10th April 2007

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Dear Robert

ZONAL TRANSMISSION LOSSES – ASSESSMENT OF PROPOSALS TO MODIFY THE BALANCING AND SETTLEMENT CODE

British Energy welcomes the opportunity to comment on the issues raised by the impact assessment and consultation on the above as published in February 2007. This response is submitted on behalf of British Energy Group plc.

British Energy firmly considers that on the basis of the evidence presented within the impact assessment none of the proposed and alternative modifications can justifiably be implemented by the Authority. Furthermore, the consultation process itself is fundamentally flawed and Ofgem should rectify those flaws before issuing their 'minded to' statement

Headline Messages:

- Ofgem's impact assessment (RIA) reinforces our view that the net benefits of the proposed schemes P198/P203 are uncertain and insignificant compared to the largely arbitrary significant gross transfers between market participants. These transfers will create winners and losers amongst existing parties in a highly competitive market with limited opportunity to hedge either the step change for existing investments or the ongoing uncertainty for all parties.

- We are concerned that the RIA fails to consider/quantify the impact of the proposals on particular types of generators. Nuclear generation and much renewable generation will be significantly adversely affected by P198/203. However, given the nature of the operating regime of these plants the imposition of zonal losses will have no impact on the running of these plants (i.e. no consequent re-dispatch). As a result, with no credible option to mitigate the risks, these plants will simply be faced with increased costs. However, this impact would be largely mitigated by P200 and somewhat mitigated by P204.

- In all decisions taken, GEMA/Ofgem should be mindful of the need to facilitate the integration of the GB market with other EU markets. In particular, if an effective France-UK-Ireland regional market is to be developed and UK competitiveness is to be maintained, major differences in transmission charging methodologies and/or levels (including for losses) across the region need to be removed. The introduction

of zonal losses would move the GB market further away from other major European markets and hence hinder the development of an integrated EU market.

- Renewable generators receive a subsidy through the Renewables Obligation. However, as indicated in the RIA, the implementation of a zonal losses scheme will have a significant financial impact on renewable generation in the North of Great Britain (the area with greatest wind resource). One of the effects of zonal losses will be therefore be to transfer part of the value of environmentally friendly renewables schemes in the North to southern generation which by and large is environmentally damaging fossil generation. Consequently, not only would a zonal losses scheme run counter to the Government's stated energy policy (and indeed European energy policy) but also introduce a new cross-subsidy.

- The additional regulatory uncertainty caused by the imposition of a zonal losses scheme based on short term loss factors and with no opportunity to hedge the position, will affect the cost of capital of all industry participants. NERA'a paper 'Regulatory Risk and the Cost of Capital' for Teeside Power, submitted with their responses to P198 and P200 consultations in June 2006, supports this view. Ofgem's impact assessment fails to consider (or even acknowledge) this analysis.

- Ofgem has relied heavily upon Oxera modelling performed for the BSC assessment of the proposals. This modelling only related to issues relevant to the BSC objectives (for example by explicitly excluding any assessment of environmental issues). It also includes significant approximations in its representation of the GB market, and the results are clearly subject to considerable uncertainty. For these reasons, we consider its conclusions insufficiently robust to be relied upon by Ofgem/GEMA in making a decision on the merits of any of the proposals.

- Although it is not clear, the TLM values produced by Oxera and used by Ofgem in its impact assessment apparently exclude the effect of fixed losses. If this is the case, any consultee using these values to estimate the material impact of the changes compared to current levels will significantly underestimate the effect of these schemes. This is a serious flaw in the consultation process and should be corrected before the formal decision-making process proceeds any further.

