

Our Ref: 976/hf

Steven Becker  
Senior Economist  
Ofgem  
9 Millbank  
London  
SW1P 3GE

9 January 2014

Dear Mr Becker

## **ELECTRICITY CAPACITY ASSESSMENT 2014: CONSULTATION ON METHODOLOGY**

Thank you for the opportunity to comment on the above consultation. The IET, led by our Energy Policy Panel, has studied the consultation and wishes to comment on selected questions which are within the IET's competence.

***Question 1: Do you agree that the general methodology used for the 2013 report is still valid to analyse GB's generation adequacy in the next five winters from 2014/15 to 2018/19? If not, please explain why and make some specific suggestions for the methodology and their comparative advantages.***

The general methodology appears fit for purpose for the short term but will become less valid with the increase in intermittent generation as well as the expected growth in demand side initiatives. Therefore we believe that attention needs to be given to the development of a fully chronological model as well as the construction of good quality data sets (see below). We suggest that parallel running of both models would then be helpful to support a decision to move from the time collapsed model to the fully chronological model.

In previous consultations we have raised our concerns regarding the Reference Case assumptions and Winter Peak Availability data and we do so again in this response.

### Reference Case assumptions

We note that the Reference Case is not specifically defined and so the assumption most likely to be made is that it be considered as the expected or most likely outcome. The Reference Case is extremely important as it will be highly influential on any future decision by ministers to initiate a capacity auction.

There are a number of assumptions that need to be made concerning key inputs, such as new plant and changes in demand. These assumptions should be consistent with the scenario and also be based on the expected outcome. But the approach adopted is

described as taking a “cautious approach”. As a consequence the Reference Case will not reflect the expected outcome but will be skewed to give an overestimate of the risk to security to supply. If a “cautious approach” is to be explored then it should be incorporated as a sensitivity.

All this points to a need for further work to be undertaken and socialised with the stakeholder community in 2014 to agree an appropriate basis for a reference case to trigger a capacity auction, so this is done on a consistent and rational basis in the future. The IET would be pleased to assist Ofgem in scoping this work.

For certain assumptions, such as new generation plant, for example, the expected outcome is going to be subjective. We suggest that the decision should not be left to Ofgem or National Grid but escalated to those commissioning the analysis, i.e. DECC, where other factors may need to be taken into account.

### Data

Previously we have commented on generator winter peak availability data and challenged Ofgem’s very low figures. We have also made comparisons with NERC data and figures quoted by Drax. Recently the report to DECC by the EMR Panel of Technical Experts in July 2013 also raised its concerns over these data (see paragraphs 36 to 41) and commented:

“Plant availability factors applied to the modelling calculating metrics based on peak demand periods are extremely conservative (low) by industry standards”

The Panel of Technical Experts recommended that the measurement of plant availabilities issue is further explored and that an independent assessment is undertaken of plant availabilities in the future, based on appropriate international experience. The IET supports this recommendation.

However, there is a more general point to be made here and that is that there should be a robust approach adopted to all critical data used by the model. This may necessitate the provision of actual data direct from industry. On the assumption that a fully chronological model is developed, the model will require substantial and continuous improvements to ensure changes to the electricity system are properly represented, e.g. larger volumes of intermittent plant, assets that exhibit storage type behaviour, e.g. demand side participation, changes in dynamic performance of conventional generators. As a consequence it will become even more important to ensure robust data is being used.

### Loss of Load Expectation

We are surprised at the way you have chosen to redefine LOLE, which is an internationally recognised measure. We would concur with the definition given by DECC in its consultation on reliability standard methodology in July 2013<sup>1</sup>, i.e.

*LOLE represents the number of hours per annum in which, over the long-term, it is statistically expected that supply will not meet demand.*

You have chosen to redefine it so that it is based on the System Owner (SO) taking mitigating action which is far more onerous and so it is misleading to refer to it as LOLE. For example, the reliability standard adopted by the former CEGB was defined as the winter risk of failure to meet demand. It was determined up to the point of load disconnections and set at 9 winters in a century. It assumed 7.5% reduced load from voltage and frequency reductions. This gave a gross margin of just under 24% or just under 10% on a de-rated basis. The equivalent figure without reduced load from voltage and frequency reductions

---

<sup>1</sup> [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/223653/emr\\_consultation\\_annex\\_c.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223653/emr_consultation_annex_c.pdf)

was 30 winters in a century, which if taken in isolation would have been circa 35% or nearly 20% on a de-rated basis, requiring much high levels of capital investment in capacity.

Thus excluding SO mitigating action from the capacity assessment will result in a de-rated capacity margin which is significantly higher when calculated on the correct international basis<sup>2</sup> and give rise to higher and uneconomic costs for consumers.

***Question 2: Do you agree with using a qualitative approach to assess the impact of interconnector flows on LOLE and EEU in our Reference Scenario and sensitivities? If you disagree, please provide justification and suggestions for alternative approaches.***

In last year's consultation Ofgem proposed two approaches to modelling the interconnectors; a quantitative and a qualitative approach. Most respondents including ourselves supported the qualitative approach and it was adopted by Ofgem. Ofgem subsequently commissioned analysis by Pöyry<sup>3</sup>. We found the qualitative approach undertaken by Pöyry highly analytical and that the conclusions reached were difficult to believe.

