Oxera

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Dear Robert

Response to consultation on Zonal transmission losses – the Authority's 'minded-to' decisions

Given the extensive use made by Ofgem of Oxera's 2006 reports for Elexon in its assessment of zonal transmission loss charging modifications[1], I thought it might be helpful to address some of the issues raised in the consultation process. First, the scope of the 2006 Oxera reports is set out and some key results of the analysis are highlighted. Second, some of the issues raised concerning the modelling methodology used for the analysis are addressed.

Scope and findings of the 2006 Oxera reports

Oxera undertook analysis in 2006 for Elexon of the potential impact of alternative zonal transmission losses schemes. In conjunction with Oxera, academic experts in this field, Professor Janusz Bialek, Edinburgh University, and Professor Stanislaw Ziemianek, Warsaw University of Technology, carried out load–flow modelling for the project.

It is important to note that Oxera has not been asked for, nor has it given, an opinion on the desirability of adopting any of the alternative Balancing and Settlement Code (BSC) modification proposals. The terms of reference specifically excluded examination of the implication of the impacts of the proposals on the environment and consumers. In addition, the reports highlighted the likelihood of transfers between different industry participants of a significantly larger scale than the net benefits of the changes. While such transfers do not affect the modelled overall net present value of the proposals they could clearly be deemed to be relevant for an overall assessment of the proposals.

Without drawing a conclusion on the overall desirability of the proposals, the following findings of our reports should be noted:

The results of the modelling in general showed the net benefits driven by loss savings to be in excess of the estimated implementation and operating costs for the proposals. However, the net benefits shown were small relative to the size of the market (as has been highlighted in the consultation responses, the range of modelled loss savings for P198 of 73GWh to 420GWh are only around 1%-6% of total losses and around 0.1% or less of total generation volumes).

[1] 'What are the costs and benefits of zonal loss charging?', OXERA, July 2006, and 'What are the costs and benefits of annual and seasonal scaled zonal loss charging?', OXERA, September 2006

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The modelling showed considerable variability in the impact of the proposals depending on market conditions. There was variability of effect between years and the results were also sensitive to changes in fuel price assumptions. Oxera believes that this variability is inherent to the proposals rather than solely being a feature of the modelling methodology used for the reports. This sensitivity was highlighted in the Oxera reports and it should be noted that since the 2006 analysis was undertaken there have been significant changes in market fuel prices and also in the ranges for future fuel prices used by the government in its own modelling for the 2007 Energy White Paper. A further input which was highlighted in the reports and which has been subject to change is the likely volume and mix of renewable generation. The proposed changes to the renewables obligation resulting from the White Paper can be expected to have a significant impact on the uptake of offshore wind which would change flows on the transmission network. The sensitivity of the results to changes in market conditions together with the small size of the net loss savings suggests that the results of the modelling analysis should be treated with care when undertaking policy analysis.

It was highlighted in the reports that although losses declined in later years, this was due to the fact that new entry tended to occur closer to demand, reducing the North-South transfers, and that this was expected to occur even under the current loss charging regime. The analysis specifically highlighted that while zonal loss charging might provide some additional locational signal for new entry 'in the medium term (ie, until the end of the study period), it is unlikely to have a significant impact on any new developments.' Oxera, July 2006, page 50). In addition, looking further ahead, the report highlighted that 'the impact of zonal loss charging on the long-run location of generation is subject to a large degree of uncertainty. Consequently, this section presents speculative scenarios that are intended to provide rough indications of the potential size of any long-run benefit under specific assumptions.' (page 51).

Methodological issues raised in the consultation

During the Ofgem consultation, a number of points were made about the methodology used in the Oxera analysis. These are addressed below.

The sensitivity of the results to the fuel price assumptions was highlighted by some respondents to the Ofgem consultation. This was also highlighted in the Oxera reports themselves and has been discussed already in this letter. A particular aspect of the results which would be subject to change depending on the fuel prices assumed would be the degree to which switching between coal and gas stations would result from the loss charging arrangements. Such switching relies on the marginal fuel costs of coal and gas (taking into account carbon costs) being sufficiently close, at least at some times of the year, for the zonal loss charges to change despatch. Oxera believes that the sensitivity of this switching effect to changes in fuel prices is a feature of the proposals rather than simply the modelling methodology used.

It was argued by some respondents to the Ofgem consultation that the Oxera methodology had assumed central despatch and that this was no longer a valid assumption since the replacement of the Electricity Pool. However, the Oxera methodology does not rely on central despatch, though it does assume economic despatch (subject to constraints discussed below). The possible differences between economically 'optimal' despatch and actual despatch, and the impacts such effects could have on the modelling results were discussed in the report (see for example page 8 of the July 2006 report). However, we believe that the assumption of despatch based on marginal costs (subject to transmission constraints etc) is an appropriate one for a relatively efficient electricity market such as Great Britain, and that this is in line with the methodological approach used in most UK energy modelling (for example the recent energy modelling undertaken by the government for the Energy White Paper). If there are large persistent differences between actual despatch and

economic despatch which were expected to continue into the future this could have significant implications for a wide range of policy measures, such as, for instance the use of emissions trading schemes.

The possible impact of transmission constraints, especially between Scotland and England, was raised by some respondents to the Ofgem consultation. This was highlighted in the Oxera reports which noted in particular the sensitivity of the results to changes in output in Scotland, and especially the Longannet station. It has been suggested that transmission constraints were not modelled in the analysis. This is not the case. Transmission constraints were modelled but it was specifically required that the system should be modelled as 'intact', i.e. without taking into account any possible transmission outages. This may affect modelled output in Scotland since summer transmission outages may result in export constraints in Scotland.

The use of 'snapshot' periods in the analysis was also raised by some respondents to the consultation. This methodology clearly has some limitations when compared to full-year modelling, and these were again discussed in the Oxera reports. Oxera believes that the computational burden of undertaking modelling of each period within a year, for all years up to 2015/16, for all of the scenarios presented would have involved considerably greater resources than were available for the Elexon reports. Oxera believes that the snapshot approach achieved the best balance between resources and results, as long as the results were interpreted in the correct manner.

A further point was raised about the transfers between companies in the scenarios and the fact that the aggregated seasonal transfers did not sum exactly to zero. For all scenarios, the uniform TLM was solved to ensure that the split of cost between generators and suppliers was 45:55; and that the total cost recovery was the same under the zonal and uniform regimes. Since the uniform TLM was an annual figure, the calculation was done against annual zonal TLMs. However, in the seasonal scenario an unweighted average annual zonal TLM was calculated from the four seasonal TLMs, whereas a loss-weighted average could have been a better way of aggregating the seasonal result and ensuring a total net zero transfer. Applying the loss-weighting results in differences in the annual supply TLMs averaging 0.03% and 0.02%, and generation TLMs averaging 0.02% and 0.8% in P203 and P204 respectively.

On the basis of the above points, our view is that Ofgem has placed more weight than appropriate on the Oxera analysis undertaken in 2006 for Elexon in arriving at its 'minded-to' decisions.

Yours sincerely

Martin Brough
Director