Robert Hull
Director of Transmission
Ofgem
9 Millbank
London
SW1P 3GE

10th April 2007

Dear Robert,

EDF Energy response to the zonal transmission losses regulatory impact assessment (RIA)

We are pleased to have this opportunity to respond to the zonal transmission losses regulatory impact assessment.

It is EDF Energy's view that none of the modifications should be implemented.

Our rationale for this view is:

- The reduction in losses from any of the modifications is uncertain. We have doubts as to the validity of OXERA's cost benefit analysis, especially the re-despatch of few large power stations;
- The reallocation of losses on the basis of GSP Groups is detrimental to competition, as all modifications greatly reallocate losses but provide only a questionable reduction in losses;
- Ex-ante calculation of zonal Transmission Loss Factors is inaccurate, especially for generation, as the GSP Groups in no way represent the power flows that create losses on the transmission system;
- It is unlikely that any environmental benefits will be realised. There is a distinct possibility that more carbon intensive, inefficient generation may displace northern generation, without reducing losses;
- Supporters of zonal losses believe it will influence the location of new power stations. We believe zonal losses are insignificant to, and not consistent with, the signal provided by TNUoS when locating new power stations.

We also note that Ofgem's current review of the electricity cash out arrangements seeks to try and simplify the trading arrangements, whereas any zonal losses scheme is only likely to make them more complex.

We have answered all the questions put forward in the RIA to substantiate this view. You will find these answers in the attached document.

Regards

Denis Linford
Director of Regulation

EDF Energy
40 Grosvenor Place
Victoria London SW1X 7EN

Tel +44 (0) 20 7752 2200
Fax +44 (0) 20 7752 2128

edfenergy.com

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Direct Impacts

Question 1: Do respondents consider we have appropriately summarised the direct impacts of the proposed and alternative modifications? No.

1. Any reduction in losses is expected to reduce in latter years.
2. The RIA includes cost-benefit from years that have passed.
3. Ofgem has not published CBA data beyond 2011 and not by GSP group.
4. OXERA's use of "snapshots" appears unreliable.
5. The OXERA CBA shows an increase in losses in 2015-16.

Question 2: Do respondents consider there are additional direct impacts that have not been fully addressed? No.

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

1. EDF Energy assessed the reallocation of losses between companies.
2. Some companies benefit both in generation and supply, few are cost neutral.
3. The relationship between redistributing and reducing losses has not been explained.

Indirect Impacts

Question 1: Do respondents consider we have appropriately summarised the indirect impacts of the proposed and alternative modifications? No.

1. We agree that there are major inaccuracies in using zonal TLFs.
2. We consider the comparison with generation TNUoS inappropriate.

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

1. We do not agree with Ofgem's view that Scaled zonal TLFs are worse than zonal TLFs.
2. We believe the merit of linear phasing has not been considered.

Question 3: Do respondents wish to present any additional analysis that they consider would be relevant to assessing the proposals? No.

Environmental Impacts

Question 1: Do respondents consider that we have appropriately outlined the key environmental impacts of the different proposals? No.

1. The RIA includes environmental benefits for years that will have passed.
2. The environmental benefit is simplistic.
3. Planned embedded generation will be adversely affected.

Question 2: Do respondents consider that there are other environmental impacts that should be assessed? No.

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

1. The RIA may overplay the potential environmental benefits.
2. We believe there is the potential for a zonal losses scheme to increase emissions.

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? Yes.

1. The RIA uses OXERA's cost benefit analysis data and not other sources. It includes data for periods that will have expired by the time the modification could be implemented.
2. There is no critique of the data in the RIA, nor is there extensive analysis on the level or reliability of re-despatch. In particular we would want to see further investigation into the levels of re-despatch in 2010-11.
3. EDF Energy requested that Ofgem and OXERA provide the changes in volume (GWh) by GSP Group and net reduction in losses by year, for the period 2012-13 to 2015/16. This has not been released.
4. There is a lack of consideration on the positive attributes of linear phasing under P198 alternative and P200.
5. Ofgem has not followed Cabinet Office guidelines by only allowing six weeks for the consultation.

Direct Impacts

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

No.

1. Any reduction in losses is expected to reduce in latter years.

Within OXERA's CBA there was evidence that the loss savings in the latter years of the analysis were far lower than in the first five years and that an increase in losses occurs in 2015-16. This was not presented in the RIA.

2. The RIA includes cost-benefit from years that have passed.

EDF Energy is concerned that Ofgem is considering modifications on the basis of modelled data that include years that will have passed by the time it could be implemented and the network configuration will have changed. If we deduct half the loss reduction for 2008-9, plus the reduction in losses for the years 2006-7 and 2007-8, the total reduction in losses for each modification is reduced by approximately 40%. The RIA therefore overplays the benefits available.

3. Ofgem has not published CBA data beyond 2011 and not by GSP group.

We are also concerned that OXERA and Ofgem have not published further data on loss savings for years beyond 2011. Figure 1 below shows OXERA's estimate of the change in output by GSP group under P203 (Table 3.11 in the July CBA) when compared against uniform losses. The red line equates to the savings in losses under P203 (table 2.3a in the RIA, for 2008-09 to 2011-12 and for further years this data was issued to the P204 working group). Ofgem and OXERA have not issued the data for the period 2012-13 to 2015-16 that shows the change in output by GSP Group. We have excluded years 2006-07 and 2007-08 as these will have passed by the time of implementation. We have used the full year's data for 2008-09* but in practice this is unobtainable as half of this period will have already passed. Figures 2 and 3 present the same data for P198 and P204 respectively.

We would also have wished to explore the change in output by GSP Group for the years 2012-13 to 2015-16 because as the savings in losses diminishes it would have been interesting to have compared it to any change in output. It is evident that the change by GSP Group is inconsistent between each modification and for each year, with some GSP Groups, such as South Scotland, not affected. In one modification (P198 for the year 2010-11), output from the East Midlands GSP Group is reduced significantly, while there is no reduction in output from the Scottish GSP Groups. This appears counterintuitive.

4. OXERA's use of "snapshots" appears unreliable and the reduction in losses is sensitive to the re-despatch of few power stations.

It is evident that OXERA's loss savings rely on re-despatch under "snapshot" periods, which may then be amplified across the whole year. Under the vast majority of proposals, generators in South Scotland remain unaffected, the exception being P203 and under the gas scenario (yet only during 2010-11). At the same time, some generators in more southerly GSP Groups are adversely affected. We are concerned that OXERA's analysis is reliant on just a few large power stations re-despatching in different seasonal snapshots, under annual fuel price inputs.

