electricity, free from threat of interruption from industrial action, political intervention, transport breaks, terrorism, and adverse weather conditions, is an essential element for economic and social stability.

Coal extraction is effectively a growth industry in that output has increased by some 8% over the last three years with a commensurate increase in employment and investment. All this has been at a time when most other industries have shed jobs and slashed investment. The results are in the maintenance of highly skilled and well paid jobs, often in otherwise deprived areas.

Effect of Carbon-Price on Coal Production

The introduction of carbon-price support will bring this growth to a halt, and then reverse it, perhaps dramatically so. Investment will largely cease. It will lead to premature closures, loss of jobs and loss of other economic benefits. UK produced coal will be replaced by imported gas (or imported coal). These impacts are set out in more detail at 5.D5 and 5.D6 below where the rationale is explained in full.

Security of Supply Risks

Currently the UK has an energy mix that allows no fuel to hold a monopoly position on the generation of electricity. The position on coal is dictated by need and by the closure of power plants resulting from the LCPD and the ratification of the IED.

Investment in new coal fired generation and low carbon technologies will be driven by electricity generators having certainty of return on investment made. The carbon price floor clearly discriminates against coal and the generation of electricity from coal. This switch away from coal, which is currently taking place via the LCPD will be accelerated by the carbon price floor mechanism being proposed. The acceleration on the switch away from coal can only dramatically add to risk in price and availability of imported gas as the main alternative. This has a clear effect on 'security of supply'.

Affordabilty and Fuel Poverty

The electricity market is competition-driven, managed primarily by the spread difference in the cost of electricity generation, cost of gas and the electricity generation cost of coal. Both costs are influenced by the price of carbon. The reducing availability in coal plant will reduce the key tool in competition i.e. between gas and coal. This in turn can only expose the market to the price of gas coming from long distance suppliers who have the rest of an energy hungry Europe competing for vital supplies.

This lack of competition can only drive up the retail price of electricity and the retail price of gas, which will affect affordability and ultimately be felt most by those least able to afford the rising electricity price.

Effect on Investment in Fossil Fuel Generation

Carbon-price support, as drafted, will initiate a renewed dash for unabated gas. This may result in earlier carbon reductions but will emphatically not lead to a decarbonised electricity supply. On the contrary, it will lead to long-term carbon lock-in with a large volume of unabated gas-fired plant being available in 2030 and for many years beyond. See below.

At the same time, carbon-price support will act as a major disincentive to investment in existing coal-fired generation plant to meet the requirements of the Industrial Emissions Directive (IED). As a result, this plant is likely either to have closed by the early 2020s or to be operating on very low load factors. Again, this will exacerbate the risks of being dependent on intermittent renewable and imported gas for base load energy production.

Decarbonisation

A major reason for introducing a carbon price floor is to stimulate decarbonisation of the electricity industry and give certainty in electricity price being generated via renewables. The policy objective of increasing renewable electricity (mainly wind) production brings clear benefits in carbon reduction but this can only be secured by maintaining embedded power plants which are immune from the factors which restrict renewable output.

Thermal generation is therefore essential and this must include fossil fuels (gas and coal) plus nuclear if deemed acceptable. This dash for renewable energy can only consolidate the need for thermal generation – the 'easy fix' for which being to accelerate the build of gas plant albeit at a security of supply cost.

This 'easy fix' does NOT decarbonise electricity production, as gas still produces substantial CO_2 emissions. In very general terms, coal produces twice as much carbon as gas, yet by 2016-17, gas will be producing twice as much electricity as coal. Therefore, policies which encourage the growth of gas generation are exacerbating the problem and forcing the country into additional security risks.

Thermal generation is, and will continue to be, essential, and the carbon issue should be managed by clean burn technologies and CCS (on all fuels), which will allow a diverse range of fuels to be used and minimise the security and political risks associated with concentration on a single fuel such as imported gas.

Effect on CCS Demonstration Programme

Carbon-price support will also act as a major disincentive to the participation of coal-fired plant in the CCS demonstration programme. Relief from CCL in respect of carbon abated at such plants (and any subsequent CCS plants) is essential. However, continuing to charge CCL on the unabated proportion of such plants will be a major disincentive for the participation of coal-fired plant in the demonstration programme. We can see no reason for any generator to construct a partially abated coal-fired CCS demonstration plant in these circumstances. The lower cost option will always be to construct unabated gas-fired plant.

The consultation states at para 4.30 that "the carbon price support mechanism will not become a barrier to investment in such demonstrations" but does not explain how this is to be achieved for coal-fired plant. We cannot see why any electricity generator should wish to invest in a partially abated coal-fired CCS demonstration plant (other than in the first, now uncontested competition for the first such plant) without relief not only for the carbon abated but also in respect of the unabated proportion of such plant.

The advantages of early carbon reduction on fossil fuelled plants would be lost as will the widely recognised economic benefits of capitalising on the UK's academic and skill base in demonstrating and promoting CCS to the rest of the world.

Overdependence on Gas

The consequence of minimal investment in either existing or new coal-fired plants is a very low level of coal burn from the early 2020s onwards. This will have two effects. First, there will be the potentially dramatic effect on coal production and investment in coal production set out above. Second, there is a risk of a very high level of dependence on gas at that time.

It is considered that the Government should carefully consider the security of supply implications of this in a period of peak demand on a cold, still winter day in the mid 2020s, the sort of weather conditions that typically occur two or three times every year. At that time, new nuclear plant is extremely unlikely to have provided any more capacity in total; at best it will merely have replaced closing nuclear capacity. Whilst nuclear generation provides some 18% of total electricity supply, it is inflexible and will provide only some 12% to 13% of peak demand.

Wind generation, however great the capacity, will be effectively zero. Pumped storage will supply 1% to 2%. In freezing conditions, hydro generation will be minimal. There may be a small contribution from some other, very expensive, renewables and dedicated biomass and landfill gas generation. It follows that dependence on fossil-fuel plant may well exceed 80%. If there is then very little coal-fired capacity, dependence on gas will be extremely high, at a time when residential and commercial gas demand is also at its highest.

In line with statements from Government in the last few years, it is considered that this, by no means unlikely, scenario poses unacceptable security of supply and/or price risks.

Imports of Electricity – Market Distortion

The proposal to apply CCL to electricity exports, but not to imports, will lead to severe market distortion given the probable increase in interconnector capacity with perverse outcomes. Whilst interconnector capacity may still be relatively small compared with overall UK generation capacity, it will be much greater in relation to coal-fired capacity and generation in the mid-2020s.

The closure of coal fired generation as a result of the Generators not being encouraged to invest in new technologies to meet IED limits will place huge demands on interconnector capacity, which is just not available. As a hypothetical example, if Longannet closes in say 2021, the only real source of power to Scotland on a calm day will be via the N-S interconnector. It is understood that major upgrading would be required at a cost which would not be affordable for the private sector and, it must be borne in mind that it took in excess of 10 years for planning approval for the last major powerline upgrade.

Interconnectors are likely to be used more at peak periods, precisely the periods at which coal-fired generation, in the UK or Europe, will be providing marginal supply. Imported electricity, including electricity generated from coal, will thus displace UK electricity generated from UK coal production. This represents a perverse effect. Imports of electricity would effectively be subsidised.

Relationship with other EMR Proposals

Whilst this is a separate consultation, it cannot be considered independently of the Government's other proposals for Electricity Market Reform (EMR) set out in the DECC consultation.

We cannot see how carbon-price support can provide any greater certainty for investment in low-carbon generation than the proposed introduction of FITs elsewhere in the EMR package. Carbon-price support can only be either (a) a revenue-raising measure or (b) designed specifically to encourage a switch from coal to gas-fired generation. (In our response to the EMR we will be highlighting what appears to be an inequitable support for gas at the expense of coal when both technologies are based on high carbon fossil fuels albeit with relative differences in carbon output per unit.)

Accounting for CCL

The proposal that fuel suppliers account for CCL on fuel inputs is unnecessarily administratively complex, at least in the case of coal supplies. The electricity generators themselves will have to account for CCL on imported coal, at present more than 50% of supplies. It makes sense, therefore, that they should account for CCL on all coal supplies, including those from UK producers which would appear to be the most transparent and secure means of HMRC being able to capture tax on all fuel usage. CoalPro has explored this with the industry's electricity generator customers and believe that they, too, would prefer this approach.

The practical issues associated with CCL relief in respect of the abated carbon at CCS stations would be far more easily dealt with by adopting this alternative approach. It would be an administrative nightmare for generators and UK coal suppliers to have to agree between themselves (bearing in mind that several UK coal suppliers may be involved) what portion of the relief should apply to coal imports (to be accounted for by the generators) and what portion should apply to UK produced coal (to be accounted for by coal producers having first been apportioned between them).

Wider Effects

From a wider perspective, there are concerns on the effect of carbon-price support on the competitiveness of UK industry as a whole both directly and cumulatively in conjunction with CRC and CCL on electricity supplies. This will give rise to risks of carbon leakage on a wide scale.

This too will impact on coal producers who are themselves electricity consumers. Such parts of the UK coal industry as remain, given the other impacts of carbon price support, will be further disadvantaged compared to coal imports by this cumulative impact.

Responses to Individual Questions

Investment

3.A1 What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

We do not have the expertise to express a view on the carbon price in 2020 and 2030. However, it is clear that it will be fundamentally influenced by decisions at a European level on whether to go further than is presently planned under the EU ETS to 2020 (i.e. whether to aim for a 30% rather than a 20% reduction in carbon emissions) and on the post 2020 regime.

It should also be noted that, to the extent that the UK takes unilateral action through the introduction of a carbon price support mechanism, this will reduce overall European emissions (subject to carbon leakage from the UK) and thus make the EU ETS price lower than it would otherwise have been.

If the EMR package introduces FITs for low-carbon generation, this will be the investment driver and the wider carbon price will have no influence.

3.A2 If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Yes, but only in the absence of other measures. If FITs are introduced, it is these that will provide the certainty. No additional certainty would be provided by any greater knowledge of the future long-term price of carbon.

3.A3 How much certainty would investors attribute to a carbon price support mechanism if it were delivered through a tax system?

There must always be concerns that measures introduced through the tax system would be subject to change as a result of wider government policy objectives and macro-economic considerations. In any event, the introduction of FITs via the other EMR proposals would provide much greater certainty. The carbon price support mechanism is unnecessary and irrelevant in this context.

3.A4 In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

This question is posed the wrong way round. It is the other elements of the EMR package, specifically the introduction of FITs, that will ensure the decarbonisation of the power sector. If these are introduced, then carbon price support is wholly unnecessary.

Against this background, carbon price support can only have two purposes: - (a) to raise revenue; (b) to promote fuel-switching from coal to gas. The latter might result in earlier carbon reductions, but will emphatically <u>not</u> lead to decarbonisation. On the contrary, it is likely to result in a dash for unabated gas which will lead to long-term carbon lock-in beyond 2030.

