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The electricity White Paper: towards a stable investment environment?

The electricity White Paper provides further thinking from the UK Department of Energy and Climate Change (DECC) on how it aims to introduce a system of long-term contracts to promote low-carbon investment and provide security of supply. This article considers the major developments in DECC's thinking, and highlights some of the risks and further details that are still to be determined

The UK Department of Energy and Climate Change's (DECC) electricity White Paper provides further thinking on the proposals put forward in its Electricity Market Reform (EMR) consultation,[1] and moves a step closer to introducing changes to the wholesale electricity market that it hopes will stimulate the investment required to meet the UK's energy goals.

How has DECC's thinking evolved since the December 2010 consultation, and what are the key features of the proposed mechanisms? What assumptions does the analysis make, and what details are still to be developed?

This article considers the rationale that lies behind the modifications put forward by DECC, and highlights some of the areas where further thinking is required. It highlights that further work is needed to address the significant risk that the proposed mechanism to provide support for low-carbon technologies could be set at inappropriate levels, while both the high-level design and finer details of a capacity mechanism are yet to be determined.

Summary

The December 2010 EMR consultation set out DECC's proposals to introduce four new mechanisms in the wholesale electricity market: a carbon price floor, feed-in tariffs (FITs) for low-carbon generation, an emissions performance standard, and a capacity mechanism. The final details of the carbon price floor were outlined in the 2011 Budget in March,[2] alongside the publication of the first 'carbon support rates'—designed to increase the effective carbon price faced by electricity generators in 2013.

The White Paper provides further details in respect of the proposed FITs and capacity mechanism—the two mechanisms that lie at the heart of DECC's strategy to introduce a framework of long-term contracts for low-carbon energy and capacity. Three broad themes emerge.

- **Further weight has been given to the potential effect of the proposed reforms on financing costs.** The White Paper reaffirms DECC's view that a key benefit of its preferred option of FITs with Contracts for Differences (CfDs) is to reduce low-carbon generators' exposure to movements in the wholesale electricity price, and in turn reduce the cost of capital, relative to a premium FIT (PFIT). DECC has commissioned further analysis, which supports the conclusions in the December consultation, suggesting that a FIT with CfD could reduce the cost of capital faced by low-carbon generators by up to 80 basis points relative to a PFIT.

- **Clawback is a key feature of the proposed contracts.** DECC's proposed FITs with CfDs, and the market-wide capacity mechanism option, both include clawback mechanisms (ie, two-way payments) that help to limit returns to generators, and reverse payments made to the contract-holder in the event that market prices exceed some pre-defined reference level. As with any explicit or implicit cap on returns, there are risks in providing under- or over-subsidy with such arrangements, and a trade-off exists between encouraging 'efficient' market signals, achieving the right level (and type) of investment, and limiting the impact on consumers' costs.

- **The proposed mechanisms rely on robust price benchmarks.** The proposed long-term contracts are to be indexed to different electricity reference prices, which DECC suggests could be tailored to suit the requirements of different technologies, and these

Feed-in tariffs: outstanding issues

- **To what extent are existing price benchmarks fit for purpose? Can Ofgem's liquidity proposals provide the necessary improvements?**
- **How will longer-dated price benchmarks (eg, year-ahead prices) be used?**
- **How will payment profiles be structured, and to what extent could forward price premiums reduce the efficiency of the support?[1]**
- **What electricity reference price should be used in contracts for flexible plant, and should there be fuel indexation?**
- **How will contract strike prices be determined? When can auctions be used, and when will a more detailed bottom-up regulatory price setting process be required?**
- **What methods can be applied to determine investors' required returns, and are they robust?**

[1] Forward price premiums or discounts reflect the difference between realised forward prices and market participants' expectations of future spot prices.

require liquid and transparent markets to be effective. Although potential reforms to improve GB wholesale market liquidity are outside of the EMR process and are instead being led by Ofgem, the energy regulator for Great Britain, DECC recognises that they are 'critical in enabling electricity market reform to deliver efficiently and cost-effectively'.[3]

The White Paper has explicitly recognised two key concerns with the December proposals raised by stakeholders: that the proposed FITs may need to be tailored to individual technologies; and that the targeted capacity mechanism proposed in the December consultation could risk introducing a number of counter-productive distortions to the wholesale market. However, a number of risks highlighted by respondents remain, and a number of contractual and institutional details must be elaborated on before the full implementation of DECC's reform agenda is complete.