For example, the Reference Case assumed no interconnector imports and 750 MW export to Ireland. Under a single Reference Case condition based on average or "most likely outcome", this might be reasonable, i.e. there is adequate spare capacity in GB and the interconnectors to continental Europe are "floating" along with 750 MW to Ireland. However, this is only a single condition. To determine the risk of security of supply, National Grid's modelling employs a Monte Carlo analysis which involves a large number of conditions based on statistical variations in demand, plant winter peak availabilities, etc. to give a distribution of outcomes from which the probability of demand not being met can be determined.

For all these conditions there is no change in interconnector flows, i.e. 750 MW to Ireland and no imports from continental Europe. So under outcomes which result in GB being unable to meet demand, even though prices would be extremely high, the assumption implied is that they remain higher in Ireland to maintain exports but not high enough to attract imports from continental Europe. This is inconsistent and does not make sense as it seems to be based on an apocalyptic outcome whereby the whole of Europe experiences high demand and at the same time wide-scale plant failures. Possibly this could be considered as an extreme sensitivity but it cannot be a valid Reference Case assumption.

A more realistic assumption would be to base interconnector capacity on **import flow capability** expected under average conditions which would probably be near to the full rating of the interconnectors. It may be sensible to reduce this to take account of peak demand correlation but this would not be much, say a reduction of 25% maximum. Note: historically the 2GW link to France was treated as firm capacity in planning assumptions. We note that you do include 2 GW of emergency services from interconnectors but, as you classify this as mitigating actions by the System Operator, it is excluded from the capacity assessment.

***Question 3: Do you agree with our proposed approach to capture the uncertainties of a potential relationship between wind availability and high-demand on the level of risk? Please justify and provide suggestions for alternative options and their comparative advantages.***

We support your proposed approach.

---

<sup>2</sup> Note: using the CEGB's figures a 24% gross margin is equivalent to a LOLE of just under 400h per century whereas a 35% gross margin is equivalent to about 50h per century. Clearly the figures will be different for today's system but they do illustrate the scale of the impact.

<sup>3</sup> [www.ofgem.gov.uk/ofgem-publications/75230/povyry-comparison-electricity-prices-between-gb-and-its-interconnected-systems.pdf](http://www.ofgem.gov.uk/ofgem-publications/75230/povyry-comparison-electricity-prices-between-gb-and-its-interconnected-systems.pdf)

**Question 4: Do you agree with the use of sensitivities to represent the main uncertainties facing the electricity security of supply outlook at the moment? If not, please provide specific reasons and alternatives.**

We agree with your approach to sensitivities, subject to our comments made in answer to question 1.

**Question 5: Do you agree that our proposed sensitivities around interconnector flows, generation capacity, and peak demand capture the uncertainties that have the most significant impact on the level of risk? If not, what other sensitivities should we consider and why?**

We agree with your approach to sensitivities, subject to our comments made in answer to questions 1 and 2.

**Question 6: Do you agree that the Reference Scenario and associated sensitivities provide a sufficient range of possibilities for the electricity security of supply outlook? Please provide suggestions for alternative options and their comparative advantages.**

We agree with your approach to sensitivities, subject to our comments made in answer to question 1.

**Question 7: Do you agree that the different demand projections presented in the report provide a sufficient range of possible demand outcomes? If not, please suggest alternatives and their comparative advantage.**

Yes.

**Question 8: What sensitivities do you think would be most appropriate to include in our main summary graphs (e.g. Executive Summary), and why?**

No comment.

## **Impact of the forward market and suppliers**

Your analysis is based on a traditional approach to electricity capacity assessment which takes no account of forward market and supplier activity. Hence the only active participants are generators who seek to maximise revenue from trading in the day ahead market.

A generator's price exposure is predominantly determined by their contract position and in general they will seek to trade out their positions as much as possible and only use the prompt market to refine their positions.

This also applies to suppliers. However, whereas a generator might choose to have some residual exposure to the prompt market, as it gives it the option to generate if it should so choose, suppliers do not have the option as they are generally price takers with little control over demand. Hence they will seek to fully cover their position to avoid exposure to high prompt prices. This is important because if there is the possibility of future capacity shortages it will impact the forward market well before it affects the prompt market. This would then become the driver for demand side participation with non-firm or interruptible contracts for commercial or industrial customers, which might then develop into

arrangements for residential customers. It will also drive the forward market thereby attracting additional capacity from new plant, mothballed plant, etc.

The forward market is possibly the most important indicator of potential capacity shortfalls. For example if the electricity capacity assessment indicated that margins were getting tight we would expect to see prices rise along with action taken by participants in order to manage their positions. We believe it would be helpful if Ofgem incorporated observations of the forward market and supplier activity in particular to help validate its assessment.

If the IET can be of any further assistance on these issues, please let me know.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Paul Davies', with a stylized flourish at the end.

Paul Davies  
Head of Policy  
The Institution of Engineering and Technology  
Email [pdavies@theiet.org](mailto:pdavies@theiet.org)  
Telephone: 01438 765687