Administration

4.B1 What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

We cannot comment. This information can only be provided by individual coal producers. It should be noted that there are a number of coal producers who are relatively small. They may prefer to account for CCL manually.

In any event, there is a far better solution. The electricity generating companies themselves will have to account for CCL on imported coal, at present more than 50% of supplies. It makes sense, therefore, that they should account for CCL on all coal supplies, including those from UK producers. We have explored this alternative with our electricity generator customers and believe that they, too, would prefer this approach.

This alternative approach would make it much easier to apply the tax relief for CCS power stations – see 4.C3 below.

4.B2 How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

We cannot comment. This information can only be provided by individual coal producers, but see the alternative proposal set out at 4.B1 above. The electricity generators will have to make the necessary changes in any event to account for CCL on coal imports and overall administrative costs will be reduced if UK coal suppliers do not have to do so.

4.B3 Please provide an estimate of how much the system changes would cost, both one-off and continuing?

We cannot comment. This information can only be provided by individual coal producers, but for small producers there could be a significant continuing cost. The alternative approach set out at 4.B1 above represents a far better solution. It is likely that both one-off and continuing costs would be lower as electricity generators will have to incur these in any event to account for coal imports.

Types of generator

4.C1 Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

Yes, but under the existing proposals, they are not. The proposals will offer a significant advantage for gas-fired compared to coal-fired generators and lead to large-scale fuel switching and a renewed dash for gas. The impact of this is dealt with more fully in the preamble to this response but will result in a very high dependency on gas in the mid 2020s, will be a major disincentive to investment in existing coal plant and in the CCS demonstration programme on coal-fired plant, and will lead to long-term carbon lock-in beyond 2030 at unabated gas plant.

Given the other elements of the EMR package, specifically FITs, the carbon price support mechanism is unnecessary. If, however, government wishes to pursue it, a single rate should be applied to all fossil fuels.

4.C2 Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

No.

4.C3 Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

This is absolutely essential if CCS is to proceed, including the demonstration programme. Without such relief, there will be absolutely no economic case for any investment in coal-fired CCS plant.

The practical issues would be far more easily dealt with if electricity generators were to account for CCL on all coal supplies, not just imports. It would be an administrative nightmare for generators and coal suppliers to have to agree between themselves what portion of the relief for carbon abated should apply to coal imports (to be accounted for by the generators) and what portion should apply to UK produced coal (to be accounted for by coal producers). The UK portion would have to be further apportioned between individual suppliers.

The demonstration programme will establish criteria for operational standards and these should apply to all CCS plants. There should be no difference, at least until the technology has been proven and is commercially available, between demonstration and subsequent plants.

There are, however, wider implications for the CCS demonstration programme (see also the preamble above). The consultation document baldly states that "the carbon price support mechanism will not become a barrier to investment in such demonstrations" (para. 4.30) without any explanation as to how and why this should be so. If there is no relief for carbon emissions from the unabated proportions of CCS demonstration plants, this would be certain to act as a major disincentive to the demonstration programme. At the very least, any demonstration plant (other, perhaps than the winner of the, now uncontested, competition for the first plant) would now almost certainly be gas. No other coal-fired demonstration plant would be likely to proceed if there were no relief for the solid fuel CCL on the unabated portion of such a plant compared with the CCL for gas.

Imports and exports

4.D1 What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

The proposal to apply CCL to electricity exports but not to imports is perverse and will lead to severe market distortion given the probable increase in interconnector capacity. Whilst this might still be relatively small compared to overall UK generation, it is likely to be much larger in relation to coal-fired capacity and generation in the mid 2020s.

Interconnectors are likely to be used more at peak periods, precisely the periods at which coal-fired generation, in the UK or Europe, will be providing marginal supply. Imported electricity, including electricity generated from coal, will thus displace UK generated electricity from UK coal production. This even applies to France. Whilst the actual electricity imported from France may be generated by nuclear stations, this is only possible due to substitution within France by coal-fired generation at peak periods. This represents a perverse effect. Imports of electricity would be effectively subsidised.

Applying CCL to electricity imports would be complex, but this is no excuse for allowing a severe market distortion and a perverse outcome.

4.D2 What impact might the proposals have on trading arrangements for electricity?

We cannot comment on the effect on the trading arrangements themselves but the overall impact will be to drive fossil fuel generation from coal to gas with all the effects set out elsewhere in this response.

4.D3 What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

The effect will inevitably be to result in higher imports from Ireland or lower exports to Ireland.

Carbon price support mechanism

4.E1 How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium to long term?

The proposal in the EMR package for FITs will provide all the certainty required for low-carbon generation. Carbon price support rates, at whatever level and over whatever time scale, cannot add to that certainty.

However, carbon price support rates at any level will massively increase the uncertainty for coal-fired generators in making their investment decisions on how to comply with the IED. The higher the rates, the greater the uncertainty. The apparent requirement for CCS demonstration plant to pay the CCL levy on the unabated portion of their plants will massively, perhaps fatally, increase uncertainty for the participation of coal-fired plant in that programme.

4.E2 Which mechanism, or alternative approach, would you most support and why?

FITs, as proposed in the EMR package, represent a far more certain option to which carbon price support will add nothing. An alternative is a low-carbon obligation.

4.E3 What impact would the proposals have on your carbon trading arrangements?

We do not participate in carbon trading.

Future price of carbon

4.F1 Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

A target carbon price is irrelevant and unnecessary to support the move to a decarbonised electricity system if FITs are introduced.

If a carbon price support mechanism is introduced, for other reasons, the target price should be maintained at low levels in both 2020 and 2030 if large-scale fuel switching from coal to gas, an excessive overdependence on gas, the premature closure of UK coal mining capacity, and long-term carbon lock-in at unabated gas plants are to be avoided (see elsewhere in this response).

4.F2 What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

If FITs are introduced as part of the EMR package, these alone will be sufficient to meet emissions reductions targets. The carbon price support mechanism may result in lower emissions in the short-term but are likely to result in longer-term carbon lock-in by promoting the large-scale construction of unabated gas-fired plant. Achieving longer term emission reductions targets from the late 2020s through to 2050 will become much more difficult.

4.F3 When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

A carbon price support mechanism is both irrelevant and inappropriate if FITs are introduced as part of the EMR package. If, for other reasons, a carbon price support mechanism is introduced, then the timing and the level at which it is introduced, should be designed to avoid an excessive switch from coal to gas with all the implications that entails (see elsewhere in this response).

Electricity Investment

5.B1 What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

None. FITs will be sufficient.

5.B2 What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

There will be minimal investment at coal-fired plant to meet the requirements of the IED with consequent closures and low load-factor operation. There must be a question as to whether sufficient coal-fired generation capacity will remain to ensure security of supply objectives can be met.

The carbon price support mechanism will stimulate a dash for gas and large-scale investment in unabated gas-fired plant.

5.B3 How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

It is essential to ensure fuel diversity of supply if security of supply objectives are to be met. Carbon price support should therefore be structured in such a way as to not make it totally uneconomic for investment in existing coal-fired plant to meet the requirements of the IED such that a reasonable amount of such capacity remains in the mid-2020s. At the same time, it should be structured to avoid an excessive level of investment in unabated gas-fired plant and thus avoid an excessive overdependence on such plant in the mid 2020s (and long-term carbon lock-in).

Only by ensuring a diversity of fuel sources can potentially very high and volatile wholesale electricity prices at peak periods be avoided.

It is suggested that the Government gives very careful consideration to the potential situation in a period of peak demand on a cold, still winter day in the mid 2020s, the sort of weather conditions that occur two or three times every year. At that time, new nuclear plant is unlikely to have provided any more capacity in total; it will merely have replaced closing nuclear capacity. Whilst nuclear generation provides some 18% of total electricity supply, it is inflexible and will provide only some 12% to 13% of peak demand.

Wind generation will be effectively zero (ten or twenty times zero is still zero). Pumped storage can supply 1% to 2% but hydro output may be near zero in freezing conditions. There may be a small contribution from some other, very expensive, renewables and dedicated biomass and landfill gas plant. It follows that the dependence on fossil-fuel plant may well exceed 80%. If there is then very little coal-fired capacity, existing or new, (bearing in mind that the main source of biomass

generation is coal-fired capacity), dependence on gas will be enormous, at a time when residential and commercial gas demand is also at its highest.

Existing low-carbon generators

5.C1 Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

SRG does not generate and therefore has no comment.

5.C2 What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

Assuming that this generation applies only to low-carbon plant, SRG has no comment.

Electricity price impacts

5.D1 How do you currently manage fluctuations in the wholesale electricity price?

SRG has no comment.

5.D2 What difference will supporting the carbon price make to your business?

See response to 5.D5 below.

5.D3 As an electricity generator or supplier, how much of the cost of carbon price support would you pass on to consumers?

SRG is not an electricity generator or supplier, but would expect that many suppliers could not survive unless the full cost of carbon price support was passed on to consumers.

5.D4 As a business, how much of the cost of energy bills do you pass on to customers?

Coal prices are wholly determined by the international market. Coal producers are therefore virtually unable to pass on any cost increase, from whatever source, that is not also incurred by our international competitors. Higher electricity prices as a result of carbon price support could not therefore be passed on to customers.

5.D5 How might your company or sector be affected and would there be any impact on your profit margins?

The effect on UK coal production will be ***dramatic***. UK coal production comes from two sources:-

(a) Deep mines are characterised by high levels of output with high fixed costs, and major periodic investment requirements. SRG acquired a deep mine from the Government at privatisation and understands the operational and investment risks which will be exacerbated by the carbon price floor proposals. It believes that these will place very difficult additional burdens on mine operators.

(b) Surface mines generally have shorter lives, with lower levels of output and are inherently more flexible in operation. Whilst they have lower levels of fixed costs, investment requirements are still high and are totally dependent on a stable and profitable long term business plan. By way of example, surface coal mine producers have a portfolio of sites at various stages of development which from initial identification to eventual production through a demanding and time consuming planning system might typically take ten years. Investment stability through this period is essential for the business and the jobs within.

As a result of carbon price support (as currently proposed), the market for coal in the 2020s is likely to be low and is in any event highly uncertain. Taking major investment decisions in the near term against that background is hazardous, to say the least.

The result of carbon price support is therefore likely to be zero, or near zero investment and consequent effect on both surface and deep mine production and jobs.

These uncertainties will lead to a curtailment of development effort and expense on potential longer-term surface mines within the portfolios of coal producing companies. Surface mine output is therefore likely to fall in the medium term.

The combined effect will be a severe loss of highly paid, high-skilled jobs in already depressed areas, loss of tax revenues and other economic benefits.

The overall impact of carbon price support will thus be the replacement of UK produced coal by imported gas. If the market for coal in the 2020s proves to be higher than we fear, UK produced coal will be replaced by imported coal.

SRG with CoalPro, urges the Government to carefully consider the wider economic implications of the impacts on UK coal production and security of supply.

Despite high international coal prices, there may still be pressure from electricity generators on UK coal producers to reduce prices in an attempt to offset the effect of carbon price support. This would impact on profit margins and may reduce output further.