- The Oxera methodology for estimating the benefits of the schemes is extremely unclear. However, it appears that the net value of losses savings estimated by Oxera (and included in tables 2.3b and 2.3c of the impact assessment) may not include the offsetting effect of the more costly (southern) generation necessarily despatched to reduce the losses. If this is the case, the estimated net benefit is clearly over-estimated

- The RIA has ascribed environmental benefits to P198/203 which are nothing to do with those schemes themselves and should therefore be struck out of the analysis. Instead these benefits (if they exist at all) are merely a consequence of what happens to be the current distribution of generation fuel types, and not an enduring feature of any of the losses schemes. Furthermore, we consider the environmental 'benefits' claimed by Ofgem in the RIA to be significantly over-stated. The differential between coal and gas prices in the UK is almost always going to be too large for there

to be a switch between fuels (eg. northern coal to southern gas) solely as a result of zonal loss factors. Whilst there may be some switching at the margin from more efficient, lower cost coal or gas plant in the North to less efficient, more expensive plants using the same fuel in the South, any significant switching between fuels is extremely unlikely.

- The impact assessment has ascribed potential long term benefits to the losses schemes beyond 2015/16 with very little evidence. We do not believe that this can be justified and these benefits should be ignored.

- Ofgem's RIA fails to appropriately consider P200. This proposal appears to have been dismissed without any assessment of the direct or indirect impacts of the proposal compared with the other proposals. In particular, there is no recognition of the marginal signal strength under P200 being the same as under P198 and P203 nor of the financial stability provided by P200 for existing investments through the removal of the windfall gains and losses derived under P198/P203. For this reason the consultation process is flawed.

- All of the modification proposals use a load flow model that allocates each node to a zone of the transmission network and then averages and scales the raw nodal marginal factors to calculate zonal TLFs. The implication of this averaging on the loss factors to be applied to individual plant may actually bear little resemblance to the plant's nodal loss factor, and hence its contribution to overall losses on the system. This issue was analysed by the BSC Modification Group and their analysis demonstrated that variations within zones could be significant. This is a significant weakness in the model.

- It is argued by Ofgem that a zonal losses scheme will introduce additional locational signals to market participants over and above those that exist already e.g. through the TNUOS Charging methodology. However, the analysis presented highlights a number of instances where the signals provided by the two mechanisms contradict. This together with the fact that both signals will change (potentially significantly) on an annual basis increases regulatory risk, is detrimental to market confidence, a barrier to new entry and potentially anti-competitive.

- The RIA fails to assess the impact of any of the losses schemes on distribution systems operation, for example the impact arising from distributed generation and the level of distribution losses. We note that distribution losses are many times greater than transmission losses.

Consultation and Decision Making Process:

Given the significant nature of the opposition to these proposals from the BSC Panel, from within the electricity industry itself, and from organisations representing both large and small customers, and given the history of Ofgem's previous attempts to introduce zonal losses, a decision to implement any of the proposed schemes is likely to be highly controversial. The

final decision on these proposals (if indeed it is to implement a scheme) should therefore be taken by the full Gas and Electricity Markets Authority and not be delegated to Ofgem.

It is also imperative that Ofgem facilitates the fullest possible consultation process. In this context, we welcome Ofgem's indication that there will be an opportunity to comment on a 'minded to' statement in due course, and we would ask Ofgem to ensure that adequate time is allowed to prepare those responses. In addition, we would also urge Ofgem to publish (either at the same time as the 'minded to' statement, or ideally earlier) all the responses to the present RIA consultation so that we (and others) will have the opportunity to review, comment on, and, if appropriate, rebut or endorse (and perhaps incorporate) points made in other respondents' submissions.

Our detailed comments on the Impact Assessment are set out as an appendix to this letter.

I trust you will find these comments helpful which should be read in conjunction with our previous comments made on these proposals during the BSC modification assessment stage. I would be happy to clarify any aspect of our response with you should you wish. I would also be happy to provide copies of our previous responses on request.

Yours sincerely

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Appendix A - Detailed comments

Overview

It should be made clear that in terms of losses, 'remote' users of the transmission system are those taking demand far from generation and vice versa, rather than the layman's interpretation as locations far from centres of population. For example, demand in London is relatively remote from sources of generation.

The final sentence expresses an expectation that proposals would over time reduce the total volume of transmission losses. However, the analysis performed by Oxera shows potential changes due to proposed losses schemes as being very small as a proportion of total losses and also indicates the main determining factor for future total losses to be reasons other than potential zonal allocation of losses. The maximum potential saving is approximately 0.5 TWh/year, less than 10% of total losses of about 6 TWh, and less than 0.2% of total generation of about 350 TWh.

