

Ofgem prepares to re-write the rules

Streamlining access to the national grid is top priority for generators of renewables

Regulators appointed to monitor the conduct of the UK's privatised utilities, the telecoms sector and railways rarely make the news headlines. There are a few notable exceptions, of course, such as when the Rail Regulator raised its head above the parapet by imposing a penalty of £14 million earlier this year on Network Rail for delays in track maintenance. But for every high profile incident there are probably several hundred other more detailed decisions made by the regulators about the sectors they supervise.

The power utilities are no exception: the Office of Gas and Electricity Markets (Ofgem) is the regulator for Britain's gas and electricity markets. In addition to being the consumers' champion – as are all the regulators - it has an additional sustainability duty which includes helping remove the barriers to increasing the amount of renewable energy sources to the UK marketplace.



The ability to bring renewable electricity sources on stream into the national grid network is essential if the Government target of producing 15% of the UK's energy from renewable sources by 2020 has any chance of being realised. Renewables provide a major opportunity for producers involved in a raft of technologies from wind power to solar energy and wave power. But they also create a challenge for the companies which physically own the backbone infrastructure of the UK's electricity system and which have to provide connectivity from the renewable generators into the national grid network.

That high voltage transmission system is owned by three companies. National Grid covers England and Wales, while two Scottish companies – Scottish Power Transmission (responsible for the Lowlands of Scotland) and Scottish Hydro Electric Transmission (the Highlands) hold the corresponding assets north of the border. National Grid has an additional responsibility as the system *operator* for the entire GB network and has to ensure that electricity supply and demand is kept in balance in real-time.

Most recent price controls

In 2006, Ofgem approved the price controls to which the three electricity transmission companies and National Grid Gas, the gas transmission company, would operate. In determining these allowances, Ofgem has made flexible allowances for the capital investment that those companies would properly make during the five years of the review period 2007 to 2012.

The baseline level of investment approved was over £5 billion, including more than £800 million relating to National Grid Gas' ownership of the high pressure gas main, the National Transmission System.

The price controls also introduce new flexible mechanisms to adjust the companies' revenues either up or down in response to the needs of network users. This arises from uncertainty over how much renewable generation or gas import projects are likely to go ahead. If the companies' high case estimates prove correct and these projects do go ahead the companies can make additional investments taking the total to as much as £6 billion – although theoretically there is no cap on the investment they can make.

Commercial judgement

How the grid operators spend their allowances is a matter of their commercial judgement. The Regulator is specifically not in the business of micro-managing the companies' own decision-making.

Compared with the previous round of controls which expired in March 2007, the £5 billion package agreed with Ofgem was at least 100% greater. Perhaps more significant than the size of the total investment 'allowance' was that the new package also included significant allowances for investment to connect more renewables to the Grid. Ofgem has worked very closely with industry and the

Strong case for retaining higher charges for generators remote from network

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Government to find ways of using the existing network capability in a better way that should help renewables join the network.

History of conventional stations

While the Grid can accommodate the total volume of traffic, the way that the network has been built was against the backdrop of primarily large conventional power stations. This is consistent with the structure of the UK electricity generating scene at privatisation.

All generators buy the right to use the transmission system from National Grid, and procure a particular capacity for their power plant. In the event that not all of this capacity is used, it could be offered back to the market for others to use.

Under the current arrangements, this practice does not occur as often as it could. Clearly, more renewables could be brought on to the network if there were an arrangement where the existing conventional generators were to share their capacity rights with renewable generators.

This potential for sharing makes economic sense as a characteristic of renewables is that they are intermittent: power from wind turbines, for example, is dependent on the strength of the wind. If access capacity were shared, a complementary power station could switch back in through the same connection when the wind was not running.

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This and other initiatives being piloted by Ofgem and the Department for Business, Enterprise and Regulatory Reform via the Transmission Access Review aim to make fundamental reforms to the existing system so renewable, low carbon, and vital conventional generation can all gain access to the grid more quickly.

Cost of connection recovered

The charges which power generating companies pay National Grid for access to its transmission capacity reflect that operator's costs in providing the connection.

The connection costs reflect the distance between the source of the power and its point of connection to the Grid. The rationale lies in the fact that electricity worth £300 million a year is lost over the transmission networks every year. There is a partial analogy with the water industry which has constant leakage through old infrastructure, but loss of electricity is due primarily to the physical resistance of the network infrastructure which results in power being wasted in heat.

Location-based charging is intended to encourage the generators to position their facilities near centres of high demand, thereby reducing the length of the network segment over which power has to be transmitted.

According to Ofgem, one of the ways of alleviating the delays in connecting the generators of renewable power is for network capacity to be auctioned between generators.

At the moment, they contract with National Grid and sign up for a fixed amount of capacity for that generator. It is argued that auctioning would provide the right signals to the transmission owners to reinforce their networks in the correct places, thereby delivering infrastructure more quickly, at low cost.

