

Appendix 2.1: Transmission losses

1. In this appendix we report parties' views on our provisional AEC and remedy on transmission losses as well as responses we received to our notice regarding assessment methodology for losses remedy.¹ Some of the parties' views described here are also reported in Section 2.

Parties' views on the AEC and proposed remedy

2. In the Remedies Notice we invited views on the effectiveness and proportionality of this remedy. We asked:
 - (a) what would be an appropriate methodology for pricing variable transmission losses on the basis of location;
 - (b) how variable transmission losses should be allocated between generators and suppliers and whether the 45/55 split was appropriate or efficiency could be further improved by changing this allocation;
 - (c) what would be the distributional impacts of the remedy and whether the CMA should take these into account in assessing the proportionality of the remedy; and
 - (d) how the remedy should be implemented.

Appropriate methodology for pricing variable transmission losses on the basis of location

3. Some parties suggested that an approach drawn from the BSC Modification Proposal P229 based on seasonal loss factors would be an appropriate methodology for pricing variable transmission losses on the basis of location.² However, EDF Energy noted that a historic assessment of losses might not be representative of the loss factor of the current year, even on a seasonal basis.³ It considered that the technical efficiency expected from locational pricing signals would be suboptimal.
4. InterGen noted that the trade-off between setting the transmission loss factor (TLF) seasonally and calculating TLFs per settlement period should be considered in determining a suitable methodology for setting the TLF.⁴

¹ CMA (2015), [Notice regarding assessment methodology for losses remedy – consultation on methodology and scenarios](#).

² E.ON response to Remedies Notice, p11; RWE response to Remedies Notice, p23. .

³ EDF Energy response to Remedies Notice, pp7 & 8, paragraph 1.4.

⁴ InterGen response to provisional findings and Remedies Notice, p4.

5. National Grid suggested that, in theory, an efficient and accurate set of locational price signals could be derived from the simultaneous optimisation of losses and constraints in real time. However, it conceded that to move directly to such a model would require a significant step change from the present arrangements and might create considerable uncertainties for market parties.⁵
6. While other parties did not suggest an appropriate methodology for pricing variable transmission losses on the basis of location, they indicated that a detailed design was needed to ensure cost-reflectivity⁶ (eg as regards the treatment of offshore transmission losses).⁷ Scottish Power indicated that an electrical flow analysis using valid technical data would be needed.⁸

Allocation of variable transmission losses between generators and suppliers

7. In relation to how the variable transmission losses should be allocated between generators and suppliers, the parties' responses were threefold.
8. While the majority supported the current 45/55 split,⁹ some parties¹⁰ indicated that the split should change. Other parties indicated that they were currently undecided on the issue on the basis that more up-to-date modelling should be undertaken and the belief that a review of the split should be deferred until after the implementation of a seasonal loss scheme.¹¹

The distributional impacts of the remedy and whether the CMA should have regard to take these into account in assessing the proportionality of the remedy

9. All of the parties recognised that the remedy would have distributional impacts. However, parties' responses differed as to the relative weight that should be given to the distributional impacts in assessing the proportionality of this remedy.
10. Both E.ON and RWE considered that distributional impacts among generators should not have an undue influence on whether or not the remedy was implemented, with RWE suggesting that the CMA should not take account of

⁵ National Grid response to Remedies Notice, p4.

⁶ Centrica response to Remedies Notice, pp41 & 47; Scottish Power response to Remedies Notice, p3.

⁷ Centrica response to Remedies Notice, pp41 & 47.

⁸ Scottish Power response to Remedies Notice, p3, paragraph 1.5.

⁹ E.ON response to Remedies Notice, p11; EDF Energy response to Remedies Notice, pp7 & 8, paragraph 1.6; National Grid response to Remedies Notice, p5; Good Energy response to Remedies Notice, p4.

¹⁰ Co-operative Energy response to Remedies Notice, pp1 & 2; Scottish Power response to Remedies Notice, p3, paragraph 1.7.