Summary

The BSC does not set out the terms by which NGET is responsible for balancing the GB Transmission System. These are set out in the Transmission Licence. The BSC describes the bid-offer mechanism and the cashout rules. The Grid Code and Connection and Use of System Codes specify other requirements for balancing.

Losses have not been recovered from generators and suppliers on a uniform basis since Vesting in 1989. Prior to 27 March 2001 when NETA was introduced, demand shared the cost of all transmission losses. Only since NETA has the cost been divided, approximately equally, generation and demand.

An expectation that total losses would reduce over time under these proposals, as generators and to a lesser extent demand customers choose to operate differently, is based on theoretical expectations of changes in marginal behaviour. However, the effects are very small compared to the total volume of losses. When compared to the effect of other factors such as fuel prices, bilateral contracts and other locational signals, there must be a risk that the theoretical savings may not materialise. Most participants will **not** operate differently under these proposals.

1 Background

1.8. The BSC distinguishes between 'delivering' and 'offtaking' Trading Units rather than generators and suppliers.

1.16 The BSC Panel tends to associate a recommendation whether or not to make a change with a particular date or dates, as practical and financial aspects of implementation timing usually affect the desirability of change.

1.21 The assessment suggests the proposals are "important" for the purposes of section 5A of the Utilities Act in terms of the potential impact (b) on market participants and (e) on the environment. Because of the re-distribution of costs between different locations, the

proposals are also likely to have a significant impact (c) on persons engaged in commercial activities connected to the gas or electricity sectors (customers who will face newly differentiated locational costs) and (d) on the general public in GB or a part of GB (as customers).

1.36 It is misleading to suggest that proposals P198 and P203 would allocate variable losses 'according to the extent to which parties give rise to them'. On a shared system, the losses which occur are a consequence of the combined effect of all parties using the system. The effect on total losses of a marginal flow at a particular location is completely dependent on the flows at other locations and completely different from the effect that flow would have in isolation. For example, a party can only 'give rise' to a negative quantity of losses to the extent that it reduces losses on the system as a whole by reducing a shared flow. Taken in isolation, each party can only cause losses.

1.36 It is stated that reducing the connection to and use of the transmission system by generators located further from demand would be expected to reduce total losses. While this may be true, it overlooks the benefits in terms of security and diversity which the transmission system provides, as well as the benefits for demand located away from centres of demand.

2 Direct Impacts

Question 1: Do respondents consider we have appropriately summarised the direct impacts of the proposed and alternative modifications?

Question 2: Do respondents consider there are additional direct impacts that have not been fully addressed?

Question 3: Do respondents wish to present any additional analysis that they consider would be relevant to assessing the proposals?

2.1 The potential impact on the total volume of losses of the various proposals depends not only on the behaviour of generators, but the behaviour of customers in response to supplier pricing.

2.4 We believe the TLMs published for P198 and P203 in Oxera's reports, and reproduced in the Ofgem impact assessment, do not include fixed losses. If we are correct, this means all delivery TLMs are higher than they should be, and all offtake TLMs are lower than they should be, and any party trying to determine the material impact of the proposed schemes on them compared to the current uniform level (which includes fixed losses) will underestimate the amount they would be expected to contribute for losses. If fixed losses are assumed to be about 40% of total losses, which are about 2% of total generation, shared 45/55 between generation/demand, an additional adjustment of about 0.4% should be subtracted from all delivery TLMs and added to all offtake TLMs. For 1000MW of generation, or demand, and an assumed market price of £45MWh, the materiality is £1.6M per year. The total value of fixed losses is about 350TWh*0.8%*£45MWh = £126M/year.

2.5 5th bullet. It would be clearer to say that under P198, a supplier in the South Western zone would on average need to purchase 3.5% more electricity (at the notional balancing point) in order to meet its offtake requirements than a supplier in the North Scotland zone. The point is that some offtake locations would be more favourable than others.