One option that industry may consider is that of a fixed allocation topped up by an auction. Generating companies would pay for a contracted connection capacity accounting in total for perhaps 80% of the network's connectivity at any time.

The remainder of the capacity, which will grow steadily as the owners of the Grid deliver on their investment, would be available for auctioning. This would provide an incentive for the three owners to accelerate their investment plans.

Building access ahead of demand

Irrespective of whether capacity is auctioned or sold by negotiation with National Grid, there has been an important shift in policy affecting rural areas. At the moment, the way the connections process works is that the generators are required to make a financial commitment before the network owners go ahead and build a connection.

That avoids the possibility of the Grid investing in a connection that might not be taken up for any reason, leading to stranded assets.

Under the new regime, Ofgem is proposing to allow the transmission owners and system operator stronger incentives to build access capacity without necessarily having the demand from the generating companies to do so. The rationale for this being that the companies and their shareholders may be willing to take on more risk if there is more reward available for doing so.

At present the transmission owners broadly do not build infrastructure unless they are certain generators will use the line, and not be stranded. Given the challenges of the 2020 targets, there needs to be more innovative thinking, and more risk taking by the companies.



With an estimated 12 GW of renewables awaiting connection to the national network, it is clear that any initiative which speeds up that process must be welcomed. Knowing that the infrastructure owners are being induced to build new connection capacity in advance of their being ready to connect should encourage these smaller operators to maintain their commitment.

On the planning front, there are examples of wind farms taking between three and five years to secure approval. The Planning Bill introduced in Parliament in June 2008 should see a streamlining of the planning process and help ensure that targets for renewables are to be met. With an estimated 12 GW of renewables awaiting connection to the national network, it is clear that any initiative which speeds up that process must be welcomed.

Knowing that the infrastructure owners are being induced to build new connection capacity in advance of their being ready to connect should encourage these smaller operators to maintain their commitment. The regulator will shortly be convening work to develop an enhanced suite of incentives for the companies.

The concept of enhancing incentives so the transmission system can be built ahead of need is a slight departure for Ofgem, given that historically funding has been based on

The landmark wind turbine operated by Ecolectricity, adjacent to Junction 11 on the M4 near Reading has proved an excellent ambassador for the concept of turbines as an integral part of the built environment.

no evidence that locational charging acts against interests of wind power generators



the companies demonstrating clearly that there is compelling evidence that it will be used. Ofgem must exercise caution, however, in those situations where network finance is being tied up without specific demand.

Whatever money is spent on augmenting the high voltage network or any of the distribution networks will have to be recouped ultimately from customers' bills.

Ofgem is therefore considering the form and mechanism to deliver this enhanced approach to connection, to ensure that consumers receive value for money for the investment they fund, and that shareholders bear a proportion of the risk that their company takes on.

Avoiding hints of subsidisation

Whether more concessions need to be granted to the generators of renewable sources of electricity is contentious. It would see essentially smaller operators being subsidised in a way that would raise more than a passing interest from Brussels.

Ofgem is clear that reaching the 2020 targets does not require favouring technology types over others. There is apparently no evidence that the generators of renewable energy have been dissuaded from investing by the present regime: since 2005, 4GW of additional capacity has been added to the network from renewables; a significant contribution to electricity resources from a standing start.

Given the large queue of generation capacity awaiting connection to the system, the view that investment is being deterred does not stack up with the reality of the situation.

Ofgem's view is that the financial incentives for renewables are already in place under the ROC scheme considered earlier.

The re-distribution of payments made into the fund sees renewable suppliers receiving about £50 for every MWh of green energy they are producing. The electricity is being sold on to users at between £50 and £60 per MWh, giving an effective income of £110 per MWh. Under a mechanism now being introduced, the ROC subsidy for more established technologies such as wind farms will reduce.

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Ofgem's view is that given current ROC prices and wholesale electricity prices wind farms will continue to be profitable. On this basis there is no evidence to suggest that locational charging is deterring investment in renewable generation.

Variation in ability to supply

The greater availability of energy from the more remote wind farms is another factor which helps to compensate for the location charges. A 100 MW generator in the north of Scotland, for example, can deliver more power in a year than an equivalent installation in East Anglia where both connection charges (shorter distances) and wind levels can be lower.

It is clear from the way that Ofgem established its price controls for the 2007-2012 cycle that the Regulator recognises the challenges being faced by generating companies under pressure to implement renewable technologies.

The price control process ensures that funding for all viable generation connections is available for the transmission companies. For its own part, Ofgem is clear that funding of the networks to cope with the challenge of 30-40% renewable electricity production is not the problem.

As Ofgem would be the first to observe, achieving those targets is right back in the hands of the producers. §