



**The Institution of
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The Knowledge Network

Ref: Sub835/hf

Ms Hannah Nixon,
Director, Regulatory Review
Ofgem
2nd floor
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11th September 2009

Dear Ms Nixon,

**Regulating Energy Networks for the Future: RPI-X@20
Working Paper 3 “Delivering Desired Results - who decides what energy networks of
the future look like?”**

The Institution of Engineering and Technology offers these comments in response to the RPI-X@20 Regulatory Review Working Paper 3 published on 31 July 2009

As one of the world's leading professional bodies for the engineering and technology community, the IET is technically informed but independent of network company, equipment supplier and service provider interests. As such it is well placed to provide an unbiased view.

This submission has been prepared on behalf of the Board of Trustees by the IET's Energy Sector Panel, who will be pleased to meet with Ofgem to explore these issues further.

The IET would be grateful if you would post the attached comments on the RPI-X@20 website so that they are available to others during the process of the review.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Paul Davies'.

Paul Davies
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The Institution of Engineering and Technology

Response to Ofgem RPI-X@20 Working paper 3: “Delivering Desired Results - who decides what energy networks of the future look like?”

11 September 2009

Key messages

- Today’s grids are, at the engineering level, complex systems whose secure and efficient operation is based on co-ordination and standardisation that was developed by the former nationalised industry.
- The smart grids envisaged for the future will have a significantly greater degree of complexity, involving automation and communication technologies, which will require significant engineering integration and co-ordination if they are to be developed cost-effectively, quickly and reliably.
- This necessary level of integration and co-ordination is a key element in managing complex systems and should not be confused with ‘centralised planning’. For example effective use of smart grids to manage energy demand will require strong integration and coordination between network companies, metering companies, ESCOs, energy suppliers and possibly the communications industry.

Observations and recommendations

1. As a general observation, we suggest there is merit in clarifying the term 'centralised plan' as this can be a pejorative term if not defined with care. We are not advocates of a centralised plan in the sense of 'a detailed master plan', but as an engineering body we are very conscious of the rising complexity of energy systems (especially smart grids) and are of the view that a centralised plan in the sense of 'an integration framework' is not only desirable but is essential.
2. An Integration Framework would address issues such as necessary standardisation, without which there can be no 'open systems' (resulting in a risk of lock-in to bespoke approaches from each manufacturer), and can be no common approach to testing and certification (with the likely result of inefficient procurement and reduced reliability).
3. The networks of the future will have to deal with a blurred separation between what are currently distinct functions. Smart networks will be much more integrated into control of supply and demand (currently energy suppliers' remits), metering (currently meter operators' remits), and potentially energy services companies (ESCOs) and others. This could be taken as an argument for more vertical integration in the industry, or a need for strong regulatory drivers towards collaboration and co-ordination. The IT systems underpinning smart networks will need secure data and control access for these different actors, as discussed in the IET's recent submission to DECC on smart metering¹.
4. All large engineering systems benefit from standardisation. For example the mobile phone sector has achieved remarkable 'plug and play' capability, while retaining strong competition and high standards of technical performance in a fast-growing market place.

¹ [IET submission number 832 August 2009 \(www.theiet.org/publicaffairs/submissions\)](http://www.theiet.org/publicaffairs/submissions)