Table 2.1a: If we apply the TLMs in table 2.1a to our expected generation for 2007, we get a result which is very different from that if we apply the estimated cost transfers per MWh within GSP Groups from table 2.4a. This suggests an inconsistency between the TLMs and the estimated cost transfers. Have fixed losses been properly considered in the TLM calculations?

Table 2.1a: In many cases, the variation in zonal TLM values between different seasons exceeds that between different zones. This highlights the volatility of TLM values and calls into question their accuracy in relation to individual BM Units and settlement periods. The presentation of TLM values in this assessment does not show or describe the significant variation in detailed theoretical TLF values between settlement periods and locations observed in detailed analysis by PTI as part of the BSC modification assessment process. The averaging over zones and over time to give zonal seasonal values introduces considerable errors for individual BM Units and settlement periods. These errors may such that the adjustments for losses are opposite in effect for some BM Units and settlement periods to those the proposals seek to achieve.

2.8 On the basis of values provided in Tables 2.2, it is misleading to suggest that locational differentials under different scheme designs diverge over time. Although the locational differentials between TLMs under different scheme designs diverge slightly over the first few years of the analysis, the schemes converge towards the end of the analysis period. This is consistent with the observation by Oxera that other factors are driving the long term behaviour of participants, and response to proposed zonal losses schemes are very secondary. As losses reduce due to other factors, the different schemes naturally tend to converge.

2.13 Table 2.3a: The table does not show the absolute level of losses against which the reductions of 73 to 545 GWh are estimated to occur. Oxera's reports indicate a level of total losses of approximately 6500 GWh (which seems rather high compared with measured values) and the variation between years for reasons other than zonal losses is estimated as 673 GWh. By contrast, the reductions due to a zonal losses scheme are estimated to be in the range 73 to 545 GWh, or approximately 1% to 8% of total losses, which in turn is 0.02% to 0.16% of total generation. The estimated savings are very small compared with the total level of losses, their variation due to other factors, and compared with uncertainty due to significant assumptions and approximations.

2.14 How has the 'value of reduction in the total volume of losses' been estimated? The reference to estimates of electricity market prices for each year suggests that the value of loss reduction might have been estimated as the reduction in losses multiplied by a market price, ie. The avoided marginal generation cost. However, this would be an overestimate of saving, as more expensive generation will have been required to run in order to achieve the loss savings. Oxera July 2006 report, page 2, section 1.3, describes this and related factors affecting the value of saving.

2.15 Comment similar to 2.14. Detail on the individual annual values of loss saving., and the components making up that saving, would assist analysis.

2.20 Table 2.4a: See comment on 2.5 Table 2.1a.

2.30 Generators and suppliers to industrial and commercial customers would be significantly affected by the need to introduce and manage zonal time varying loss multipliers into their systems and processes for forward trading and balancing. Suppliers to other customers would be impacted because of the need to factor more volatile loss adjustments into pricing and settlement, particularly for longer term contracts.

2.34 We note that the impact and estimated benefits of the various losses schemes do not vary linearly with the scaling or phasing of transmission loss factors. The reduced loss factors under P204, and presumably under phased introductions, give loss reduction benefits comparable with the unscaled proposals with much less redistribution of costs.

2.40 P200 provides the same signal as P198 and P203 to all generators for changes to output relative to existing levels. Oxera analysis indicates that most of the effects of a locational losses scheme arise from changes, albeit small, in generator behaviour. Therefore it is rather misleading to suggest that hedging as proposed by P200 would be expected to have lower impact in reducing losses than the unmitigated scheme. The differences should be very small.

3 Indirect Impacts

Question 1: Do respondents consider we have appropriately summarised the indirect impacts of the proposed and alternative modifications?

Question 2: Do respondents consider that there are any indirect impacts of the proposed and alternative modifications that have not been fully assessed?

The impact of deficiencies in the methodologies have not been fully considered or quantified. For example, the potential range of errors in adjustment applied to individual BM Units over time as a result of: use of a DC load flow model rather than a more accurate AC model; averaging of TLMs over a zone, averaging of TLMs over time and the long lag between calculation of TLFs and their applicability. These represent misallocations of losses under any of the proposals, and under 'high strength' schemes P198/200/203 the impact of misallocation for individual locations and times could act (a) against the aim of reducing total losses and (b) against the objective of competition.

