Oxera

Agenda

Advancing economics in business

The Energy Bill: a recipe for risk reduction?

The recently published Energy Bill and Gas Generation Strategy are intended to facilitate significant investment in UK energy generation. Although the proposals contain positive developments, they also highlight the current tensions facing energy policy-makers, and the problems that this can cause in making credible policy commitments. We examine progress and threats to a stable investment environment

Published on November 29th 2012, nearly two years after the initial Electricity Market Reform (EMR) consultation from the Department of Energy and Climate Change (DECC), the UK Energy Bill followed the rigour and criticism of pre-legislative scrutiny from the Energy and Climate Change Select Committee.[1] Soon after this came the Gas Generation Strategy, a further document designed to signal to the energy industry and investors that the government recognises the potential for low gas prices in future, and envisages a role for gas in the electricity generation mix.[2]

The goal of the political process remains the same: to facilitate significant investment in large-scale, low-carbon electricity generation, alongside the investment needed to provide security of supply,[3] and for this investment to be delivered as efficiently as possible. Indeed, it was the prospect that reform of the existing electricity market arrangements could reduce developers' risks—and hence the financing costs of the investment programme—that was used to justify the package of proposals put forward by DECC in 2010 which led to the proposals in the Bill.

The Bill sets out some promising steps towards creating a framework in which market participants in the generation sector and further up the supply chain can feel confident to invest. However, some key areas provide cause for concern, which suggests that there may be a need for more considered policy commitments in order to encourage the desired investment.

This article reviews the proposals contained in the Energy Bill and Gas Strategy, provides a reminder of the conditions required to create an efficient and stable investment environment, and compares and contrasts this with the possible developments in the UK electricity sector. It concludes with some recommendations.

Recent developments—the Energy Bill and the Gas Strategy

The Energy Bill and Gas Strategy provide further clarity on the mechanisms to be used to bring forward the investment needed to make progress towards the UK's 2020 renewables target, and longer-term decarbonisation strategy. The Bill provides the primary legislation to enable two key instruments to be put in place:

- **contracts for differences (CfD)**—the central policy instrument to be introduced is a long-term CfD for low-carbon generators. These contracts will determine two-way payments between the low-carbon generator and counterparty, equal to the difference between the contract 'strike price' and a reference electricity price. Hence, if the electricity price is below the strike price, the CfD will provide top-up support payments to ensure the viability of the project;

- **a capacity market**—the second key instrument is a capacity market, which would reward eligible participants for providing reliable capacity (or demand reduction) in future years. Under the proposals, capacity requirements will be forecast four years in advance of the delivery year in which the capacity is needed, and any shortfall contracted for through a competitive auction.

Before the Bill was published, the industry had raised two concerns with DECC's proposed operational framework for the proposed CfDs, as reflected in the Select Committee's report:

- there was a concern that the contracting arrangements previously proposed by DECC (in which generators would enter into a 'multi-party'

CfD with all suppliers collectively) could lead to significant payment shortfalls or delays if a supply company were to default. There was a strong desire to address this counterparty risk by using a government-backed entity to enter into long-term support contracts with developers;

- there was also concern over how CfDs would be allocated between technologies, and whether sufficient funding would be made available in total so that developers of different technologies—and manufacturers further up the supply chain—could have some assurance of the size of the market, and commitment of support for future projects.

As outlined in the box below, both of these have received attention in the Bill. The government has proposed a revision to the contracting arrangements so that generators are party to a single government-backed counterparty, and the total value of support to be made available under CfDs up to 2020 has been proposed under an extended Levy Control Framework limit.

Despite this progress, one critical area that remains to be determined is the strike price that will set the level of support to be provided to each technology under the proposed CfDs.

As the delivery body, National Grid is required to assess the appropriate level of strike prices offered in the CfDs (based on an assessment of the technology costs, operating patterns, developers' required returns, etc) and make recommendations to DECC.[4] These recommendations will be scrutinised and fed into DECC's five-year delivery plans, which, among other aspects, will set out the proposed strike prices for the contracts issued within a five-year window. These plans will be supplemented by annual updates (the first delivery plan will establish strike prices for contracts issued between 2014 and 2018). DECC's proposed Heads of Terms suggest that strike prices will be fixed for the duration of the contract, expressed in £/MWh and indexed annually by reference to the Consumer Price Index.

Shortly after the Energy Bill was published, DECC also published its Gas Generation Strategy, in which it notes that it expects gas to play a major role in supporting decarbonisation, and outlines steps being undertaken to reduce barriers to investment in gas.

DECC notes that investment in gas is consistent with its decarbonisation goals, on the basis that emissions from new gas plant could displace those from the more carbon-intensive coal and older gas plant that are expected to be decommissioned over the next few years. The key announcements in the Strategy are outlined in the box below.

