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Dear Erik,

Long Term Electricity Network Scenarios – Draft Scenarios Report and Consultation

I refer to Stuart Cook's letter of 29 August 2008 and the LENS Draft Scenarios Report published in August 2008. I am pleased to offer EDF Energy's comments regarding the Draft Scenarios 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, 17 January 2008 and 10 June 2008) and this letter should be read with reference to our previous comments.

The following commentary relates to the questions raised in the 29 August letter.

Q1. Do you have any further comments on the draft electricity network scenarios for Great Britain set out in section 4 of the report, or the method used to derive them, in light of (i) the scenario merger and quantification exercise, (ii) the addition of 2025 way-markers, and (iii) the additional refinements made in light of stakeholder feedback?

The (energy / networks) scenario merger and quantification exercise has been a logical step. Given the mapping previously undertaken (i.e. understanding at a high level the network impact of various energy scenarios) we can be reasonably confident that this does not compromise the validity of the inputs to the model. The addition of way markers is an important step as it provides an insight into the 'foreseeable' futures pertaining to each scenario. The report notes that 'plausibility' is an important factor in determining way markers.

However, the 2025 way markers are essentially precursors to the 2050 scenarios and are not necessarily consistent with current developments in the UK electricity generation portfolio, or the path that current UK energy policy is pursuing. For example, albeit that refinements have been made to the scenarios in light of

stakeholder feedback, it is not apparent that any of the scenarios (or more specifically the 2025 way markers) are entirely consistent with the Government's (albeit still developing) Renewable Energy Strategy (RES). This is not a criticism of the model; indeed the outputs from the model might usefully inform the RES, and energy policy generally. However, any inconsistencies between current energy policy and the 2025 way markers would seem to be an important consideration, since decisions taken today will have ramifications beyond 2025 and will therefore ultimately compromise the feasibility of some 2050 scenarios.

Q1(a). Do you agree that all five scenarios are plausible? If not, please explain *why* you think that one or more of the scenarios are implausible.

We have previously acknowledged that all five scenarios (to 2050) are theoretically plausible, but that some would appear intuitively more plausible than others if considered in terms of dominant scenarios. The inclusion of 2025 way markers reinforces this view since for some 2050 scenarios to be realised, significant changes to current energy policy and/or advances in technology would seem to be necessary for the envisaged 2025 'milestones' to be achieved. Whilst to some extent true of all five scenarios, this observation is perhaps particularly relevant to the Energy Services, Distribution System Operators, and Microgrids scenarios.

Q1(b). Do you agree that the draft scenarios report demonstrates that the five scenarios, between them, span a suitably wide range of (plausible) outcomes for GB electricity networks in 2050? If not, what essential features (if any) do you think are missing and could these potentially be accommodated within the existing scenarios?

The five scenarios span a very wide range of plausible outcomes to 2050. However as we have commented before, this is not to say that scenarios which fall outside the captured range are implausible. Indeed, history tends to show that it is the unpredictable 'high impact low probability' events that are most instrumental in bringing about rapid and fundamental changes in policy. The potential for such events between now and 2050 must be relatively high.

As we have also commented, the very fact that the scenarios do cover such a wide range leads to a high probability that none of them will precisely reflect the position at 2050; rather that hybrids of the presented scenarios will materialise. Indeed, it is quite feasible that different hybrids will emerge across specific regions of the UK. We did comment from the very beginning of the project that some regionally disaggregated consideration of scenarios would have been helpful; particularly as an input to longer term network development scenario planning. It is already apparent that, over the period to 2025, the degree to which both transmission and distribution networks will be impacted by new generation technologies will vary by region; especially in the case of wind generation. It should therefore have been possible to reflect this regional dimension in the 2025 way markers.

Referring again to the developing UK Renewable Energy Strategy, the UK's allocated contribution towards the EU 2020 renewable energy target has significant implications for the future electricity generation portfolio. To that end, studies are now being undertaken to assess the (transmission and distribution) network implications arising from very high levels of intermittent wind generation (both onshore and offshore). In the context of a 'mid-case' scenario, by 2020, up to 25GW of offshore wind capacity is now considered feasible, in addition to 13GW onshore.¹ Such a scenario has major implications for not only onshore networks but also (new) offshore transmission systems.

It is noticeable that none of the LENS (2050) scenarios consider offshore wind capacities even approaching these levels; indeed some consider offshore wind generation capacities even less than current levels either connected or under construction. Unless it is envisaged that installed offshore wind capacity will either fall well short of the Government's aspirations for 2020 or significantly reduce from a peak in 2020 (in which case the way markers would logically reflect that view) this would seem to call into question the quantification of some of the scenarios, if not the practical (as opposed to theoretical) plausibility of the scenarios themselves.