Question 3: Do respondents wish to present any additional analysis that they consider would be relevant to assessing the proposals?

3.7 4th bullet: Applying a scaling factor to the marginal loss factors derived from the load flow model is not a simplification. It is a deliberate adjustment to achieve a desired outcome, specifically either to attempt to allocate the volume of actual variable losses exactly using zonal factors (P198/203), or to attempt to allocate the variable losses such that all BM Units pay towards variable losses, by varying amounts, and none are credited with energy (P204).

3.8 The assertion that relaxing any of the simplifying assumptions would have the potential to be more accurate is not true in the case of the scaling factor, which is not a simplification but a tool to give a desired outcome.

1st bullet 'Zones versus nodes': It is stated that 'The analysis demonstrated that variations within zones could be significant – particularly for geographically remote nodes within a zone.' While this may be true, reference to geographically remote nodes is misleading, as the important factor is the electrical characteristics of the network.

4th bullet 'Applying a fixed scaling factor of 0.5': 50% is exactly the number which when applied to marginal TLFs will cause variable losses to be allocated between nodal flows with no remainder, if that is the desired outcome.

5th bullet 'Applying a variable scaling factor to ensure no energy credits': For the avoidance of doubt, it should be noted that P204 scales TLFs to satisfy a constraint on the value of TLM. In claiming that scaling of TLF's in this manner 'would appear to detract from (or at least not improve) the accuracy of the TLFs', the assessment appears to pre-judge what the loss mechanism is aiming to achieve.

Another assumption in the determination of zonal loss factors by all the methods has been overlooked: Absolute volumes (regardless of sign) are used in the zonal averaging of loss factors to avoid potential mathematical problems with division by zero.

3.9 Reference is made to a 'less accurate allocation of losses from the perspective of reflecting physical reality'. Again, this appears to prejudge the desired outcome, but in any case the only physical reality is that losses occur on the components of the network due to the shared flows on them.

3.14 (TNUoS charges) In the case of generation, the charges are based on marginal transmission asset costs, with adjustment because generators pay only a proportion of total costs. For demand, the charges are based on marginal transmission asset costs adjusted so that there are no negative demand charges, and demand pays a certain proportion of total costs. Use of the term 'reflect' in the statement that 'These charges reflect the costs of the network assets…' is noted as meaning different things in different circumstances.

3.21 We note that existing TNUoS charging differentials do not appear to have deterred major generation investment in areas with high transmission network charges. In Scotland there is a queue of parties waiting to connect, despite the high network charges. There is currently no evidence that locational transmission loss charging will affect generation investment decisions.

3.22 The summary of Oxera's analysis post 20015/16 is misleading. Section 8.2 Table 8.2 of Oxera's July 2006 report refers to a 'central estimate' of £10.6m savings per annum between 2015/16 and 2020/21 due to relocation of generation. However, in the introduction to this section they also say this is 'for illustrative purposes only'. Section 5.3 of their report concludes with the statement that 'In the longer term (beyond 2015/16), the range of potential benefits is large and very uncertain, with estimates of between of £1m and £20m per annum.'. The uncertainty arises from uncertainty over the extent to which the location for new plant

would depend solely on expected zonal loss factors. Oxera make no assertion about the most likely outcome.

3.27 While a decision to approve one of the proposals would reduce uncertainty about the regime to apply in the future, it would not reduce uncertainty about the value of loss adjustment any particular BM Unit is likely to face. This is an uncertainty which does not apply under present and historic arrangements.

3.31 While analysis indicates zonal loss factors have potential to reduce total losses slightly, the methodologies also have potential to create false signals and provide inefficient outcomes, in particular where the assumptions and averaging actually give the wrong sign to loss adjustment at a particular location at a particular time.

3.28 – 3.31 No consideration has been given to the relative costs of investment in the transmission system to reduce losses compared with incentivising changes in generation and demand by the use of locational loss factors. It is possible that in some cases investment in transmission circuits with intrinsically lower losses would be more cost effective than potentially stranding generation or incentivising new build in locations where other costs are higher. Similarly, no consideration has been given to the interaction between NG's incentive scheme and this losses scheme.