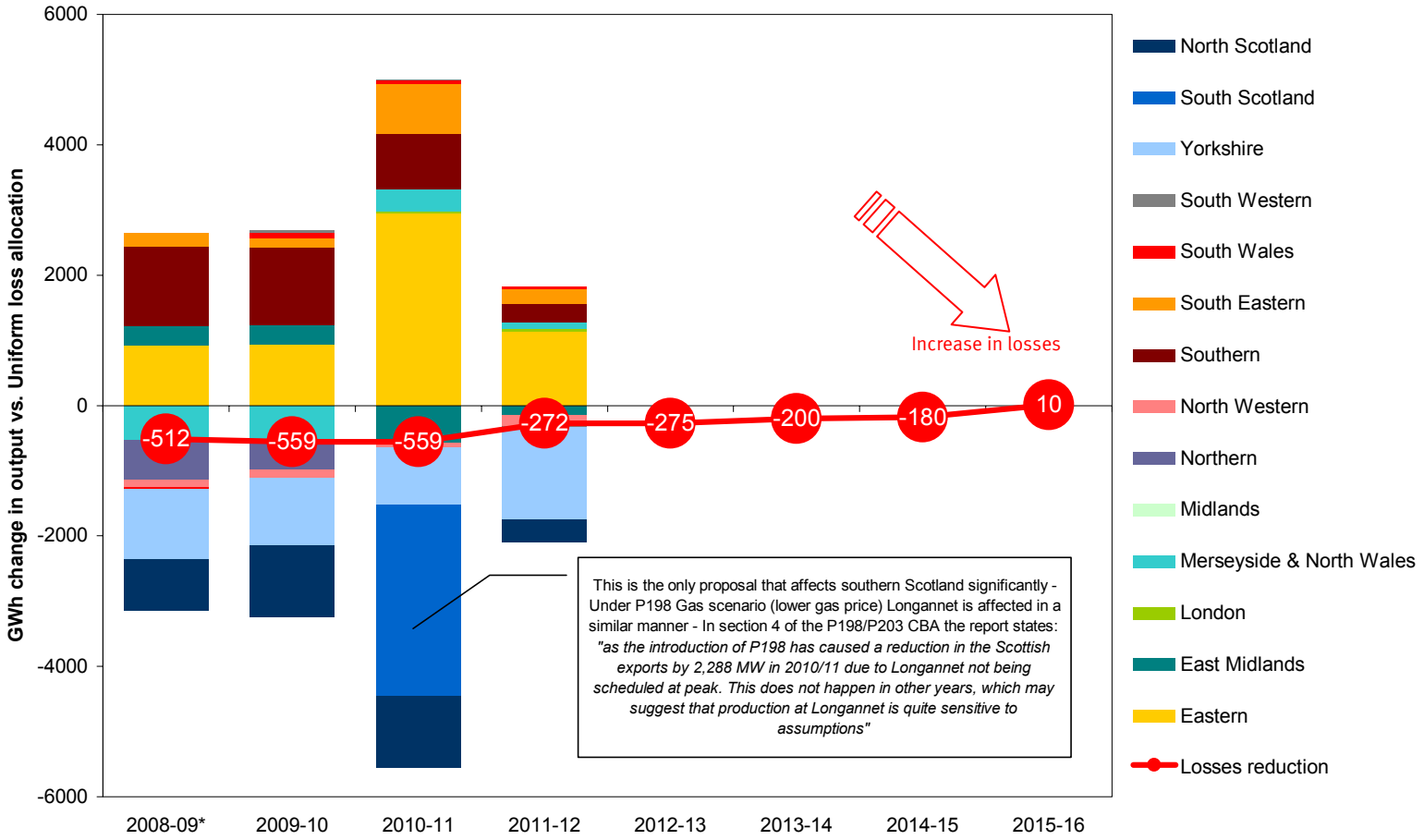
We doubt the level of re-despatch modelled by OXERA is accurate, especially in Scotland where system issues mean that certain plant (such as Longannet) usually has to run. Losses seem to be particularly sensitive to large changes in demand and generation on a few nodes.

We would have liked to have seen the reduction in losses attributed to actual changes in generation at particular nodes. Consequently, we believe the data in the RIA provides a maximum estimated indication of the reduction of losses. There is no clarity as to how wind farms are treated by OXERA and gas price seasonality also appears to have been ignored, both of which may have a significant impact on losses.

5. The OXERA CBA shows an increase in losses in 2015-16.

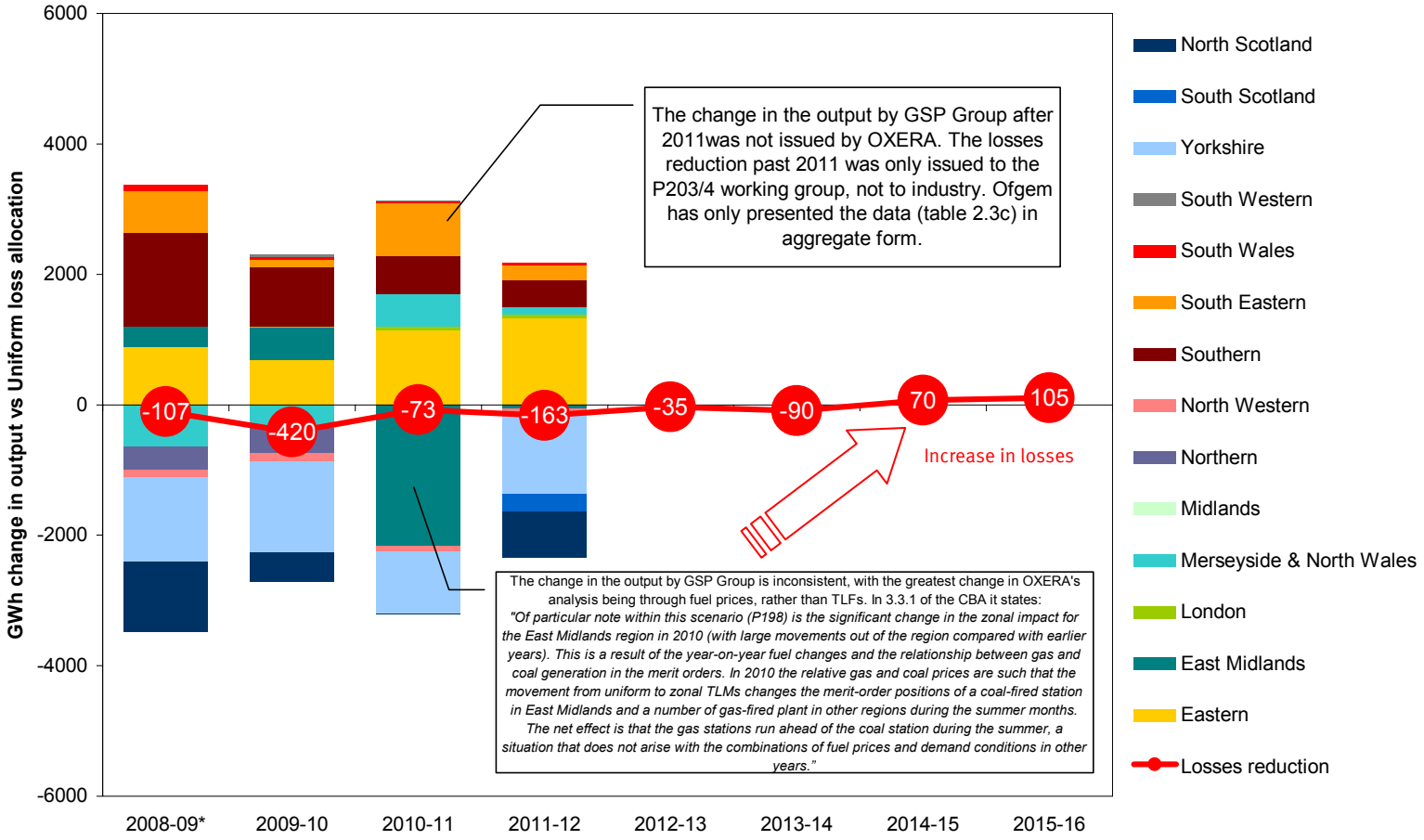
The CBA does not explain the worrying trend to an **increase in losses in 2015-16**, for P203, P198 and P204, nor does it explore the importance of fuel and market prices on the level of losses. For instance, post May 2006, losses have increased significantly with an increase in energy flows from Scotland and a decrease in energy flows from France. Zonal losses would have signalled the interconnector to export to a greater extent, theoretically acting to increase transmission losses further.

