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Dear Angelita,

Re. Consultation on changes to National Grid Electricity Transmission plc's electricity transmission licence to publish the Electricity Ten Year Statement (ETYS)

I write in response to Geoffrey Randall's letter of December 17.

Question 1: Do you agree that amending Standard Condition C11 (replacing the obligation to produce the SYS with one to produce the ETYS) and amending Special Condition 2F (removing the obligation to produce the ODIS) in line with the proposals above is appropriate?

Yes.

Question 2: Do you think that setting the reporting period to ten years is appropriate?

Yes.

Question 3: Do you agree that the ETYS should be published annually, and that updates should be published quarterly? Alternatively, do you consider half-yearly updates to be sufficient?

I agree that annual publication with quarterly updates is appropriate.

Question 4: Do you have any comments on our proposed timings for stages in the ETYS, in particular whether 30 November is an appropriate publication date?

For practical purposes, if the ETYS is to refer to and describe the impacts of scenarios set out in National Grid's Future Energy Scenarios (FES) document, the ETYS should be published sufficiently after the FES document to allow power system impact studies to be completed and adequately reported. However, the ETYS should be published no later than that.

Question 5: Do you have any comments on the type of information provided in the ETYS?

Much of the information published in the ETYS is very useful. However, I believe it could be improved in respect of transmission system power transfer capabilities. In particular, it reports a comparison of the 'required transfer capabilities' with the transfer capability that the system is planned to have for a number of boundaries. However, since a change to the NETS SQSS where the concepts of "security planned transfer", "economy planned

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transfer” and “boundary allowance” were introduced in March 2012, it can be seen that there are, as a minimum, two ways of calculating the required transfer capability on any one boundary. The critical one is the higher of the two. I believe that:

- a) what is reported in the ETYS should be much clearer than in the 2013 ETYS about which one is driving a reinforcement on a particular boundary.
- b) both the security driven required capability and the economy driven required capability should be reported for each boundary and for both directions on each boundary. (For example, while power is normally exported from Scotland to England and the economy driven required transfer would normally be expected to drive any necessary investment on boundary B6 from north to south, there are circumstances in which power might flow from south to north; in such a case, compliance with the security driven required transfer capability in that direction would be expected in order to ensure an adequate reliability of supply in Scotland. Moreover, compliance with the SQSS in such a case is heavily dependent on the ‘generation background’ – see my response to question 7 below).
- c) there is ambiguity in the NETS SQSS on how the security driven required capability and the economy driven required capability are calculated for any given ‘generation background’ meaning that it is very difficult for readers of the ETYS to reproduce the results shown in the section on transmission capability and to verify that proposed investments (or the lack of them) are driven on a sound basis.
 - A particular ambiguity seems to me to concern determination of which generators are ‘contributory’ and which are not. My expectation is that this starts from the ‘ranking order’. The ‘ranking order’ is a function of market conditions and is therefore not fixed; hence, it is quite correct that it is not defined in the NETS SQSS though the ranking order that NGET uses should be published from time to time. I am pleased to see that a ranking order has been included in section 2.10 of the 2013 ETYS.
 - A ranking order is mentioned in respect of the security criterion in section 3.5 of the 2013 ETYS. Is the ranking order used in the boundary capability studies reported in chapter 3 the same as that shown in section 2.10? And, does the determination of the ‘contributory’ and ‘non-contributory’ generation in the economy criterion follow the same ranking order method (and the same ranking order) as for the security criterion? (This not clear to me when reading either the NETS SQSS or the ETYS).

A further remark is that while it is good to also see publication of assumed availability factors in section 2.11 of the 2013 ETYS, the lack of explanation of the derivation and use of the factors leads one to question the validity of the values quoted. (Generation capacity adequacy assessments, for example, will be particularly sensitive to such values).

Question 6: Do you agree with our proposals on how interconnection should be covered in the ETYS (see Appendix 2, table 2)?

Yes.

Question 7: Do you have any comments relating to the submission of the future scenarios to the Authority each year (including the timing), and the right for the Authority to request further development of the future scenarios?

Future scenarios – the generation and demand ‘background’ – are clearly very important to informing timely investment in both generation and transmission capacity. It is very important for the electricity supply industry in general and the transmission licensees in particular that information about credible future scenarios is made public and good progress has been made in this regard in recent years. However, the production and publication of scenarios remain problematic.