3.33 This section highlights that changes to the total volumes of losses would be small compared to the redistribution of loss allocation between locations.

3.35 The benefit to consumers in aggregate would be likely to be very small (See comment on 2.13, where effect on losses as a percentage of total generation is estimated to be about 0.02% to 0.16%).

3.36 & 3.37 No consideration has been given to the distributional effects on customers. Competition between customers using electricity at different locations will be affected, and businesses in the South and particularly the South West will be disadvantaged compared to those in the North.

4 Environmental Impacts

Question 1: Do respondents consider that we have appropriately outlined the key environmental impacts of the different proposals?

Most of the environmental benefits are largely coincidental and arise from the current distribution of generation fuel types. A different distribution of fuel types would give a different picture. If there is a desire to limit carbon emissions, then that aim could and should be dealt with directly. The materiality of the environmental benefits claimed could be significantly exaggerated by the use of carbon prices much higher than current levels.

Question 2: Do respondents consider that there are other environmental impacts that should be assessed?

Generation close to centres of demand carries a social cost which is difficult to quantify.

Question 3: Do respondents have any additional analysis in relation to environmental impacts that they wish to present?

4.3 A statement is made that 'losses vary by geographical location and may be higher for generators in remote locations.' This is not a factual way of describing the effect of flows at different locations and gives the impression that there is an agreed and undisputed way of allocating shared costs to particular locations. It would be more accurate to say that (a) the marginal effect on total losses of flows at different locations on the network is different and (b) generation at a location far from centres of demand is likely to increase total losses on the network.

4.3 Location of generation close to centres of demand would reduce losses, but carries difficult to quantify social costs in terms of visual and acoustic impact, fuel and waste transport, and local air quality.

4.4 The potential savings from zonal losses schemes would make an insignificant contribution to national targets for emissions reductions.

4.5 The visual and acoustic and other subjective environmental impacts of a few large installations may be less than the aggregate impact of large numbers of smaller installations, particularly if the smaller installations are located closer to centres of demand.

4.6 It is claimed that 'zonal loss charging has the potential to reduce the total level of losses by providing signals for generation and demand to locate closer together, this will have short-term and long-term effects'. Some evidence has been provided by Oxera for an expected small effect on generation despatch and a very small demand response, but no firm evidence has been provided that generation and demand will locate or relocate differently because of a losses scheme.

4.7 It is misleading to suggest that a zonal losses scheme would necessarily reduce carbon emissions. A zonal losses scheme applied to the current locational pattern of generation fuel types appears to give a reduction in emissions, but this appears to be because of the re-distributional effect of the schemes rather than the saved emissions associated with the reduced losses. Ie. Northern generation is more polluting, and marginal reduction in its despatch reduces emissions. If a different locational distribution of fuel types were to develop in future this situation could be reversed, and a losses scheme could increase emissions while reducing losses (as observed from results for 2006/07).

4.8 Oxera analysis indicates that while P204 could be expected to reduce total losses less than P203, its redistributional effects are significantly lower. This means the effect of inaccuracies in the calculation method on individual BM Units are reduced overall.

4.11 Table 4.1. Why have the later years been excluded from the analysis of effects on emissions? The carbon prices used to estimate a value for emissions savings are considerably higher than current values. This will tend to exaggerate the value of potential savings.

4.15 The analysis says in relation to long-term impact that 'The introduction of zonal loss charging by encouraging more efficient locational decision-making could have a positive

impact on the environment'. However, no firm evidence to support this possibility is provided, and 4.16 and 4,19 confirm the uncertainty.

4.22 Oxera find that locational signals from zonal transmission losses are likely only to have a minor impact on the growth of renewable new build.

4.23 In relation to renewable generation in Scotland, other factors have the potential to outweigh the impact of the introduction of zonal transmission loss charging.

