

# Electricity Market Reform: Response to HM Treasury & DECC

By [REDACTED]

10th March 2011

## **Introduction: Comments on General Context to Carbon Price Support & Electricity Market Reform**

What is the purpose of electricity market reform and carbon price reform? The first purpose is to support the UK government's carbon reduction targets. The Committee on Climate Change (CCC) suggests that to reach our 2050, the electricity sector should be decarbonised by 2030.

- The government's carbon targets are a *backstop minimum* of the degree of ambition of decarbonisation. The CCC's analyses also included *intended targets* "which the UK should adopt if a meaningful successor to the Kyoto Protocol can be agreed" as well as the *interim targets*.
- The optimal rate of decarbonisation is not known with a large degree of certainty. Certain things are known with a high degree of certainty: optimal decarbonisation will involve electricity sector decarbonisation, and probably electrification of other sectors. Secondly, a stable carbon price (e.g. a carbon tax) is an efficient way to promote decarbonisation.
- It is necessary to distinguish between economic *costs* and economic *activity*. More rapid decarbonisation is likely to be slightly more *costly*, but may *increase* economic *activity* (*GDP*). Rapid decarbonisation through electricity sector investment may be a cost effective way of increasing economic activity and economic growth relative to other methods such as increased government spending.
- Carbon pricing (especially at a high level) should be mindful of impacts on competitiveness. There are reasons to suggest however, that even at a comparatively high carbon price of up to £100/tCO<sub>2</sub>, the impacts for most industries would be relatively minor. There are comparatively few sectors with high carbon intensity and high export intensity. With a high carbon tax, the government, in collaboration with the EU, could consider either grandfathering, or, better, rebates for manufacturing in sectors with high carbon intensity, using border tax adjustments.

## **Current Market Arrangements**

**D1. Do you agree with the Government's assessment of the ability of the current market to support the investment in low-carbon generation needed to meet environmental targets?**

Yes, although I would go even further. We need massive investment low-carbon generation to meet economic targets relating to economic growth and paying our way in the world as well. We should be prepared to 'overachieve' relative to the economic targets.

**D2. Do you agree with the Government's assessment of the future risks to the UK's security of electricity supplies?**

Yes; lack of investment threatens the future security of UK energy supplies. Security of supply concerns regarding natural gas have been assuaged somewhat by the discovery of coal-bed methane.

## **Options for Decarbonisation**

### **Carbon Price Support (Treasury Consultation)**

*See appendix.*

#### **Feed-in Tariffs**

**D3. Do you agree with the Government's assessment of the pros and cons of each of the models of feed-in tariff (FIT)?**

Broadly, yes.

**D4. Do you agree with the Government's preferred policy of introducing a contract for difference based feed-in tariff (FIT with CfD)?**

Broadly, yes. This appears to be the most cost-effective. Note that one of us (Stephen Stretton) proposed an electricity price *floor*, with the understanding that price floors typically lead to 'over-investment' and therefore long term price *falls* (due to excess *supply*), but that those price falls can in this case be assuaged by increasing the carbon tax. In practice, over-investment in low-carbon electricity is unlikely to be a problem, as long as the policies for large scale deployment do not 'pick winners'. The amount of low-carbon electricity investment required to achieve our emissions targets is very high (well over 50GW and probably closer to 100GW). Investment in low-carbon electricity is one of the limiting factors in moving to a more stringent emissions target, and even the existing targets are extremely stretching.

On balance, we believe the FIT with CfD to be the most cost-effective of the options presented, and support this option. The onus will be on finding the appropriate price for the CfD.

**D5. What do you see as the advantages and disadvantages of transferring different risks from the generator or the supplier to the Government? In particular, what are the implications of removing the (long-term) electricity price risk from generators under the CfD model?**

This approach makes a lot of sense.

**D6. What are the efficient operational decisions that the price signal incentivises? How important are these for the market to function properly? How would they be affected by the proposed policy?**

There are two classes of decisions that price signals incentivise: the investment decision and the dispatch decision. The proposed policy should be dependent on overall market prices for electricity, and so.

**D7. Do you agree with the Government's assessment of the impact of the different models of FITs on the cost of capital for low-carbon generators?**

Broadly, yes.

**D8. What impact do you think the different models of FITs will have on the availability of finance for low-carbon electricity generation investments from both new investors and existing the investor base?**

We believe that the existence of FITs will enhance the availability of finance for low-carbon electricity investors.

