Mr. Erik Sleutjes
Senior Manager
Ofgem
9 Millbank
London SW1P 3GE

10 June 2008

Dear Erik,

Long Term Electricity Network Scenarios – Interim Report and Consultation

I refer to Steve Smith's letter of 14 May 2008 and the LENS Interim Report published in May 2008. I am pleased to offer EDF Energy's comments regarding the Interim Report and our observations in respect of the specific questions raised by the letter.

We have provided comprehensive commentary in our responses to previous consultations on the development of LENS (ref. our letters of 23 July 2007 and 17 January 2008) and we are pleased to note that a number of our suggestions appear to have been incorporated, or at least considered, in the subsequent development work; in particular our suggestions in respect of developing themes.

Overall, we believe that the Interim Report clearly demonstrates that the LENS research has been thorough and that the consultation process has so far been effective. The documentation is also comprehensive and provides a robust audit trail underpinning the decisions that have been made regarding inputs, pathways and themes, and ultimately the selected energy and network scenarios. These are important prerequisites to achieving 'buy-in' to the scenarios and to the wide acceptance of the future outputs of the LENS project.

The following commentary relates to the questions raised in the 14 May letter and is informed by our active participation in the 3rd LENS workshop held on 5 June 2008.

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Q1. Do you have any comments on the energy and network scenarios for 2050 set out in the interim report, or on the method used to derive them? In particular:

> **Q1(a).** Do you agree that all of the network scenarios are plausible? If not, please explain *why* you think that one or more of the scenarios are not plausible.
>
> **Q1(b).** Do you agree that the interim report demonstrates that the network scenarios, between them, span a suitably wide range of plausible outcomes for GB electricity networks in 2050? If not, what essential features do you think are missing and could these potentially be accommodated within the existing scenarios?

Q1. As with any scenario work looking so far out into the future, it is important to appreciate that unforeseeable events could (and probably will) occur that might have a significant impact on which, if any, of the energy and network scenarios actually become dominant at 2050. During the intervening period, it is not inconceivable that major political, environmental, or economic events could occur as a consequence of currently unpredictable circumstances. Moreover, recognising that technology can be both a scenario input and output, the potential scope for major technological breakthroughs that might impact on either (or both) energy and network scenarios over the period to 2050 should not be underestimated.

However, albeit by no means the only possible scenarios that could materialise at 2050, the draft energy scenarios described in Section 7 of the report represent a broad band of intuitively plausible scenarios based on the comprehensive arguments presented in the report.

Q1(a). Section 8 of the Interim Report describes a plausible range of generation and demand profile scenarios, each logically mapped to the 5 energy scenarios. In terms of generation scenarios, whilst none of these appears implausible, it will be important to recognise that 'way markers' are already being established in terms of emerging Government policy. For example, whilst the development of micro-generation might be accelerated by the prospect of the 'zero carbon' home (especially post 2016) and to the extent that Government is persuaded by arguments for subsidies (for example the Micropower Council Report of 2 June 2008[1]) the Government has now also given a much stronger signal in favour of nuclear generation, and has also suggested that 33GW of offshore wind generation might be feasible by 2020.[2]

Whilst none of the scenarios presented in the report appears implausible, some would appear intuitively more plausible than others if considered in terms of dominant scenarios. No doubt the further MARKAL-ED modelling to be undertaken under the next phase of the project will shed further light on energy and network scenario feasibility.

QI (b). The 5 network scenarios proposed under Section 9 represent a very wide spectrum of potential network developments to 2050. In terms of onshore

[1] http://www.micropower.co.uk/news/newsrelease57.html

[2] http://www.thecrownestate.co.uk/newscontent/92-round3.htm

transmission and distribution, it is difficult to imagine a scenario that is not covered by the overall range of possibilities represented by this set of scenarios, even if none of the 5 individual scenarios actually materialises.

In terms of offshore transmission, the 'Big Transmission and Distribution' scenario refers to expansion of the transmission network to connect offshore renewables sites, with circuits continuing onwards to provide interconnection with western mainland Europe. However, a further possibility is that by 2050, irrespective of the scale of North Sea offshore wind development, a much stronger linkage with Europe might emerge such that the GB (and indeed NI) transmission system becomes a physical extension of the UCTE network. Such a scenario could of course be a major influence on the future development of GB T&D networks.

Q2. What are your initial views on transitional issues and 'way-markers' for 2025, in light of the scenarios for 2050 set out in the interim report?

Whilst we would agree that the derivation of 2025 'way markers' will be helpful in the context of creating a 2050 'road map', we would suggest that an even more important element of the modelling will be to test whether the implied changes to the national electricity generation portfolio, the current energy market model and our overall electricity network architecture are plausible over such a relatively short timescale.