The main elements of the Strategy were to confirm a number of existing policies and initiatives that could support gas investment, such as the proposed capacity mechanism to be enabled through the Energy Bill. However, a key message was that future operating hours and associated emissions from gas-fired generation may not be limited by policies intended to ensure that the UK meets its legally binding, economy-wide carbon budgets:

Key announcements from the Energy Bill

- **Support for low-carbon technologies to be provided through long-term technology-specific CfDs.**
- **Owned by the government, the CfD counterparty will be a limited company responsible for signing CfDs with generators and for collecting/distributing funds between suppliers and generators.**
- **The Levy Control Framework, which currently sets a £2.4 billion limit on Levy-funded support to low-carbon generation in 2012/13, is to be extended to £7.6 billion (in 2012 prices) by 2020/21.**
- **The first auction under the proposed capacity market could be run in 2014 for delivery of capacity in the year beginning winter 2018/19; successful providers will enter into capacity agreements and face financial penalties if they fail to deliver.**
- **Low-carbon plant receiving CfDs are to be excluded from the capacity market, at least until the CfD strike prices are set administratively.**
- **Provisions will be made to introduce a power sector carbon intensity target for 2030, although any decision on the level of the target will be made in 2016.**

Key announcements from the Gas Strategy

- **Outline of scenarios of new future gas-fired generation investment (ranging between 19GW and 37GW by 2030).**
- **Confirmation and further details on existing proposals, including a capacity market, Ofgem's proposed liquidity reforms, and its review of 'cash-out' arrangements.[1]**
- **The possibility of a revision of the fourth carbon budget was reconfirmed, in order not to hinder the building of new gas power plants.**

Note: [1] Liquidity reforms include Ofgem's proposals on improving liquidity in wholesale energy markets, and the government's proposal to intervene if necessary to create certainty and therefore greater levels of liquidity. 'Cash out' is the process used to settle differences between the financial contracts and the physical metered volumes of market participants—the current arrangements are under review by Ofgem.

> The modelling shows that gas could play a more extensive role, with higher load factors, should the 4th Carbon Budget be revised upwards.[5]

The Energy Bill and Gas Strategy therefore bring forward positive developments to help facilitate investment; however, as outlined below, there may be further areas that deserve attention.

Revisiting the investment challenge

It has become common practice to describe the investment challenge in terms of scale. As DECC notes: 'this is a major challenge – the level of investment needed is the equivalent to that required to build 20 Olympic stadiums a year from now until 2020.'[6] However, the scale of the challenge appears more relevant to interventions focused on addressing capital market failures that could restrict the flow of capital to the sector (ie, limited understanding of immature technologies by investors can lead to underinvestment), or coordinating investment in production capacity in different parts of the supply chain, neither of which is the focus of the EMR.

A more useful recasting of the investment challenge is to consider what is required from government in order to instil confidence in the sector to make long-term investments that depend on future policy decisions, which can be politically driven. Minimising exposure to these risks is essential to avoid investors requiring returns with significant risk premia or making investments elsewhere.

Two core elements of a stable investment environment that could minimise these effects are:

- a clear view of long-term government decarbonisation goals (ie, no moving targets), to help size the market—as well as clear indication of any limits to deployment that could be imposed on certain technologies;

- no expropriation of firms' outperformance or implicit subsidy in the case of underperformance (for example, in this case against the incentives within the CfDs for cost reduction).

The potential risks in each of these areas are explored below.

Reasons for caution

Despite the progress made in the Energy Bill, some investment risks remain with the proposed CfD design and broader market arrangements, which, if not addressed, could act to undermine investment in the sector. Three such risks are discussed below.

First, CfD strike prices are to be fixed in advance for up to 15 years (for renewable projects), based on expected capital and financing costs. This provides strong incentives for generators to seek to outperform these assumptions. For large projects, such as a new nuclear development, annual CfD support payments could be several hundreds of millions of pounds. Unforeseen cost overruns, or savings from refinancing after the construction phase, could therefore result in some contracts being significantly in or out of the money.[7]

Experience with Non-Fossil Fuel Obligation (NFFO) contracts highlights that developers can significantly over- or under-estimate capital expenditure on building new renewable technologies. The bidders for the NFFO contracts failed to deliver on multiple counts, partly due to flawed auction design and optimistic estimates, as outlined by DECC in its Consultation Document to the Treasury:

> No penalties were established for failure to deliver, so many more projects were not built whether due to cost estimates proving optimistic, finance being difficult to secure or technology shortcomings. Critics also cite a 'winners' curse' whereby bidders tended to be optimistic and subsequently regretted their bid[8]

While the prospects of significant gains from outperforming against the CfD strike price can have important incentive properties, experience also suggests that government may find it difficult not to intervene if the returns to developers are considered too great, or, conversely, significant projects were to enter financial difficulty and be wound up during the construction phase. The prospect of undefined future intervention would generate considerable risks and uncertainty for investors, counter to the initial objective of creating a stable investment environment and price certainty.