5.D6 Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

The Impact Assessment takes no account of the effect on coal production, the effect of premature closures in the industry, the consequent loss of jobs and other economic benefits (including tax revenues) and the cessation of investment.

Concluding Remarks

In view of what we perceive to be a severe effect on this industry and a consequent negative effect on security and availability of energy supply, we, together with CoalPro would welcome the opportunity to discuss further any of the issues raised in this response and explain the concerns and rationale for our suggestions.

Scottish Water Response to HM Treasury consultation – Carbon price floor

Scottish Water is both a large consumer of electricity (>600 GWh annum) and a generator of renewable electricity (~18 GWh annum). As a renewable generator, Scottish Water supports incentivising decarbonisation. A carbon floor price should give more certainty for investment in lower carbon energy generation. However any carbon floor price must equally provide fair value for consumers as well as incentivising generators to invest in grid decarbonisation.

Participant costs to purchase carbon allowances in the CRCEES are payable from 2012 onwards. These introduce a significant cost increase to large energy users such as Scottish Water. This should be taken into account by DECC and HM Treasury when considering the additional cost implications of a carbon floor price.

Current renewables incentives (e.g. Renewable Obligation Order) have resulted in hidden pass-through costs from suppliers to consumers, irrespective of suppliers' actual exposure. Scottish Water suggests Government should address this anomaly by mandating transparency in this area. (Suppliers in this context being vertically-integrated companies in the electricity market).

Scottish Water suggests that low-carbon generation should not be able to benefit during periods when higher-carbon-fuelled generators are providing the marginal supply.

As a renewable generator, Scottish Water supports incentivising decarbonisation but cautions that any new mechanism should not favour or disfavour any scale or technology.

Government is consulting on simplifying the current array of taxes and levies imposed on energy production and consumption. Without simplification, we are concerned that there will be continued confusion and hidden costs for the consumer. Scottish Water supports moves to simplify and create transparency of decarbonisation costs borne by consumers.

Carbon price floor: support and certainty for low-carbon investment

Investment
3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?
Scottish Water expects the carbon price to increase on the basis that removing free EUETS allocations in the next EUETS phase will stimulate upward movement of the carbon price. Scottish Water considers that a carbon price floor may reduce investment risk in renewable generation.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.
Scottish Water believes that long-term certainty of carbon price will increase investment in low-carbon generation. However Scottish Water suggests there needs to be a balance between maintaining business competitiveness and increasing electricity prices to consumers (as a means of stimulating investment in low/zero carbon technology). Large consumers such as Scottish Water already pay significant sums towards decarbonising through existing measures, i.e. RO, FITs, EUETS, CCL, and CRCEES and Scottish Water questions whether any additional cost to reduce investment risk for generators should be borne by consumers.
3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?
Scottish Water expects to see transparency within retailer pricing and believes a tax-based mechanism would support that objective.
3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?
Scottish Water believes that reform of the current GB wholesale electricity market is needed, specifically in the area of all bidders-in being awarded the marginal price – i.e. the current system could unfairly benefit zero carbon-based generation (given the likely position of high-carbon generation at the system margin). Scottish Water cautions against increasing the cost-burden to consumers and introducing further complexity in pricing structure through any additions to existing measures to decarbonise the power sector.
Administration
4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?
Scottish Water has no comment to make.
4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?
Scottish Water has no comment to make.
4.B3: Please provide an estimate of how much the system changes would cost, both

one-off and continuing?

Scottish Water has no comment to make.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

Scottish Water believes all types of electricity generators should be treated equally and any carbon pricing mechanism must take account of the carbon intensity, efficiency and scale of all types of generation.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

Scottish Water believes that good-quality CHP should receive preferential treatment, given the higher overall efficiency of fuel conversion and higher capital costs for CHP.

Maintaining CCL exemption and/or relief from the proposed carbon floor price for fossil fuel used by CHP would support this.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Scottish Water suggests that CCS should be mandatory on all fossil fuel fired power stations and as such eligibility for tax relief is not relevant.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

Carbon-intensive electricity generated in the UK might be incentivised to export to benefit from CCL exemption, but would still contribute to UK grid conversion factors (CO_2/kWh). This would have an adverse impact on carbon allowance costs within the CRCEES.

4.D2: What impact might the proposals have on trading arrangements for electricity?

Scottish Water is concerned that some generators would be allowed to unfairly benefit from the current marginal system pricing, i.e. the relatively more expensive carbon-intense fuels will determine the marginal system price and hence zero-carbon generators would potentially attract a "windfall" benefit (assuming there is no change to the present GB wholesale trading arrangements).

4.D3: What impact might the proposals have on electricity generation, trading and supply

in the single electricity market in Northern Ireland and Ireland?
Scottish Water has no comment to make.
Carbon price support mechanism
4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?
Carbon price support rates should be set such that there is minimal price risk and high certainty. As a regulated business with 5 year business planning cycles, Scottish Water would find it would be difficult to plan annual budgets if there were continual change to carbon prices and/or commercial structures.
4.E2: Which mechanism, or alternative approach, would you most support and why?
The rate escalator offers the optimum measure for budgeting & forecasting with minimal risk for investment planning
4.E3: What impact would the proposals have on your carbon trading arrangements?
Scottish Water has no comment to make.
Future price of carbon
4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?
As a consumer Scottish Water is exposed to current carbon costs associated with the Renewable Obligation, EUETS, FITS, CCL and CRCEES. Any new carbon floor price need to reflect the existing scale of decarbonisation costs already being levied on industrial and commercial consumers.
4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?
It is critical that any carbon floor price is set at a level affordable by consumers. HM Government should mandate transparency of the carbon intensity of electricity supplied to consumers within the price offerings from retailers.
4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?
HM Government should develop a pathway towards achieving a single clear and consolidated policy related to the price of carbon (i.e. combine all current policies into a single transparent policy) as soon as reasonably practicable.

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

Scottish Water expects any carbon price support mechanism to increase investment in low carbon electricity generation with the proviso that any mechanism should be transparent, low risk and programmed.

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

Scottish Water expects that there will be an increase in autogeneration, particularly by large and energy-intensive non-domestic consumers.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

Scottish Water suggests that only carbon-intensive generators should be liable for carbon costs, and that low/zero carbon-intensive generation should not be permitted to benefit from the current marginal pricing system inherent within the current GB wholesale trading arrangements.

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

The Renewable Obligation Order and Feed in Tariff already provide support for renewable energy autogeneration within Scottish Water. Any new instrument that allows retailers to pass-through *transparent* carbon costs will stimulate renewable generation opportunities.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

The carbon floor price should not be treated in isolation from existing decarbonisation incentives which currently support projects for ~20 years.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

Scottish Water as a consumer has a developed a risk management policy that is implemented through flexibly traded wholesale electricity.

5.D2: What difference will supporting the carbon price make to your business?
As a consumer, Scottish Water believes it will face increasing costs for electricity supply.
5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?
Scottish Water has no comment to make.
5.D4: As a business, how much of the cost of energy bills do you pass on to customers?
Scottish Water is a regulated business with customer prices set by an independent Regulatory body. Increases in energy bills would be passed on to customers only at the next regulatory price review period (2015). Therefore we will have to absorb any interim energy price rises, which we believe would be discriminatory.
5.D5: How might your company or sector be affected and would be there any impact on your profit margins?
Scottish Water expects its energy costs to increase as a result of the introduction of a carbon price floor.
5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?
Scottish Water has no comment to make.

Sellafield Ltd

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22 June 2011

Martin Shaw
Environmental Taxes HM Revenue & Customs
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[redacted]

Your ref: N/A
Our ref: CFP_PC1

Dear Sir

Carbon Price Floor: Support and Certainty for Low Carbon Investment Consultation

The introduction of the Carbon Price Support Rate (CPSR) will have a significant cost impact on Sellafield Ltd as well as other similar businesses within the UK civil nuclear decommissioning and other non generating nuclear industries.

Sellafield site benefits from Climate Change Levy exemption for the majority of its energy consumption supporting uranium fuel reprocessing under the Finance Act 2000 Schedule VI paragraph 13 (b)(iv), our understanding is that this exemption would not be affected by the introduction of the CPSR.

Increases in energy costs for Sellafield site will have a direct impact on the funding available for safe, secure decommissioning of UK Government legacy nuclear facilities and associated hazard reduction. Costs associated with activities supporting the nuclear fuel cycle would also increase which would be contrary to the governments aim of encouraging low carbon generation activities.

For these reasons Sellafield Ltd believe that CPSR should not be applicable to the UK civil nuclear industry, specifically not to the decommissioning and uranium processing at Sellafield and that our current CCL relief should continue to be applicable under the CPSR scheme.

Attached are some more specific consultation question contributions.

[redacted]

[redacted]

Questions

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?
3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.
3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

Response: While our current site power and steam supply arrangements are set due to previous capital investment in CHPP, carbon price as part of energy cost will be a significant factor in the investment decision for CHPP replacement in 10 years time. Maintaining a significant cost incentive to use waste heat from CHPP will be a key factor to counter the large cost of maintaining a large steam distribution infrastructure (c15km). Failure to do this may drive alternative decisions e.g. local provision of steam/heating from electric or fossil fuel sources which may be counter to government policy. Greater certainty on future carbon prices will enable greater certainty in business investment decisions when considering energy cost for alternative energy supply scenarios can be considered.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.
4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

Response: CHPP and 'Good Quality' DECC scheme have been encouraged by government policy and utilisation of waste heat provides a clear carbon benefit over the alternatives and as such should continue to receive more preferential treatment. If full relief for all CHPP input fuel is not considered practical, the government could consider a full relief against CPSR on input fuels *in proportion to the amount of useful heat supplied* from those CHPP stations. The government could also consider introducing alternative benefits to CHPP operators e.g. grants for efficiency improvement schemes etc. Will the CHPP Good Quality scheme remain in place, and what benefit will operators now receive against the cost of maintaining accreditation? Could partial CPSR relief for those stations with Good Quality status be introduced as an incentive?

Future price of carbon

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

Response: ETS phase III also comes into effect in April 2013 which will have a significant carbon cost impact (>£1.5M for Sellafield proportion of local CHPP output) for the business to deal with. Implementing CPSR at the same time will mean business incurs a double hit, delaying CPSR until April 2014 would enable business to better manage these two changes.