¹¹ EDF Energy response to Remedies Notice, pp7 & 8; RWE response to Remedies Notice, p25.

these impacts in its proportionality assessment of the remedy, given the evidence that the benefits to consumers would be materially positive.¹²

11. The majority of the parties considered that the distributional impacts of the remedy should be taken into account when assessing proportionality.¹³ SSE and Dong Energy also noted that updated modelling and analysis were needed in order to understand the distributional impacts properly.¹⁴ National Grid said that any changes to arrangements for allocating costs would have distributional impacts and that it agreed that they would be in the direction of transfers outlined in our provisional findings.¹⁵

Implementation/effectiveness of the remedy

12. The majority of the parties stated that should we be minded to pursue the remedy, it should be implemented by a recommendation to Ofgem to initiate a BSC modification, such that the relevant industry experts are given the opportunity to support the detailed assessment and development of such a change.¹⁶
13. Some of the parties believed that the CMA should implement the remedy directly via an order.¹⁷ Both E.ON and RWE suggested that it would be sensible to introduce the form of scheme which was developed under BSC Modification Proposal P229,¹⁸ since implementation would be relatively straightforward and Ofgem had already acknowledged that the proposal meets the BSC objectives.

Parties' views on the CMA's notice regarding assessment methodology for losses remedy – consultation on methodology and scenarios

14. On 8 December 2015, we published a consultation on the methodology, scenarios and underlying assumptions that our consultants, NERA Economic

¹² E.ON response to Remedies Notice, p11; RWE response to Remedies Notice, p25.

¹³ EDF Energy response to Remedies Notice, pp7 & 8, paragraph 1.7; Scottish Power response to Remedies Notice, pp3 & 4, paragraph 1.9; SSE response to Remedies Notice, pp16–18; Dong Energy response to Remedies Notice, pp1 & 2.

¹⁴ SSE response to Remedies Notice, p17; Dong Energy response to Remedies Notice, pp1 & 2.

¹⁵ National Grid response to Remedies Notice, p5.

¹⁶ EDF Energy response to Remedies Notice, p8, paragraph 1.8; Centrica response to Remedies Notice, p48; Scottish Power response to Remedies Notice, p4, paragraph 1.10; Dong Energy response to Remedies Notice, pp1 & 2; National Grid response to Remedies Notice, p5.

¹⁷ E.ON response to Remedies Notice, p12; RWE response to Remedies Notice, p26; Good Energy response to Remedies Notice, p4.

¹⁸ E.ON response to Remedies Notice, p10; RWE response to Remedies Notice, p23.

Consulting, proposed to undertake as part of a new cost-benefit analysis for the introduction of locational pricing for transmission losses.¹⁹

15. Specifically we encouraged parties to submit comments on both methodology and scenarios to assist the inquiry group in deciding how much evidential weight to put on this work. We also invited parties wishing to conduct their own analyses to submit their results to the CMA.
16. We received responses to our consultation from four of the Six Large Energy Firms (except for E.ON and Scottish Power), National Grid, Dong Energy and Ofgem. We summarise their views below.
17. Most parties provided responses on the methodology, scenario and assumptions proposed by NERA. SSE and Dong Energy also provided more general comments.
18. In particular, SSE noted that economic modelling of the type proposed in the notice could not be relied upon to simply provide the ‘right answer’; instead, it should only be considered as one part of the evidence towards better understanding the question of zonal losses. It said that as a relevant comparison, Ofgem’s decision regarding CMP213 was based on a broad spectrum of economic modelling, peer review and detailed economic analysis and that Ofgem did not rely on any single modelling result.
19. Dong Energy, instead, expressed concerns over whether the benefits of locational pricing could justify the added transaction costs and complexity. It added that the policy would have a disproportionate impact on smaller suppliers that might find it more difficult to precisely factor in the additional costs. It considered that this could result in additional risk premiums that would drive additional costs for consumers.
20. The majority of parties commented on the overall approach adopted by NERA and Imperial College London:
 - (a) Dong Energy considered that the modelling approach seemed appropriate for an initial evaluation of the effects of more accurately reflecting transmission losses in the costs to generators and consumers.
 - (b) RWE said that the approach adopted by NERA and Imperial College London provided a comprehensive basis for the assessment of a zonal transmission losses scheme.

¹⁹ CMA (2015), [Notice regarding assessment methodology for losses remedy – consultation on methodology and scenarios](#).