Figure 1: P203 Changes on output by GSP Group and net losses reduction



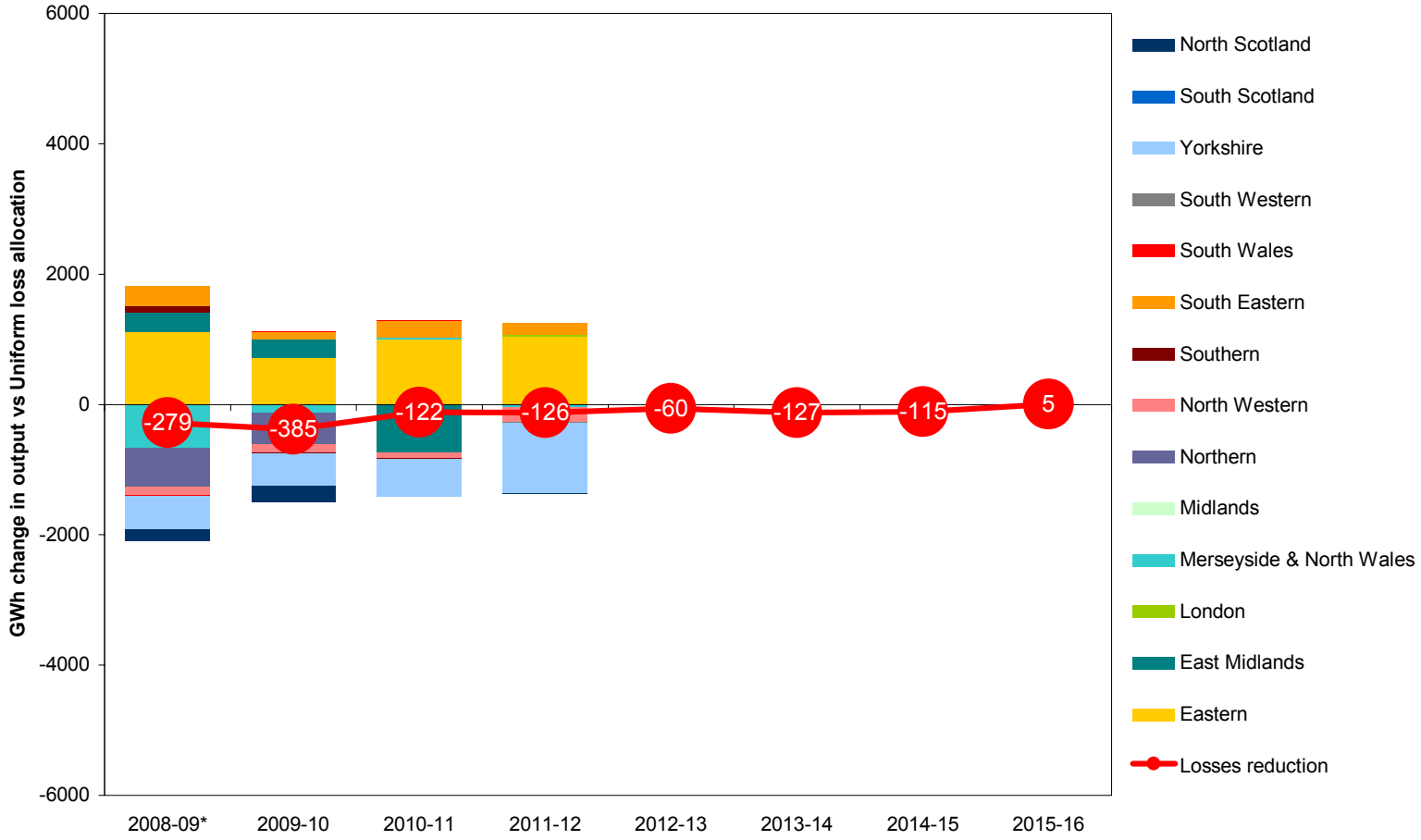
[P203 data is taken from OXERA's July report table 3.11, (P198 Seasonal scenario)].

Figure 2: P198 Changes on output by GSP Group and net losses reduction



[P198 data is taken from OXERA's July report table 3.8, Central scenario].

Figure 3: P204 Changes on output by GSP Group and net losses reduction



[P204 data is taken from OXERA's September report table 3.7, Seasonal scenario].

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

No.

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

Yes.

1. EDF Energy assessed the reallocation of losses between companies.

We have analysed the reallocation of losses that could have occurred if all else was equal during 2005/06. This is presented in figures 4, 5, 6, which identify the reallocation between different companies.