Electricity price impacts

5.D2: What difference will supporting the carbon price make to your business?
5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

Response: While Sellafield Ltd operates the Site based CHPP plant, the site owner, the Nuclear Decommissioning Authority (NDA) has a trader who deals with carbon and energy trading separately. CPSR being levied against CHPP input fuel for that portion of the station output (steam and electric) used on Sellafield Site would need to be paid from within the existing Sellafield Ltd/NDA budget i.e. this value of government funding would be diverted from its intended purpose of dealing with the UK civil nuclear decommissioning legacy. Sellafield Ltd therefore consider that CPSR should not be applicable to the civil nuclear industry and its associated decommissioning activities

Sellafield funding is derived from the NDA which has recently had a multi year fixed settlement in the Government Public Spending Review; it is extremely unlikely further funding would be made available to meet this additional cost. It would not appear consistent with the environmental protection aims of the government should one aspect of environmental protection impact another i.e. decommissioning and high hazard reduction and managing the UK's nuclear legacy waste

Sellafield activities supporting nuclear fuel cycle operations which support low carbon nuclear generation currently have a CCL exemption. This exemption covers some 93% of the power currently consumed at Sellafield site and our understanding is that this exemption would not be affected by the introduction of the CPSR. **Ref Finance Act 2000 Schedule VI para 13 (b) (iv**) – *A supply of a taxable commodity to a person who uses it in producing uranium for use in an electricity generating station*. If this were not to be the case going forward the impact would be a further >£1.5M diverted from UK decommissioning activities.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?
5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

Response: CPSR has the potential to have a significant impact both directly, should the sites CHPP derived power and steam be liable and also indirectly, due to likely increases in raw material supplier costs e.g. nuclear operations require large amounts of process chemicals and gases which are likely to become more expensive. These increasing costs impacts and the potential impact on the profitability of the sites nuclear fuel reprocessing contracts directly affect the funding available for our core business of safe, secure nuclear clean up and hazard reduction.

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11 February 2011

Dear Mr Shaw

Carbon Price Floor Consultation Response

Sembcorp provides utilities and services to customers on the Wilton International manufacturing site on Teesside. Sembcorp owns a combined heat and power station on the site and supplies up to 500te/hr (400MW) of steam at three pressures to process plants on the site. The CHP station also supplies electricity to site customers as well as exporting some of its output to the grid. We also own a 30MW biomass-fired electricity generating station ("Wilton 10").

By operating in CHP mode over the first 50 years of operation, we have saved 20 million tonnes of CO2 emissions, this does not include the new investments which are saving further emissions.

Despite our CHP plant having an overall higher efficiency than a power only plant (70% versus 50% for CCGT), we would end up at a disadvantage from power only generators as our overall efficiency is made up of around 45% heat and 25% power. If as expected, the additional costs incurred by power only generators feed through into higher power prices, CHP would only benefit from such a rise in power prices by about half the required rate which would result in a damaging burden on our customers – the already struggling UK chemical sector.

As a solution, the Government could simply exclude the fuel used for the heat generated from CHP from the new carbon tax. This would preserve the value for CHP operators and is administratively very simple as it would use the existing CHP Quality Assurance programme. To increase support for CHP, it could be entirely exempted from the new carbon tax.

The following attachment is Sembcorp's response to the Carbon price floor: support and certainty for low-carbon investment consultation.

[redacted]

Questions

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

Government's data indicates a price of £70 per tonne in 2030 which appears high based on historic levels. Market data currently goes out as far as 2016, and at this point the carbon price is estimated to be €16. Using this data, internal forecasts we have prepared show that this figure would increase to around €30 by 2024.

The carbon price is a very important factor when considering investment in low-carbon generation. If the carbon price is high, it will in turn make the running of carbon intensive plants less attractive and therefore investment in low carbon generation would become more favourable.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

If investors were to have greater certainty in the future long-term price of carbon, and these prices were due to be higher than what we have recently experienced, this would increase investment in low carbon electricity as explained in the question above.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

Investors would attribute a lot more certainty than they currently do to a carbon price support mechanism if it were delivered through the tax system as it would set a certain price, as the way it stands now, there can be no certainty what so ever.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

Carbon price support in some form is required to decarbonise the power sector in the UK however the system needs to be a simple one which will encourage investors and ensure current plants maintain levels of support which they are currently entitled to. At present, the carbon price support proposed will have a detrimental affect on CHP and as such further incentives would be required for investment in these types of plant, whether it be by modifying the current carbon price support proposals or by adding additional benefits in the electricity market.

Administration

4.B1: What changes would you need to make to your procedures and accounting

systems to ensure you correctly account for CCL on supplies to electricity generators?

This would need to be investigated further closer to the time.

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

Again, would need to make further investigations.

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

As above.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

No. All types of electricity generators should NOT be treated equally under the proposed changes, it should depend on the carbon intensity of the generator. Under the current system, CHP operators do not pay any levy on input fuels and receive levy exemption certificates for all electricity generated and exported to the grid. This treatment reflects the higher efficiency of CHP plants compared to that of power only plants.

Despite the fact that CHP plants are more efficient than power only plants, the majority of the efficiency relates to heat output rather than power output.

Using Sembcorp's CHP plant as an example, the CHP plant is approximately 70% efficient. Of this 70%, 45% efficiency relates to heat and 25% efficiency relates to power. This compares to a power only plants efficiency of approximately 50%. Under the current proposals, this would result in CHP paying double that in fuel levy than a power only plant, with the majority of the additional costs incurred by power only plants being fed through into the power prices. Whilst CHP would benefit from any rise in power prices also, it would only be at approximately half the required rate. Depending on whether this additional burden can be passed through to the end customer, this would have a damaging burden on either the CHP plant or its customers, either way damaging the industry.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

This question is unclear as we are not aware of CHP currently being provided with additional or more preferential treatment. There is already insufficient investment in CHP and the proposed measures threaten to close existing CHP down.

We do believe that additional or more preferential treatment for CHP should be applied to CHP and could be applied easily in two ways. Either to exempt good quality CHP entirely or to exempt good quality CHP from the levy on fuel used to generate heat. This would be quite simple as all the data required is already collated for the CHPQA programme.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

This question is not relevant to our plant.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

We will not be responding to this question as we do not import or export electricity.

4.D2: What impact might the proposals have on trading arrangements for electricity?

At present we don't expect that there will be a major impact on trading arrangements for electricity.

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

No response as we have no significant knowledge of the market in Northern Ireland and Ireland.

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

The carbon price support rates should be set so that the carbon price reaches a fixed level over a minimum of ten years to ensure adequate returns on investment could be reached.

4.E2: Which mechanism, or alternative approach, would you most support and why?

As discussed in section 4.C2 above, we believe good quality CHP should either be excluded entirely or at the very least, an exemption should apply to the fuel used to generate heat.

4.E3: What impact would the proposals have on you carbon trading arrangements?

In order to have a carbon price mechanism, you need to have a carbon price index against which to trade. As a carbon price index does not currently exist this would lead to a great deal of uncertainty as to what this will be and will have the additional impact of increasing the costs of trading, increasing the overall burden.

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

Yes, the government should target a certain level as a fixed carbon price would be more conducive in encouraging investment and would provide a lot more certainty.

The level at which the carbon price is set is of no real concern so long as the Government solves the issues in relation to CHP and ensures that CHP plants are not at a disadvantage compared to other power only generators.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

In order for the UK to meet its emissions reduction targets in the power generation sector the most appropriate carbon price would obviously be the highest one. However this would not address the other issues faced by this sector such as fuel poverty etc.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

It would make sense for the carbon price support mechanism to be introduced in 2013 when free allowances end, however as per question 4.F1 above. So long as the unfair treatment of CHP plants is resolved, when the carbon price support mechanism is introduced is not a real issue.

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

In its current form (i.e. with CHP and power only plants being treated in the same way), the carbon price support mechanism will have the effect of decreasing investment in CHP generation and may also change the way installed CHP plants run as to maintain current economics would no longer be feasible.

The effect on renewable power, such as Sembcorp's biomass plant would be favourable and as such would incentivise more investment in this type of generation.

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

If the carbon price support level is set too high, it could have the effect of turning off less carbon intensive generation in the UK in favour of more carbon intensive generation in Europe as it is bound to do in some degree.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

The support given should be fair across all types of generating stations.

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

The impact of the proposals would vary on our generation portfolio.

On our Wilton 10 plant, which is a biomass plant it would have a positive effect as it does not emit any carbon.

However on our low carbon intensive CHP plant, the impact would be negative as described previously.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

As discussed previously, CHP would be at a huge disadvantage and as such the Government should review its proposals in this regard.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

No response at this stage.

5.D2: What difference will supporting the carbon price make to your business?

The added burden of charging a levy on all input fuel on our CHP plant will have a major impact on our business. Invariably we will pass this charge through to our customers, however this will cause our customers to suffer. The chemical sector in the UK has diminished significantly in recent years and this will have another negative impact.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

Being a CHP plant we would be at a huge disadvantage as we could only recover the costs on the portion which relates to power.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

No response at this stage.

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

The proposals in this consultation place a higher burden on CHP plants than they do on power only plants. This burden will see Sembcorp having to pass through additional costs to our customers in the chemical industry. It is safe to assume that our customers will suffer.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

No comments to add.

System Operator for Northern Ireland

Single Electricity Market Operator

18 February 2011

Martin Shaw
Environmental Taxes Team
HM Revenue & Customs (HMRC)

Re: Carbon Price Floor: support and certainty for low-carbon investment

Dear Martin,

EirGrid welcomes the opportunity to respond to the HM Revenue & Customs consultation on Carbon Price Floor: support and certainty for low-carbon investment.

EirGrid Plc holds licences as independent electricity Transmission System Operator (TSO) and Market Operator (MO) in the wholesale trading system in the Republic of Ireland (RoI), and is the owner of SONI Ltd, the licensed TSO and MO in Northern Ireland (NI). The Single Electricity Market Operator (SEMO) is part of the EirGrid Group, and operates the Single Electricity Market on an All Island basis.

EirGrid is closely following the market reform developments in the UK electricity trading arrangements. As we understand, the creation of Carbon Price Floor is one of a number of options being considered.

We are especially interested in the effect any changes in UK policy would have on: 1) the interaction between the SEM and the various electricity trading arrangements in Great Britain (GB) and 2) NI electricity policy and the internal workings of the SEM.

By 2012, interconnection between the SEM and GB will increase to 1GW. While this represents just over 1% of the generation capacity in GB, it represents a more sizeable 10% of combined generation capacity of RoI and NI. Therefore, any changes in UK policy could have a significant impact on electricity trading in the SEM.

A Carbon Price Floor will almost certainly systematically raise the wholesale price of electricity. With increasing interconnection and more developed regional integration across our trading arrangements, it is likely that this effect will be felt in the SEM. In addition, if NI generation as part of the UK were to adopt similar changes, this would have far reaching implications in terms of the operation of the SEM.

Creating greater certainty regarding future carbon prices undoubtedly has its merits; however, when considering changes of this nature, we believe that due regard is given to the regional impacts of a policy development of this nature.

We look forward to the outcome of this consultation and will be responding to the overall consultation on Electricity Market Reform.

Shell Response to HM Treasury's Carbon Price Floor Consultation

Summary

- Shell supports the UK's carbon emission targets and agrees with the Government's objectives for securing early and substantial emission reductions from the UK electricity sector as well as ensuring that electricity supplies are secure and affordable. We agree time is short and stronger market instruments are needed as investment incentives.

