



Response of the Clean Coal Task Group to the DECC Consultation Document: *Electricity Market Reform*

07 March 2011

1. Introduction

The Clean Coal Task Group (CCTG) is a joint trade union/energy industry body formed to promote clean coal technologies within the UK. Its terms of reference are: “To identify an appropriate policy framework and supporting economic instruments and regulatory framework that would take forward the research, development and promotion and initiation of clean coal burn and carbon capture and storage technologies”.

In its reports to Government on behalf of the TUC, the CCTG has acknowledged the vital contribution of clean coal technology with carbon capture and storage in tackling the global challenge of climate change, not just to ensure the successful deployment of CCS in the UK, but for the major coal burning economies both within and outside the OECD. Equally, we argue that the UK’s indigenous coal reserves have a key role to play within a CCS framework in providing us with secure, affordable and clean energy for the long term.

The CCTG has prioritised:

- developing a framework for the successful deployment of clean coal;
- security of supplies and energy costs (and their consequences for fuel poverty and costs to industry) as well as emissions; and
- employment opportunities and skills challenges in power generation, mining and equipment supply

The TUC CCTG welcomes the opportunity to participate in the consultation process. The TUC supports in principle a balanced generation mix of nuclear (including new build), renewables and clean gas and coal with CCS. From our experience on the CCTG, UK industry is committed to the development and deployment of CCS technology for coal and gas, with major employment and skills opportunities in a mature CCS industry. Our shared concern is the lack of progress and speed of government support for CCS projects on the ground:

- CCS is vital for security and diversity of clean energy supplies.
- CCS is essential to ensure the maximum use of our indigenous coal reserves, noticeably not mentioned in either consultation paper.
- The key issue for CCS emerging from the consultations is the default option of unabated gas fired generation.

Response overview

The right mix of reforms is needed to secure coal generation, the future of UK coal reserves and CCS deployment at speed. This includes:

1. **CO2 floor price of £20/tCO2 in 2020:** unless set at the right level, a carbon price floor could have a negative impact on generation from coal, with worrying impacts on UK coal mining. It will not provide certainty for investment in CCS without resolving the issue of exemption of CCS from the CCL levy.
2. **Emission Performance Standards for coal and gas:** the proposal for an Emissions Performance Standard is negative for coal and fails to send any signals for reducing carbon emissions from gas fired power stations. The combination of the EPS levels and the policy on grandfathering at the point of consent appears to undermine a policy requiring CCGTs to be designed to be carbon capture and storage ready.
3. **FITs to apply for CCS schemes for coal and gas:** we support a Feed-in tariff for all low carbon electricity generation based on a *contract for difference* with the wholesale electricity price. For CCS we would recommend a premium over the wholesale electricity price.
4. **Compensatory capacity payments for fossil fuel plants with CCS to cover periods of low renewable power supply.** Further consideration should be given to the relative economics of different mixes in the whole system taking account of costs of generation and additional system costs.

Accelerating CCS and clean coal technology

In order to ensure that the UK remains at the forefront of international CCS development, the Government must accelerate progress to have four demonstration plants in operation by 2015 or as soon after as possible. We support the aim of placing the UK at the forefront of global technology, but the timeframe proposed is not sufficiently ambitious.

We need a firm timescale for progress which aims to have four demonstration plants in operation by 2015 or as soon after as possible. As the CCTG has previously argued, these four new stations could deliver 6.4GW of new coal power plant with full CCS, which could cut UK emissions by 42 million tonnes a year, or 23% of emissions from power plant on 2007 levels. To realise the employment and *economic opportunities for UK based businesses in a new industrial sector*, the CCS industry needs a clear commitment to an ongoing build programme commencing with and extending beyond the four demonstration projects.

UK coal reserves –part of the energy security solution

On the contribution of our coal reserves to energy security and affordability, Wicks¹ argued that, “Given the abundance of proven coal reserves and its relative low costs and flexibility to meet fluctuations in demand for power, I believe that there is a long-term future for coal in the UK’s energy mix. Indeed, given the importance of supply diversity to our security, it would be foolish to abandon coal ... it must be part of the solution, not as now part of the problem” (para. 6.24). We agree with the DECC response: “It is also a reliable fuel for power generation, low cost, with abundant remaining global reserves and countries across the globe set to use increasing quantities for electricity generation. Developed countries need to show leadership in demonstrating that we can decarbonise electricity generation from coal. If we cannot tackle emissions from coal, it is

¹ “Energy Security: A national challenge in a changing world” by Malcolm Wicks

difficult to see how a move to a future global low carbon economy can be reconciled with the need for energy security and affordability.”

