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Dear Socrates,

Electricity Capacity Assessment: measuring and modelling the risk of supply shortfall

Thank you for the opportunity to comment on the above consultation. This response represents the views of companies within the Centrica group excluding Centrica Storage, it is non-confidential and may be placed on the Ofgem website and in the Ofgem library.

We think that it is critical that Ofgem do not underestimate the risk of supply shortfall. We broadly agree with the approach set out in the document, but we have some comments on certain aspects of the methodology, which we summarise below.

- **Consistency with the assessment of gas security of supply**—DECC has asked Ofgem to consider a range of interventions to enhance security of supply in the gas market. It is important that the assumptions used by Ofgem in the two security of supply workstreams (gas and electricity) be consistent. For example, if Ofgem expects CCGTs to provide a larger amount of demand response in the gas market in certain circumstances, then the availability of CCGTs without oil backup should be discounted in the electricity market in those same circumstances.
- **Definition of Expected Energy Unserved (question 2)**—we think that EEU should include energy unserved due to voltage reductions triggered by the SO. A voltage reduction represents a failure of generation to match demand, and such events are therefore relevant to the assessment of security of supply.
- **Net-of-wind demand (question 5)**—we agree that demand and wind generation are both driven by weather and that it makes sense in presentational terms to consolidate both variables in one single assumption. However, to arrive at this assumption it is necessary to model the uncertainty around both variables separately (taking into account the correlation between them), rather than simply use a consolidated time series of historical net-of-wind demand. Because wind penetration is a recent development, we have no guarantee that historical time series of net-of-wind demand capture all possible states of the world – ie there could be combinations of very high demand and very low wind generation that do not show in consolidated historical data but that could happen and cause a real risk to security of supply.

- **Wind availability (question 5)**—Ofgem outlines two options to convert wind speeds to generation availability: the first is based on the historical correlation between wind speeds and generation; the second works by converting wind speeds into generation based on the technical specifications of turbines. The second option is much superior to the first and should be used if possible. The first option is based upon correlations which may no longer be valid given wind technology developments in recent years. There is also a question around dependency on location of the existing wind farms, i.e. if we are trying to infer future generation (which may be much more weighted towards large offshore wind parks) from the behaviour of the existing fleet which, until recently, has been predominantly land-based, this could raise concerns. It would be better to have a model which knows about the location of the future fleet and which can give turbine-specific generation output from natural wind variability.
- **Information requests (question 7)**—Ofgem could issue information requests to licensed generators, provided the provision of information is voluntary and the information is treated confidentially. With respect to retirement decisions and commissioning dates, Ofgem could request ‘sliding scale’ estimates indicating the probability of closing/commissioning certain plants for certain dates.
- **Modelling LCPD running (question 8)**—there are at least two ways to model available opted-out LCPD plant generation. The first is simply to assume that the number of hours run to date from 2008 is representative of the plant’s long run behaviour and calculate a closure date based upon the remaining hours. The second would be similar but based upon a shorter period of time, say the last year or two, on the basis that running behaviour may have changed significantly over time. The size of the difference in implied closure dates calculated from the two approaches would give an indication of sensitivity. A third option would be to use a forward-looking approach modelling the optimal dispatch given price expectations, albeit this might be difficult in computational terms.
- **Half hourly cross-correlation (question 12)**—Ofgem rightly identifies demand-side response and pumped storage as two potentially sensitive issues with respect to correlations between half-hourly period. Other than these two issues, it is more important in our view that demand and wind are correctly correlated between each other and geographically across regions.
- **Interdependencies between key variables**—it might be important to consider interdependencies between key variables (other than between demand and wind generation). For example the output of a CCGT depends on temperature: it normally increases with colder temperatures (down to a certain point). However, the risk of forced outages might be higher under extreme weather conditions (for CCGTs and other plants). During the severe cold snap at the end of 2010, for example, we saw enhanced levels of forced plant outages due to the extreme cold and snow further exacerbating an already tight system margin.
- **Plant profitability**—it is not obvious from the consultation whether the model envisaged by Ofgem will be based on, or coupled with, a despatch model for the GB market. If it is, there would be merit in modelling the profitability of both existing plants and potential new plants, as this would inform retirement and new build decisions. If it is not, then these decisions will necessarily involve a larger amount of judgement (even if such assumptions can be supported by information requests to companies as mentioned above).

- **Commissioning dates**—One option to capture the uncertainty around commissioning dates would be to include a (skewed) probability distribution around the expected date based on historical observations.
- **DECC’s security of supply target** – We believe it would be useful if DECC could indicate to Ofgem and NG the range of security of supply benchmark measures that it will assess. By this we mean, whether it will be looking at a 1:10, 1:20 or 1:50 probability of energy unserved exceeding X GWhs. This will help ensure that Ofgem is evaluating the right part of the distribution of possible events with sufficient resolution.
- **Demand Side Response**—Ofgem are correct in aspiring to capture the effect of smart meters on peak demand. In the short term, the impact is expected to be small, but if a scenario-based modelling approach is used in the longer term, at least one scenario should capture a fast uptake of smart meters and the resulting impact on daily demand shape.
- **Transparency**—we believe that the industry should have clear visibility of how the issues highlighted in the consultation paper are handled by Ofgem and National Grid. We recommend that the annual report on security of supply include an appendix providing detailed information on the assumptions and methodologies.

We hope that these comments are useful. Do not hesitate to contact me if you have any questions.

Yours sincerely,

By e-mail

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