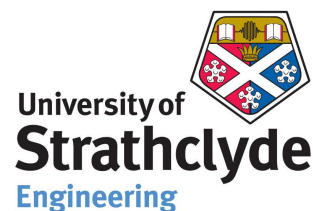


Rachel Fletcher
Partner, Smarter Grids and Governance
The Office of Gas and Electricity Markets
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Dear Ms Fletcher,

Re. Open letter on innovation stimuli

I welcome the opportunity to respond to Ofgem's recent open letter on gas and electricity innovation stimuli.

In Ofgem's RIIO decision document of October 2010, the view was expressed that the UK's energy industry faces a very large number of extremely difficult challenges, notably in respect of replacement of ageing assets and in accommodation of a lower carbon economy, and that they will require significant innovation. I totally agree with that view. Furthermore, I welcome the RIIO initiative's focus on incentives and reward for network companies' good performance in respect of service to energy users, including in respect of reliability of supply, not only in the short-term but also the longer term and note the importance of research and development to the latter.

Both the October 2010 RIIO document and the recent open letter on innovation set out high level principles but lack detail on how these will be implemented. It seems to me that the precise manner of implementation will be critical to the success of the initiatives and I look forward to seeing detailed proposals and arguments for how they will lead to the outcomes Ofgem desires on behalf of energy users.

My understanding is that the framework that Ofgem has in mind for transmission mirrors that recently put in place for distribution in respect of the 'low carbon networks fund' (LCNF) but with one key exception: there will be no specific allowance in transmission licensees' revenues for 'tier 1' R&D such as has been facilitated in recent years by the Innovation Funding Incentive (IFI).

In spite of some concerns, I regard IFI as a great success. It has succeeded in reversing the decline in R&D expenditure by the networks companies and slowed down the drain of network companies' in-house advanced engineering knowledge that is essential to the making of rational decisions on innovation and to being informed customers of research commissioned from outside. The ability of networks companies to invest in smaller R&D projects to develop knowledge regarding future uncertainties and test ideas in advance of larger investment is critical to the whole innovation process. While it is inherent to R&D that not all ideas will succeed, a number of those initially supported through IFI are making or have made their way through to deployment. Furthermore, the benefits of the associated investment in the training and development of individual engineers should not be underestimated.

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World class engineering expertise will be required if the low carbon and asset replacement challenges are to be met. UK universities have played a critical role in developing this expertise through PhD programmes facilitated by partnerships between industry, the UK research councils and the European Commission and via projects directly sponsored by companies to address immediate research questions under IFI. It would be a grave mistake to consider that these programmes need only deliver a few graduates to fill future academic positions within the universities. A great many more are needed to provide the engineering leadership that the industry requires to meet its present and future challenges. Development of this human resource is very much in energy users' long-term interests but experience of the network companies' performance prior to IFI does not give me confidence that they will make the necessary investment 'off the bottom line'.

Notwithstanding some concerns, set out below, about the likely competitive innovation funding process, I welcome the proposal to invite innovation proposals from 3rd parties. However, I would urge caution in its scope: the final responsibility for safe, secure and economically efficient network development and operation rests with the network licensees. Obliging the licensees to implement innovations put forward by 3rd parties that have no responsibility for safety and reliability may lead to irreconcilable tensions.

I do have some concerns regarding the implementation of the LCNF 'tier 2' competition that I feel should be addressed before adopting any comparable process for transmission. I would highlight two:

- the time, effort and resource expended on development of competitive bids of which only a subset can be expected to be funded;
- whether it is appropriate for there to be just one engineer on a panel of a number of individuals (whose manner of appointment could have been more transparent) sitting in judgement of what are, at root, engineering proposals, albeit that must be shown to promise long-term benefits in terms of facilitation of carbon reduction, reliability of supply and cost to consumers.

I would question whether it is in energy users' long-term best interests that, as the open letter on innovation stimuli implies, network companies' shareholders should fund all R&D not covered by a process akin to that of the current LCNF 'tier 2' funding. I would agree that innovation that promises a payback within a price control period should be funded by shareholders. This would normally be expected to lie towards the D end of the R&D spectrum and tending beyond that to Demonstration and Deployment. As noted above, smaller-scale R and the development of engineering expertise facilitated by support of research remain critical parts of the innovation process; network companies' performance prior to IFI leads me to question whether companies will sanction use of shareholders' money for early phase research and development without strong incentives. However, partly because of its generally high cost, it is possible that even investment in relatively low-risk demonstration and deployment will not be sanctioned by companies if they are not given confidence that shareholders will be able to accrue at least some part of the benefits in subsequent price control periods. That is, companies may be unwilling to risk shareholders' money if the benefits will be assumed in a re-set 'baseline' performance.

I believe that innovation in design and operation of electricity networks and the development of knowledge to inform that innovation are essential if the UK's transition to a low carbon economy is to be achieved while continuing to provide reliable supply of energy at an acceptable cost. Electricity transmission is absolutely central to that. In the UK as well as around the world, electricity is currently viewed as providing the key to carbon reduction not only in respect of existing uses of electricity but also in transport and heating. There is a global consensus that the vast majority of the growing need for low

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carbon electricity will be met by large-scale energy conversion facilities such as nuclear power stations and offshore wind farms, and these are most economically provided via electricity transmission networks the reach of which must extend to continental scales. Given the lack of public acceptance of development of overhead lines, engineers must look to alternatives such as underground or undersea HVDC and multi-terminal HVDC, all of which are still under development. In the meantime, existing assets must be fully utilised, power transfers maximised and the variability of renewables managed. However, this presents significant risks as well as opportunities: it is generally judged that greater transfers over longer distances also present increased likelihood of major disturbances. These risks must be fully understood and the degree to which demand-side measures involving great numbers of individual energy users can be relied on in operation of the power system as a whole – of which the transmission system operator has greatest visibility and for which it carries final responsibility – must be assessed.

Energy users in the UK are accustomed to electricity transmission operating with a high degree of reliability and are perhaps unaware of its centrality in meeting their energy needs; to neglect research, development and innovation not only in future transmission plant but also the way transmission is designed and operated would have significant adverse effects. As witnessed in, for example, California in 2000 and South Africa throughout the last decade, unreliable transmission would have grave consequences for the economy as a whole.

Your sincerely,



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