- As noted in National Grid’s “Future Energy Scenarios” document, a great many uncertainties impact on generation development and demand for energy.
- Published detail in National Grid’s scenarios down to the level of individual generation projects, while useful to independent analysts, might be seen as prejudicing individual projects and should therefore be

treated with caution. However, totals, for example by generation type and region, are still important outputs.

- Although it might seem as if a single numerical optimisation in which the total cost of electrical energy, including the capital cost of new generation developments, is minimised over a given period of time, is the best way to construct credible, self-consistent scenarios given a set of input assumptions,
 - they can be very sensitive to the input assumptions due to the nature of a cost minimisation, and
 - they do not necessarily reflect the way in which investment actually happens where, for example, investors have different portfolio strategies and financing or planning constraints that are not easy to model, or investors deliberately hedge between different technologies rather than going exclusively for the technology that appears cheapest.

Nonetheless, provided the input assumptions are stated clearly and the effects of sensitivity tests are shown, such models can be very useful to probe interactions and produce one or more scenarios on a rational and consistent basis. It would be useful to know if National Grid uses or would consider using such models, perhaps as a counterpoint to other methods.

- There will be lots of different opinions on real investment and demand effects that may be difficult to capture in a cost minimisation model. Thus, the extensive consultation process National Grid undertakes is welcome. However, the process by which consultation responses and 'key axioms' are turned into scenarios could be better explained, with particular attention to factors that are relatively amenable to numerical analysis such as availability of power from all classes of generation, the weather correction of demand and the relationships of annual energy demand and peak power demand with underlying economic conditions. Furthermore, wherever possible, the sources of data used should be cited or published.

In light of the above, it seems reasonable to me that a stakeholder might request additional information in respect of National Grid's scenarios or for Ofgem to request further scenarios, though the time and effort required to meet requests should not be underestimated.

Question 8: Do you have any comments about the interaction between the ETYS and the TYNDP, e.g. in their content or the frequency of publication (the TYNDP being published every two years)?

It is clear to me that the assumptions made in the production of the TYNDP should be consistent with those used in the ETYS. However, because the timescales for production of each are likely to be different, I believe there would be value in National Grid stating which ETYS or ETYS quarterly update had formed the basis for TYNDP representation of Britain.

I believe it would *not* be helpful to the sector in Britain if the frequency of publication of the ETYS were reduced to every two years to be the same as for the TYNDP. Although considerable time and effort is invested in the production of the ETYS and it might be argued that this could be reduced by publishing the ETYS less often, my feeling is that both the regulatory situation and market background of the industry in Britain is changing rapidly enough to justify an annual publication. Similar reasoning might be applied to the TYNDP in relation to the situation across Europe, but the TYNDP is, as yet, a less mature document; my experience is, of course, not fully representative but, it seems to me, its use by stakeholders is not yet clear enough for more frequent publication to be robustly argued.

Question 9: Do you have any general comments or suggestions on the form or contents of the ETYS?

One observation: at the time of writing (December 23rd, 2013), using a search engine to find the page for the Electricity Ten Year Statement and then clicking on "current statement" does not take you to the 2013 statement. (See <http://www.nationalgrid.com/uk/Electricity/ten-year-statement/current-elec-tys/>) (I notice from your letter that the URL given for the 2013 ETYS is: <http://www2.nationalgrid.com/UK/Industry-information/Future-of-Energy/Electricity-ten-year-statement/Current-statement/>) While my feeling is that National Grid is generally good about publishing information, the ease of navigation of its website could be much improved.

A final comment is to note that the publication of basic network data and site generation capacities is very welcome as it is of great value to independent analysts. However, editions of the Seven Year Statement also

contained generating unit registered capacities and reactive power capabilities. If the network data provided in Appendix B is to be fully utilised, e.g. in load flow studies, generating unit data should also be provided. Moreover, I believe there would be value in independent analysts having access to more detailed generator characteristics in respect of their dynamic performance. I acknowledge that there may be some issues in respect of commercial confidentiality and ownership associated with such data which I understand is the main reason why NGET has not felt able to publish it, and that National Grid has taken steps to develop and make available some 'generic' generator models. However, I believe that the commercial sensitivities around such data are generally overstated relative to the potential value in terms of facilitating investigation of system stability, especially for future scenarios. I would encourage Ofgem, in particular, to look into whether generator dynamic models should be made available, either explicitly or in encrypted form.

Yours sincerely,

A handwritten signature in black ink that reads "Keith Bell". The signature is written in a cursive style with a large initial 'K' and a distinct 'B'.

Prof Keith Bell