Irrespective of the generation scenarios, a particular influence on the demand profiles will be the extent to which participation in Demand Side Management (DSM) facilitated by a national roll-out of smart metering is embraced by customers; especially domestic customers. A further influence will be the nature of future domestic electricity demand which, over the period to 2050 and even 2025, is likely to be impacted significantly by:

- the availability of more efficient (A or B rated) 'cold' appliances;
- the discontinuance of incandescent lamps in favour of CFLs;
- continued growth in consumer electronics and domestic-scale air cooling;
- the practical manifestation of the 'zero carbon home' which is likely to be a catalyst for micro-generation and the probable re-emergence of electric space and water heating;
- the probable rapid development of the plug-in hybrid car as an alternative to the ICE; and, perhaps most significantly,
- in respect of the anticipated roll-out of smart metering, the extent to which a fully functional 'operational' (as opposed to a 'billing') smart meter, giving rise to significant DSM opportunities, is specified by BERR.

Other than in terms of relative scale (and acknowledging that the relativities might be significantly influenced by the energy scenarios) the changing nature of domestic demand as described above would otherwise appear, at least intuitively, to be common to all the considered energy scenarios.

Whilst the inclusion of the 'Multi-Purpose Networks' scenario might be seen as a 'catch-all' provision, it is in our view both a pragmatic and realistic scenario that is perhaps most representative of the multi-dimensional nature of 'transitional' network development that is likely to materialise over the period to 2025, as a new generation of power stations of various technologies replaces much of the existing GB fleet. Beyond 2025, it might be that one or more of the other 4 scenarios will then begin to show prominence.

Q3. What are your initial views on the most important issues for networks and for the regulation of networks that arise in light of the scenarios for 2050 set out in the interim report?

Irrespective of which of the 5 envisaged energy and network scenarios proves most representative in the longer term, it is clear that the role of electricity networks and their technical architecture can be expected to experience significant change over a sustained (at least until 2025) transitional period. Such change will both be driven by changes to the energy market and, to some extent, give rise to changes in the energy market.

For example, a wider and deeper proliferation of DG (including micro-generation) would give rise to a need for more active management of distribution networks and the deployment of new network technologies. Equally, the future management of electricity distribution networks might involve technical aggregation and system balancing, including the dispatch (constraining on) of DG and storage, and through DSM actions. Such actions would directly impact the balancing market and might therefore require changes to DNOs' licence conditions.

At the transmission level, there would be significant challenges, for example in terms of system balancing and system stability, arising from a future generation portfolio containing a significant contribution from DG and/or intermittent generation. In terms of system balancing and system stability, significant connections of offshore generation and enhanced interconnection with mainland Europe would each bring challenges and opportunities to the GBSO.

The most pressing need for DNOs is to participate fully in the development and deployment of the necessary active network management technologies and, equally importantly, to develop the necessary technical and commercial skill base to deal with a future more complex market and network architecture. From a regulatory perspective, the need for effective incentives for technology and skills development is paramount, as is appropriate reward for (and/or protection from) a responsible level of active network investment risk. The great majority of network components installed today will still be in operation in 2050 and, in the context of 2025 way markers, it is therefore essential that progress towards the necessary transition is made during DPCR5.

Q4. Do you see benefit in a fourth (and final) stakeholder event for the LENS project, following publication of the June draft scenarios report?

Without pre-empting the output of the final stage of the LENS project, it is clear from the Interim Report that the envisaged future electricity network scenarios imply significant changes to the current industry model. It is therefore essential that the output of the report is disseminated to all relevant stakeholders, and widely debated, in order to ensure that the implications of the report are fully understood. In particular, it will be important that agreement is reached regarding the next steps that will be necessary to effect the necessary transitional actions in respect of: the energy market, network architecture, governance (including transmission and distribution codes), regulation and possibly legislation.

In terms of implementation, a 'fourth and final' stakeholder event to ratify the findings of the June draft report would therefore seem to be no more than an essential first step before embarking on a much wider and deeper consultation process.

Q5. Do you have any other comments or views about the LENS project that you wish to raise at this stage of the scenario development process?

Throughout the LENS programme, Ofgem has sought to emphasise that there would be no direct link between the output of the LENS project and DPCR5. The 14 May letter reiterates this and notes that the output is more likely to be an input to Ofgem's 'RPI at 20' project. In the context of the increasing level of network investment now envisaged over the DPCR5 period, this would seem at best a missed opportunity, and at worst a possible barrier to the achievement of the 2025 way markers. Unless significant progress is made during DPCR5 in respect of the necessary transition towards new network architectures, the legacy and/or asset stranding issues that could then arise from a 'business as usual' approach to asset replacement might be sufficient to preclude the realisation of the very network scenarios proposed by the June report.

I hope you will again find our comments constructive and helpful. You may be assured that EDF Energy remain committed to supporting this important piece of work.

Yours sincerely,

Dave Openshaw
Head of Engineering Regulatory Strategy
EDF Energy Networks