- We welcome the UK Government's focus on strengthening the carbon price signal. We strongly believe the best approach is to strengthen the EU ETS. We recommend that government urgently pursues two actions on the ETS with the EU and other Member States:

  - A balanced reduction of available credits from Phase III of the ETS.

  - Early action on Phase IV, including the announcement of a reserve price on auctions.

- Success within the EU ETS would be much preferable as it would avoid the adverse consequences of unilateral action, i.e. carbon leakage, higher than necessary energy prices in the UK impacting competitiveness and undermining the EU ETS.

- However, we recognise the UK's need for action on a timetable earlier than might be pursued through the ETS. Therefore, if the CCL is reformed to strengthen the carbon price signal, it should be reformed to establish a CO_2 price floor so that the downside risk to major front-end investment in low carbon technology is reduced. We believe it would be a policy error to design the CPS mechanism to try to set the marginal cost of CO_2 mitigation because:

  - a centrally set price is unlikely to reflect the true cost of mitigation. Setting this marginal cost should be left to market forces driven by the ETS,

  - getting the price wrong leads either to too little low carbon investment or unnecessarily high power costs, and

  - it risks undermining the ETS and further reducing confidence in the mechanism, when the UK has been a key proponent of this mechanism in Europe.

- The proposed contract for difference and feed-in tariff should not be long term instruments but used as "launch aid" for pre-commercial technologies at demonstration phase. The main such technologies are new nuclear, offshore wind and CCS. The reliability and cost of all these technologies must be properly appraised and proven before subsidies for large scale deployment are applied. So if used, FITs and CfDs should be a transition mechanism only, with the long term

signals set by the EU ETS. Open-ended subsidies for nuclear, wind and CCS should not be implemented.

- We understand the need to strengthen the incentives for low-carbon investment but we highlight the risk that substantial support to nuclear and offshore wind may reduce the attractiveness of, and thus crowd out, investment in gas-fired generation. Gas is an immediately available and affordable energy solution and its contribution to emissions reduction is increasingly widely recognised:

  - Gas replacing old coal is the fastest, biggest and surest way for the UK to reduce CO_2 emissions in the next 10 years. We estimate the reductions in terms of hundreds of millions of tonnes and up to 20% of power sector emissions by 2050.

  - Gas puts least stress on the physical and financial system. On a levelised cost basis CCGTs are currently half as expensive as offshore wind and the estimated cost of gas+CCS is 60% that of Round 3 offshore wind costs on a First of a Kind basis, and 80% on an Nth of a Kind Basis[1].

  - With CCS, gas can remain an important low carbon energy source for the long-term, and economics have shown that CCS with gas plants are competitive compared with coal with CCS, nuclear and offshore wind.

Introduction:

Shell welcomes the opportunity to respond to HM Treasury's consultation on the carbon price floor. It has been difficult to determine fully the impact on our business and the effectiveness of the proposals, because of the absence of detail around the rate of the carbon price support and the mechanism with which it would be set. Our response below reiterates the key points made in the executive summary and responds to the specific questions raised in HMT's consultation.

Investment

3. A1 What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

With concerted action from European governments to recognise the importance of mitigating the effects of climate change through setting Greenhouse Gas (GHG) emissions reductions targets, not least through the EU ETS, Shell anticipates that the carbon price in 2020 and 2030 ought to be significantly higher than today's price, particularly through the number of allowances in the system which will be introduced in Phase III from 2013. However, because of the historic performance of the EU ETS, there is still considerable future price uncertainty, which does not give confidence to investors considering investment in low carbon technologies.

Phase III of the EU ETS is at risk of not delivering a robust CO_2 price because of the severe recession and the anticipated permanent step-down in the level of EU output and emissions relative to the pre-

[1] Mott MacDonald (June 2010). "UK Electricity Generation Cost Update".

recession expectations on which the emissions cap for Phase III was set. If strengthened, the EU ETS will deliver the targeted emission reductions. The EU ETS is based on setting limits to the absolute levels of emissions and the global economic downturn has had a significant impact on the level of future emissions. To mitigate this impact, the EU should work towards a balanced withdrawal of available credits from Phase III and introduce an allowance reserve price for Phase IV. The reserve price would signal to investors that future unexpected shortfalls in emissions would be used in part to step up emission reductions and at the same time reduce uncertainty in long-run investments associated with the CO_2 price. While there needs to be a better understanding of the impact of the recession and the shape of the recovery, action should be taken soon because most large-scale investments being considered today will only see a Phase IV carbon price in terms of operating costs, given the timeline for investment decisions and implementation. This would help to close the gap between the long-run carbon targets and the need to reduce the uncertainty that businesses face in making long-run investment decisions.

3. A3 How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

The level of the carbon price is a key factor in stimulating investment in low-carbon generation. Hence, long term visibility of the carbon price level and the ability to plan with a minimum carbon price are very important considerations for investment in the power generation sector and the UK focus on achieving this is welcome. Given the drawbacks of unilateral action such as the impacts on UK competitiveness and the risk of significant carbon leakage to the EU, Shell believes the UK Government should take a lead in Europe on improving the EU ETS to ensure it delivers on its objectives (see responses given in the Executive Summary and in 3A1). A stronger carbon price signal through the EU ETS would provide more certainty for investors through multilateral commitment and could provide increased certainty compared to unilateral action.

Because of long-term political unpredictability (i.e. a future government could reverse or change the policy), Government should consider making the design of the rate transparent and objective through a market-based index or giving the responsibility of setting the rate to an independent body, as well as setting the rate several years in advance. Without this certainty, there is a risk that this proposal could result in greater volatility of the overall carbon price and increased hedging costs.

3. A4 In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

A robust carbon price could deliver the necessary level of decarbonisation that meets the UK targets at least cost and we share the UK Government's view on the importance of strengthening this signal. If it is decided that further support to low-carbon generation should be provided through a wider package of electricity market reforms, the chosen mechanisms should recognise the need for investment in the development of a variety of low-carbon technologies, to ensure diversity of the UK generation mix. This requires "launch aid" for pre-commercial technologies at demonstration phase, including new nuclear, offshore wind and CCS. The reliability and cost of all these technologies must be properly appraised and

proven before subsidies for large scale deployment are applied. If used, feed in tariffs or a contract for difference mechanism should be transitional only, with the long term signals set by the EU ETS.

It is also important to note that if all the low-carbon support proposals currently under consultation were implemented, it would lead to a significant increase in intermittent and inflexible electricity supply sources. This would then make it necessary for Government to consider how to ensure the required investment in conventional technologies to provide back-up and maintain security of supply.

Administration

4.B1 What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

The administrative impact of changes in taxation regulation are generally minimized when new accounting measures are coordinated with existing measures and use existing information/reporting as much as possible. In addition, sufficient lead time between announcing legislation and implementation also supports more efficient introduction. The current proposals are unlikely therefore to entail a large administrative burden.

Shell's Industrial and Commercial (I&C) gas retail supply business, Shell Gas Direct (SGD), levies the current CCL in relation to business customers. The procedures and systems are therefore already in place to administer any revised CCL – we do not believe that Shell is alone in this regard - and it would make sense to continue utilising them. However, to do so does requires the charge to be levied by the entity supplying and invoicing the customer at the meter level, not at the wholesale trading level.

4. B2 How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

Implementing the carbon price support rate in 2013 should allow enough time to make the administrative changes. Shell would require a period of 12 months to make the necessary changes.

4. B3 Please provide an estimate of how much the system changes would cost, both one-off and continuing?

For gas supply companies with an Industrial and Commercial business, there would be some additional costs from the proposed system changes but these are unclear at this stage. The proposal is, in effect, an extension of what these Shell businesses have to currently undertake. Shell Gas Direct, for example, is at present levying the CCL on some 7,000 customers via their retail bills.

Extending this activity to include supplies to power stations should not incur any appreciable additional systems costs.

For the refining business, please refer to UKPIA's response.

Types of Generator

4. C1 Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

There is concern that the current proposals would negatively impact CHP plants. Please refer to UKPIA's response for further detail.

The principle of a level playing field should apply to all low carbon technology development. Shell supports subsidies and other forms of targeted support to enable low carbon technologies to be developed in the early, pre-commercial phases. However, we do not support the use of subsidies or support for the large scale roll-out of immature technologies, effectively selecting technology winners (as is currently the case with offshore wind development in the UK). The reliability and cost of all new technologies must be properly appraised and proven before subsidies for large scale deployment are applied. In addition, support should be withdrawn once these technologies reach commercial stage and a level playing field approach, incorporating the carbon costs associated with actual carbon emissions, should then be applied. This would provide for greater transparency of the most cost-effective low emission options.

4. C2 Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

Please refer to the UKPIA response.

4. C3 Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Yes. We agree that tax relief (relief from the CPSR) should be granted to CCS projects. A relief for CCS should be introduced on the basis of the final gCO_2/kWh intensity of the plant or fraction of plant, to which the CCS is fitted.

In the case of CCS demonstration projects, we would argue that the entire power station should receive relief. In the demonstration phase, CCS will only be applied to a small fraction of the plant and therefore any relief received on that basis will be minimal. The additional CPSR costs therefore could deter further demonstration projects.

For the purposes of qualifying for such tax relief, a variety of reasonably straightforward tests could be applied to CCS plants, e.g. the capture plant has received the relevant Section 36 consent and/or the storage site operator has received a CO_2 storage permit and is therefore verifiably storing CO_2 under the conditions imposed by the permit.

Imports and exports

4. D1 What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

Imported electricity should be exposed to the same tax, based on the average generation mix. Exported power should be exempt at the point of export on the basis of the average mix. Dependent on the regime for imported electricity, flows across the interconnector could be distorted by the proposal to include fossil fuels used for electricity exports. This would make imported electricity cheaper and more attractive, potentially displacing electricity generated in the UK.

4. D2 What impact might the proposals have on trading arrangements for electricity?

There are unlikely to be direct impacts on electricity trading arrangements, although credit requirements may increase.

The main impacts would appear to be indirect in nature and affect system operation as a result of the earlier dispatch of renewables, given that the carbon price support would increase the costs of fossil fuel generation.

These impacts would fall more on the balancing, transmission charges and cash-out exposure of suppliers.

Carbon price support mechanism

4.E1 How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

Regarding the proposals offered in this consultation, the key factors in setting the rates should be to ensure that they are sufficiently protected from political influences; that there is certainty several years in advance (at least as long as the electricity and carbon price forward curves) and they are not adjusted too frequently. Even annual changes would make forecasting CO_2 prices difficult and add to the risk associated with the current carbon market.

Adjustments based on a carbon market index would therefore seem to be the only option of those proposed that is less susceptible to political variance and would possibly give the most certainty in terms of investor confidence. In addition, rates set annually based on a carbon market index would be preferable as this would link the levy to the carbon market. If implemented, the CPSR should be abandoned in future when the carbon price set by the EU ETS is robust enough to support the required low-carbon generation.

4. E2 Which mechanism, or alternative approach, would you most support and why?

As indicated in question 3.E1, Shell believes that the most appropriate approach is to create a more robust carbon price through a balanced withdrawal of available credits from Phase III and through setting a reserve price in Phase IV of the EU ETS, and not undertaking unilateral action.

