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Ref: (S)931/hf
Your ref: 15/12

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2 April 2012

Dear Ms Fletcher

ELECTRICITY DISTRIBUTION PRICE CONTROL REVIEW – RIIO-ED1

Thank you for the opportunity to comment on the way forward for the next electricity distribution price control review – RIIO-ED1.

Introduction – IET's key points

The IET welcomes the changes to network regulation implied by RIIO and in particular the recognition that the future of distribution networks will be very different to their recent past, and that companies will have to combine ever-improving operational efficiency with a strong culture of engineering innovation to support and enable a low carbon electricity and energy system. There are many uncertainties over how and at what pace this will develop and flexibility will need to be an integral part of the process.

The requirement for accelerating the pace of engineering innovation (together with its associated commercial and consumer interfaces) is really very challenging for a sector that has honed its processes for a more stable business environment. Feedback from early Low Carbon Network Fund projects supports this observation. To achieve the scale of response required, strong incentives should be considered for gaining the priority attention of company managers and to reward them for excellence in innovation. The sort of measure that could make a difference is an increased return on equity where a company can demonstrate it is really delivering on environmental and social goals, and is at the leading edge of cost-effective engineering innovation and the sharing of knowledge gained.

Our key messages are:

- A **strategic perspective** needs to be implemented, taking a pragmatic view of technology and network futures and the roles incremental short term investments will play in that wider context;
- Allied with the above, RIIO-ED1 provides an opportunity to implement a **systems approach** to ensure that each of the elements that contribute end-to-end functionality is correctly prioritised and integrated; in the absence of such an approach there can be little confidence that the full potential benefits for consumers will be released from network investments;

- Systematic identification and removal of **unintended regulatory barriers** to innovation needs to be a priority;
- DNOs need to be encouraged to **change and adapt** over time as needs and technologies evolve. This implies a need for relatively frequent but light-touch review of allowed expenditures and priorities, within the helpful context of the longer term planning enabled by RIIO;
- Rigorous means of **accommodating uncertainty** and developing future flexibility and optionality within an effective framework of governance will be crucial; and
- The scale of response required from the regulated network companies is very challenging and we encourage Ofgem to consider **bold management incentives** that will carry forward the momentum being created by mechanisms such as the Low Carbon Network Fund, to ensure full innovation deployment and organisational adaptation.

This is a major change for all DNOs. They will need support and encouragement from Ofgem in making the transition from managers of assets to managers of asset innovation. This will not be straightforward. The IET sees many potential benefits here for consumers and is very supportive of the direction of travel and would be pleased to discuss means by which it might help facilitate the changes ahead. This might include knowledge sharing, cross-sector 'systems thinking', and skills development amongst engineering professionals.

CONSULTATION QUESTIONS

1. How the price control should be structured to deliver the timely and cost effective connection of low carbon technologies

The next price control sees the distribution networks having to adapt and respond to a multitude of new challenges both technical and commercial. These include:

- asset renewal
- demand side connectivity (smart metering)
- adaptation of networks to become active rather than passive (to accommodate reversal of power flows and increasing variability of mobile demand from Electric Vehicles which could also become generators if storage is considered)
- intermittent generation and demand side service provision
- new contractual arrangements between retailers and transmission network operators.

The traditional approach of appraising each of the elements of an overall business plan independently is no longer appropriate and requires fresh thinking.

RIIO-ED1 provides an opportunity to deliver a **systems approach** to ensure that each of the elements that contribute end-to-end functionality is correctly prioritised and integrated, so that it delivers the full benefit across the various technical deployments that will be required to make power grids truly fit for purpose while remaining cost-effective.

This is not limited to electricity as areas such as heating, cooling, and transportation all become part of the wider challenge in a systems approach to investment selection and delivery. The consideration of "timely and cost effective connection of low carbon technologies" needs to extend to include a **wide range** of possibilities – i.e. intelligent demand, possibility of mass EV charging, electrification of heating, storage etc, as well as generation.

If, for example, individual projects within a business plan are appraised purely on the outputs they alone will deliver, there is a high risk that the wider benefits available to the overall system will be overlooked. It follows that projects that may seem not to deliver immediate benefit may nevertheless be crucial for enabling other projects to go ahead and deliver the full benefit required. In the more complex world ahead, a systems approach will be key to ensuring that consumers' money is demonstrably well spent.