Wicks argued that, with major investment in both deep and surface mines, UK coal production “could be sustained at current levels of around 20 million tonnes a year to at least 2025.” This represents a remarkable shift in energy policy since the 2003 Energy White Paper, which spoke of the continuing decline of domestic coal production, “as existing pits reach the end of their geological and economic lives”.

We agree that the UK should develop its own economically viable coal resources where it is environmentally acceptable to do so, including through the use of innovative technologies. Indigenous coal should be recognised as having the potential to meet a significant amount of the demand for coal in the UK. UK coal production has stopped falling at 18-19mtpa; the industry believes the reserve base is capable of maintaining an output of 20mtpa at internationally competitive costs; employment has risen to some 6,000 employees.

Responses to Electricity Market Reform

Current Market Arrangements

1. 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?

The current market is not delivering the investment required.

2. Do you agree with the Government’s assessment of the future risks to the UK’s security of electricity supplies?

No. The present market will not deliver on the Government’s objectives for security of supply and affordability.

Options for Decarbonisation

Feed-in Tariffs

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

As the EMR notes, wholesale electricity prices generally follow the price of gas-fired generation plus carbon allowances so there is little fuel price risk to the gas-fired generator. The FIT must be designed to provide a benefit versus unabated gas which is maintained if gas or coal prices increase. The competition for low carbon generation with fossil fuels and CCS is unabated gas-fired generation. Also, FITs for low carbon fossil fuel and biomass generation need to be linked to fuel prices.

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

Yes, providing there is a linkage to fuel price as above, otherwise we would prefer the Premium FIT

8. 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?

As Q3, above. There is a considerable difference between fossil generation with high exposure to the variable cost of fuel and the other forms of generation where fuel costs are low.

11. Should the FIT be paid on availability or output?

Yes. FIT should most logically be paid on output ie £/MWh but there is a case for flexible fossil fuel plant with CCS to be paid a capacity payment.

Options for Decarbonisation

Emissions Performance Standards

12. 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?

No. These proposals do not incentivise new plant with CCS, they disincentivise the construction of new coal fired plant. This will reduce, not increase security of supply. We are concerned that a single EPS, not fuel specific, would always weigh more heavily on coal more than gas.

An EPS may be necessary to define low carbon generation in the context of Feed-in Tariffs or Carbon Price Support exemption. But potential investors in coal fired power plant with CCS need clarity on how the proposed rules will apply to coal plant and also to gas plant and also how the rules relate to the funding rules for CCS demonstrations and exemption from the CCL levy (Carbon Price Support).

13. 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?

We would comment as follows:

1. Existing power plant: for which an EPS would not be not applicable because of the importance of coal generation for security of supplies.
2. New coal power plant must meet the EPS applicable at its date of consent. An EPS at 600g/kwh would require CCS on 25% of the plant; EPS at 450g/kwh would require CCS on 50%. In practice the rules on demonstration funding (currently proposed 300/400MW of CCS) would then determine the maximum sizes of plant to be built for CCS Projects 2, 3 or 4.
3. The 600g/kwh option is consistent with current policy and some developers' proposals for the NER300 have assumed this policy. A tighter standard could be introduced as a requirement from a later date and would be applicable to the second tranche of CCS projects (see below). If such plants meeting the EPS are classified as low carbon generation, and gain exemption from the Carbon Price Floor/CCL levy the effect of Carbon Price Support would be to help incentivise retrofit of CCS on the full plant as the cost of emissions rises.
4. For new gas power plant, neither of the above EPS limits (600 nor 450 g/kwh) require CCS. With the grandfathering principle this would be the case for the life of the plant. The incentive for CCS will come only from the effect of the Carbon Price Support. CCS will only be possible if plants are built CCR so this requirement should continue.
5. New plant commissioned after the CCS review would have to meet a new EPS established during the Review in the light of the results of the Demonstrations. Since we are confident in the technology, we would expect an EPS based on a level of 100g/kwh could be applied from 2025. There is a strong case for indicating now a lower EPS (say 150 g/kwh) for plants consented before 2020; and for retrofits to complete CCS on demonstration projects to encourage their early Implementation.

As proposals stand, they mitigate against investment in coal power plant to a greater extent than justified by the relative unabated emissions of coal and gas.