- (c) Ofgem noted the complexity and interactions between assumptions in modelling of this type and considered that small changes in assumptions could significantly change results. It encouraged the CMA to carefully consider all the assumptions made by NERA in its model.
- (d) SSE expressed a number of 'significant' concerns with the modelling methodology and assumptions proposed by NERA. It said that critical assumptions (eg simplified treatment of continental European interconnectors, Aurora's model to optimise the generation mix) affecting the modelling results were not clearly explained in the notice and that a thorough peer review of the modelling results was necessary in order to draw robust conclusions from NERA/Imperial College London models.
- (e) National Grid said that adopting an ex-ante approach to the derivation of transmission losses (such as P229 and the one proposed by the CMA), whilst having the benefit of being predictable, was likely to constrain the accuracy that could be achieved in capturing a given party's real-time impact on losses. It considered that losses would be sensitive to actual system conditions which would be subject to short-term variability due to wind production and power demand. Further it noted that inconsistencies between locational pricing for losses such as envisaged under P229 and new pricing zones might emerge as a result of the implementation of arrangements introduced under the EU's Capacity Allocation and Congestion Management regulation.
- (f) EDF Energy said that the exact form of the zonal transmission losses scheme proposed by the CMA was not clear, nor were the potential options being considered, for instance a seasonal or hourly approach. It added that as part of this new analysis it was important that sufficient information was provided to identify the estimated economic benefits for GB consumers, GB producers, the national economic benefit and impacts on the economic benefit for producers and consumers in the EU as a whole.
- (g) Additionally, EDF Energy considered a comprehensive cost-benefit analysis required estimation of the implementation costs of locational pricing for losses and that costs would differ depending on the approach being implemented (eg costs would be lower for a seasonal zonal implementation approach). Further, it said that it assumed and supported that alternative allocation of 'fixed' (as opposed to variable) losses should be outside the scope of the proposals and modelling.

21. We also received very detailed comments on the assumptions and scenarios proposed by NERA, which we report below:

- (a) Centrica said that if location Transmission Loss Multipliers were to be applied in practice, the outputs from the DTIM model (using 16 zones) needed to be translated into zones which were already recognised within the industry. Dong Energy and EDF Energy also noted this point and considered the cost-benefit analysis based on the DTIM model would not necessarily reflect benefit/impact of losses as they would occur in practice.
- (b) SSE said that electricity demand was likely to be overestimated by NERA as it did not appear to take account of rises in demand-side responses and embedded generation. EDF Energy said that the sensitivity of estimated benefits to different approaches and scenarios should be examined to ensure that conclusions from the modelling remained valid. In particular the sensitivity of results to the definition of zones, to different averaging methods for loss factor within zones and over time, and to future market scenarios with a different (higher) level of PV generation, a different (higher) level of interconnection and a different (more responsive) level of systematic demand should be examined.
- (c) Centrica said that it was important to use a well-defined and appropriate set of assumptions around the level and type of decentralised generation given its growing importance and its impact on transmission losses. EDF Energy considered it important that an assessment was made of the likely achievable behavioural change resulting from a locational losses scheme, and not just what is achievable in theory.
- (d) EDF Energy and Centrica considered that NERA should test the sensitivity of the model to a different/higher level of new interconnector capacity, particularly new capacity landed in South East England (Centrica).
- (e) RWE said that NERA should consider the potential impact of the closure of Longannet on the analysis of locational transmission losses.
- (f) RWE said that NERA should examine sensitivities of its power flow model to changes in injections or withdrawals of power across the GB transmission system, including with respect to new nuclear new build and CCS. A similar comment was made by Dong Energy, which suggested that the CMA needed to consider further scenarios and sensitivities related to the variations in the build out and future generation profiles of various low carbon technologies as part of its work. SSE, instead, considered that assumed plant capacity was already out of date.

- (g) SSE said that insufficient details about the model (eg exogenous and endogenous components) made it impossible to express an opinion on the validity of the approach taken. It also considered that insufficient details regarding key assumptions (eg fuel costs, the Irish market) were provided.
 - (h) SSE did not agree that the treatment of coal in NERA's model represented a conservative case as generation was likely to be overestimated by a large quantum.
 - (i) SSE submitted that the model was likely to overstate transmission losses given that the recent changes in government policy regarding renewable generation were not accounted for.
 - (j) RWE also identified areas where further work might be required to help the industry understand the outputs and potential impacts of a move to locational pricing. These included: analysis of different load flows across the representative period (eg winter peak, high and low wind effects); evolution over time of TLFs and Transmission Loss Multipliers derived from the model; and examination of the impact of zonal losses on different classes of generators.
22. Dong Energy, also expressed some views on the transparency of the model and the timing of our proposal. It said that stakeholders should have full access to any relevant inputs and models to ensure there was full transparency over the analysis. It added that given the complexity of locational losses and any modelling, it would like foresight and knowledge of the CMA's process and timeline as much as possible.