A current example of this would be the smart metering roll-out. If smart meters are equipped with functionality that facilitates smart grid requirements, but the communication infrastructure does not provide the ability to utilise that functionality, it would be costly to recover from such a situation.

This is a major challenge for the sector as it moves forward from a traditional business model. The systems approach is key to success, but is very broad in its impact as it includes technical aspects, commercial aspects, and has business systems and organisational implications.

Innovation in connection arrangements

An example of a potential regulatory barrier to the successful deployment of innovation is Ofgem's (otherwise commendable) Connection Service standards:
http://www.ofgem.gov.uk/Media/FactSheets/Documents1/ConnectionsFS.pdf
For example, the standards state that provision for a connection quotation at EHV must be made in 65 working days. These standards are binding on the network companies and provide for customer compensation payments if breached. This may steer network planners towards standardised, traditional solutions and away from innovative solutions.

Ofgem is right to encourage good customer service in this area, but it may be at risk of creating unintended consequences. The IET would encourage Ofgem to explore refinements to this mechanism – perhaps developing an option to agree a time extension with a customer where an innovative solution could bring customer advantages in terms of cost, or reduced construction time or disruption.

We note that some DNOs are already demonstrating innovation in connection arrangements for both demand and generation connections through their LCNF Tier 2 projects: notably Electricity North West in its Capacity to Customers project and UK Power Networks in its Flexible Plug & Play project, both of which have the potential to provide speedier and cheaper connections through exploiting technological and commercial innovation.

A further important consideration is achieving the ideal balance between advance investment in infrastructure (where the cost will essentially be socialised), and cost-reflective deep connection charging. The latter approach might appear appropriate on a 'polluter pays' principle but the reality is that lack of infrastructure can present a real deterrent to new development, and hence economic growth, since the 'first comer' will sometimes be faced with high up-front costs with no guarantee of reimbursement should follow-on development be slow to take off. Apart from cost, insufficient core infrastructure also invariably creates delays in providing new connections to major housing and commercial developments.

In the longer run, a piecemeal approach to providing connections will inevitably lead to suboptimal and hence more costly network development. We would therefore encourage Ofgem to take account of the longer term interests of consumers that would accrue from **optimal network development**, requiring the companies to demonstrate a systems approach, and encouraging DNOs to make justified investments in advance infrastructure.

2. Which DPCR5 outputs and incentives can be retained

We understand that the spirit of the Low Carbon Network Fund (LCNF) is to be taken forward under RIIO as the "Network Innovation Allowance and Competition" and we very much support this. We would encourage Ofgem to consider ways of **progressively developing the scale and natural evolution of the key network-proving projects** that will make use of these incentives, to ensure that innovative approaches become part of Business as Usual and are rolled-out widely for maximum impact and consumer benefit. Furthermore, it is likely to be beneficial to integrate

projects and application developments, perhaps on a geographical basis, or where market/commercial synergies can be created.

More broadly, it will be important for outputs to properly reflect the challenges and opportunities that DNOs will face as Great Britain begins to see real traction in the take up of low carbon technologies such as electric vehicles, heat pumps and decentralised generation. DNOs should be rewarded for well managed innovation, not only in respect of new technology but also in terms of commercial innovation, for example exploiting opportunities for aggregated responsive demand and 'interruptible' connection agreements. However, while Ofgem will understandably be concerned to ensure that DNOs are delivering efficient economical and co-ordinated distribution systems, **it will be important to reward innovation that also confers upstream benefits.** For example, whilst techniques such as responsive demand and energy storage have the capability to improve distribution network load and utilisation factors, they also have the potential to improve transmission and generation utilisation, and provide valuable system balancing ancillary services. Regulatory boundaries must not stand in the way of such opportunities being exploited.