2. Some companies benefit both in generation and supply, few are cost neutral.

It is evident that some companies would receive significant benefits from zonal losses, especially if they have a northern customer base and southern power stations. It is the companies with only a southern customer base or only northern generation that are likely to be most adversely affected. The main beneficiaries are RWE Npower and E.ON, whereas the parties most adversely affected include ourselves, Teesside, Drax, British Energy and SSE. It is evident that the greatest impact is on generation, as there are few companies that have numerous generating stations both situated in the north and south, to hedge the impact of zonal losses. Although these proposals benefit EDF Energy's southern power stations, we are concerned that our customers will be adversely affected.

3. The relationship between redistributing and reducing losses has not been explained.

The RIA aims to identify the distribution of costs between suppliers and Generators, yet makes no reference as to the relationship between the reallocation and the corresponding reduction in losses. (OXERA's data is clearly wrong for the reallocation of costs for P203 as the figures under table 2.4a do not add up to zero, but -£3.66m). It is evident from OXERA's analysis that P204 has the lowest ratio between the reallocation of costs and a reduction in losses.

- P204 represents 45% of the total reduction in losses attributed to P203 (OXERA's CBA for the full ten year analysis).
- For the reallocation of losses between companies, P204 represents 24% of the total reallocation attributed to P204 (using EDF Energy's analysis).

We believe that a significant reallocation of losses will create a major competitive distortion.

Figure 4: P203 Reallocation of costs between companies (using 2005-06 volumes)

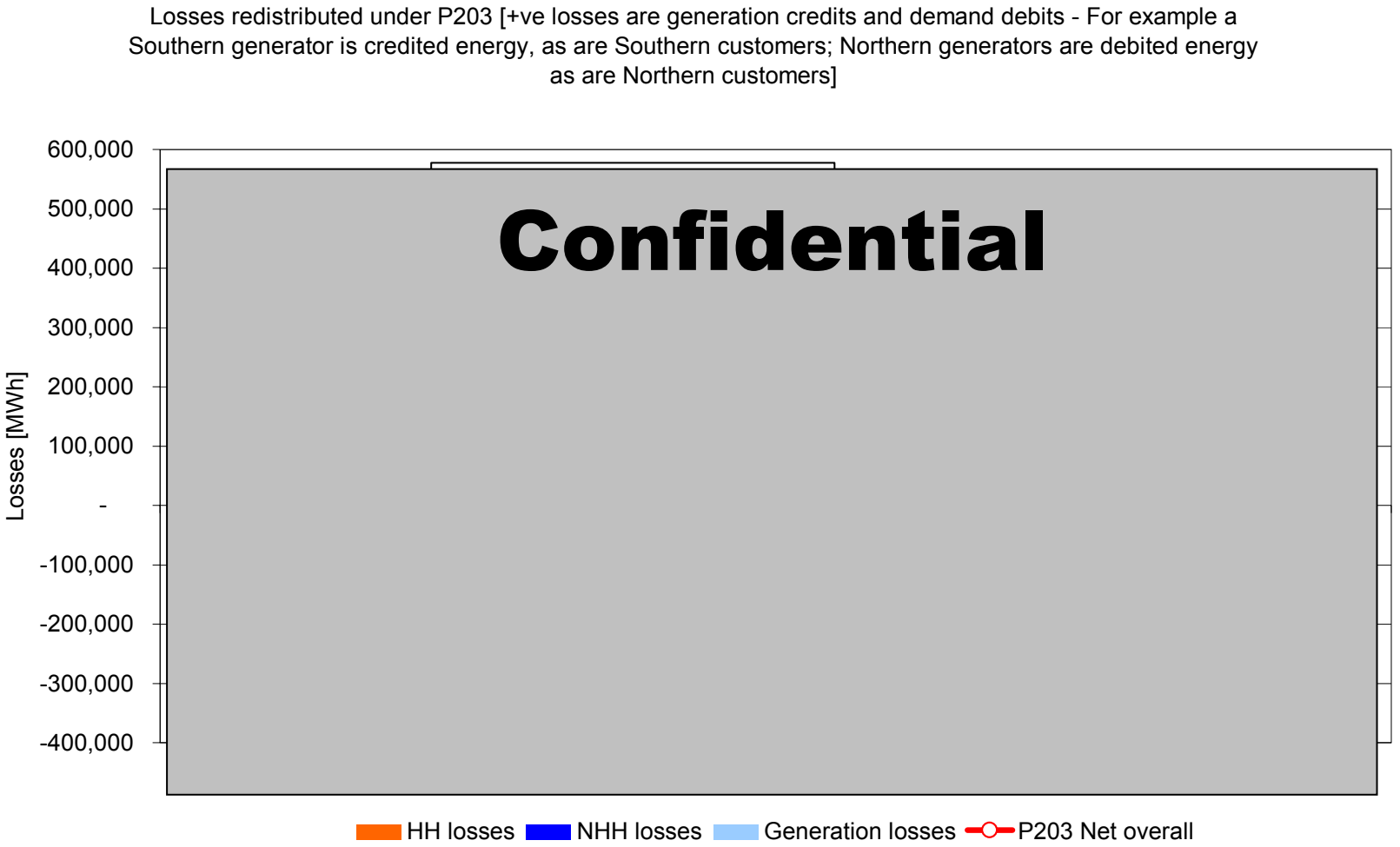


Figure 5: P198 Reallocation of costs between companies (using 2005-06 volumes)