5. In the mobile phone sector, the GSM Association has been a strong facilitator for standardisation of protocols and for resolving complex common issues with government and regulators, such as international frequency spectrum allocation. There may be merit in looking more closely at the GSMA model. Note that the easy to read, high level, home page leads the serious players on to detailed technical materials such as: www.gsmworld.com/our-work/programmes-and-initiatives/index.htm
6. New Technical Standards must be global. Even EU-wide is unlikely to be adequate. Standards are key to avoiding obsolescence by ensuring ongoing compatibility by means of upgrade paths. Note that this is an area where the parallels with GSM have to be treated with care: power system equipment needs to remain compatible with evolving communication and control systems for a life of some 15-40 years, whereas GSM can operate with a rolling upgrade programme knowing there will be rapid handset turnover.
7. Innovation has not been a defining feature of electricity distribution in recent times and network companies have not focussed on it. Recent initiatives by Ofgem and others have started to change this, with some encouraging results. The recent DPCR5 developments in this area are welcomed. However the extent and pace of innovation needs to change substantially to deliver at full scale the networks necessary to achieve the UK's carbon targets. Consideration should be given to further enhancing the profile for innovation within the regulatory process, perhaps creating requirements for KPIs for innovation, rewards for innovation leadership, and facilitating network innovation by other similar means to speed its integration as part of 'business as usual'.
8. Para 2.10 bullet 4 makes reference to the risks associated with under-utilised assets; to this can be added the further situation of assets rendered obsolete through, say, later technology break-through. We are pleased to see that this issue has been identified by Ofgem as it could be a serious barrier to new technology adoption, depending on the regulatory treatment. We would offer the view that major engineering developments have never followed a perfectly optimal path and that progress with complex systems is characterised by a learning process (an element of informed trial and error). If the network companies do not experience some unsuccessful projects or early obsolescence it would point to work programmes that are not truly innovative. Innovation is in the wider interest of customers; customers will therefore benefit too from a (hopefully small) proportion of asset write-offs.
9. Para 3.5 bullet 5 suggests that today's networks operate without a 'central planner'. This needs careful qualification as the great majority of the networks are the result of the co-ordinated and integrated approach established by the former nationalised industry. Today's companies benefit greatly from common technical standards and procurement specifications (national and international); since privatisation these have been updated incrementally through a co-ordinated approach under the auspices of the Energy Networks Association. However, there must be some doubt as to how this process would respond to the challenges of fundamental step changes, which are time-consuming and require experienced staff. We would commend Ofgem to address this in its considerations as, although it is very much a behind the scenes activity, it is on the critical path for achieving efficiency and effectiveness where step-change innovation is involved.
10. In a step-change innovation context, we endorse Ofgem's observation (para 3.21) that pilot implementations and large scale trials are likely to be an effective catalyst for progress. The DPCR5 initiatives in this area are welcomed. We commend Ofgem's close attention to the implementation details of the new Low Carbon Preparation Fund; for example to ensure that the competitive nature of access to the major part of this funding does not inhibit information sharing and collaboration in contexts that have national application. We note that, as a comparison, access to EU R&D funding (a common pot in effect) requires collaboration by a number of Member States and demonstration projects in several locations.

11. Our observation from collaborative projects run in the UK and internationally is that it may be helpful to identify a 'lead player', with the other players in some form of 'associate' role. This is likely to hasten effective decision making as one party is clearly leading and the inertia associated with 'lowest common denominator' decision making can be minimised.
12. Para 3.23 considers an integrated approach across sectors; we would observe that while such optimisation would be an aspiration, it is important that new arrangements are practical and transparent. As a starting position for the UK we would encourage simplicity and seek cross-sectoral efficiency opportunities to be sought through linkages between separately established bodies. A little sub-optimality would be a worthwhile trade-off if it enables organisations to be established that will communicate effectively and deliver concrete outcomes in reasonable timescales.
13. A central government model is considered for completeness in the Working Paper, but we would caution against its adoption for a number of reasons. In particular we would foresee considerable difficulty in government establishing a sufficient body of competence for what would be a most demanding task. Our concern is based on our observation that the necessary deep technical knowledge of the sector is now becoming scarce across the companies, especially in the area of innovation in networks. This capability needs to be renewed and reinforced over the coming years and the national pool is at present too shallow to create a central government body without seriously depleting capabilities in companies, manufacturers and research organisation.
14. Para 4.3 bullet 10 raises the question of the ability of a joint industry group to have breadth of thinking and the ability for self-challenge. Many different formats and governance arrangements for such groups can be observed across industry and in different countries and good practices can be utilised to minimise the risks identified. For example it would probably be effective for a joint industry group to report to a joint industry 'board' comprising senior sector executives and having 'non executive' independent members. The board would be accountable for validating and probing the industry group's recommendations (as works very effectively in the governance arrangements of many commercial organisations). With the right checks and balances, narrow thinking and self-interest need not be a serious risk for an industry group approach. This group should include representation or close interaction with other parts of the industry such as suppliers, ESCOs, and meter operators.
15. As a final comment we would wish to reinforce the importance of definition of terms: for example, a 'centralised plan' should not confuse detailed 'central planning' with 'necessary integration and co-ordination'. These are very different in nature and the latter could fit well with an adapted regulatory framework through a joint industry group that has strong and balanced governance arrangements.

These arrangements will need to be kept under review to ensure they do not present barriers to the delivery of a low carbon energy system. The performance of a deregulated energy sector remains untested in an environment of rapid change, and it is possible that results will not be created quickly enough by simply enhancing industry coordination. We recommend formalised tracking of progress and clear signals that Ofgem will examine the case for more active intervention if necessary.

The IET would be pleased to discuss these points further or amplify the arguments and provide more detailed evidence for the comments made.

September 2009