

## P350 'Introduction of a seasonal Zonal Transmission Losses scheme'

The Competition and Markets Authority has concluded that the absence of locational pricing for transmission losses creates an adverse effect on competition. In line with its determination, P350 will introduce a Transmission Loss Factor for each GSP Group for each BSC Season in order to allocate transmission losses on a geographical basis.



ELEXON recommends P350 is progressed to the Assessment Procedure for an assessment by a Workgroup

This Modification is expected to impact:

- Generators
- Suppliers
- Distribution System Operators
- The Transmission Company
- The Balancing Mechanism Reporting Agent (BMRA)
- The Central Data Collection Agent (CDCA)
- The Central Registration Agent (CRA)
- The Settlement Administration Agent (SAA)
- The BSC Auditor
- ELEXON

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## About This Document

This document is an Initial Written Assessment (IWA), which ELEXON will present to the Balancing and Settlement Code (BSC) Panel on 14 July 2016. The Panel will consider the recommendations and agree how to progress P350.

There are two parts to this document:

- This is the main document. It provides details of the Modification Proposal, an assessment of the potential impacts and a recommendation of how the Modification should progress, including the Workgroup's proposed membership and Terms of Reference.
- Attachment A contains the P350 Proposal Form.

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# 1 Why Change?

## What are transmission losses?

When electricity is transmitted over the Transmission System some energy is 'lost'. This lost energy is commonly referred to as 'transmission losses'. Transmission losses are comprised of two main elements:

- **Fixed losses** are losses which do not vary significantly with power flow. These arise in transformers (from magnetising the iron core) and overhead lines (dependent on voltage levels, length of line and climatic conditions).
- **Variable losses** arise due to the heat caused by the flow of current through transformers and lines. Variable losses increase with current flow (and associated power flow) and the length of the line through which the current flows.

'Total transmission losses' refers to the sum of fixed and variable losses. The total losses are the total energy lost from the Transmission System at any given time, which equates to the difference between total metered generation and total metered demand.

## How are transmission losses allocated?

A Transmission Loss Multiplier ( $TLM_{ij}$ ) is a factor used to scale each BM Unit's Metered Volumes in Settlement. A Transmission Loss Multiplier is generated for each individual non-Interconnector BM Unit<sup>1</sup> in each individual Settlement Period based on two further parameters, a Transmission Loss Factor ( $TLF_{ij}$ ) and a Transmission Losses Adjustment ( $TLMO_j$ ). The calculation for this is as follows:

$$TLM_{ij} = 1 + TLF_{ij} + TLMO_j$$

The Transmission Loss Factor is applied to BM Units on an individual basis. This is used to apply a differential allocation of some or all transmission losses, meaning each individual BM Unit could have its own specific Transmission Loss Factor applied to it. This parameter is currently set to zero for all BM Units and so has no effect in practice.

The Transmission Losses Adjustment is used to uniformly adjust all generation and demand to apportion transmission losses (excluding any already allocated through the Transmission Loss Factor mechanism) between BM Units. This ensures an exact allocation of the actual level of total losses in a given Settlement Period. Two separate Transmission Losses Adjustment values are calculated for each Settlement Period, one to be applied to BM Units in delivering Trading Units ( $TLMO_j^+$ ) and one to be applied to BM Units in offtaking Trading Units ( $TLMO_j^-$ ). The Transmission Losses Adjustment calculation includes a constant factor  $\alpha$  (alpha), which determines the proportion of the total transmission losses to be uniformly allocated across all BM Units in delivering Trading Units. The remaining proportion is uniformly allocated across BM Units in offtaking Trading Units. This constant is currently set at 0.45, meaning:

- 45% of total losses are allocated across all BM Units in delivering Trading Units; and
- 55% of total losses are allocated across all BM Units in offtaking Trading Units.

<sup>1</sup> The Transmission Loss Multiplier for all Interconnector BM Units is set to 1 in all Settlement Periods. This change was introduced by Approved Modification [P278 'Treatment of Transmission Losses for Interconnector Users'](#) to comply with European legislation.



### Further information

The calculations for the allocation of transmission losses can be found in [BSC Section T 'Settlement and Trading Charges'](#).

Further information is also available on the [Losses](#) page of our website.