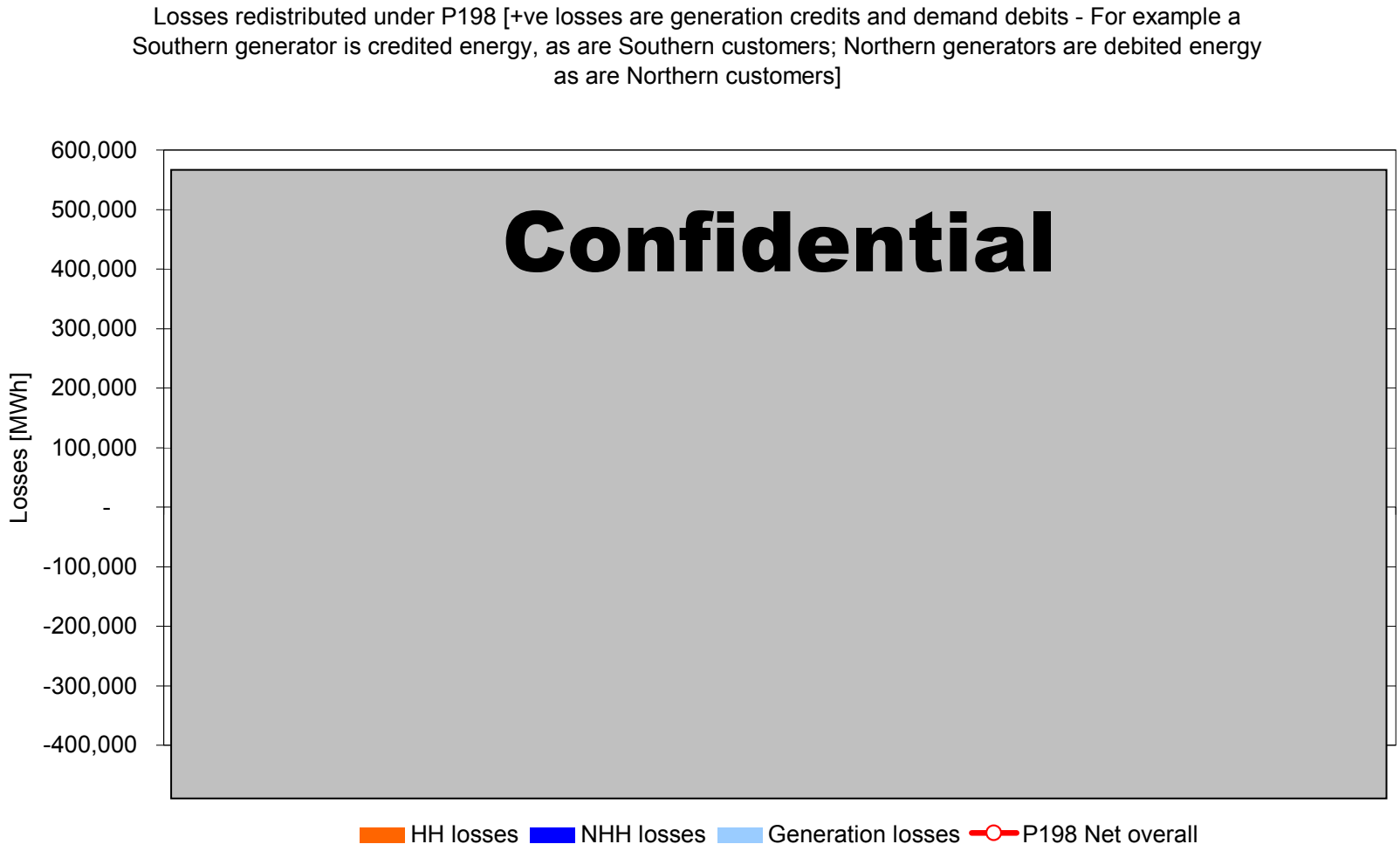
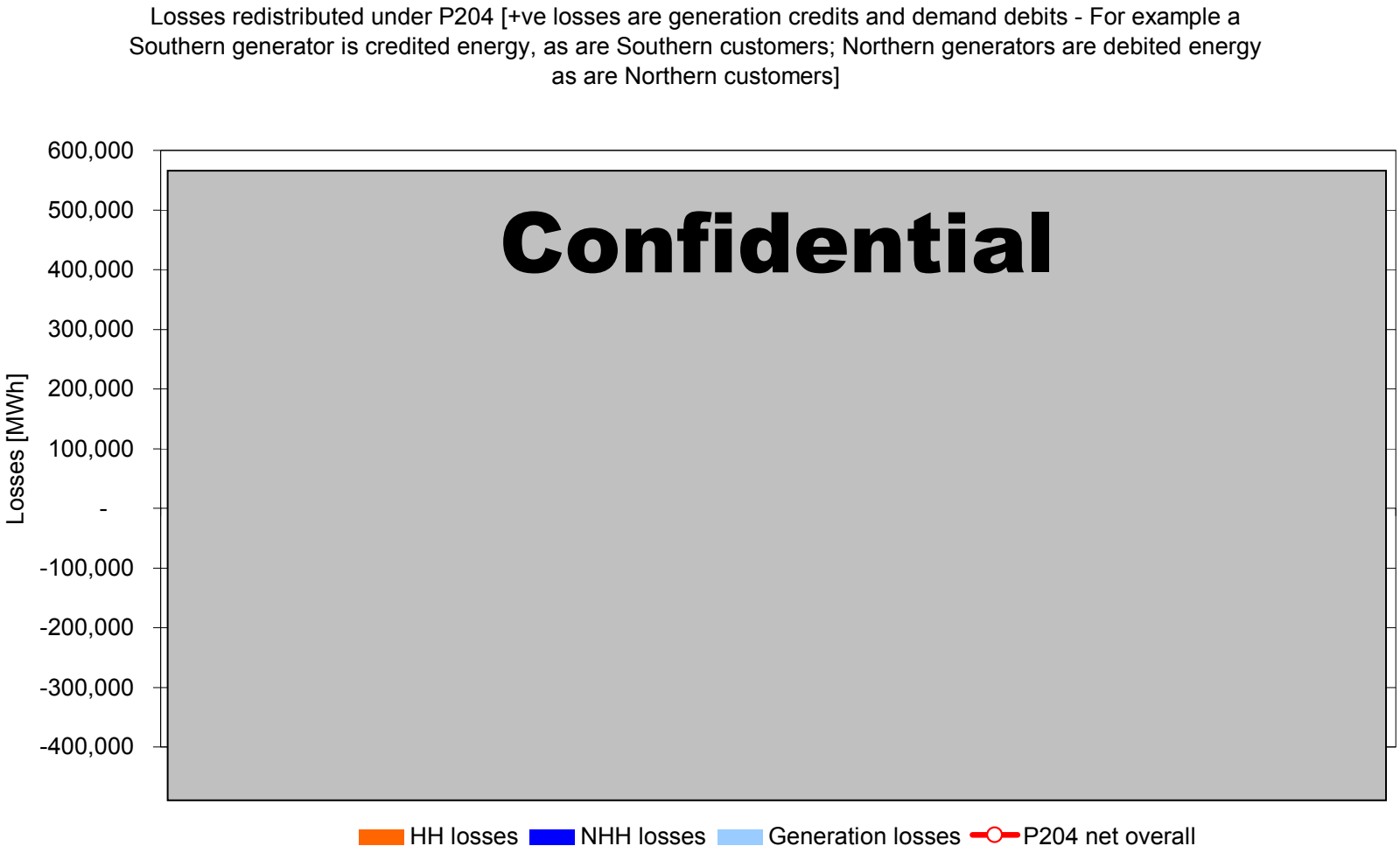


Figure 6: P204 Reallocation of costs between companies (using 2005-06 volumes)



Indirect Impacts

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

No.

