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Dear Erik

Long-Term Electricity Network Scenarios (LENS) – draft scenarios report and consultation

Thank you for the opportunity to comment on the continued development of the LENS project and the draft report.

We continue to be supportive of the LENS project and welcome Ofgem's efforts to co-ordinate a coherent approach to long-term projections specific to the network industry.

With regard to the specific questions raised in your letter of 29th August, I would comment as follows;

1. *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? In particular:*

1a) *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 think that the overall approach to scenario development is logical and well laid out in the draft report. We additionally consider that the scenarios have been merged appropriately and the narratives are richly illustrative.

The fifth scenario was introduced in the initial report and we voiced concerns as to whether it formed a distinct scenario in its own right. We feel that this has been 'sharpened up' considerably in its merged form and now presents a coherent and plausible possibility.

We agree that each scenario appears individually plausible, particularly when considered over a 40+ year timeframe. As noted previously, however, the process by which the scenario may be ultimately derived is likely to be a non-linear path.

1b) Do you agree that 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 proposed scenarios do seem to span a wide range of plausible outcomes and there is a danger in developing too many scenarios to accommodate further possibilities. We have however previously noted that there is no consideration of a fall in environmental concern from its current level, which some commentators observe may still be ill-informed and alarmist. It may be imprudent to assume that the environmental theme only increases from today's level.

We also continue to have concerns that energy security issues are being underplayed in the scenarios compared to the potential impact of environmental concern.

2. 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 set out in section 4 of the report?

The development of the 2025 way-markers is, in many respects, the most interesting aspect of the LENS work as it embodies the critical issue as to whether the long-term will be reached by incremental changes to the legacy position, or whether a revolution in current infrastructure provision will be required. The assets being installed now are likely to have to endure the market, consumer and physical environment of the 2050s and beyond. As such, a view on the level of 'future-proofing' that it is viable to undertake now (as opposed to future retrofit or stranding costs) may be appropriate.

Regarding DNOs, we note that all the scenarios forecast a significant and enduring role for a local distributor (in contrast to the Transmission function) but vary in the pace at which a network operator changes into an active system operator. A number of the scenarios discuss the rise in function of energy service companies (ESCOs), which leads to the issue of the respective future role of the ESCO, supplier and DNO/DSO, and indeed if having such multiple agents is desirous and efficient from an industry framework perspective.

We note the detailed quantitative modelling results for the scenarios with interest, and also the report's caveats that the results will not necessarily mimic the narratives exactly; however, for our own understanding, it is worth pointing out some of the apparent anomalies in the results presented;

- The modelling results set out for each scenario are useful and aid the narrative description. We are concerned however that they demonstrate dramatic switches between energy types that, in practice, would lead to massive switchover and stranded asset costs. For example, in the 'Big T&D' scenario, Coal CCS grows from insignificant in 2025 to almost half of national generation by 2030, a process that isn't achieved by simply retrofitting CCS to existing plant. This suggests that the MARKAL model may be inappropriately favouring this technology type by not considering the overall costs of a technology switchover on this kind of scale and the resultant supply issues it may bring.

The 2020-2030 projections for the generation mix in the 'Microgrids' scenario also stretch plausibility that such change could a) happen, and b) be the lowest cost solution.

- The 'Big T&D' scenario assumes 'abundant' demand and yet has the lowest installed capacity of any of the 2050 scenarios. We note the explanation on p.131 regarding availability factors of renewable plant, however this would still seem anomalous.
- Regarding 'Big T&D', we note that the 'centralised large scale generation' includes nuclear as an example (p.4), and the 2025 waymarker suggests that nuclear new build is underway, however the projected nuclear installed capacity in 2050 is zero. This suggests an inconsistency in the modelling.
- Comparing the installed capacity projections for the five scenarios and their waymarkers suggests an anomaly that isn't highlighted in the modelling discussion. By 2025, the scenarios have a range of 82-90GW installed capacity compared to a 2000 level of 84GW. By 2050, this range has widened to 101-120GW, and the order of the scenarios has changed. It may be useful to explore this area and provide a rationale as to why capacity growth is so much faster in the second 25-year period.
- The microgrids scenario suggests a 99% reduction in carbon emissions from the 2000 level, despite 4GW of large thermal (no CCS) capacity and 12GW of imports. It is not clear what assumptions are made for the fuel mix of the import component and hence how the 99% reduction claim can be substantiated.

3. *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 set out in section 4 of the report?*

One of the fundamental issues in terms of the scenarios impacts on the regulation of networks is the extent to which the regulatory framework is used as the catalyst or stimulus to change in the energy market, and to what extent its role is more passive in terms of reacting to changes driven by other stimuli. In that regard, one of the key lessons is that any future review of regulatory frameworks, such as 'RPI at 20', needs to ensure that sufficient flexibility is built into the regime in order to accommodate the potential variability that the scenarios suggest.

Some of the scenarios envisage DNOs operating outside of their current remit and effectively becoming players in the generation market as well as system operators. There seems to be a spectrum of decentralisation which sees the role of the DNO grow from its present position as it becomes more active in local system management and demand balancing, through to a decline as the more extreme self-sufficient variants of microgrids are reached, whereby even an intra-regional distribution infrastructure becomes largely redundant. Determining an appropriate approach to the network regulation issues that this poses will require some long-term probabilities to determine the most appropriate near-term steps.

There is welcome acknowledgement of the risks of underutilised or stranded assets in the 2025 waymarker for the 'Multi-purpose networks' scenario (p.137) and the resultant regulatory issues. To us, this is a key element in the debate – if network companies are to have a changing role in the future, there needs to be acknowledgement of the potential risks of stranding with changing policy approaches, abortive technology developments, changing market structures etc.

In all cases, there will be a role for network companies to facilitate or carry out new technology trials and innovation, and the regulatory framework will need to suitably accommodate this. Network development will also be contingent on other extraneous factors such as planning legislation which may determine the extent to which continuing large infrastructure investment is feasible.

4. 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?

In terms of further development, there would seem to be potential to link with the upcoming UKCIP climate change forecasts for the UK due to be published in November as a model output. This may give a refined view as to the type and quantum of environmental change that can be assumed under different scenarios, and hence how future consumers may react. For example, the ESCO scenario context (p.69) links environmental concern to temperature increases and (unquantified) changed weather patterns. It may be possible to link the scenarios presented to the emissions scenarios promised in the forthcoming UKCIP report.

One area that does not appear to be modelled in detail in MARKAL is that of accessibility to finance and the potential impact of changes in the attractiveness of infrastructure financing vis-à-vis the retail market for example. This is a potential area for further exploration.

5. 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?

To us, linking the LENS output into the 'RPI at 20' review seems a sensible approach – the review of regulatory framework must take into account the potential changes to networks over the next few decades and potential energy futures that may emerge. Regulation over the next twenty years is likely to have to incorporate significantly more flexibility and uncertainty than the essentially cost-cutting paradigm that RPI-X effectively represented, and the output of LENS should be a key input to this.

Incidentally, we assume that the reference to 'not' maintaining the plausibility and richness of the scenarios on p.34 is a proofing error.

I trust these comments are helpful. We would be interested in attending the final workshop and look forward to receiving further details in due course.

Yours sincerely,

Paul Bircham
Regulation Director
Electricity North West Limited