

Response to the Consultation on a Capacity Mechanism

Author's background and summary

The author worked for 32 years for the Central Electricity Generating Board, during which time he managed the first major study of the impact of wind energy on the electricity network. Since 1992 he has been an independent consultant and has completed studies of a similar nature for a number of clients.

This is, in essence a response to Question 26: What are your views on the costs and benefits of a Capacity Mechanism to industry and consumers?

It is argued that the justification for the Capacity Mechanism is weak and that its introduction could dilute the one of the claimed strengths of the Electricity Market Reform – greater certainty. This would act to push up prices rather than the reverse, quite apart from the costs of administering the mechanism itself.

Justification

The government's preference for a Capacity Mechanism is set out on one of the introductory pages to the Electricity Market Reform documentation: –

A significant proportion of electricity generating plants will close in the years ahead as a result of environmental regulation and old age. These factors, combined with a shift to a greater proportion of low-carbon and intermittent and less flexible electricity generation, have raised credible concerns on the ability of the UK electricity system to meet demand - for example, during winter anti-cyclonic conditions where demand is high but wind is low for a number of days.

It is not clear why this focuses on the possible absence of wind at peak periods. During the winter of 2008/9 around 50% (5000 MW) of the nuclear plant was out of action for several months. That was a more serious threat to the security of the system than the absence of wind, given that the most optimistic estimates of the maximum capacity credit of wind plant do not exceed about 5000 MW. The reasoning in the Consultation appears to place undue credence on the ability of wind energy to contribute towards peak electricity demands. In practice, few stakeholders in the electricity industry are likely to assume that wind will consistently contribute on a substantial scale towards peak electricity demands. (This does not undermine the statistical argument for wind having a modest capacity credit)

As the desirable plant margin (the difference between the installed capacity of the thermal plant and the expected peak load) is of the order 14 GW, this will always be significantly larger than the

capacity credit of wind. Moreover, all potential stakeholders are likely to be fully aware of the technical issues and most will probably assume that wind has a low capacity credit. The second sentence of the DECC justification, cited above, is consequently regarded as weak. Common mode failures of other plant types could equally erode the plant margin.

Planned plant closures, and possible delays in the implementation of the proposed nuclear programme, are a more cogent issue. Although DECC suggests there may be a capacity shortfall in the future, there is a significant amount of gas-fired generation in the pipeline and it is quite possible that the anticipated shortfall may diminish as we move forward into the future. Respondents to the EMR consultation made this point. It should also be noted that a 5% margin, based on "derated plant capacities" equates – roughly – to a 20% plant margin based on the definition used for many years, i.e. (plant capacity minus peak demand). Moreover, if the market is working as it should, there will be gradual increase in wholesale prices that will enhance the attractions for new entrant generation.

System operation at peak times.

If a Capacity Mechanism is introduced, this may mean that old coal or oil fired plant that is currently used occasionally at times of peak demand may be decommissioned. It is an open question whether specially built new plant would do the job at less cost. The output of generating plant required to meet peak demand has followed a similar pattern for many years and the power requirements at the peaks have been met by open cycle gas turbines and/or old large coal or oil fired units, such as the ones at Fawley and Grain. We can assume that the capital cost of that plant are sunk and so the prices they charge, although apparently high, only need to be paid for a few hours. They probably offer the system good value for money.

A return to centralised planning - and extra uncertainty?

The descriptions of both types of capacity mechanisms emphasise their complexity – and with complexity comes cost. The ethos suggests a return to centralised planning. In the past, the Central Electricity Generating Board was frequently criticised for getting the plant margin wrong – at a time when they were fully in control of all generation. The difficulty nowadays is that whichever body sets the Capacity Margin will have to second-guess the market. What is more, the market will be unsure exactly what capacity (if any) will be commissioned. This will introduce uncertainty and may well result in owners of low load factor plant – discussed in the previous paragraph - taking them out of commission altogether. That would most likely push up costs. In addition, the uncertainty is likely to push prospective generators into using higher investment hurdle rates, thus defeating one of the central objectives of Electricity Market Reform.