1. We agree that there are major inaccuracies in using zonal TLFs.

We wholeheartedly agree with the RIA's concerns over the inaccuracy of TLFs when using 14 GSP Groups (paragraph 3.8). These may be adequate for demand, but will be inaccurate for generation. It is a major flaw in the proposed modifications that GSP Groups are to be used for zones as these cannot change over time. We would not suggest that losses be allocated on a nodal basis or TNUoS zones, as this was considered unworkable by the working group, rather that all modifications be rejected.

2. We consider the comparison with generation TNUoS inappropriate.

We do not agree with Ofgem's analysis in paragraphs 3.14 to 3.17, where a comparison is drawn between zonal losses and TNUoS charges. TNUoS charges aim to reflect the investment required in the network should generation increase at a node on the electrical system. The residual element and the +/-£1/kW zoning criteria reduce this cost reflectivity. One of the key features of TNUoS charges is that, should the £/kW tariff figure break the zoning criteria, another zone would be created. Under each of the zonal losses modifications, the zones are based on GSP Groups, with no intention to change these zones. Under the 2007/08 TNUoS zones (of which there are 20 rather than 14 GSP Groups) we would see TNUoS zone 13 having generation in 5 GSP Groups, Eastern, East Midlands, Yorkshire, North West and Merseyside and North Wales.
Therefore TNUoS bears no reference to transmission losses and comparisons should not be drawn between zonal losses and TNUoS charges.

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

Yes.

1. We do not agree with Ofgem's view that Scaled zonal TLFs are worse than zonal TLFs.

Paragraph 3.8 states that "Applying a variable scaling factor to ensure no energy credits……would appear to detract from (or at least not improve) the accuracy of the TLFs." We would disagree with this presupposition that scaled zonal TLFs are less accurate or worse than zonal TLFs.
The view that no generator would be credited energy was discussed at the working group. Many members considered it nonsensical to increase the volume above that it could physically generate, especially when using a calculation to estimate the losses it has reduced.

2. We believe the merit of linear phasing has not been considered.

As previously identified, the implementation of zonal TLFs would redistribute significant funds between different companies which have limited chance to respond. A particular concern is the impact this will have on long term power supply contracts EDF Energy has with HH customers and counterparties. Linear phasing will minimise the impact of zonal TLFs in the in the first years after

implementation, thus reducing the impact on contracted positions which will be affected by the reallocation of losses.

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

No.

Environmental Impacts

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

No.

1. The RIA includes environmental benefits for years prior to implementation of the proposals.

Again we note that the environmental benefits are overstated and incorporate data for years prior to the implementation of any of the modifications. As outlined within Oxera's CBA, our response to Direct Impacts Question 1 (Figures 1 – 3) the loss savings, and hence environmental benefits in the latter years of the analysis were far lower than in the first five years.

2. The environmental benefit is simplistic.

We also note that table 4.1 which relates to total CO_2 emission savings between 2006 and 2011 makes the very simplistic assumption that carbon intensive generation is responsible for those transmission losses avoided by a zonal losses scheme. By using generic t CO_2/MWh figures the analysis has failed to identify any difference between efficiency of plant. A typical example is the difference between the cleaner more efficient station, Drax and Uskmouth or Didcot A. TLFs would encourage generation from Uskmouth and Didcot whilst reducing the likelihood of Drax generating. CCGTs, such as Teesside, Keadby, Deeside, Immingham and Saltend are also affected adversely. The value attributed to any CO_2 savings is also unrealistically high as £35 - £140/tC implies £10 - £39/t CO_2 which is much higher than the current cost of CO_2 for phase 2 permits which is around 16 euros/tonne of CO_2.

3. Planned embedded generation will be adversely affected.

Paragraph 4.26 considers embedded generation and states that "appropriate pricing signals for transmission losses could encourage more local, embedded and on-site generation schemes." We disagree with this point as embedded generators in the North will see a dis-benefit and in the South a benefit, irrespective of being an Exempt Export BMU or linked to a supplier's GSP Group trading unit. This is outlined in table 1, where it can be seen that embedded benefits are affected by Zonal Losses, adversely affecting those in the North. The first element to the table shows that for an embedded export BMU (where the generator has decided not to contract directly with a supplier, but claim the embedded benefits directly), the impact of zonal losses is identical to the impact on transmission connected generators. The benefits are reduced in the north and increased in the south.

This is similarly the case for a generator that contracts with a supplier by registering under supplier volume allocation and linking to a supplier's base trading unit. In this case the supplier volumes are scaled up or down in line with the relevant loss factor. Due to the loss factors being based on supplier GSP Group, and the balance between off taking and delivering BMUs 55:45, the zonal loss factors also act in the same manner as for transmission connected generation.
We believe that the impact assessment is discounting the impact on embedded generation and wish to remind Ofgem that there is 950MW of embedded generation that is under 100MW, nearly all of which is due to connect in Scotland under BELLA agreements. Paragraph 4.28 states that "In the longer term the proposals have the potential to encourage more local, distributed and on-site generation", yet makes no reference to what embedded generation would replace the aforementioned embedded generation that is disadvantaged by zonal losses.

Table 1: Summary of embedded benefits

Export Exempt BMU	Uniform	North	South
Volumes	Increased	Reduced	Increased
TNUoS Payments	Increased	Decreased	Increased
BSUoS Payments	Increased	Decreased	Increased
SVA Supplier Base Trading Unit	Uniform	North Scotland GSP	London GSP
Supplier volumes	100	100	100
Generation	5	5	5
Net Supplier volumes	95	95	95
TLM (P203 Winter)	1.005	0.986	1.025
Volume	95.48	93.67	97.375
Difference	0.475	-1.330	2.375

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

No.

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

Yes.

1. The RIA may overstate the potential environmental benefits.

Figure 8 present Oxera's redespatch CO_2 reduction benefits (the same data as used by Ofgem in table 4.1 in the RIA). This figure shows the annual net change in CO_2 emissions from coal and CCGT generators, (assuming all generators have the same thermal efficiency), and shows the net change in emissions in red. It is evident that the estimated CO2 emissions reductions from P203 are not evenly distributed between years, with negligible impact except for 2010-11, In the data provided, 2010-11 appears to be the only year where significant switching from coal to gas takes place hence reduction in CO_2 emissions, with a small reduction in emissions from both coal and CCGT generators in other years.