An EPS should not be introduced which allows unabated gas plant, whilst imposing CCS on coal generation. This will undermine investment in renewables, coal, CCS and nuclear. It would lock in carbon over the next 30 years and further weaken our diversity and security of supply through

import dependency and leave consumers highly exposed to future moves in international gas prices and supply interruptions. We would suggest an EPS level of 100g/kwh for 2025 that will require CCS on gas as well as coal, and a lower EPS at 150g/kwh for plants with CCS in operation by 2020 and for retrofits to complete CCS on demonstration projects.

14. 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.

15. 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?

Extension of the EPS to existing plant should be considered after the CCS review.

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

Yes. New coal fired plant commissioned after the review would have to meet a new EPS in the light of the results of the CCS demonstration projects. The government’s intention to apply tighter EPS’s which will require CCS on all new gas and coal power plant needs to be signaled now.

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

The EPS should apply to emissions from fossil fuels. CO2 from approved biomass should be zero-rated.

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

Yes, for the short term.

Options for Market Efficiency and Security of Supply

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

Further consideration should be given to the relative economics of different mixes in the whole system to cover different shortage scenarios. Three types of capacity shortfall need different solutions.

1. A capacity shortage that could occur at the relatively short **early evening peak** of demand. Such shortage would be for just a few hours, and a few GW maximum. Solutions would be more interconnection, more pumped storage, demand side reduction, open cycle gas turbines.
2. Shortage could occur due to the difference in demand between **day/evening and the middle of the night in winter** lasting, each day for about twelve hours and measured around 10 -15 GW. This capacity is provided by older less efficient coal power plant and gas CCTGs with modest load factors (30- 40%) acceptable commercially because the capital investments in these plants have been written off. It is technically feasible for coal with CCS to provide flexible, low carbon capacity but there would need to be capacity payments to compensate for the high capital costs and modest load factors.
3. Capacity shortages could also occur at **periods of low wind** across the whole generation system, sometimes lasting several days and up to 25 GW if wind targets are met. Coal with CCS can provide flexible, low carbon capacity to back up gaps in wind generation but there

would need to be capacity payments to compensate for the high capital costs and low load factors.

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

Yes.

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

- a central body holding the responsibility;

Yes.

- volume based, not price based; and

Yes.

- a targeted mechanism, rather than market-wide.

Yes – for generators that can respond to the specific need.

23. 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?

See 19 above.

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

Yes.

Analysis of Packages

26. 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?

The FIT and targeted capacity payments are the main instruments of the package supported by carbon price support to provide an investment environment which de-risks the carbon price.

29. How do you see the different elements of the preferred package interacting? Are these interactions different for other packages?

To ensure the development of coal with CCS, the right policy mix would include:

1. **CO2 floor price of £20/tCO2 in 2020:** unless set at the right level, a carbon price floor could have a negative impact on generation from coal, with impacts on coal mining. It will not provide certainty for investment in CCS without resolving the issue of exemption of CCS from the CCL levy.
2. **Emission Performance Standards for coal and gas:** the proposal for an Emissions Performance Standard is negative for coal and fails to send any signals for reducing carbon emissions from gas fired power stations. The combination of the EPS levels and the policy on grandfathering at the point of consent appears to weaken the intent of the current government policy of requiring CCGTs to be designed to be CCR (carbon capture and storage ready).
3. **FITs to apply for CCS schemes for coal and gas:** It is essential that there is early commitment to a Feed-in Tariff applicable to coal or gas with CCS so that generation companies can take this into account when making decisions on development of demonstration and follow on projects.

4. **Compensatory capacity payments for fossil fuel plants with CCS to cover periods of capacity shortfall.** Further consideration should be given to the relative economics of different mixes in the whole system taking account of costs of generation and additional system costs.

Implementation Issues

30. 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?

That the reforms detract from coal fired generation, with consequences for supply security and gas dependency.

31. 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?

As an alternative to auctioning, for CCS, initial FITs and capacity payments are essential for defined capacity (say 5GW), based on experience of the CCS demonstration plant.

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

Consistent with developing a balanced energy mix, we would suggest limits for new plant of about one-third each for nuclear, CCS plant and renewables.

• 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?

An auction is likely to favour a particular technology.

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

We are concerned at the pace and scale of CCS project decision making and actual development in the UK, notably as our competitors are working on similar projects. Developers require certainty of full cost support, which only government can provide.

35. 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.