Second, although the intention of the Gas Strategy was to provide a reassuring message to the developers of new gas plant, it also highlights uncertainty over the commitment to future UK carbon targets:

> [we] will review our progress in early 2014 and if, at that point, our domestic commitments place us on a different trajectory from the one agreed by our partners in the EU under the [Emissions Trading System], we will revise up our [fourth carbon] budget as appropriate to align it with the actual EU trajectory.[9]

Analysis from the Committee on Climate Change (CCC), the independent body responsible for recommending future carbon budgets, suggests that two of the three scenarios put forward in the Gas Strategy for power sector carbon intensity in 2030 are

inconsistent with the UK's longer-term decarbonisation goals.[10] This places considerable doubt over whether the CCC's recommendations regarding the fifth carbon budget (covering the period 2028–32) will be enacted in 2016, and subsequent uncertainty over whether a 2030 power sector carbon-intensity target for 2030 will be proposed following the CCC's 2016 recommendation.

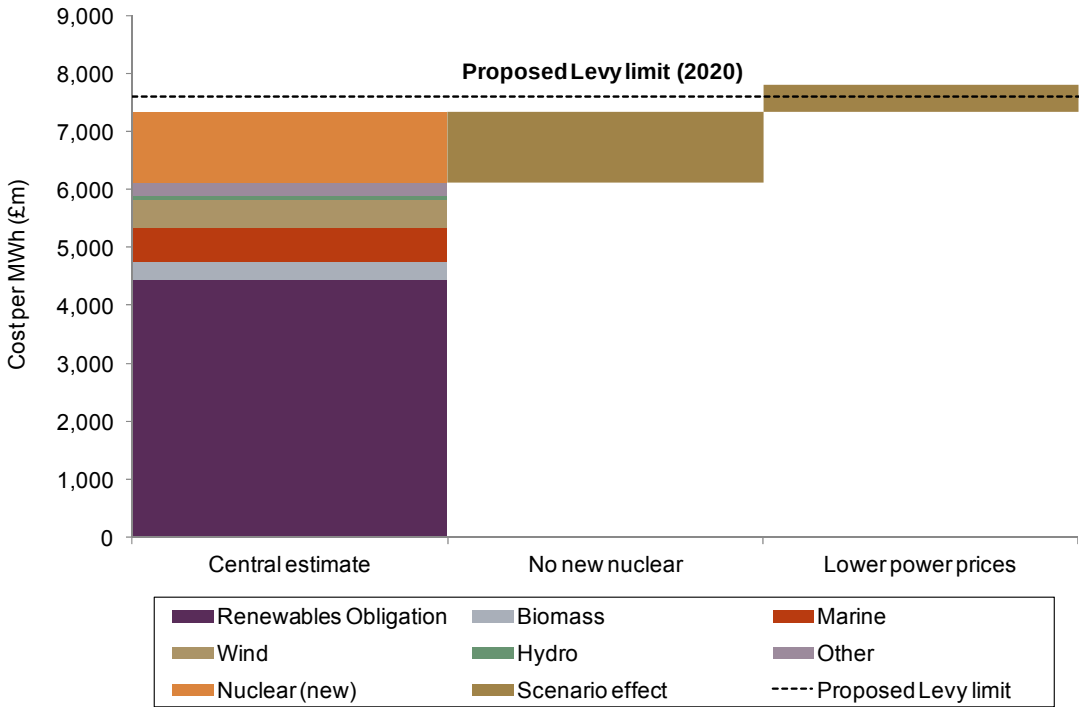
This could create significant risks for developers of new gas plant. In particular, if investment were to be undertaken in line with the most carbon-intensive scenario in the Gas Strategy, but future governments were to introduce stricter sector emission-reduction targets during the 2020s and 2030s, newly built gas plant could become stranded, or require significant investment to reduce their emissions—eg, through stricter requirements to retrofit carbon capture and storage (CCS).