**D9. What impact do you think the different models of FITs will have on different types of generators (e.g. vertically integrated utilities, existing independent gas, wind or biomass**

generators and new entrant generators)? How would the different models impact on contract negotiations/relationships with electricity suppliers?

**D10. How important do you think greater liquidity in the wholesale market is to the effective operation of the FIT with CfD model? What reference price or index should be used?**

The wholesale price of electricity needs to be defined. The price paid by large-scale generators in spot contracts.

**D11. Should the FIT be paid on availability or output?**

FIT should be paid on output, but the reference price for the feed-in-tariff should be based on the market price, and not the price paid by the supplier.

## **Emissions Performance Standards**

**D12. Do you agree with the Government's assessment of the impact of an emission performance standard on the decarbonisation of the electricity sector and on security of supply risk?**

Yes.

**D13. Which option do you consider most appropriate for the level of the EPS? What considerations should the Government take into account in designing derogations for projects forming part of the UK or EU demonstration programme?**

The EPS should be set at 500gCO<sub>2</sub>/kWh. Power stations with CCS can be permitted up to 650gCO<sub>2</sub>/kWh can be considered, with the understanding that these must be retrofitted by 2020 to meet the full EPS of 500gCO<sub>2</sub>/kWh.

**D14. Do you agree that the EPS should be aimed at new plant, and 'grandfathered' at the point of consent? How should the Government determine the economic life of a power station for the purposes of grandfathering?**

Yes, the EPS should be grandfathered.

**D15. Do you agree that the EPS should be extended to cover existing plant in the event they undergo significant life extensions or upgrades? How could the Government implement such an approach in practice?**

Yes.

**D16. Do you agree with the proposed review of the EPS, incorporated into the progress reports required under the Energy Act 2010?**

Yes.

**D17. How should biomass be treated for the purposes of meeting the EPS? What additional considerations should the Government take into account?**

**D18. Do you agree the principle of exceptions to the EPS in the event of long-term or short-term energy shortfalls?**

Yes.

## **Options for Market Efficiency and Security of Supply**

**D19. Do you agree with our assessment of the pros and cons of introducing a capacity mechanism?**

**D20. Do you agree with the Government's preferred policy of introducing a capacity mechanism in addition to the improvements to the current market?**

**D21. What do you think the impacts of introducing a targeted capacity mechanism will be on prices in the wholesale electricity market?**

**D22. Do you agree with Government's preference for a the design of a capacity mechanism:**

- a central body holding the responsibility;
- volume based, not price based; and
- a targeted mechanism, rather than market-wide.

**D23. What do you think the impact of introducing a capacity mechanism would be on incentives to invest in demand-side response, storage, interconnection and energy efficiency? Will the preferred package of options allow these technologies to play more of a role?**

**D24. Which of the two models of targeted capacity mechanism would you prefer to see implemented:**

- Last-resort dispatch; or
- Economic dispatch.

**D25. Do you think there should be a locational element to capacity pricing?**

### ***Analysis of Packages***

**D26. Do you agree with the Government's preferred package of options (carbon price support, feed-in tariff (CfD or premium), emission performance standard, peak capacity tender)? Why?**

Yes. I would make sure that the electricity market reforms are transitional arrangements, to help smooth the path to a free-market system with a constant carbon tax of around £200/tCO<sub>2</sub>. So electricity price guarantees and capacity payments should be set initially at a relatively high level but should be phased out over time, as the carbon price support is brought in.

**D27. What are your views on the alternative package that Government has described?**

**D28. Will the proposed package of options have wider impacts on the electricity system that have not been identified in this document, for example on electricity networks?**

**D29. How do you see the different elements of the preferred package interacting?**

**Are these interactions different for other packages?**

### ***Implementation Issues***

**D30. What do you think are the main implementation risks for the Government's preferred package? Are these risks different for the other packages being considered?**

**D31. Do you have views on the role that auctions or tenders can play in setting the price for a feed-in tariff, compared to administratively determined support levels?**

- Can auctions or tenders deliver competitive market prices that appropriately reflect the risks and uncertainties of new or emerging technologies?

**• Should auctions, tenders or the administrative approach to setting levels be technology neutral or technology specific?**

The levels should be technology neutral such that the most cost-effective method is used. An effort should be made to ensure that all costs and benefits are well represented in the market price. Where such prices are contentious, it is better to make some assumption than none at all.

