Project Discovery - Options for delivering secure and sustainable energy supplies

Consultation response by J M Harrison, B.Eng (Hons), C.Eng, FIEE

This consultation response is informed by my service in the electricity supply industry from 1971 to 2006, latterly as Commercial Manager, Trading Arrangements with ScottishPower Energy Management Limited. Apart from a specific section relating to the gas market my response relates to the electricity market arrangements and could be considered to be a response to Question 11 of the consultation paper..

I am encouraged that Ofgem appears now to recognise that the current energy-only electricity market arrangements are incapable of delivering sufficient generation capacity of the right type and in the right location to meet the diverse objectives set for the industry by government and society. Of the options for development of the market arrangements which are put forward in the consultation paper I believe that a system of capacity tenders would be the correct choice. Such a system seems to me to be the only way in which sufficient peak capacity, a desirable plant mix and the requisite level of security can be delivered. Some form of energy-only market would operate alongside the capacity tender system to ensure the efficient scheduling of plant.

A key component of a capacity tender arrangement would be the specification, by government, of the required level of security of supply. Such a definition[1] used to exist but, since no licensee is now responsible for ensuring that security is maintained, there is no longer any stated standard.

A defined standard of security, coupled with the use of probabilistic modelling of both demand and generating plant performance, would enable the tendering authority to ascertain what capacity of each of different types of plant would, in combination, allow the standard to be achieved. The output patterns of the different types of plant would be determined by the tendering authority based on historic output and reliability data, where available, and by judgement and consultation when dealing with novel types of plant or demand side response. An added advantage of having such a system would be the ability to demonstrate, e.g., to politicians, the amount of additional capacity, and hence additional cost, of intermittent forms of generation relative to the amount of conventional baseload generation which would be required to achieve the specified level of security of supply. Inadvertent and unseen reductions in security of supply caused by the pursuit of environmental objectives could therefore be avoided.

It is also encouraging to note that Ofgem recognises that the cost of transmission needs to be taken into account when deciding where generating plant should be located. Whilst specifying the approximate location of the required generating capacity in the tender requirements may not be the only, or indeed the best, way of achieving this, it is clearly the case that the overall cost to the system and society must be considered when making investment decisions. It is also important that the benefits associated with environmentally friendly generation are not included in both

[1] Roughly speaking, under Average Cold Spell conditions, demand net of voltage reductions would be met in 96 winters out of 100.

the generation and transmission investment appraisals; this appears to be possible under the current arrangements.

I accept that the use of capacity tenders may lead to small scale and distributed generation options being overlooked. Were this to happen, however, it would reduce the amount of investment needed to accommodate 'wrong-way' flows in the distribution network. I also accept that there may be "risks associated with leaving a central entity to make all the key decisions, which could turn out to be wrong." There are also risks associated with a central entity, government, taking decisions about the levels of subsidy for renewable energy without an adequate framework for specifying and measuring the security of supply delivered by the consequent capacity and mix of generation. There is also the risk of 'group-think' and 'herd-following' amongst the generators such that only CCGT plant with no distillate capability is built lest a particular generator loses ground to its rivals under the short-term measurement of financial performance. In a modern society such as ours, the consequences of having insufficient generating capacity are likely to outweigh the costs of having too much. The risks and consequences appear to me to be asymmetric.

Regarding the gas market arrangements, the capacity/energy distinction appears to me to be less well defined than in electricity as the need to balance minute-by-minute is absent. However, I have never been comfortable with the argument that "the market will provide." Dependence on international markets for spot imports at the time of high demand seems to me to be unwise given that the external market arrangements are often dominated by national self-interest and the potential trading parties are unlikely to feel morally obliged to help the UK out of a self-imposed predicament. Should they decide to make supplies available, the price is likely to reflect the circumstances of the deal and could approach the distressed purchaser's value of lost load. Capacity payments may therefore be a sensible means of ensuring that sufficient seasonal storage capacity is provided on the UK gas network.

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