

Mr Edward Owen  
Elexon  
4th Floor  
350 Euston Road  
London  
NW1 3AW

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Dear Ed

### **Transmission Losses—Oxera Reports July 2006 and September 2006**

I am writing to respond to the points of clarification on the two Oxera reports for Elexon (produced in July 2006 and September 2006) requested in your fax dated December 21st 2006. I have reproduced the requests below, followed by our response. I hope this provides sufficient additional explanation for Ofgem.

#### **1. Explain the modelling approach in more detail**

*We seek further clarification on: (i) the approach used to derive the uniform losses scenario against which the impact of zonal losses charging are compared from 2007/08 onwards; (ii) what are the new entry assumptions you have made under uniform loss charging and are these the same under the locational TLFs, and if not, why are they different.*

(i) The approach to the modelling of generator behaviour under the alternative loss charging arrangements (uniform or zonal) is identical. First, the Oxera wholesale electricity model is run for the appropriate snapshot periods. The wholesale model (as described in Appendix 1) is a despatch model based on a comprehensive database of GB grid-connected stations (defining capacity, thermal efficiency, operating costs, fuel type, grid zone, etc). Stations are despatched on the basis of short-run marginal cost including a transmission loss charge. The resulting despatch for the three snapshot periods is then fed into the load-flow model to estimate the transmission losses for the current year and the implied TLMs to be applied in the subsequent year's despatch.

The same underlying assumptions on market conditions are used for the wholesale market modelling under zonal and uniform loss regimes. Differences between the two sets of results may arise for the following reasons:

- in the first year of comparison, the different TLMs under the uniform and zonal regimes alter the merit order and hence change the pattern of output used in the load flow model;

- in subsequent years, the calculation of the zonal and uniform loss factors would be on the basis of different TLFs;
- over time, the differential locational investment incentives may alter the geographic supply-demand balance (though, as highlighted in the report, this effect was not present in the model runs undertaken).

(ii) New entry is determined endogenously within the model according to market characteristics, with the potential projects defined in Table 2.4 (2.3) of the July (September) report. Whereas there are differences in the level and timing of new entry between scenarios, as indicated in section 2.4, the new entry patterns were identical under uniform and zonal loss charging arrangements for a *given* scenario. For example, Table 2.6 in the July 2006 report is presenting the modelled entry for the zonal and uniform charging regime under the Central scenario. The implication of this is that the zonal charging arrangements had no material impact on investment decisions (over levels or location of capacity) within the model.

## **2. Clarify the snapshot approach used for seasonal scenarios**

*The reports set out the modelling approach by which the results for annual scenarios are derived as being based on results from three snapshot periods (peak, midpoint, trough). While results for seasonal scenarios are based on BSC season, it is unclear whether each season is similarly divided into three snapshots or whether the seasonal results are derived from weighted averages of the annual snapshot results. We seek further clarity on the use of snapshot periods for scenarios based on seasonal TLFs.*

Each season was divided into snapshot periods—the re-despatch effects in each season in each snapshot period are presented in section 3.2 and are based on time-weighted snapshot averages in each season, not a season-weighted average of an annual result.

## **3. Issue of information on uniform losses base cases for each scenario**

*The analysis of annual loss savings reports the level of variable losses in the uniform losses base case scenario against which the zonal losses scenario results are compared, in addition to the change in losses between these scenarios. We note that in other analysis where the report shows the impact of the zonal losses scheme it does not show the equivalent results for a uniform losses scheme e.g. the analysis of changes in annual output by zone and by fuel type. We seek further clarity on the reasons for the exclusion of this analysis and the implications for the overall consideration of the cost and benefits of the proposed schemes.*

The cost-benefit analysis is conducted with reference to the difference between the out-turn generation profile under uniform and zonal loss charging arrangements and therefore the exclusion of the actual out-turn figures under a uniform loss charging arrangement does not affect the conclusions reached in the reports. This was a presentational issue, where it was decided that the relative performance under uniform and zonal loss charging was the most relevant result to highlight.

## **4. Explain the difference between the results for the uniform losses base cases of the central and seasonal scenarios**

*The analysis of annual loss savings discussed in Question 2 includes zonal losses scenarios which are based on the same underlying market assumptions but differ according to whether the given zonal losses scheme is based on annual TLFs (the Central scenario) or seasonal TLFs (the Seasonal scenario). The results of Oxera's analysis show a significant difference between annual and seasonal loss scenarios, with the base case variable losses being significantly higher for seasonal scenarios than the equivalent annual scenario.*

*We seek further clarification on this difference in light of the fact that the base case variable losses for seasonal and annual scenarios are based on the same underlying market assumptions according to the Central scenario.*

The difference arises because the analysis in the seasonal scenario measures losses using snapshots for each season rather than three snapshots covering the whole year. The extra granularity in the seasonal scenario implies greater variation in how the overall load is met (ie, the despatch patterns show a wider variation between seasons). The consequence of this is that the patterns observed for the seasonal scenario are likely to show higher losses since they differentiate to a greater extent periods of low demand and periods of high demand where optimal despatch conditions may vary. As the comparison of the low demand and central scenarios show on an annual basis, the periods of low demand are likely to lead to higher variable losses.

The fact that there are differences between the central and seasonal scenarios on a uniform losses basis does not, however, affect the analysis since no comparisons are made between these two results. The important comparisons are between the zonal and uniform outcomes under either the annual (central) or the seasonal scenario.

If there are any further points of clarification we would be very happy to assist you or Ofgem.

Yours sincerely

**Dr Gareth Davies**  
Managing Consultant