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Since the Transmission Loss Factor for all BM Units is currently zero, each BM Unit's Transmission Loss Multiplier is determined solely by the Transmission Losses Adjustment values. This means two Transmission Loss Multipliers are applied in each Settlement Period, one to all BM Units in delivering Trading Units (which scales volumes down in magnitude) and one to all BM Units in offtaking Trading Units (which scales volumes up in magnitude). The appropriate multiplier is then applied to each BM Unit's Metered Volumes, depending on the direction of its Trading Unit in that Settlement Period. Each Party's overall allocation of transmission losses is therefore dependent on the Metered Volumes across all of its BM Units.

The current arrangements result in all fixed and variable transmission losses being allocated to Parties on a uniform, non-locational basis in proportion to each Party's Metered Volumes. This allocation of transmission losses does not take account of the extent to which individual Parties contribute to such losses.

## What previous Modifications have been raised?

Several BSC Modifications have been raised in the past to examine the allocation of transmission losses.

In 2002 and 2003, Modifications [P75 'Introduction of Zonal Transmission Losses'](#), [P82 'Introduction of Zonal Transmission Losses on an Average Basis'](#), [P105 'Introduction of Zonal Transmission Losses on a Marginal Basis without Phased Implementation'](#) and [P109 'A Hedging Scheme for Changes to TLF in Section T of the Code'](#) were progressed to put forward various options. In 2003, the Authority elected to approve P82. However, this decision was overturned in 2004 following a judicial review and P82 was not implemented.

In 2005 and 2006, four further Modifications were progressed: [P198 'Introduction of a Zonal Transmission Losses scheme'](#) (based on P82), [P200 'Introduction of a Zonal Transmission Losses scheme with Transitional Scheme'](#), [P203 'Introduction of a seasonal Zonal Transmission Losses scheme'](#) and [P204 'Scaled Zonal Transmission Losses'](#).

Following a Regulatory Impact Assessment, the Authority issued a statement noting it was minded to approve P203. However, in 2008 the Authority timed out on making a decision following a further judicial review.

In 2008, [P229 'Introduction of a seasonal Zonal Transmission Losses scheme'](#) was raised based on the P203 solution. The P229 Workgroup developed an Alternative Modification based on P204. The Authority subsequently rejected P229 in 2011.

## What has the CMA concluded?

The Competition and Markets Authority (CMA) initiated a review of the energy markets in 2014 at the request of Ofgem. Its final report was published in June 2016.

One of the areas the CMA considered was the absence of locational pricing for transmission losses. It noted that losses are higher the greater the distance electricity needs to be transported, and that the costs of these losses vary considerably by geographical location. For example, in an area with relatively low levels of demand and high levels of generation, consuming electricity will be associated with low losses and generating electricity will be associated with high losses. The CMA believed that the current system of uniform charging for transmission losses creates a system of cross-subsidisation that distorts competition between generators and is likely to have both short- and long-term effects on generation and demand.



### **The CMA's energy market investigation**

The overall findings of the CMA's energy market investigation are summarised in its [Final Report](#).

Its views on the effects on competition of the absence of locational pricing for transmission losses are contained within [Appendix 5.2 of its report](#).

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As part of its investigation, the CMA carried out a modelling exercise to assess the costs that are likely to arise as a result of the absence of locational charges for transmission losses. It concluded that the results were similar, overall, to those from previous modelling exercises and showed that total efficiency costs vary between around £130m and £160m over the period 2017 to 2026, with these results robust to a variety of assumptions regarding fuel input costs. It also found a moderate environmental cost arising from the absence of locational charges for transmission losses in the form of increased sulphur dioxide (SO<sub>2</sub>) and mono-nitrogen oxide (NO<sub>x</sub>) emissions, valued at between around £1m and £15m over the same period.

The CMA's overall conclusion was that the absence of locational pricing for losses is a feature of the wholesale electricity market in Great Britain that gives rise to an adverse effect on competition. It believed this is likely to distort competition between generators and to have both short- and long-term effects on generation and demand.