Decarbonisation proposals

Feed-in tariffs for low-carbon generation

The White Paper reaffirms DECC's commitment to establishing a system of long-term contracts to encourage investment in low-carbon generation. The proposals reflect two key developments since the December consultation.

- FITs with CfDs are to be tailored to the needs of different technologies to reflect their operating characteristics. For example, intermittent generation could receive support referenced to day-ahead prices, and in proportion to metered output, in order to more closely reflect realised prices based on actual wind conditions; baseload plant could receive support based on year-ahead prices.

- Further work commissioned by DECC supports its conclusion that FITs with CfDs can provide significant reductions in the required financing costs of low-carbon generation relative to PFITs. Importantly, the White Paper also acknowledges that the conditions required to facilitate an effective auction to determine contract strike prices might not be present (although technology-specific auctions could be introduced towards the end of the decade where possible). As a result, in the medium term support levels are likely to be determined centrally, with little opportunity to market-test the impact of the proposed FITs on financing costs, thereby increasing the risk that an inappropriate level of subsidy is built into the contracts.

The box above identifies a number of issues that remain to be addressed.

Security of supply proposals

Capacity mechanism

The White Paper also reaffirms DECC's view that a capacity mechanism is needed to ensure security of supply. However, compared with the December consultation, greater emphasis is placed on the need for flexible capacity to provide output during periods of high demand and low wind, and preference is no longer given to a targeted mechanism focusing on peaking plant alone.[4]

In addition, the White Paper provides a more detailed assessment of the benefits and costs associated with both targeted- and market-wide mechanisms. In particular, DECC notes that 'a capacity market is likely to achieve the required security of supply, is potentially more compatible with a longer term move to a more responsive demand side, and could mitigate market power in the electricity market', although the associated market design challenges could be considerable.[5]

Alongside a commitment to undertake further analysis and present a detailed capacity mechanism option by the end of the year, the White Paper puts forward two options for consideration, with the following features.

- A refined targeted mechanism based on a model of strategic reserve:
  - capacity procured under the mechanism would be kept outside the wholesale market and used only

Capacity mechanisms: outstanding issues

- **What is the relevant product within the contracts—for example, de-rated capacity, flexibility (ramp rates)? What volume is required?**
- **What eligibility criteria should be set to allow participation? Should physical backing be required—for example, demonstration of existing capacity or committed investment?**
- **Should contracts be bought centrally, or an obligation placed on market participants?**
- **What is the optimal contract duration? Should this vary by technology?**
- **At what frequency should capacity contracts be bought and sold?**
- **What are the risks and benefits of effectively introducing price caps in the wholesale market?**
- **How can the overlaps and interactions between a wider capacity market and FITs with CfDs best be managed?**

when market prices rise above a pre-determined dispatch price, effectively capping the wholesale price;
  - dispatch prices could be below the Value of Lost Load but sufficiently higher than the highest long-run marginal cost in the market; and
  - a mix of strategic reserve could be procured, including, where possible, Demand Side Response, storage and interconnection, provided it has the necessary physical characteristics (eg, ramp rates).

- A market-wide capacity mechanism based on a model of a reliability market, which would rely on financial instruments (ie, reliability contracts) to incentivise capacity:
  - providers of capacity could operate in both markets, substituting uncertain returns in the electricity market for long-term certainty from the capacity market;
  - generators or flexibility providers could sell a 'reliability contract', allowing the buyer of the contract to purchase electricity at no more than the strike price, or receive penalty payments if electricity is not available; and
  - a clawback mechanism could limit support (similar to a CfD) by requiring the generator or flexibility provider to pay the contract holder if the electricity price exceeds the contract reference price.

The box above identifies a number of issues that remain to be addressed.

The discussion above highlights that, while DECC has moved a step closer to providing further details of how the long-term contracts it envisages could work, further analysis is needed to address the risk that the proposed FITs with CfDs could be set at inappropriate levels, and ensure that they can work effectively. The White Paper considers a wide range of issues relevant to the design of a capacity mechanism fit for the GB market, but both the high-level design and finer details are yet to be determined.

[1] DECC (2011), 'Planning our Electric Future: a White Paper for Secure, Affordable and Low-Carbon Electricity', July.
[2] HM Treasury (2011), 'Budget 2011', March.
[3] DECC (2011), op. cit., p. 11.
[4] DECC (2011), op. cit., p. 59.
[5] DECC (2011), op. cit., p. 76.

If you have any questions regarding the issues raised in this article, please contact the editor, Dr Gunnar Niels: tel +44 (0) 1865 253 000 or email g_niels@oxera.com

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