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Capacity markets in energy

By Jessica Lennard

2010 marks the 20th anniversary of privatisation of the UK energy market: an appropriate time to analyse, evaluate, and question its fitness for purpose in a rapidly changing and ever more complex global and domestic context. With demand threatening to outstrip supply in the next few years, the market and the regulator are under pressure; not just to fill the looming energy gap and keep down prices, but to demonstrate that the current market formulation can and will support the gigantic investment required to drive decarbonisation.

Big ideas

There is fighting talk of radical reform, restructuring and step changes from both Labour and Tory politicians, and a growing sense that it is a time for Big Ideas in the energy sector. It remains to be seen in the upcoming energy green paper whether the Tories are prepared to put their money where their mouth is on reform, but in a recent interview with the Telegraph, Ed Miliband openly advocated a more interventionist approach to energy policy. Ofgem has also suggested a move toward greater central control, leading to further conjecture that Britain's liberalised energy market may now be heading in the opposite direction to European markets which are finally beginning to open up. In the same article, Mr Miliband, who has displayed a noteworthy level-headedness and commitment to this exceptionally challenging first brief, focuses on one such 'big idea'- capacity payments.

These are hardly a new concept; in fact we used to have them before Neta replaced the pool system which operated from 1990 until 2001. Under the old system, generators set the wholesale price of electricity (the system marginal price) via a bid process. In contrast, Neta (now Betta) created a commodity-type market in which both generators and suppliers can trade electricity. The idea of such a competitive market system was to bring down prices for consumers. As recent years have shown however, even where prices have come down, it's a rare day when such savings actually reach customers.

Perhaps the greatest problem now is the need for investment. Energy companies rightly point out that the current system, combined with decades of excess supply and low fossil fuel prices, provided little or no incentive to build the new capacity required to avoid a black out. The reality is that without stable market signals and a long term regulatory framework in place, would-be investors do not see Britain as a commercially viable option for the enormous levels of expenditure involved. Capacity payments and the establishment of a forward capacity market, including renewables and demand response resources, would be a radical, yet logical, consideration.

How do they work?

In any functioning competitive market, price should reflect supply and demand of goods. Unfortunately in the energy market we cannot always predict levels of future demand, and this will become increasingly problematic as intermittent supply, such as wind, plays a greater role in our energy mix. Capacity is a form of insurance. It guarantees that when all consumers wishing to use energy are attempting to do so, the necessary supply will be present. However, without additional economic benefit for providing such insurance, the industry has no incentive to do so. Capacity payments and a forward capacity market are designed to ensure future peak demand is met and to encourage investment in existing and new power sources. Paying generators for capacity they make available, as well as energy they actually supply, addresses both these issues, as well as improving the future stability of the grid.

A forward capacity market, in which generators are paid in advance at competitive prices for supplying future peak demand, would not only improve the likelihood of reliable service and allay fears of power outages, but would provide stable funding streams on which to finance generation investment. To overcome the issue of uncertain levels of demand, in most models, the regulator or another appropriately empowered body projects the future needs of the system in advance (various different models suggest three, five, seven years) and holds an auction for the right to fill them. Generators are thus encouraged to build more capacity, with risk levels significantly lower because advance capital and early indications of excess demand are provided.

An added crucial benefit would be a market which functions to include not only traditional generation and renewables but also decreased electricity use through demand-response sources such as that operating in the United States in New England. There are significant financial savings and environmental benefits to allowing energy efficiency to be traded on an equal playing field to actual power supply; not least encouraging development of demand-side response products and creating the potential for consumers to participate in the market. This also provides a boost for ESCO projects which tend to require a large initial capital investment, but which over time permanently reduce energy consumed, making them a far cheaper method of reducing emissions than building new low carbon generation.

Of course there are many potential pitfalls, not least the risk of inaccurately forecasting levels of future demand. In terms of rigidity of the pool system, even firm advocates of forward capacity markets, such as Dieter Helm, caution against a straight return to a pre-Neta system. The serious logistical and economic implications of a full scale reversal of 20 years of liberal energy markets make such a move appear unattractive politically and unlikely on a practical level. However, in terms of providing clear long-term investment signals and creating a market which incentivises and delivers a reliable mix of supply solutions, a system which incorporates capacity payments and capacity markets may provide an attractive solution to some of our more immediate and serious problems.