The CMA's remedy to this issue is to introduce locational charging for transmission losses in Great Britain. It believes this will improve the accuracy with which the avoidable costs of variable transmission losses are borne by those who cause them, thus reducing waste, reducing the cost of electricity generation, and ultimately reducing the total bill for end customers. The design of its remedy will be identical in its technical aspects to the P229 Proposed Modification, including notably the use of semi-marginal (rather than full marginal) Transmission Loss Factors<sup>2</sup>. To mandate this, the CMA will impose an order on National Grid, as the System Operator, (and make amendments to National Grid's Transmission Licence conditions) that will require it to:

- ensure that, at all times, imbalance charges (and specifically the estimated volumes of imbalance) are calculated such as to be locationally sensitive to transmission losses;
- ensure that the imbalance charges are calculated, as of 1 April 2018, on the basis of the principles set out in the order;
- assume responsibility for the calculation of the Transmission Loss Factors if the BSC Company (BSCCo) and/or any other agent appointed for that purpose fails to perform its duties within this context; and
- raise a BSC Modification to modify the BSC in line with the P229 Proposed Modification.

## What is the issue?

The CMA is mandating that, in order to implement its remedy for the absence of locational pricing for transmission losses, National Grid raises a BSC Modification in line with the P229 Proposed Modification. National Grid has therefore raised this Modification accordingly.

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<sup>2</sup> The P229 solution proposed a 'semi marginal' scheme in that it would only allocate variable losses locationally, and would therefore retain the existing uniform allocation of fixed losses.

### Proposed solution

[P350 'Introduction of a seasonal Zonal Transmission Losses scheme'](#) was raised by National Grid on 4 July 2016. To implement the CMA's remedy, it proposes to progress the P229 Proposed Modification as put forward in the [P229 Final Modification Report](#).

Under this solution, 14 Transmission Loss Factor zones would be created based on the existing 14 Grid Supply Point (GSP) Groups. A Network Mapping Statement will be established to document the allocation of BM Units to zones. One Transmission Loss Factor value will be calculated per zone per BSC Season. These values would be published three months prior to the start of each BSC Year, and would be based on historical data from a preceding 12-month period (the Reference Year). The Transmission Loss Factor for a given zone would be applied to all non-Interconnector BM Units allocated to that zone for all Settlement Periods in the relevant BSC Season. A new BSC Agent, the Transmission Loss Factor Agent, would be created to perform these calculations, and the calculation would be documented in a Load Flow Model Specification document.

Transmission Loss Factor values would only be used to allocate variable losses. A scaling factor of 0.5 would be applied to the marginal Transmission Loss Factor values, which would have the effect of ensuring that the volume of losses allocated through the Transmission Loss Factor mechanism is approximately equal to the total volume of variable losses. Fixed losses would continue to be allocated via the Transmission Losses Adjustment values, and the calculation and application of these values, including the value of  $\alpha$ , would remain unchanged from currently.

Interconnector BM Units will be exempt from these arrangements, and will continue to be allocated a Transmission Loss Multiplier of 1 in all Settlement Periods.

### Applicable BSC Objectives

The Proposer believes that P350 would better facilitate the following Applicable BSC Objectives:

- **Applicable BSC Objective (a)** as this Modification is required to ensure that National Grid can comply with the relevant provisions that the CMA will introduce to its Transmission Licence.
- **Applicable BSC Objective (b)** as the CMA's analysis has demonstrated that applying a locational factor into transmission loss allocation leads to lower total losses and thus increases the efficient, economic and co-ordinated operation of the Transmission System.
- **Applicable BSC Objective (c)** as the CMA's assessment concluded this change would remove distortions in competition that exist under the current uniform allocation of transmission losses.



#### What are the Applicable BSC Objectives?

(a) The efficient discharge by the Transmission Company of the obligations imposed upon it by the Transmission Licence

(b) The efficient, economic and co-ordinated operation of the National Electricity Transmission System

(c) Promoting effective competition in the generation and supply of electricity and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity

(d) Promoting efficiency in the implementation of the balancing and settlement arrangements

(e) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency [for the Co-operation of Energy Regulators]

(f) Implementing and administrating the arrangements for the operation of contracts for difference and arrangements that facilitate the operation of a capacity market pursuant to EMR legislation

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## Implementation approach

The CMA is mandating that its remedy, and hence P350, is implemented on **1 April 2018**. In its final report, the CMA recognises Parties' preference for aligning the Implementation Date with their contract rounds. It also recognises that P229 (and other previous zonal transmission losses Modifications) had an implementation lead time of 12 months from the point of Authority approval. This means that an Authority decision on P350 needs to be received by 31 March 2017.