2. We believe there is the potential for a zonal losses scheme to increase emissions.

The scenario where more polluting southern generators replace cleaner northern generators is a distinct possibility. Figure 8 represents the same data as figure 7, yet for P198 under the Gas Scenario. Under this scenario gas plant is expected to be more economic than coal in some of the years. We would like to draw Ofgem's attention to this scenario being the DTI's central price scenario and was the case for winter 2006-07. Under this scenario, the carbon savings are reduced from 0.54MtC (P198) to 0.24MtC (Gas Scenario). An equivalent analysis on P203, under the Gas scenario, cannot be made as P203 was considered by OXERA to be a scenario within the cost benefit analysis of P198. In two of the years, under the Gas Scenario, emissions increase even though losses are reduced overall. With figure 9, we have presented the reduction in losses for each of the modifications alongside the reduction in carbon emissions. This highlights that there is no linear or direct relationship between a reduction in losses and a reduction in emissions. Reduction in line losses is due to location of generation in relation to demand while emissions reduction is related to carbon intensity (fuel type) of the generation re-despatched. It is clearly possible that emissions may be negligibly or even adversely affected by the introduction of a zonal losses scheme.

Figure 7: Carbon reductions under P203, by year, 2006-2011

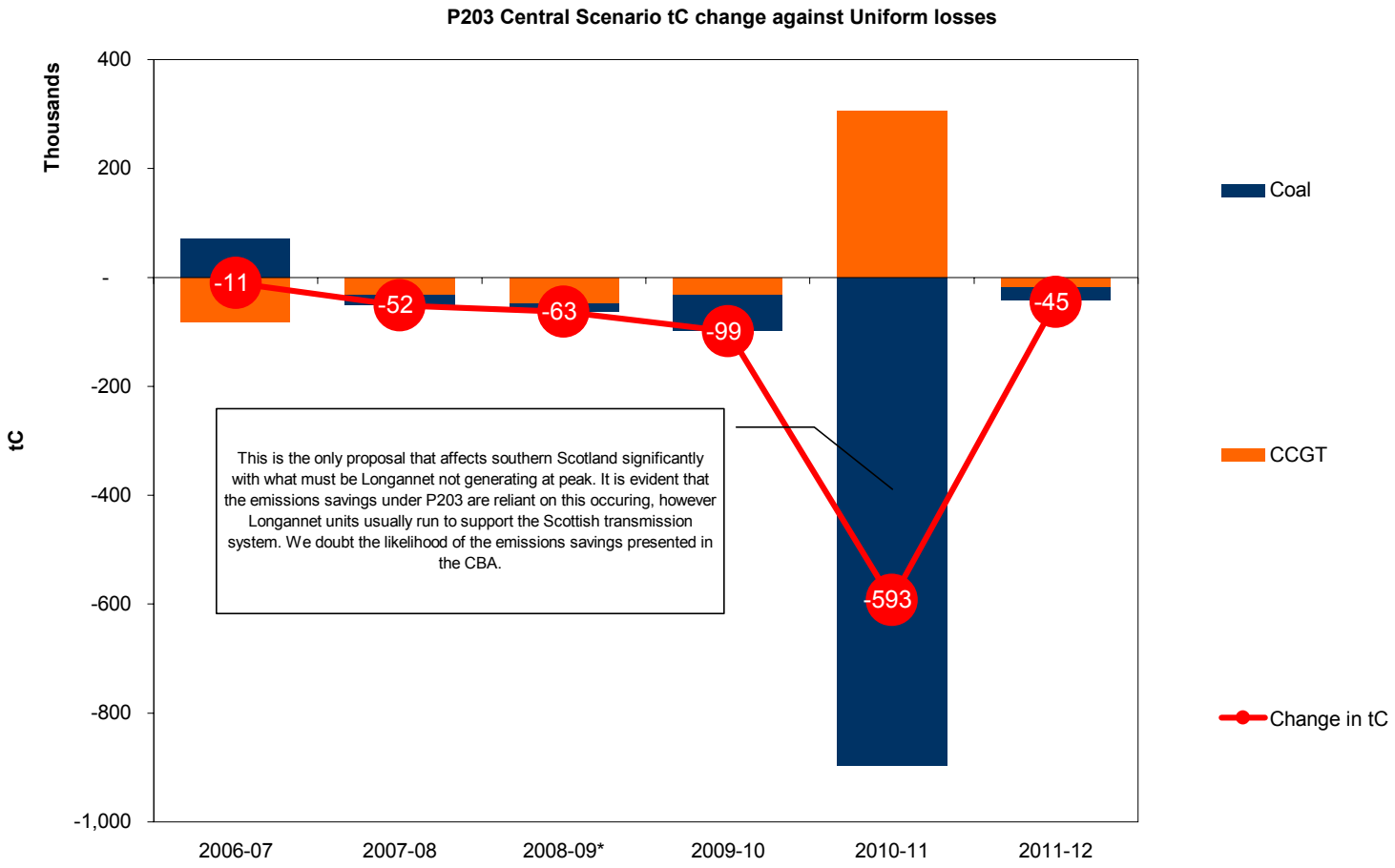


Figure 8: Carbon reductions under P198 GAS SCENARIO, by year, 2006-2011

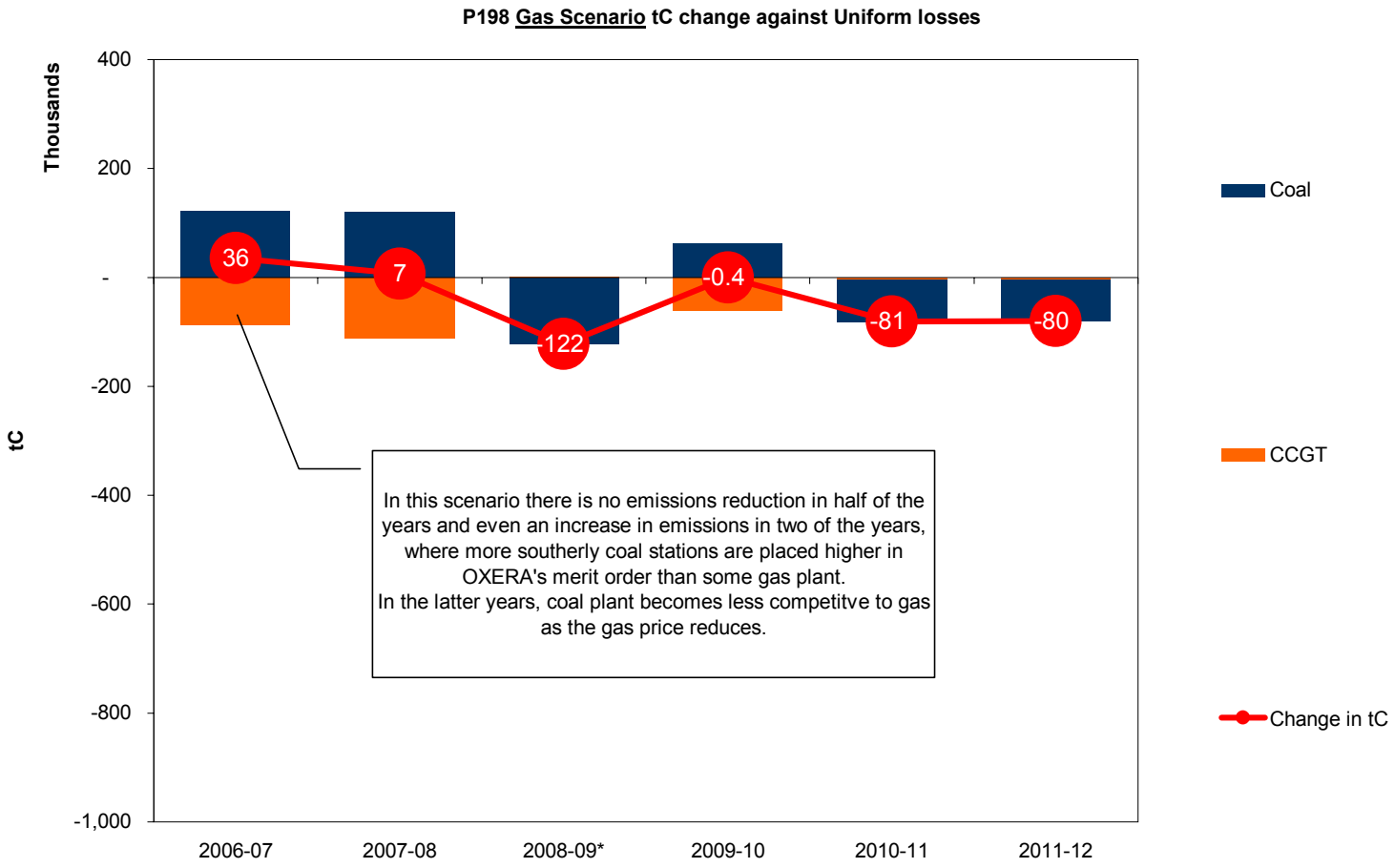
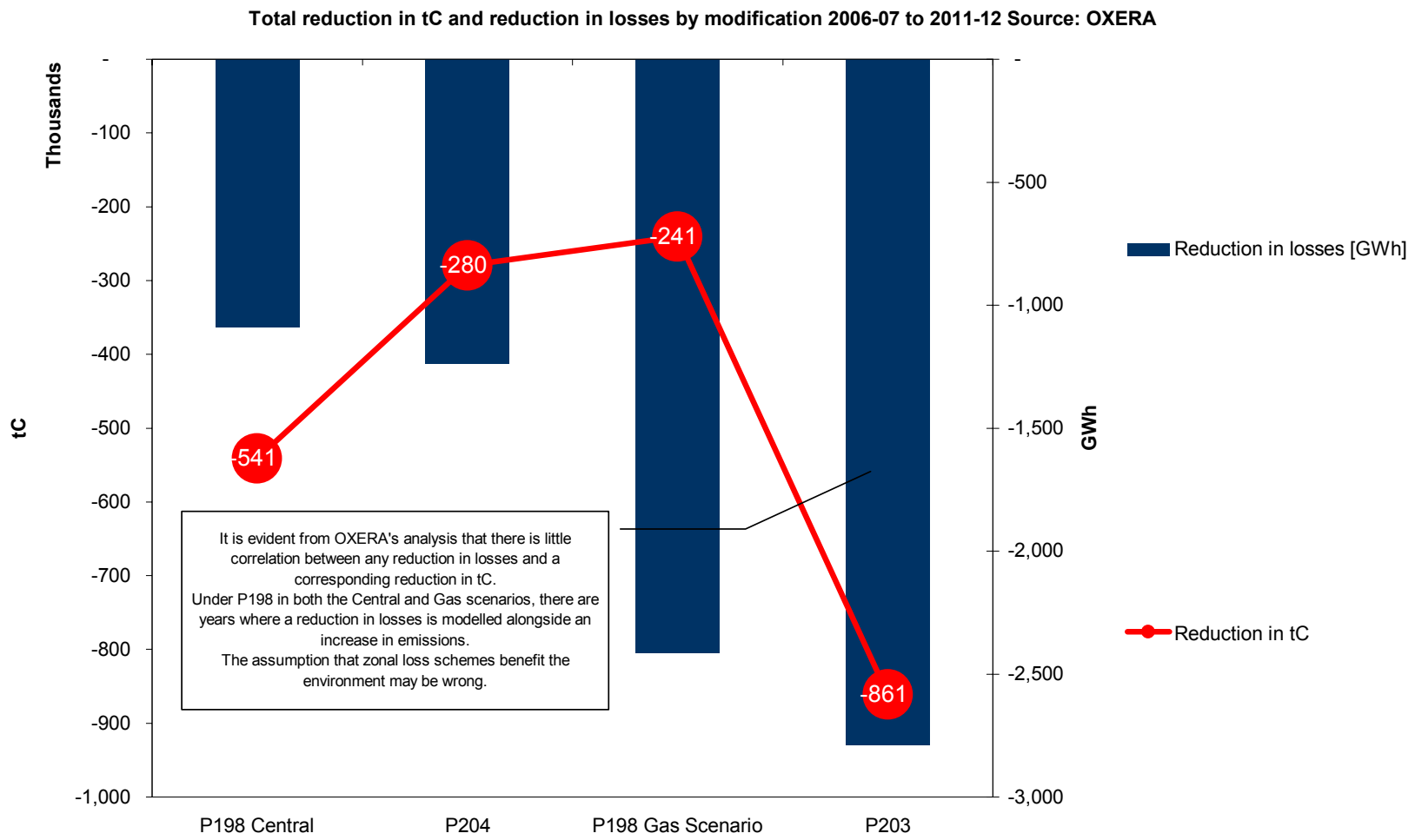


Figure 9: Total carbon reductions under, 2006-7 to 2011-12 for each modification



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?

Yes, we believe the process and timetable for the assessment is flawed because:

1. The RIA uses OXERA's cost benefit analysis data and not other sources. It includes data for periods that will have expired by the time the modification could be implemented.

2. There is no critique of the data in the RIA, nor is there extensive analysis on the level or reliability of re-despatch. In particular we would want to see further investigation into the levels of re-despatch in 2010-11.

3. EDF Energy requested that Ofgem and OXERA provide the changes in volume (GWh) by GSP Group and net reduction in losses by year, for the period 2012-13 to 2015/16. This has not been released.

4. There is a lack of consideration on the positive attributes of linear phasing under P198 alternative and P200.

5. Ofgem has not followed Cabinet Office guidelines by only allowing six weeks for this consultation.