**• How should the different costs of each technology be reflected? Should there be a single contract for difference on the electricity price for all low-carbon and a series of technology different premiums on top?**

Yes. There should be a single contract for difference. The emphasis should be on an implicit price large enough to support all reasonably economic technologies (primarily Wind, Nuclear, CCS). We should not try to 'pick winners'. There is also a case for R&D and initial deployment support for early- or mid-stage technologies where the UK has a technological lead.

- Are there other models government should consider?**
- Should prices be set for individual projects or for technologies**
- Do you think there is sufficient competition amongst potential developers / sites to run effective auctions?**
- Could an auction contribute to preventing the feed-in tariff policy from incentivising an unsustainable level of deployment of any one particular technology? Are there other ways to mitigate against this risk?**

No. So long as the guaranteed electricity price does not create distortions and reflects the full economic benefit of the electricity produced (ie the subtraction is based on the general price of electricity and not the price achieved for the electricity actually produced – so, for example, if there is mass wind deployment it is done on a fully economic basis), then there is no practical upper bound on the amount of investment in low-carbon technologies. However, the price needed to incentivise new investment is different from that appropriate for long-term mass investment (due to first-of-series costs, and generally declining 'learning curve'.

**D32. What changes do you think would be necessary to the institutional arrangements in the electricity sector to support these market reforms?**

No opinion.

**D33. Do you have view on how market distortion and any other unintended consequences of a FIT or a targeted capacity mechanism can be minimised?**

Over time, as the market achieves greater confidence in carbon prices and there comes online sufficient investment to be confident about security of supply, the FIT and capacity payment could be phased out in favour of a carbon-tax only scheme.

**D34. Do you agree with the Government's assessment of the risks of delays to planned investments while the preferred package is implemented?**

Yes

**D35. Do you agree with the principles underpinning the transition of the Renewables Obligation into the new arrangements? Are there other strategies which you think could be used to avoid delays to planned investments?**

Yes.

**D36. We propose that accreditation under the RO would remain open until 31 March 2017. The Government's ambition to introduce the new feed-in tariff for low- carbon in 2013/14 (subject to Parliamentary time). Which of these options do you favour:**

- All new renewable electricity capacity accrediting before 1 April 2017 accredits under the RO;
- All new renewable electricity capacity accrediting after the introduction of the low-carbon support mechanism but before 1 April 2017 should have a choice between accrediting under the RO or the new mechanism.

The second option. Generators should be given the option to adopt the new scheme.

**D37. Some technologies are not currently grandfathered under the RO. If the Government chooses not to grandfather some or all of these technologies, should we:**

- Carry out scheduled banding reviews (either separately or as part of the tariff setting for the new scheme)? How frequently should these be carried out?
- Carry out an “early review” if evidence is provided of significant change in costs or other criteria as in legislation?
- Should we move them out of the “vintaged” RO and into the new scheme, removing the potential need for scheduled banding reviews under the RO?

No opinion.

**D38. Which option for calculating the Obligation post 2017 do you favour?**

- Continue using both target and headroom
- Use Calculation B (Headroom) only from 2017
- Fix the price of a ROC for existing and new generation

No opinion.

## **Appendix: Response to Treasury Consultation on Carbon Price Support**

### **Expectations**

**T3.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?**

At present, the main structure delivering a carbon price is the EU emissions trading scheme. In regard to this scheme I have relatively low expectations of its ability to deliver a consistent carbon price signal over the long term. The carbon price is essential for delivering investment in low-carbon electricity generation.

**T3.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.**

In general, yes, although we have concerns that the UK government does not lock itself into a sub-optimally low carbon price. To achieve large-scale investment in low-carbon electricity generation requires greater certainty of revenues. The part of those revenues that is most essential to achieve certainty in is that which is dependent on government; specifically the carbon price. In the absence of other support, it might prove sensible to provide long-term guarantees of the carbon price. However, the government has proposed to support the electricity price.

**T3.A3: How much certainty would investors attribute to a carbon price support mechanism if it were delivered through the tax system?**

Because the tax system is always subject to change at the time of the budget, it is not the ideal mechanism for developing certainty. It is however, an excellent method for giving price support.

**T3.A4: In addition to carbon price support, is further reform of the electricity market necessary to decarbonise the power sector in the UK?**

Yes, along the lines as proposed by DECC in the Electricity Market Reform document. The

### **Administration**

**T4.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?**

n.a.

**T4.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.

**T4.B3: Please provide an estimate of how much the system changes would cost, both one-off and continuing?**

n.a.