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### 3 Areas to Consider

In this section we highlight areas which we believe the Panel should consider when making its decision on how to progress this Modification Proposal, and which a Workgroup should consider as part of its assessment of P350. We recommend that the areas below form the basis of a Workgroup's terms of reference, supplemented with any further areas specified by the Panel.

#### What has changed since P229?

The CMA has stated that its remedy for the absence of locational pricing for transmission losses should be identical in its technical aspects to the P229 Proposed Modification.

We have identified that the P229 solution, which was assessed and developed in 2009, did not take into account High Voltage Direct Current (HVDC) transmission circuits. However, one such connection, the HVDC Western Link<sup>3</sup>, is expected to become live in 2017. We recommend that the P350 Workgroup should:

- clarify the implications of using the P229 solution (which does not include any specific provisions for HVDC transmission circuits) to model power flows on a Transmission System that does include HVDC circuits; and
- consider whether there are changes to the detail of the P229 solution that would allow the impact of HVDC transmission circuits to be more appropriately reflected in Transmission Loss Factor values.

Given the CMA's decision that this Modification should be identical in its technical aspects to the P229 Proposed Modification, we recommend that the Panel seeks confirmation from the CMA as to whether the low-level detail of the P229 technical solution could be amended to take into account HVDC connections. The response from the CMA on this matter should be incorporated into the terms of reference for the P350 Workgroup.

At the same time, we recommend that the Panel confirms with the CMA two other points of legal drafting that this Modification will need to take account of:

- Since the progression of P229, [P278 'Treatment of Transmission Losses for Interconnector Users'](#) has exempted Interconnector Users from the allocation of transmission losses; this change was needed to comply with European legislation. The CMA references this in its report<sup>4</sup>. The legal text for P350 will therefore need to account for this.
- The CMA's remedy gives National Grid powers of 'step-in' if ELEXON or the Transmission Loss Factor Agent fails to complete the required calculation of zonal Transmission Loss Factors. The legal text for P350 will therefore need to include provisions to support this.

<sup>3</sup> The HVDC Western Link is an offshore HVDC circuit linking Hunterston in North Ayrshire to Deeside in Flintshire. It is intended to reduce transmission constraints that sometimes limit the power flow from Scotland to England.

<sup>4</sup> Paragraph 6.121 footnote 66 of the [CMA's Final Report](#).

## What analysis should and should not be undertaken?

Two pieces of analysis were commissioned by the P229 Workgroup from external expert consultants in 2008-2009. These were to:

- perform load flow modelling to assess what values the Transmission Loss Factors (and thereby the Transmission Loss Multipliers) would likely take for each GSP Group, and the sensitivity of these values to certain solution decisions; and
- perform a cost-benefit analysis on the introduction of locational transmission losses.

We consider that some of the load flow modelling tasks undertaken for the P229 Workgroup should be repeated under this Modification. We believe that it would be helpful to Parties, in identifying and preparing for the impacts on their organisations, to see the Transmission Loss Factor and Transmission Loss Multiplier values calculated for each zone using the full proposed methodology and up-to-date input data. This is equivalent to Task 1 under the P229 load flow modelling, and will give Parties an indication of the values that will apply to them upon implementation. It has been seven years since the P229 modelling was undertaken, and the CMA's recent cost-benefit analysis did not calculate values at a GSP Group level.

We believe that it would also be useful to conduct two or three sensitivity scenarios, in which the Transmission Loss Factor calculation is repeated with one or more changes to the input data. We recommend that one of these scenarios is the inclusion of the HVDC Western Link for the reasons explained earlier. We propose to agree the other scenarios with the P350 Workgroup.

We believe that the other load flow modelling tasks undertaken for P229 should not be repeated for P350. This is because these tasks either:

- supported the consideration of different solutions (which would not now deliver the CMA's mandated remedy);
- delivered the same or similar results as previous Modifications (from which the learnings are therefore publicly available)<sup>5</sup>; and/or
- were relevant to areas included in the cost-benefit analysis (see below).

We believe that the P350 Workgroup should not commission a cost-benefit analysis as part of its assessment. The CMA noted that its cost-benefit analysis produced broadly similar conclusions to the previous sets of analysis commissioned by both the P229 Workgroup and Ofgem for P229. As the CMA is mandating the introduction of P350, we believe it would be an inappropriate use of BSC Parties' resources to commission any further analysis in this area. This does not prevent P350 Workgroup members and BSC Parties drawing on the various previous cost-benefit analyses in support of their views against the Applicable BSC Objectives.