It will also be important to reward companies that demonstrate **good risk management**. Whilst the introduction at DPCR5 of health and load indices has been helpful in creating an outputs-based regime, we believe that this now needs to evolve to a regime wherein DNOs effectively manage the risk of ageing and more highly utilised assets, rather than simply maintaining a notional load or condition profile. **A risk-based outputs regime** will encourage DNOs to better understand the probabilities and consequences of functional failure and hence develop intervention policies to manage an appropriate level of risk. DNOs will develop a much clearer understanding of critical conditions - such as specific asset conditions that have a 'high consequence' failure mode, and critical component loadings and duty levels - and hence will be encouraged to develop better diagnostics to more accurately measure such conditions. Overall, a risk-based approach to asset management will drive further efficiencies in network investment and provide a spur to further innovation in network management.

3. How Ofgem can improve the cost assessment for RIIO-ED1 expenditures

We welcome Ofgem's move away from a mechanistic calculation of expenditure allowances based on past efficiency; as the future becomes less certain, it makes sense to focus more on assessing what constitutes a reasonable forecast.

Ofgem is currently proposing a 'toolkit' approach made up of disaggregated historic cost analysis, unit cost analysis, independent (expert) review, totex analysis, external comparators, and cost/benefit analyses for major investments. **We wholly endorse this use of a 'rich picture' in judging the efficiency of the business plans of DNOs.** We therefore strongly favour exploring the use of totex analysis which encompasses both opex and capex and hence attempts to assess the combination which offers the least whole-life cost. An example would be assessing the relative net present value of refurbishment and replacement, taking full account of any differentiating factors such as relative risk.

Most importantly, Ofgem must recognise the changing landscape which will require DNOs to depart from their traditional 'least unit-cost' approach to achieving a short-term (i.e. within the price control period) output. Given the as yet uncertain speed, scale and ultimate impact of low carbon transition, **creating flexibility and optionality** will be key aspects of future investment appraisals. Some investments in ED1 period might be justified in terms of their positive impact during the ED2 period. Given that some technologies are currently immature in terms of technology and market readiness, it needs to be recognised that initial investments in such technologies might initially incur higher unit costs which, nevertheless, will be justified in terms of creating the necessary technology-pull that will encourage economies of scale such as through vendors investing in scaling up their production and refining their products and processes.

4. Whether the ED1 price control period should last eight or nine years

It will be important to **manage uncertainty** as the requirements will without doubt emerge and change over the ED1 period. The DNOs should be encouraged to change and adapt their approaches if that is cost-effective and/or strategically prudent, so avoiding the creation of perverse incentives to stay 'locked in' to the RIIO plan as first approved. Engineering experience would suggest that it would, in fact, be unusual if such adaptation was not evident.

The price control could be more adaptive if the full review period is longer (e.g. 10 years) and there is provision for a number of light touch interim reviews (e.g. every 2 years) to take account of practical experience with low carbon technologies and new insights arising from LCNF or NIA/NIC projects.

5. Which stakeholder engagement mechanisms can be used by the companies and by Ofgem.

Willingness to Pay (WTP) surveys, which used to be a mainstay of customer input, may be less appropriate given the pace of change because consumers will not necessarily be aware of the wider context. It will be important to ensure that any such surveys are looking to a future and very different use of the network. The further use of Ofgem's Consumer Challenge groups shows promise as a way of gaining informed engagement.

It will be important for DNOs to demonstrate that the engagement processes surrounding their ED1 business plans are part of a more holistic approach to engaging with stakeholders. Not least of these stakeholders is Government departments such as DECC who will wish to be assured that DNOs are engaging in strategies that will deliver affordable low carbon transition.

Learning from LCNF and other projects will be important as implementation proceeds. On a specific point we suggest that new mechanisms should be considered to draw out the learning points from **SME vendors and innovators** who typically bring forward significant levels of innovation but because of their size find it impractical to engage with industry consultations, committees and other forums. The IET would be pleased to consider with Ofgem how it might assist in this area.

The IET is one the world's leading professional bodies for the engineering and technology community. We have over 150,000 members in 127 countries and has offices in Europe, North America and Asia-Pacific. The Institution provides a global knowledge network to facilitate the exchange of knowledge and to promote the positive role of science, engineering and technology in the world. This response has been prepared by the IET's Energy Policy Panel and takes into account feedback received in response to a call for comment to the wider IET membership.

If the IET can be of further assistance to Ofgem on these matters please do not hesitate to contact me.

Yours sincerely

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