4. E3 What impact would the proposals have on your carbon trading arrangements?

No material impact identified.

Future price of carbon

4. F1 Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

The Government should set an emissions target and carbon prices should naturally reflect the marginal cost of abatement of the technologies needed to meet that target. This method will provide more certainty in the national emission levels outcome, and encourage innovation to find technological solutions for lowering the cost of carbon. A robust CO_2 price signal is needed to drive transformational change, but the emissions target should be the primary lever (and outcome) for governments.

Electricity investment

5. B3 ***How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?***

Any support of the carbon price will have an impact on the wholesale electricity price through increasing the costs of generation. As mentioned previously the best way of structuring carbon price support is through implementing a reserve price in Phase IV of the EU ETS. If a CPSR is implemented, it should be a separate, predictable pass-through charge rather than a variable or changeable charge to feed through to customers via wholesale electricity prices. If there is uncertainty around the level, it will increase the degree of wholesale price risk that needs to be hedged, as well as increase hedging costs.

Should the carbon price support be implemented, we would suggest that it is not designed to try and target a level approximating the marginal cost of mitigation. It should be designed to reduce the downside risk for front-ended investment in low carbon technology. It should operate as a carbon price floor only, in other words to supplement the EU ETS price only in cases when the carbon price drops below a certain level.

Electricity price impacts

5. D1 How do you currently manage fluctuations in the wholesale electricity price?

As part of our Energy Procurement Strategy, Shell buys power on a flexible basis using a variety of market contracts/indices. From an administrative perspective, price fluctuation is not much of a concern. However, from a budget and price certainty perspective, price volatility does give us concern and efforts are made to manage this. We procure power for a number of Shell businesses and for some of these businesses, e.g. Shell Retail, a degree of budget certainty is crucial.

5. D2 What difference will supporting the carbon price make to your business?

There are at least two principal negative considerations. For elements of our business which are not part of the traded sector, e.g. on-site electricity generation, this will mean an increase in the cost of the fossil fuels used to generate the electricity. How soon such plant could be adjusted to reduce fuel consumption, and hence emissions and costs, is unknown. Secondly, higher wholesale electricity prices

will have an impact on our business margins, particularly in light of our trade intensiveness and our higher exposure to international competition. Shell strongly urges that current exemptions from the CCL and for own use of energy products are maintained (see UKPIA response).

There are however also positive implications. The higher carbon price is likely to make coal to natural gas switching in power generation more attractive and therefore reduce CO_2 emissions. Gas is the cleanest-burning fossil fuel: modern gas plants emit half the CO_2 of modern coal plants, and 60-70% less CO_2 than old coal plants. Today, gas plants have a higher energy-efficiency than coal plants (55-60% vs. 34-42%).

5. D5 How might your company or sector be affected and would be there any impact on your profit margins?

Should electricity wholesale prices reach around £70/MWh by 2020 (as suggested in the consultation), this represents an increase in 40% over the next 9 years. This would impact all Shell UK energy intensive businesses e.g. refineries.

In terms of our gas retail business, the introduction of a carbon support mechanism would have little impact from a systems perspective. The main impact on the gas retail business will be limited to the broader issue of the impact on overall gas demand and wholesale electricity costs.

From a Shell power trading perspective, there would be a limited impact, mainly because we do not trade very much UK power[2]. The pricing and hedging of price risk in future long-term gas-to-power contracts, however, could be made more difficult. Uncertainty over how the levy is set/will change makes hedging of gas costs more problematic – this could reduce the attractiveness of gas, although the higher the levy, the more it will hit coal-to-power contracts.

11 February 2010

[2] Lack of liquidity in the UK power market has acted as a barrier to increased participation.

SIEMENS

Energy

[redacted]

Mr Martin Shaw
Environmental Taxes Team
HM Revenue & Customs
Environmentaltaxes.consultation@hmrc.gsi.gov.uk

Dear Mr Shaw

Carbon Price Floor Consultation Response

Siemens has been established in the UK since 1843 and has been working in the energy industry ever since. Today it serves every aspect of the energy sector, from building and maintaining power stations through to customer data collection and meter management. As a global company, Siemens has created energy infrastructures in some of the world's most demanding environments and its experience in the UK has provided a detailed understanding of the way the market is developing.

Siemens is the largest supplier of wind turbines in the UK market as well as providing turbine generators and other equipment for thermal power plants, including biomass and CHP.

Siemens employs more than 16,000 people in the UK with some than 5,000 of those in the energy sector. Its global technology and manufacturing centre for small gas turbines is situated in Lincoln, supplying the oil and gas industries and industrial power markets worldwide as well as the UK CHP market.

The 1990s was an active period for CHP development in the UK but subsequent restructuring of the electricity industry, the introduction of NETA and failure of some host companies leaving stranded CHP plants, resulted in withdrawal of the major generators from the market.

The government has long recognized the importance of CHP to a lower carbon future and introduced exemption from Climate Change Levy for qualifying CHP electricity and Enhanced Capital Allowances for CHP investment.

In this last decade this support has proved to be insufficient and there have only been a small number of CHP plants of significant industrial scale contracted, fulfilling special refinery needs or previous contractual commitments. The economics of CHP are still fragile and the government's targets for CHP development have been missed.

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SIEMENS

Questions 4 C1 & 2 – CHP plants

We do not agree (para 4.26) that carbon price support would provide an additional incentive for CHP whether from renewables or from fossil fuels such as gas.

In the case of renewables it will increase the benefit of renewable electricity but not of renewable heat. It therefore swings the economic choice away from CHP and more in favour of pure power production.

In the case of gas fired CHP, the levy will apply to all input fuel ie for heat production as well as for power generation, penalising the overall efficiency benefits of CHP compared with separate production of heat and power. In effect the operator is paying more tax to save carbon in the overall economy.

We fear that, if no relief is given, not only will new CHP development be disadvantaged but plants currently in operation will be closed to be replaced by stand-alone boilers and bought-in power. This will have negative consequences for the CHP supply chain and service industries such as our own. Worse, it will affect the competitiveness of the industries that have secured their long term energy supply security and economics by investing in on-site CHP.

We strongly urge the government to exempt fossil-fired CHP from the CPS levy to the extent that it meets the CHPQA standard and to consider the negative incentive for future renewable CHP investment when considering levels of reward under other mechanisms such as the RHI.

Question 4 C3 – carbon capture & storage

We agree that tax relief should be given to power stations with CCS based on the quantity of CO_2 captured and sent to storage and that this should be matched carefully with other mechanisms to support CCS to avoid unintended outcomes.

We would like to thank you for the opportunity to respond to this proposal and look forward to hearing the government's final proposals in due course.

By email to: HM Revenue & Customs
Environmentaltaxes.consultation@hmrc.gsi.gov.uk

Cc: Energy and Climate Change Committee
ecc@parliament.uk

11th February 2011

Dear Sirs

Re: Carbon price floor: support and certainty for low-carbon investment

SmartestEnergy welcomes the opportunity to respond to HM Treasury's and HM Revenue & Customs' consultation on "Carbon price floor: support and certainty for low-carbon investment."

Introduction

SmartestEnergy is a licensed electricity supplier operating primarily in the half hourly electricity market. We consolidate independent generation and supply electricity to corporate and group customers. We are also a licensed gas shipper and supplier.

We consider ourselves to be a champion of renewable generation and believe that any reforms to the market should be consistent with generally accepted free market principles; the market should operate as a level playing field for all players and where necessary incentives should be built around those arrangements.

Viewpoint summary

We broadly support the government's proposed package of market reforms as they are both consistent with government policy of promoting renewables whilst ensuring security of supply, and are "market-friendly."

As a general rule we prefer to see incentives rather than taxes as a means of encouraging markets and modifying behaviour. The government needs to be particularly mindful of the effect of higher prices on customers, particularly businesses competing in global markets (although we appreciate that the increased costs which

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result from taxing fossil fuels will encourage more efficiency, especially in the domestic market.)

However, we can see that such a tax is consistent with government policy and as part of a package of reforms which includes other incentives we can support it.

We would strongly urge CHP exemption from the carbon support levy proposed. The proposals may simplify arrangements but they are not in keeping with the desire to encourage distributed generation. CHP, by its nature, tends to be locally situated and is significantly more efficient than CCGTs. CHP should not be treated differently from any other low carbon technology.

We are also mindful of the fact that taxes, by their nature, do not tend to include any "grandfathering arrangements" and therefore such an arrangement runs the risk of giving great cause for concern to investors. The government not only needs to give serious thought as to how it can send clear signals well into the future but also to giving as much notice as possible for definitive changes to the tax system. We would suggest that three years is required for the latter if the wholesale market is to continue functioning, otherwise liquidity will get worse, not better, in the wholesale market.

Remainder of this document

Our answers to the specific questions contained within the consultation document can be found in the Appendix to this letter.

Should you wish to discuss this further please do not hesitate to contact me.

[redacted]

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APPENDIX: Answers to specific questions in the Consultation Document

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

Political, regulatory and developmental factors are so uncertain that we are unable to form a firm view of the carbon price in 2020 and 2030. The carbon price will only be a serious factor for investment decisions if it can be attributed correctly to reflect the social and environmental costs of emissions from power plant through the wholesale market. The carbon price element would then become increasingly relevant as low-carbon generation to establishes itself in the merit order.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Greater certainty may not necessarily increase investment, especially in the longer term, but it would certainly better inform investment decisions.

It is natural for investors to want as much price certainty as possible. By and large, energy and commodities are traded in markets; investors seem willing and should be able to factor in to their calculations volatility due to market risk. What is unreasonable in a world of markets is to change goal-posts through regulatory intervention.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

There is a tradition of grandfathering incentive schemes, but tax does not tend to do this. Uncertainty would be greater under a tax regime than under an incentive scheme. However, the possibility of a complete overhaul or u-turn on market arrangements makes this a rather theoretical dilemma.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

Yes. Greater and clearer incentives through FiTs/ROCs are essential, as are initiatives to discourage fossil fuel baseload plant.

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Administration

4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

None

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

N/A

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

N/A

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

No. We believe that CHP should continue to be exempt because it is consistent with government policy to encourage self supply and efficiency.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

We would not view it as preferential treatment but there is a case for continuing exemptions for CHP plant; CHP should not be treated differently from any other low carbon technology.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Yes we believe tax relief should be considered for power stations with CCS, as this would be fair. We have no views on the practicalities of how this might be achieved other than to say that it needs to be in proportion to the carbon abatement.

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Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

We have no view to offer on this.

4.D2: What impact might the proposals have on trading arrangements for electricity?

While coal is the marginal fuel liquidity in the market will suffer as we approach any announcements to make adjustments to the tax. The periods over which the tax is set and the amount of notice of a tax increase are therefore critical.

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

We have no view on this.

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

Notice of tax adjustments should have at least a three year lead time. Ideally, tax rates should not be adjusted any more frequently than every 5 years and preferably more.