We therefore recommend that the Panel instructs the P350 Workgroup, through its terms of reference, not to undertake any further cost-benefit analysis and to commission only those areas of load flow modelling analysis set out above.

We also recommend that the Panel seeks confirmation from Ofgem that this analysis will be sufficient for the Authority to be able to make a final determination on P350. We note

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<sup>5</sup> The relevant Workgroups commissioned load flow modelling analysis for P82, P198/P203 and P229.

that, as part of deciding on its remedies, the CMA has already taken account of Ofgem's wider statutory duties.

## Areas to consider

The table below summarises the areas we believe the P350 Workgroup should consider as part of its assessment of P350:

Areas to Consider
What has changed since P229 that needs to be accounted for in the P350 solution?
What changes are needed to BSC documents, systems and processes to support P350 and what are the related costs and lead times?
Are there any Alternative Modifications?
Does P350 better facilitate the Applicable BSC Objectives than the current baseline?

We note that the last three items are standard questions the Panel includes as part of any Modification Workgroup's terms of reference.

The CMA has already considered implementation costs, based on the P229 costs and on further submissions made to it from Parties. However, given the amount of time since P229 was progressed and to ensure a smooth implementation, we will need to conduct a fresh Impact Assessment to confirm the required BSC implementation activities under today's baseline.

Due to the wording of the CMA's final report and remedy, it is unlikely that there can be any Alternative Modification that would better facilitate the Applicable BSC Objectives than the Proposed Modification. We therefore recommend that the Panel encourages the P350 Workgroup to constrain its solution considerations to only those points of lower-level technical detail that need developing to support P350 (such as HVDC connections, P278 and the inclusion of National Grid's 'step in' powers).

## Activities to perform

As part of its assessment of P350, we believe the P350 Workgroup will therefore need to undertake the following activities only:

- The load flow modelling analysis set out above, based on a reduced scope from that conducted by the P229 Workgroup;
- An Impact Assessment to identify the activities required to implement P350 under the BSC; and
- The Workgroup's Assessment Procedure Consultation.

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## 4 Proposed Progression

### Next steps

We recommend that P350 is progressed to the Assessment Procedure for assessment by a Workgroup.

Neither we nor the Proposer believe that P350 would meet the Self-Governance Criteria as P350 would have a material impact on consumers (Criterion (a)(i)) and competition (Criterion (a)(ii)). We therefore believe that P350 will require an Authority decision.

Both we and the Proposer believe that P350 should be considered exempt from the ongoing Significant Code Review (SCR) on faster switching, as this Modification does not relate to the areas this SCR is examining.

### Workgroup membership

We believe that the P350 Workgroup should be comprised of members of the P229 Workgroup, experts in transmission losses and other interested parties.

Given that this Modification needs to align with the CMA's order and changes to National Grid's licence, we recommend that the Panel encourages Ofgem to attend the Workgroup meetings and also invites the CMA to attend.

### Load flow modeller

We recommend that an external consultant undertakes the load flow modelling on behalf of the P350 Workgroup. BSC Section F2.4.15 allows ELEXON to procure any support for a Modification Workgroup as required, including the use of external consultants and advisors, provided that any material expenditure is approved by the Panel. The Modification Workgroup terms of reference sets the threshold for such approval at £50,000.

The cost of the P229 load flow modelling was £56,258. Taking inflation into account, this equates to approximately £64,000 today. We expect the actual cost for the P350 load flow modelling to be less than this since we are recommending a reduced analysis scope. However, as we do not yet have certainty of the exact cost, we ask the Panel to approve expenditure of up to £64,000 as part of this IWA. This avoids either delaying the start of the modelling or needing to hold an ad-hoc Panel meeting to agree the exact expenditure. We will inform the Panel of the actual cost once known.

### Timetable

We believe that a six month Assessment Procedure timetable is needed for P350. This is to allow the load flow modeller enough time to complete its work and for the Workgroup to consider the results of this before it issues its Assessment Procedure Consultation. This will also allow enough time for the Workgroup to consider all the other areas in Section 3 and complete all necessary Impact Assessments.



