

UK Electricity Market Reform – what does it mean for future generation projects?

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The UK Government has said that its commitment is to "transform the UK's electricity system to ensure that our future electricity supply is secure, low carbon and affordable". On 12 July 2011, the UK Government's Department of Energy & Climate Change (**DECC**) published a White Paper setting out its proposals to achieve this (**White Paper**)¹.

In Brett Hillis's recent *Alert*, "UK Electricity Market Reform - FiT for energy traders?"², he considers the likely impact of the proposals on wholesale energy and emissions trading. This paper considers the potential impact of the proposals on the energy structure in the UK and, in particular, the likely effects upon future generation projects.

The publication of the White Paper has coincided with the DECC's publication of its Renewable Energy Roadmap³, which signals support for, in particular, offshore wind and relatively modest ambitions in respect of onshore wind.

Overview of the proposals

The White Paper states that the UK faces threats to security of supply from future plant closures, as well as the need to decarbonise power generation to meet the Government's carbon reduction targets, and an expected rise in electricity demand. To meet these threats, the DECC wants to create conditions encouraging greater long-term investment in renewable and nuclear electricity generation. The White Paper sets out the Government's policies to encourage this investment. The main new policies are:

- long-term contracts for low-carbon energy called Feed-In Tariffs with Contracts for Difference (**FiT CfDs**) to provide predictable revenue streams for investors in low-carbon generation;
- a carbon price floor to further incentivise low-carbon generation;
- a framework for contracting for capacity (**Capacity Mechanism**) to ensure there is enough electricity to meet peak demand; and

- measures to improve wholesale market liquidity.

DECC's White Paper describes the FiT CfD and Capacity Mechanism in detail. The carbon price floor will operate as part of the UK tax code and was announced in the 2011 Budget.

What does this mean for the direction of generation?

Nuclear

The White Paper is clearly intended to enable and encourage the construction of new-build nuclear power plant in the UK. The two measures that it brings in, the carbon price floor and the FiT CfDs, both serve this purpose. Depending upon the strike price set by the FiT CfDs, these should establish a predictable basis upon which investment in nuclear plant is facilitated.

Wind

Unlike the current Renewable Obligation Certificate (**ROC**) system, the new FiT CfD proposal is intended to provide a more predictable level of return by way of a top-up subsidy reflecting the difference between the measured energy prices and the strike price set in the FiT CfD for each unit of generation.

A key feature of the FiT CfD is that, as the cost of fossil fuels and usage demand rises, energy prices may achieve a level above the strike price set in the FiT CfD. In those circumstances, unlike the current ROC system, the generators could be required to make a payment back to the CfD counterparty. In this way, in the long term, the new proposals could result in a lower return than the current system.

That should not necessarily cause concern. Although the revised proposals may be less generous, the costs of wind energy are predominantly front-loaded and those that are not (maintenance being the obvious one) may be sufficiently predictable, given the increasing use of 10- or 15-year service agreement terms. Therefore, because of the increasing accuracy of lifecycle costing, the FiT CfD should provide a system which, provided that the strike price is set at a sufficient level to provide an adequate return, ensures that wind projects can be financed, but without creating a position where what may currently be moderate returns could become

extravagant in 10 to 12 years' time, as energy prices increase with no perceptible corresponding increase in the cost of wind generation.

The proposals may not, however, have a significant effect. Although the intention is for the FiT CfD to become available from 2014 onwards, it is not intended to replace the ROC scheme until 2017, and during the overlap developers will be able to select which scheme applies. If they choose to retain the existing ROC arrangements, then this will remain valid for the lifetime of the plant. If the construction programme goes to plan, then the largest anticipated investment (Round 3 of the UK offshore wind programme) will have been completed before the FiT CfD becomes mandatory.

Carbon Capture and Storage (CCS)

CCS is encouraged through an Emissions Performance Standard (**EPS**), which it is proposed be set at an annual limit for released CO₂ equivalent to 450g/kWh. This is considered to be a target which will be difficult to attain, particularly based upon current technology. However, this requirement is tempered in a number of respects:

- it will not have retrospective effect and will instead only apply to schemes which are consented after the proposals are enacted. Schemes that have been consented prior to that date will be grandfathered;
- plant in the UK CCS Demonstration programme or benefitting from European funding for commercial scale CCS, will be exempted from the requirement; and
- as it will operate as an annual limit, it will not prevent the intermittent use of high-carbon fossil fuel plants. It will, therefore, be possible to use high-carbon plant within the Capacity Mechanism (see below) without falling foul of the EPS.

Traditional Coal and Gas (not CCS)

Given the addition of the carbon price floor and the EPS, new fossil fuel plants will, unless they satisfy the EPS or are otherwise exempted (see above), become more expensive to run and may eventually become uncompetitive when compared to nuclear and renewables. As noted above and below, there may still remain a need for fossil fuel plant within the Capacity Mechanism.