4.E2: Which mechanism, or alternative approach, would you most support and why?

We definitely are not in favour of the "rate escalator" as this will certainly soon become out of kilter with the market and government objectives. Between the other two mechanisms we probably prefer the "annually adjusted CCL rates and fuel duty rebates" as this is something that can be better modelled over the future and is also more flexible/responsive.

4.E3: What impact would the proposals have on yoru carbon trading arrangements?

We do not foresee that there would be any impact on our carbon trading arrangements.

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Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

Yes, there should be a target price for 2020 and 2030 so that investor confidence is increased. We are concerned that the higher scenarios for 2020 are not economically justifiable as per the cost benefit analysis. It is also likely that an aggressive level in the early years will increase prices for fossil fuelled peaking plant before new technologies/demand response can develop.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

We believe that to meet the targets the rate should be £30/t in conjunction with changes outlined in the EMR but that £50/t is justified without changes to the structure.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

Given that this consultation has already aired the likelihood of a carbon price support mechanism being introduced it important to minimise the hiatus of investment decisions. However, as stated above, we believe targets for 2020 should err on the low side.

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

We would expect investment to increase but in the absence of other arrangements the price signal to flexible plant will not be responded to:

Document states: “Existing plants with high carbon emissions would be likely to face a net reduction in profits because their costs would increase by more than electricity prices. “ This probably means that peaking prices would rise dramatically. In the longer term we would expect the differentials to start narrowing due to the nature of the plant mix: at times of low demand, wind and nuclear combined may begin to bid negatively into the balancing mechanism i.e. ask to be paid to constrain themselves off.

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However, these effects are unlikely to have a significant effect on the type of plant built. In other words, technology does not develop in response to future likely price differentials.

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

Until such time that there is a threat that renewable plant will dominate the fuel mix we believe that investment decisions will be largely unaffected.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

As already stated, notice of tax adjustments should have at least a three year lead time. Ideally, tax rates should not be adjusted any more frequently than every 5 years and preferably more.

The desired fuel mix will be effected through other measures than the carbon price support. Therefore, carbon price support need not be “structured” to achieve other market aims.

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

N/A

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

N/A

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

We hedge by entering into contracts for the duration of our physical positions. Variations to the expected position are managed through shorter term products.

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5.D2: What difference will supporting the carbon price make to your business?

We will be forced to increase prices to our retail customers accordingly but we would anticipate all suppliers to do the same and therefore competitiveness will remain the same. Likewise, independent generators will expect to receive market prices.

As mentioned previously in the short to medium term we would anticipate that not only will prices increase but that the differential between peak and baseload prices will also increase i.e. demand weighted prices will become proportionately more expensive than time-weighted.

As a result the risk that tradeable products do not match actual demand will increase and this will feed into higher premia for this risk. We would anticipate being financially neutral but the risk is higher.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

100%

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

100%

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

We do not anticipate any impact.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

No

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[redacted]

Subject: Carbon price floor consultation - SMMT response
Date: 11 February 2011 10:36:28

SMMT Response to Carbon Price Floor consultation

The Society of Motor Manufacturers and Traders (SMMT) is one of the largest and most influential trade associations in the UK. It supports the interests of the UK automotive industry at home and abroad, promoting a united position to government, stakeholders and the media. The automotive industry is a vital part of the UK economy with £40 billion turnover and £8.5 billion value added. With over 700,000 jobs dependent on the industry, it accounts for more than 10% of total UK exports and invested £1.5 billion in R&D in 2010.

The SMMT fully supports the need to encourage investment in lower carbon electricity generation and ensuring we have security of supply. With the move to the electrification of the vehicle fleet having the necessary capacity to accommodate this switchover and ensuring that the emissions associated will be lower than the current oil based fuel our products use is paramount.

Industry is concerned if the carbon price floor (CPF) is best placed to achieve the objective of securing an abundant supply of low carbon electricity, at least cost. The energy market is complex and there appear to be a number of policy instruments in place aiming to achieve the same basic outcome. It is difficult for us as end users to understand and compare the array of policy instruments. For example, how does CPF compare (or contrast) to the feed-in-tariff and contract for difference, or capacity payments or emissions standards performance? We would also like to see a comparison in net costs in the UK compared with our competitors in Europe.

The CPF would generate a cost on our sector and not guarantee that investment was actually made in low-carbon electricity, as end users we would simply be left with higher energy bills. The consultation acknowledges that prices will rise and impact on the competitiveness of sectors subject to international competition. If the CPF was introduced we would like to see reductions in other taxes (such as EU ETS, CCL or CRC) to counter these impacts. We are also concerned that the CPF could be subject to change in each Budget, which would further undermine certainty and unsettle long-term investment decisions.

The UK is home to a large number of vehicle manufacturers and supply chain companies. Pre-recession production was some 1.75 million vehicles per annum. Some three-quarters of what is produced in the UK is exported, primarily to the EU, but also increasingly to markets in Asia, Eastern Europe and America. All the volume manufacturers are foreign owned and must compete for inward investment with plants in Europe and further afield.

Whilst understanding the need for a secure supply of low carbon power, the competitiveness of UK industry must be maintained, especially at a time when manufacturing is being looked upon to support wider economic growth and help rebalance the economy. The automobile industry is widely regarded as being a relatively low-profit making sector, but is a global industry and would find it very difficult to pass-on costs, unlike the electricity generators.

Industry faces a similarly complex regime of policy instruments designed to encourage greater efficiency and lower energy use – the EU ETS, CCL/CCAs and CRC. Many of

these instruments are also being assessed and this is not only spreading the resources of industry to adequately review and respond to the numerous consultations, but also creates uncertainty for investment in the UK.

Given the complex array of policy instruments in place industry is very concerned it will be paying for the cost of carbon multiple times. Electricity generators will ultimately pass on their higher costs to customers like us. Coupled at a time when energy costs are already rising rapidly, this makes the commercial viability of producing in the UK ever tougher.

Several of our members have combined heat and power units (CHP) and we are particularly concerned that the carbon price floor will adversely affect the cost-effectiveness of running these existing units or making investment in CHP. We propose that inputs for heat in CHP should not be subject to the carbon price floor. We would also support CHP continuing to receive special treatment to encourage its up take.

We urgently need greater transparency on all these carbon reduction initiatives and how they interact with each other, for us to fully comprehend and respond to the myriad of consultations.

We strongly support a strategy for growth and would like to see the cumulative impact of energy and climate change policies incorporated into that. We should not achieve emissions reduction by exporting carbon, jobs and wealth out of the UK.

Kind regards

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[redacted]

Martin Shaw
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Direct fax:
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Your ref:
Our ref:

Dear Martin,

9 February 2011

Carbon price floor:support and certainity for low-carbon investment consultation response

Q5.D5: How might your company or sector be affected and would there be any impact on your profit margines.

At present our company benefits from CCL relief through the "Finance Act 2000 Schedule 6 paragraph 13(b)(iv) - A supply of a taxable commodity to a person who uses it in producing uranium for use in an electricity generating station". After correspondence with Michael Stansfield of HM Treasury, we understand this relief will not be affected by the proposed Carbon Price Support Rate (CPSR).

The introduction of the CPSR will have a significant cost impact on our business and the non-generating civil nuclear industry as a whole. The specific impact on Springfields Fuels Limited (SFL) will both be a direct and indirect cost. The former relating to the operation of our Combined Heat and Power Plant and subsequent emissions and the latter from cost increases from our suppliers of energy intensive raw materials, e.g. Hydrogen and Hydrofluoric Acid, both of which are key components in the manufacture of Nuclear fuel.

This cost increase will be passed on to our customers, through increased prices of nuclear fuel and intermediate products, all of which are part of the low carbon generation mix the Government is trying to encourage new investment in. Therefore SFL believe that the CPSR should not be applicable to the civil nuclear industry and our current CCL relief should be applicable to the CPSR scheme.

We look forward to your response.

[redacted]

2011-02-11

Martin Shaw
Environmental Taxes Team
HM Treasury
1 Horse Guards Road
London
SW1A 2HQ

11 February 2011

Subject: Statoil response to HM Treasury Consultation on the *Carbon Price Floor: support and certainty for low-carbon investment.*

Dear Mr Shaw,

Statoil U.K. Ltd welcomes the opportunity to respond to the HM Treasury Consultation on the *Carbon Price Floor: support and certainty for low-carbon investment.*

The UK electricity market is important for Statoil – the largest importer of natural gas to the UK, a joint investor in the Sheringham Shoal offshore wind farm, a development partner for the Dogger Bank offshore wind zone and a potential storage provider for CO_2 for 3rd parties.

Statoil is leveraging its experience and technology position as in CO_2 storage (CCS) and floating offshore wind concepts to develop and strengthen Statoil's business positions within natural gas, renewable energy and CO_2 storage. At present Statoil is testing the Hywind floating offshore wind platform and we are involved in four CCS projects in the Sleipner area, the Snøhvit LNG development, In Salah in Algeria, and a CO_2 capture facility at the Mongstad refinery.

We are committed to reducing our carbon footprint at every production stage. Production on the Norwegian Continental Shelf is 60% more efficient than industry average.

Summary of our position

Statoil supports a global CO_2 price which will incentivise investments in the most carbon efficient solutions.

We support the government's ambition to reduce CO_2 emissions in the power sector and welcome the discussion on the Electricity Market Reform (EMR). To meet the ambitions, the measures – once introduced – should be stable for a long period in order to underpin the long term nature of the required investments.

However, we are concerned by what appear to be contradictory signals in UK policy. When discussing security of supply the UK government recognises the role of natural gas while the proposed Carbon Price Floor together with other proposed measures in the EMR counters that. There appears to be little recognition of the competitive pressure natural gas producers are under internationally, or the need for markets to maintain attractiveness to ensure volumes can be delivered when required. The link between those pressures and their impact on the domestic gas market does not appear to have been made.

Natural gas is a low-carbon fuel which can substitute coal and immediately enable the UK to meet its low carbon energy security targets. Natural gas in combination with renewable energy and CCS can

provide significant savings in electricity generation while reducing emissions at lower cost and with lower technological risk. Overall, the important role of natural gas should be better taken into account when establishing new policy.

The proposed Carbon Price Floor as part of the UK Electricity Market Reform (EMR) is very sparsely described. We are therefore unable to accurately assess its impacts on our business other than it is a tax on coal and gas, which will make our product – natural gas - less competitive. Besides, the tax should be applied on output i.e. CO_2 emitted rather than the input i.e. CO_2 content of the fuel. Making the investment climate for natural gas fired power generation less certain will not in and of itself trigger the scale of investment in low carbon generation which is the stated objective of the tax. It does, however, have the potential to undermine supply security.

The carbon price support aims to make up for the low ETS price and apply additional tax to account for the externalities of carbon emissions from fossil fuels. Yet other forms of generation have environmental externalities as well. For example, seen in a lifecycle perspective, nuclear has its own set of impacts such as water consumption, and decommissioning costs all of which need to be taken into account. Applying a carbon price support tax to fossil fuels does not, therefore, provide a level playing field with other generation technologies when these issues are taken into consideration.