4.25 It is suggested that large transmission towers and double circuit transmission connections carry an unfavourable environmental impact. Presumably the inference is that locating generation closer to demand would reduce the need for such equipment. However, the visual and acoustic and other subjective environmental impacts of a few large installations may be less than the aggregate impact of large numbers of smaller installations, particularly if the smaller installations are located closer to centres of demand.

4.27 The reduction in emissions appears to be largely due to a co-incidental assumed redistribution of generation despatch away from more polluting generators, rather than the reduction in emissions associated with losses.

4.28 No explanation is given for the suggestion that the proposal(s) could encourage more local, distributed and on-site generation. Embedded generation either contributes to or offsets a transmission flow, so the value of energy for embedded generation should correspond with that of transmission connected generation in the same GSP Group.

4.29 See comments on 4.27.

4.30 Table 2.3a shows P204 as giving more loss saving than P198 in some years. Tables 4 and 6 in appendix 3 shows P204 as giving more emissions saving than P198 or P203 in 2006. It is not generally the case that P198 gives more favourable outcomes than P204, as suggested.

5. Process and way forward

Question 1: Do respondents have any views on both the process and timetable that are proposed for taking forward this assessment of the proposed and alternative modifications?

See above.

Appendix 2 – Additional Clarification from Oxera

The answer to question 1 refers to 'transmission losses for the current year and the implied TLMs to be applied in the subsequent year's despatch'. The total transmission losses in Oxera's analysis seem higher up to than historic and prevailing measured total loss values. For example, for 2006/07 and 2007/08 the estimates are 6.3 and 6.8 TWh, compared to outturn and current levels below 6 TWh. Is there an explanation for the apparent discrepancy?

Further to question 2, how many snapshot periods were there in each season?.

Answers to questions raised in relation to sections 2.4 and 2.14 above would clarify the situation.

Appendix 3 – Impact of proposals on emissions

Table 2: Greenhouse emission factors for electricity generation: The first row of this table is labelled CO2, with units of g/GJ. Should this be Carbon rather than CO2?

The emission factor numbers in Table 2 are identical to the assumed conversion efficiency numbers in Table 3 is this correct?

1.3 , 1.4 , 1.5, 1.6
Changes in emissions are largely a by-product of the changes in marginal despatch arising from proposed locational loss factors. Because generation fuel types are not uniformly distributed across the GB, the dispatch changes coincidentally shift generation between fuel types. The savings directly due to reductions in losses are small.
The assumed carbon prices of 35, 70 and 140 £/tC are much higher than current prices. This will tend to exaggerate the value of Carbon savings.

1.6 Another explanation why P204 is not postulated to increase emissions in 2006 could be that the reductions in emissions due to losses reductions under this scheme outweighs small increases in coal generation.

Appendix 4 – The Authority's Powers and Duties

1.5 The authority must have regard to, amongst other things, the interests of individuals residing in rural areas. A scheme which will increase the cost of electricity for customers in some 'remote' areas will not meet this objective. No consideration has been given to this.

Appendix 5 Glossary

Load Flow Model : "A model used for estimating impact of a marginal increase in power at each individual node in the network on total flows on the transmission system".
A Load Flow Model is not directly concerned with the effect of marginal changes at nodes. It would more accurately be described as "A model of an electrical network from which flows on circuits of the network may be estimated given the input and output flows at nodes and the electrical properties of the circuits."

Network Mapping Statement: "The document established by Elexon on behalf of the BSC Panel to map power flows on the GB transmission system by node."
This would more accurately be described as "A document which would be established by the BSC Panel to map GB network nodes to Volume Allocation Units, BM Units and Zones if any of the currently proposed zonal losses schemes were to be implemented."

Node: "A transmission node is a point on a network at which circuits meet."

This would more accurately be described as “A transmission node is a point on a network at which circuits meet or [where flows into or from the network occur] or [including connections to external circuits which are not part of the network].

Transmission Losses: The amount of energy that is lost through the process of transmitting energy from generators to **points** [not ‘centres’] of demand.

Transmission Loss Multipliers (TLMs): TLMs are applied to metered volumes of electricity in order to factor transmission losses into the calculation of BM Unit volumes [not ‘imbalances’].