Combined Heat and Power (CHP)

The White Paper reiterates the DECC's support for CHP. It does not, however, set out how CHP would fit within the White Paper's structure. The Government recognises that the application of the EPS could have an unfair effect on CHP because it does not make allowance for the useful heat also generated by CHP plant. Further detail, on how CHP is to be incentivised, is promised.

Capacity Mechanism: the unanswered question

One of the most interesting, but still unanswered, aspects of the White Paper is the discussion and consultation on the requirement for a "Capacity Mechanism".

As the White Paper identifies, the future years are likely to see a much more complicated energy market where: (i) electricity demand increases, despite predictions of increased energy efficiency, as electricity takes the place of fossil fuels in cars and industry, and (ii) we replace the current, flexible, generation structure (where gas and coal-fired power stations can respond to peaks in demand) with a combination of inflexible, baseload, nuclear and unpredictable, largely weather-based, renewables.

The complication is in the need to establish a structure where there is sufficient space in the market not only to enable 30+GW⁴ of wind generation to be viable, but also to ensure that there is still electricity to meet demand when the wind does not blow. It is helpful that wind generation is stronger and more predictable in winter, when energy demand is invariably higher.

Nevertheless, without a successful mitigation strategy, we would face the prospect of blackouts during periods where wind generation drops off.

The industry has estimated that by 2020 the UK will require "17 gas-fired plants worth about £10 billion"⁵, to be held on standby to cover potential drop-offs in wind generation.

The DECC anticipates adopting a number of measures to cover that capacity requirement. These include the use of: (i) "demand-side response" (i.e. agreements from industrial users to drop out and thereby reduce demand); (ii) local generation; (iii) energy storage (although this option is very limited at present); and (iv) interconnection with other grids that may have an excess of capacity at times when we have a surfeit.

In order to incentivise investment in interconnection, a cap-and-collar mechanism is proposed, using Project NEMO (the proposed interconnection between Britain and Belgium) as a pilot scheme. Nevertheless, it appears inevitable that some flexible (i.e. fossil fuel) standby generation capacity will need to be relied upon to cover shortfalls in generation because of weather fluctuation.

The question is how to provide sufficient incentivisation such that generators are willing to put significant generation capacity on standby in order to cover the hole that could be created by a drop-off in wind speeds or other problems relating to the intermittent nature of renewables. The Government has expressed a preference for a targeted mechanism (that pays only when utilised), rather than a capacity market (under which generators are compensated for providing capacity whether or not utilised), although both are being consulted upon. Particularly in respect of the targeted mechanism, the Government recognises a *Catch 22* situation.

For the system to work, it needs to be sufficiently lucrative to provide an adequate return on investment for standby generation even though that standby generation may only rarely be used. However, if the standby system is sufficiently lucrative, then generators may intentionally move generating capacity from the market into the Capacity Mechanism, reducing market generation capacity in order to increase the extent that the more lucrative reserve price needs to be relied upon.

Concluding remarks

The White Paper provides significantly greater clarity on the structure of the energy market over the next 20 years.

We already know that nuclear energy should be facilitated and wind energy should also be secure, at least until the anticipated conclusion of Round 3. CCS is also encouraged, as are interconnection projects. The DECC is also keen to encourage new technologies which may help to balance out the intermittent nature of wind generation. Consistent with the Renewable Energy Roadmap and the recent reduction in the Feed-in Tariff⁶, solar energy clearly does not feature heavily in the DECC's plans, at least not beyond small-scale rooftop projects.

Much, however, remains to be resolved. In particular, the requirement for, and ultimate form of, a Capacity Mechanism is clearly at the forefront of the DECC's thoughts, and needs strategic planning sooner rather than later.

The Government is still consulting on a number of matters within the White Paper, particularly the Capacity Mechanism proposals. Until that consultation is complete, we will only be able to see part of the picture.

1. Planning our Electric Future: a White Paper for secure, affordable and low-carbon electricity, Department of Energy & Climate Change, July 2011, Reference CM 8099

2. reedsmithupdate.com/ve/ZZnt8178W8167O27pe

3. UK Renewable Energy Roadmap, Department of Energy & Climate Change, July 2011, URN 11D/698

4. According to the Renewable Energy Roadmap, the Government anticipates that the UK will house wind turbines with a combined nameplate capacity of 31GWh by 2020, and significantly more by 2030.

5. <http://reedsmithupdate.com/ve/P8131q82n919777W62/stype=click/OID=111825165933480/VT=0>

6. Feed-in Tariffs Scheme: summary of responses to the fast-track consultation and Government response, Department of Energy & Climate Change, June 2011, URN 11D/794

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