In general, Statoil see the EU ETS as the preferred instrument for cost efficient reduction of GHG emissions. The EU ETS provides a predictable framework for industry in the long term, rewarding the most carbon efficient solutions, and achieving targeted emissions reductions in a cost effective manner. As the most liquid carbon market in the world, it is serving as a blueprint for emerging cap and trade schemes globally. Harmonisation between these schemes could lead to a global CO_2 price.

We acknowledge that the EU ETS does not currently provide sufficient incentive to develop and implement immature technologies. It is Statoil's view that concerted EU action to lower the emissions cap will bring about a more robust CO_2 price, as well as lower the emissions. We are concerned that introduction of new unilateral measures will undermine the EU ETS as the major measure to reduce emissions, without obtaining the intended effects. This should be further assessed and interactions with the other EMR measures and environmental taxes have to be better understood.

A targeted low carbon support mechanism is more likely to deliver. Statoil would like to recommend that channelling part of the revenues generated from the tax to the demonstration and deployment of CCS. We would urge the Secretary of State to take action as foreseen in the 2010 Energy Act and put in place the regulations for a support mechanism for CCS projects.

Given the above, Statoil do not think it is appropriate to introduce a new tax at this stage. Yet with the understanding that the Government will not consider alternative proposals we would suggest an approach that minimised the impact of the tax on the electricity market. As such option one (£1/ t CO2 on top of the prevailing EU ETS price rising to a target price of £20/ t CO_2 in 2020 would be the least risk option.

Please find our detailed response to the specific questions in the appendix.

[redacted]

Appendix : Detailed response to questions in consultation document

Investment

3.A1: What are your expectations about the carbon price in 2020 and 2030? And how important a factor will it be when considering investment in low-carbon generation?

Statoil is an advocate of a CO_2 price on a harmonised global scale, to a level that would make investment in low carbon energy technologies profitable. We believe that this is best delivered through carbon markets, such as the EU ETS, which deliver targeted emissions reductions in a cost effective way.

It is Statoil's view that concerns about the price level of the EU ETS are best addressed through concerted EU action to lower the emissions cap, which will bring about a more robust CO_2 price as well as lower the emissions. In the medium to longer term this will encourage investments in low carbon generation in the UK and reduce revenue uncertainty. We therefore expect the UK government to continue making the case for more ambitious climate action at EU level.

The current uncertainty in international climate negotiations is likely to have a bearing on the EU CO_2 price. The European Commission's own scenarios for the current 20% target project a CO_2 price of €30/ t CO_2.

The carbon floor price cannot be seen in isolation from the rest of the EMR package. We are concerned that the broadening of the support mechanism to all low carbon generation in conjunction with the carbon price floor could be a significant disincentive to invest in CCGT plants. Given the potential attractiveness of a fixed income stream under a future low carbon support scheme against a fluctuating power price and a tightening carbon price due to the carbon floor price it may prove difficult to justify new gas fired capacity. The exact effect is unclear from the proposal as it will depend on the support level under the support mechanism and the level of the carbon price floor.

3.A2: If investors have greater certainty in the future long-term price of carbon, would this increase investment in low-carbon electricity generation in the UK? If so, please explain why.

Yes. However, a tax is inherently prone to regulatory uncertainty. In our opinion, other measures in the EMR would be more important to promote investment in low carbon generation capacity, such as a targeted low carbon support mechanism. Such mechanism can be long term, determined in advance to coincide with lead times of project development.

Another problem with a carbon tax is that it doesn't factor in the life cycle impacts and costs of different low carbon generation forms. We are particularly concerned that such a measure will encourage disproportionately the development of nuclear power generation when the issues of spent fuel management have not been resolved.

Specifically regarding CCS uncertainty with regard to relief from the tax for CCS plant may put on hold new investment in this technology. This needs to be clarified by Government as soon as possible.

3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?

Not much for the inherent weaknesses of a tax as explained above.

3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?

The other measures proposed in the Electricity Market Reform will better deliver the decarbonisation of the UK power sector. Statoil do not believe that the carbon price floor is necessary to deliver the required changes. In our view the low carbon support mechanism would on its own be able to achieve the objective in a more effective way than a tax. This will be crucial to stimulate a continued deployment of renewables and to ensure further development of CCS

In addition to the measures in the Electricity Market Reform, Government needs to promote increased liquidity in the power market and ensure a timely development of grid with the appropriate charging regime.

Overall, demand for low carbon electricity is not at the required levels. Consumers still respond to pricing. Incremental investment costs for low carbon electricity generation remain higher and it is standard commercial practice that this is reflected in electricity consumer bills. So already, demand for low carbon electricity needs to be pushed further. Public acceptance for the additional cost of a CO_2 tax should not be taken for granted.

Administration

4.B1: What changes would you need to make to your procedures and accounting systems to ensure you correctly account for CCL on supplies to electricity generators?

For our reporting task regarding CCL, the proposals only have a limited influence in terms of additional work and costs. We believe however that there could be an impact on the work performed by the people working with and maintaining the systems.

4.B2: How long would you need to make the necessary changes to your systems to account for CCL on supplies to electricity generators?

No comment.

4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?

No comment.

Types of generator

4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.

Yes. However, taxing fossil fuels while promoting increasing use of uranium/nuclear without taking into account lifecycle impact is, in our view, discriminatory and a potential risk for security of supply.

4.C2: Is there a case for providing additional or more preferential treatment for CHP? If so, what is the best way of achieving this?

No comment.

4.C3: Do you agree that tax relief should be considered for power stations with CCS? If so, what are the practical issues in designing a relief; what operational standards should a CCS plant meet in order to be eligible; and how might these issues differ for demonstration projects?

Yes, a tax relief should be granted for power stations with CCS. The tax relief should be granted to all carbon that is safely stored while tax would still be levied on residual emitted carbon. To ensure consistency with EU law all CCS plant of at least 300MW should be eligible for tax relief.

Early demonstration plants would need to have more flexible treatment in anticipation of first-of-a kind operational issues leading to higher than expected emissions. Statoil proposes that demonstration plants are granted full tax relief to the planned CCS capture capacity of the plant.

Imports and exports

4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?

Firstly, there needs to be a definition of "supplier". Many companies - their trading arms - buy coal and gas. They often don't know where the gas is going. How will the tax be measured and at which point?

Secondly, uncertainty over the modalities of applying the tax is in itself a deterrent both for imports and for exports of electricity as it is not clear who will bear the extra cost and how. Suppressed investment in gas and CCS in Britain before significant nuclear capacity comes on stream may increase reliance on the interconnector with France for baseload electricity. The interconnector's capacity is 2 GW which is enough to meet about 2% - 3% of total UK demand in 2015/2016. A higher tax on top of transport costs is also likely to increase arbitrage opportunities for French generators in favour of other markets such as Germany who expect that 20% of electricity demand will be met by electricity imports by 2020.

4.D2: What impact might the proposals have on trading arrangements for electricity?

No comment.

4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?

No comment.

Carbon price support mechanism

4.E1: How should the carbon price support rates be set in order to increase certainty for investors, in particular over the medium and long term?

A low trajectory is preferable to minimise both the investment risk during the first learning period and the impact on the EU ETS carbon price.

4.E2: Which mechanism, or alternative approach, would you most support and why?

The stated intent of this measure is to make carbon sourced energy uncompetitive compared to other forms of low carbon energy. An uncertain tax environment will make it hard for us to take the risk of investing in CCS. Moreover, the effect for our gas production business is that the UK gas market becomes uncertain.

The UK will continue to require CCGT's and should therefore also consider the effects of such uncertainty on the gas market and security of supply. A punitive tax environment will make the UK less competitive with other markets.

As previously stated, a low carbon support mechanism would be a more effective policy measure to promote the development of low carbon generation as it can be long term and determined in advance to coincide with lead times of project development. It can also be time limited which can give a clear signal that public support will only be made available for the time needed to develop the technologies.

4.E3: What impact would the proposals have on you carbon trading arrangements?

The main impact on our carbon trading arrangements will come from the impact of the measure on the EU ETS price. A high price in the UK compared to the rest of the EU will distort the market with stronger disincentive to sell gas to the UK. The UK holds about 15% of EUAs. In the long term the Carbon Floor Price may reduce demand for EUAs and therefore impact negatively the CO2 price.

Future price of carbon

4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?

No. The carbon price should reflect the marginal costs of targeted emission reductions, in order to achieve the most cost effective emission reduction measures. A targeted carbon price may lead to a deviation from the targeted emissions reductions.

4.F2: What is the most appropriate carbon price for the UK to meet its emissions reduction targets in the power generation sector? How would this be affected by changes in the structure of the electricity market?

No comment.

4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?

We recommend that the government focuses on concerted EU action to lower the emissions cap, which will bring about a more robust CO_2 price as well as lower the emissions.

Electricity investment

5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?

We expect it to favour the development of nuclear and renewables. As a result it will put natural gas at competitive disadvantage compared to nuclear.

We anticipate that the proposed mechanism will act as a disincentive to invest in high CO_2 power such as coal.

Great caution is required as the measure aims to crowding out both gas and coal, in a time scale that may prove too quick for the UK economy to afford. Natural gas is still necessary for balancing power generated from renewables until the intermittency issue has been resolved.

We are not convinced that this measure in isolation will increase investment in CCS as other issues could be more dominant in the relevant investment decision process (such as impediments in the planning process, liability issues of other measures addressed in the EMR proposal).

5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?

No comment.

5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?

It should be set at the lowest possible level until its impacts have been thoroughly assessed.

Existing low-carbon generators

5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?

Not applicable.

5.C2: What would be the implications of supporting the carbon price for existing electricity generators and how should the Government take this into account?

It will increase fuel costs for coal and gas power stations and lead to an increase in the electricity prices. Hence, if the goal is to promote new low carbon generation, targeted measures such as low carbon support mechanisms would be more efficient.

Electricity price impacts

5.D1: How do you currently manage fluctuations in the wholesale electricity price?

No comment.

5.D2: What difference will supporting the carbon price make to your business?

No comment.

5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?

No comment.

5.D4: As a business, how much of the cost of energy bills do you pass on to customers?

No comment.

5.D5: How might your company or sector be affected and would be there any impact on your profit margins?

Supply contracts are sometimes indexed to exchange prices. Some industrial electricity users are still bound by long term contracts; others may have adopted purchasing strategies based on forward electricity prices, thus limiting their exposure to both electricity and CO_2 price volatility. Sometimes costs of intra day adjustment are added to obtain the final supply cost. An exception to this is the long term contract signed between a power supplier and a generator where the electricity price is indexed to international coal prices and CO_2 prices. The ability to hedge electricity price will therefore be compromised by a CO_2 tax.

5.D6: Do you have any comments on the assessment of equality and other impacts in the evidence base of the Impact Assessment, included at Annex D?

No comment.