Q2. What are your final views on the scenario implications for networks, as defined elsewhere in this letter, in light of the draft electricity network scenarios for Great Britain set out in section 4 of the report?

It is clear from the LENS work that there are many possible implications for networks depending on which, if any, of the envisaged scenarios (or hybrids thereof) come to fruition. Given the impracticality of developing a definitive scenario (let alone sensitivity studies surrounding such a single scenario) this suggests the need to develop a flexible network architecture that is adaptable to a wide range of future energy scenarios. Refinement of the architecture might become feasible as greater clarity emerges as to the direction of future energy policy, which would then enable some convergence between the scenarios envisaged.

Irrespective of which scenario might be considered more likely, and therefore which might direct the development of future network architecture to a greater degree, it is apparent that maintaining the status quo (when considering both transmission and distribution networks) is unlikely to be sustainable.

Q3. What are your final views on the scenario implications for the regulation of networks, as defined elsewhere in this letter, in light of the draft electricity network scenarios for Great Britain set out in section 4 of the report?

Building on our comments under question 2 above, it is clear that the regulatory framework must be geared towards providing incentives for appropriate investment in

¹ Ref. Sinclair Knight Merz: 'Growth Scenarios for UK Renewables Generation and Implications for Future Developments and Operation of Electricity Networks' June 2008 (BERR Publication URN 08/1020)

future flexible network architecture. Designing such incentives will require consideration of a wide range of factors; for example:

- The need for innovation (including through R&D) in developing flexible and sustainable (i.e. as far as practicable, future-proofed) networks;
- Recognition of enhanced risk – including both new technology and asset stranding risk (if, for example, one of the more extreme scenarios gains prominence to the extent that even a flexible network architecture is unable to be adequately adapted);
- The need for human resources – which means attracting sufficient people with the necessary skills and qualifications to design and manage future networks; and
- Incentives that reward long-term ownership and network development.

However, the regulatory framework must also be sufficiently adaptable to embrace such changes to the UK industry model that would be a necessary precursor to the delivery of some of the envisaged scenarios. For example, existing interfaces between Generators, Suppliers, Meter Operators and DNOs may need to be reviewed, and responsibilities redefined. In particular, some scenarios will clearly impose a duty on DNOs to take at least some responsibility for System Balancing, Storage, DSM, and ICT.

Q4. Is there follow-on work that, in your opinion, Ofgem and the Authority (or other relevant stakeholders) should consider undertaking in light of the draft electricity network scenarios for Great Britain set out in section 4 of the report, after the close of the LENS project?

The LENS work has identified a number of scenarios, none of which can be considered ‘business as usual’ and some of which are nothing less than radical in terms of their implications for networks and the future regulatory framework. Ofgem must of course give careful consideration to the report in the context of the current Distribution Price Review while, in the medium term, the report will be an important input to Ofgem’s RPI@20 project.

However, the report has obvious implications for all stakeholders in the energy supply chain (including Government, customers, manufacturers, academia, research establishments and energy companies generally; as well as Generators, TSOs, DNOs, Meter Operators and Suppliers). It will therefore be important to maintain ongoing frameworks that will enable:

- relevant stakeholders to continue to contribute to the development of future network scenarios;
- the necessary direction to be given to the development of future network strategies; including for example identifying key areas for research development and deployment of new technologies; and
- regulatory and/or market barriers to be identified and removed.

By way of an example, the recently reconstituted BERR / Ofgem sponsored Electricity Networks Strategy Group is well placed to use the LENS work as an input to developing future electricity network strategies; identifying and removing technological, regulatory and commercial barriers to progress.

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

We agree with Ofgem's view that a final stakeholder consultation meeting should be held in order to further explore stakeholders' views relating to the questions raised in the letter, and the implications for further work and/or next steps.

In terms of contemporaneous market events and developments which have not so far been explicitly considered as inputs to the project, we agree with Ofgem that these should be incorporated into the final draft of the report. As we have observed, the Government's emerging Renewable Energy Strategy would seem to be one such development, given that it might give rise to energy scenarios that will have long term implications for networks outside the range currently embraced by the LENS range of scenarios.

I hope you will again find our comments constructive and helpful. You may be assured that EDF Energy remains committed to supporting this important piece of work. As such, we look forward to participating in the final stakeholder workshop and, thereafter, supporting any future periodic repeat (or review) of this exercise. In the meantime, it will be important that the final outputs of the scenario modelling are used to inform discussions on network investment requirements, and potentially regulatory framework changes, over the period covered by DPCR5.

Yours sincerely,

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EDF Energy Networks