### **Types of generator**

**T4.C1: Do you agree that all types of electricity generators should be treated equally under the proposed changes? If not, please explain why.**

Yes, absolutely. Apart from early-stage technology support, and support for R&D across all technologies, there should be a level playing field. If a technology develops high profit as a result of level-playing field, this should be acceptable, with the proviso that the electricity generation market should be fair.

**T4.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 general, heat should be treated on a equal basis; again with the same carbon tax.

**T4.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?**

Carbon Capture and Storage counts as an early-stage technology, which is not yet proven, and is worthy of support (the UK could have a competitive advantage in this technology).

#### **Imports and exports**

**T4.D1: What impact would the Government's proposals have on electricity generators and suppliers that export or import electricity?**

It would make imports more attractive and exports less so.

**T4.D2: What impact might the proposals have on trading arrangements for electricity?**

The carbon price support proposals would drive up the short term price of electricity.

**T4.D3: What impact might the proposals have on electricity generation, trading and supply in the single electricity market in Northern Ireland and Ireland?**

n.a.

#### **Carbon price support mechanism**

**T4.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?**

There are a number of methodologies useful for determining the price of carbon:

- The carbon price needed to give a significant boost to economic *activity* and rebalancing of the economy away from fossil fuel imports (or avoided exports) and towards domestic investment.
- The carbon price needed to give high degree of certainty in achieving our long-term carbon targets.
- The carbon price needed to achieve emissions reductions consistent both with playing a leading role in achieving a 2 degrees target, consistently with avoiding large economic costs, and stimulating the economy.
- The carbon price needed to support key technologies (such as carbon capture and storage, offshore wind, and nuclear), when all (non-carbon) costs are properly priced in.
- Equivalent price to that charged for petroleum in private road transport.
- Maximisation of revenues over next 10-20 years from carbon price, in order to eliminate more administratively or deadweight costly alternatives.
- Price that, when coordinated internationally, needed to capture significant economic rent associated with fossil fuels for geopolitical reasons.
- The estimated social cost of carbon *plus* optimal tax.
- That price needed to change consumption behaviour significantly.

All these sources of evidence tentatively suggest a carbon price in the range £100-£200/tCO<sub>2</sub>.

**T4.E2: Which mechanism, or alternative approach, would you most support and why?**

**T4.E3: What impact would the proposals have on you carbon trading arrangements?**

#### **Future price of carbon**



**T4.F1: Should the Government target a certain carbon price a) for 2020 and b) for 2030? If so, at what level?**

Yes, by 2020 it should target a price of around £200/tCO<sub>2</sub> by 2020 (a level consistent with power sector decarbonisation; the higher level consistent with decarbonisation of other sectors). This level should be sustained. Measures to compensate sectors that are heavily traded and energy intensive need to be considered (for example border tax adjustments, akin to the current VAT system).

**T4.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?**

The appropriate level for the UK to achieve its emissions reduction goals is approximately £200/tCO<sub>2</sub>.

**T4.F3: When would be the most appropriate time for introducing a carbon price support mechanism and what would be the most appropriate level?**

The price support mechanism should be phased in over 4 years, and raised to the ultimate level of £200/tCO<sub>2</sub> in the years to 2020.

#### **Electricity investment**

**T5.B1: What impact would you expect the carbon price support mechanism to have on investment in low-carbon electricity generation?**

The carbon price support mechanism would significantly increase the level of investment

**T5.B2: What other impacts would you expect carbon price support to have on investment decisions in the electricity market?**

This carbon price would reduce investment in coal. Effect on gas depends on degree of certainty and on capacity payments.

**T5.B3: How should carbon price support be structured to support investment in electricity generation whilst limiting impacts on the wholesale electricity price?**

It's not clear that the effects on the wholesale electricity price should be limited.

#### **Existing low-carbon generators**

**T5.C1: Can you provide an assessment of the impact of the proposals on your generation portfolio and overall profitability?**

n.a.

**T5.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**

**T5.D1: How do you currently manage fluctuations in the wholesale electricity price?**

n.a.

**T5.D2: What difference will supporting the carbon price make to your business?**

n.a.

**T5.D3: As an electricity generator or supplier, how much of the cost of the carbon price support would you pass on to consumers?**

n.a.

**T5.D4: As a business, how much of the cost of energy bills do you pass on to customers?**

n.a.

**T5.D5: How might your company or sector be affected and would there be any impact on your profit margins?**

n.a.

**T5.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?**

n.a.