Finally, while the extension of the Levy Control Framework provides some useful transparency over the support likely to be available to investors, further clarity may be required around the allocation of CfDs if the Levy limit becomes binding. Given the difficulties in establishing a credible long-term emissions target as outlined above, the Levy Control Framework provides a useful commitment mechanism to signal the level of investment that government is willing to support. Arguably, industry is also well placed to assess what future electricity prices may be, and hence how many projects the Levy limit can support. However, difficulties could arise if the Levy limit is to become binding, and there is uncertainty about future allocation rules to ensure that particular technologies receive funding to the exclusion of others. Alongside the Energy Bill, DECC announced that the Levy limit of £7.6 billion is to be allocated on a first-come, first-served basis until total support costs approach the limit.[11] Thereafter, allocation rounds and eventually a competitive auction process will determine the allocation, although DECC has not provided details on when this transition would occur, or the allocation process.

Figure 1 below highlights that if the power price in 2020 is towards the lower end of DECC estimates, payments (based on high-level strike price estimates) to support the deployment levels projected under DECC's original EMR analysis could exceed the Levy limit.[12]

While market participants may be able to judge the likelihood of the limit being reached (based on their own assumptions), no clarity has been provided on how rationing across technologies would take place.

Figure 1 Scenario analysis for total payout under Levy limit framework



Note: The projected costs in the 'central estimate' (left) are based on illustrative strike prices and DECC central power price estimates. DECC has suggested that separate budgets will apply for technologies in the 'general pot' and a separate budget for technologies 'outside the general pot', such as biomass and solar. It is assumed that these allocations represent a subdivision of the overall Levy Control Framework limit. The first scenario (middle) excludes the development of any new nuclear power plants. The second scenario (right) assumes power prices at the lower end of DECC's estimates. Assumed illustrative strike prices include nuclear (£120/MWh), onshore wind (£90/MWh), offshore wind (£138/MWh), dedicated biomass (£126/MWh).
Source: Oxera analysis based on data from Department of Energy and Climate Change.

If future support were to be allocated according to arbitrary future rules, this could create uncertainty for investors in manufacturing facilities further up the supply chain.

Summary and recommendations

The publication of the Energy Bill and Gas Strategy marks an important step in realising the new market arrangements put forward during the EMR process, and highlights the tension between achieving decarbonisation goals and limiting the impact on consumer bills (and problems this can cause in making credible policy commitments).

The two publications also help to make progress towards establishing an attractive investment environment—through the introduction of a single government-backed counterparty for the proposed CfDs and the announcement of a longer-term Levy Control Framework limit.

However, there also appear to be areas where there is scope for further improvements. If it is likely to be politically contentious for larger long-term CfDs to end up significantly in or out of the money, the risks and hence costs of investment may be best reduced by making explicit provisions for particular revisions to the strike price, rather than risk future political interventions to claw back excess returns, or support failing ventures.

The Levy Control Framework potentially provides a more credible commitment mechanism to support investment than long-term output or emissions targets that are subject to change. However, further thinking may still be required to facilitate the significant investment in gas-fired generation envisaged in the Gas Strategy.

---

[1] House of Commons, Energy and Climate Change Committee (2012), 'Draft Energy Bill: Pre-legislative Scrutiny', First Report of Session 2012–13, July, Volume I.
[2] Department of Energy and Climate Change (2012), 'Gas Generation Strategy', December, p. 6.
[3] Possible investments that can provide security of supply include new generation plant (eg, gas- or coal-fired plant), investment in interconnection, energy efficiency and electricity storage, and investment in smart grids and metering that allow more flexible demand response.
[4] National Grid is given the responsibility for modelling the construction and operating costs of each technology using data collected in the Renewables Obligation Banding Review, together with additional evidence gathered by DECC. National Grid will use a 'fully integrated power market model', which will allow analysis of different scenarios encompassing uncertainties including electricity demand, fossil-fuel prices, costs, hurdle rates, and potential deployment of technologies. The results would be provided to the government, which would use them to make informed decisions about the CfD strike prices.
[5] Department of Energy and Climate Change (2012), 'Gas Generation Strategy', December, p. 6.
[6] Department of Energy and Climate Change (2012), 'Electricity Market Reform: Policy Overview', November, para 3.
[7] 'In (or out of) the money' indicates that the contract is very profitable (or unprofitable) for the company.
[8] Department of Energy and Climate Change (2010), 'Electricity Market Reform – Consultation Document', December, p. 118, Box 12.
[9] Department of Energy and Climate Change (2012), 'Gas Generation Strategy', December, Box 2B, p. 22.
[10] Committee on Climate Change (2012), 'The Need for a Carbon Intensity Target in the Power Sector', letter to Edward Davey MP, September.
[11] Department of Energy and Climate Change (2012), 'Electricity Market Reform, Annex A, Feed-in Tariff with Contracts for Difference: Operational Framework', November, paras 76–77.
[12] Department of Energy and Climate Change (2010), 'Electricity Market Reform – Analysis of Policy Options, v.1.0', December, Figure 22.