

# Comments on the 2014 Electricity Capacity Assessment Consultation on Methodology

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6 January 2014

## *Preamble*

1. Having been an advisor for the previous two reports, my comments here essentially reinforce my opinion that the methodology remains fit for purpose, but should continue to improve. There are clear virtues in maintaining a consistency of approach, as that allows trends in the risk levels to show up more clearly on a comparative basis, even if the absolute determination of risk remains subject to questions of definition.

2. The purpose of the Report, as expressed in the latest Consultation (p2) is “to illustrate the risks to electricity security of supply in Great Britain (GB) over the next five years”. In choosing to use the word “illustrate”, the objective is being stated as one of providing an informed vision of the risks to supply. It is explicitly not designed to “calculate how much capacity to procure to reach a particular standard of reliability”(sic), as DECC has a separate modelling activity to take the capacity auctions forward. Nevertheless, given the authoritative standing of this report, it will often be interpreted in a more indicative way than its circumspect intentions imply and that must be recognised, particularly with some of the terminology and where the range of scenarios are presented. It requires a delicate balance to keep the two readerships, expert and lay, in mind when drafting the final report.

3. The terminology “Loss of Load Expectation” (LOLE), as used for the key risk measure in the Report, has, in particular, been a persistent source of controversy. This term appears to imply the risk of blackouts, but in the way it is formulated for these studies, it is focussed upon a critical point that may be somewhat, possibly substantially, before disconnections would occur in practice. This point of resource scarcity occurs before the System Operator will take mitigating actions, use its operational reserve and solicit voluntary load shedding, and assumes no inflows from abroad. As such, this critical point therefore defines a GB resource adequacy assessment rather than, more literally, when a loss of load would occur. I think this point may have to be communicated even more clearly than it has been in previous years. Otherwise, it invites inappropriate criticism.

*Questions as posed in the consultation document:*

**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.**

4. There would be two reasons for changing the general methodology. Firstly, if new information has arisen in the past year that demonstrates substantial flaws in the existing approach. Secondly, if the structural evolution of the power sector by 2019 makes the design of the model (as distinct from the input assumptions) inappropriate. On the first point, apart from lingering questions on whether the risk assessment should be about disconnections rather than GB generation adequacy, I am not aware of any methodological flaws having emerged in the past year.

5. On the second point, evidently as time progresses there will be a greater proportion of intermittent generation, both embedded and grid-connected, and more demand-side response, and these will all change the input assumptions, especially on inter correlations. These may begin to necessitate more ex ante modelling of particular effects (eg on the demand side) as most of the parameter estimates in the existing model are based upon historical data. As more of the wind capacity goes offshore into large farms, detailed ex ante modelling of the relationship of generation output to wind speed at each of the main sites will be required (which might mean merging the approaches taken in 2012 and 2013 to reflect both empirical calibration to wind measurements and new incoming turbine designs). In addition, the calculations used to estimate the distribution of the elapsed time of outages will need to evolve to the new technology mix. Overall, however, I think incremental evolutions of the current methodology should suffice for the greater amount of wind and demand side influences envisaged in the 2014 assessment.

6. Of more concern going forward is the endogenous profile of new investment, mothballing, accelerated or postponed retirement of capacity, depending upon scarcity and prices. The effect of tighter capacity margins in the near term may increase prices, and thereby restore margins, whilst in the medium term, the proposed capacity payments will manage resource adequacy. This endogeneity has been mentioned in previous reports, but may need a more explicit and thorough analysis in future.

**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.**

7. The approach taken in 2013 was very credible, analysing the situation in each of the neighbouring countries. The analysis showed that only The Netherlands was expected to be a net exporter in the next five years with France, Belgium, Germany and Ireland becoming or remaining resource scarce. This justified the prudent assumption of no net contribution from

interconnectors in the Reference scenario. It would be useful to have clearer definitions of how the neighbouring assess resource adequacy, and in particular if they also assume float. I remain surprised that exports to NI have continued to be in the reference scenarios. Is that justified on the basis that even if there are disconnections in GB, exports to NI will continue? Nevertheless, if the assessment is being defined as a GB resource adequacy, it would be more consistent to assume no imports or exports. And to complicate things in 2014, there is, of course, the topical issue of Scottish Independence.

8. Seeking to actually model interconnector flows is obviously fraught with difficulties, and if attempted, would invite more criticism than the current approach. I do not suggest this should be attempted. But, perhaps an overall weather analysis could inform some of the key concerns, eg the risk of very low windspeeds occurring simultaneously across particular countries. At some point however, Ofgem, DECC, ENTSO-E or some other European body should face the question of the overall security for the integrated markets at a macro level. If greater interconnection is being advocated for security reasons, but each country assesses security at float, and perhaps implements capacity auctions accordingly, there is a clear issue emerging of uncoordinated inefficiency.

**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.**

9. No, I can see no justification for assuming a zero correlation between demand and windspeed during peak periods when the maximum likelihood estimate on historical data is negative. Furthermore it cannot be argued that zero correlation has a strong prior expectation.

**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.**

10. The sensitivities are essential, but it would be useful to motivate each alternative scenario in a more credible way with some discussion about what would make it plausible, why it might occur, what early signs we would expect to see and what endogenous process it might entail. More use could also be made of industry surveys to indicate the range of views on key parameters.

**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?**

11. If the assessment is based upon GB resource adequacy, then logically, it could be argued that sensitivities on interconnector flows are not necessary. They do help to illustrate the risks however.

12. The potential changes in the daily load profile, with the possible erosion of daytime peaks, due to extensive solar installations as elsewhere in Europe, is an important consideration.

**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.**

13. As I mentioned in the Preamble, I am comfortable with this being a GB resource adequacy analysis, to the critical point where the system operator may have to take actions, assuming no contribution from interconnectors. LOLE in the report therefore overestimates the actual risk of disconnections, since it is not designed to do so. I am puzzled by the inclusion of the operational reserve margin of the largest infeed loss, however. The implication of this inclusion is that the System Operator will disconnect customers before using this operational reserve. In principle, it seems very odd, therefore, that this capacity, which is reserved for loss of generation (not transmission), will never be used if generation is actually lost. I think it should be excluded from the risk analysis.

**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.**

14. This is an important question to ask industry participants. It should make explicit that demand refers to the net effect of consumer demand less embedded generation. The latter could increase quite considerably, as indeed could energy efficiency over the next five years, especially under a high price scenario.

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

15. Demand growth or erosion is clearly important, as would the accelerated withdrawal of existing plant, especially perhaps CCGTs if their load factors fall below a viable level.