### What are the Self-Governance Criteria?

A Modification that, if implemented:

(a) is unlikely to have a material effect on:

- (i) existing or future electricity consumers; and
- (ii) competition in the generation, distribution, or supply of electricity or any commercial activities connected with the generation, distribution, or supply of electricity; and
- (iii) the operation of the national electricity transmission system; and
- (iv) matters relating to sustainable development, safety or security of supply, or the management of market or network emergencies; and
- (v) the Code's governance procedures or modification procedures; and

(b) is unlikely to discriminate between different classes of Parties.

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Proposed Progression Timetable for P350	
Event	Date
Present Initial Written Assessment to Panel	14 Jul 16
Workgroup Meeting(s)	W/B 25 Jul 16
Perform Load Flow Modelling	08 Aug 16 – 14 Oct 16
Impact Assessment	02 Sep 16 – 23 Sep 16
Workgroup Meeting	W/B 17 Oct 16
Assessment Procedure Consultation	04 Nov 16 – 25 Nov 16
Workgroup Meeting	W/B 05 Dec 16
Present Assessment Report to Panel	12 Jan 17
Report Phase Consultation	13 Jan 17 – 31 Jan 17
Present Draft Modification Report to Panel	09 Feb 17
Issue Final Modification Report to Authority	10 Feb 17

We note that, to achieve the CMA's mandated Implementation Date for P350, the progression of this Modification needs to run in parallel with the CMA's development of its order and Transmission Licence drafting. Based on discussions with the CMA, and its final report, we anticipate that these will be implemented by the end of 2016, in time for the P350 Final Modification Report. We will make all efforts to liaise with National Grid, Ofgem and the CMA as P350 progresses.

## 5 Likely Impacts

### Impact on BSC Parties and Party Agents

Party/Party Agent	Potential Impact
Generators	BSC Parties, in particular generators and Suppliers, will be allocated transmission losses based on the GSP Groups their BM Units are situated in following implementation. Parties may also need to make changes to their own systems to support non-zero Transmission Loss Factors.
Suppliers	
Distribution System Operators	Distribution System Operators will need to provide distribution network data to support the implementation and annual calculation of the Transmission Loss Factors.

### Impact on Transmission Company

The Transmission Company will need to provide network data to support the implementation and annual calculation of the Transmission Loss Factors. It will also need to support the Network Mapping Statement process.

### Impact on BSCCo

Area of ELEXON	Potential Impact
Procurement	ELEXON will need to procure a new BSC Agent (a Transmission Loss Factor Agent) and a new service provider (a Load Flow Model Reviewer) as part of the implementation project. P229 also required use of an escrow agent to hold a copy of the Load Flow Model.
BSC Operations	Amendments to other operational activities will be needed, and new operational activities introduced, to support the calculation and use of non-zero Transmission Loss Factors.

### Impact on BSC Systems and processes

BSC System/Process	Potential Impact
BMRA	BSC Systems may need amending to account for changes in the Transmission Loss Factors – this will be determined as part of the assessment of P350.
CDCA	
CRA	
SAA	

### Impact on BSC Agent/service provider contractual arrangements

BSC Agent/service provider contract	Potential Impact
Transmission Loss Factor Agent	Contractual arrangements for this new BSC Agent role will need to be put in place.

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Impact on BSC Agent/service provider contractual arrangements	
BSC Agent/service provider contract	Potential Impact
Load Flow Model Reviewer	Contractual arrangements for this new service provider will need to be put in place.
BSC Auditor	The scope of the BSC Audit will need to be extended to include the activities of the new BSC Agent and service provider.

Impact on Code	
Code Section	Potential Impact
Section E	Changes are expected to be required to these Code sections, in line with the P229 legal text.
Section H	
Section T	
Section V	
Section X Annex X-1	
Section X Annex X-2	

Impact on Code Subsidiary Documents	
CSD	Potential Impact
BSCP01	Changes are expected to be required to these documents.
BSCP15	
BSCP38	
BSCP41	
Communications Requirement Document	
BSC Agent Service Descriptions	New BSC Agent documents will be required for the Transmission Loss Factor Agent.
BSC Agent User Requirement Specifications	Changes may be required to relevant existing BSC Agent documents.
Load Flow Model Specification	A new Code Subsidiary Document will be established to cover the load flow modelling method.
Network Mapping Statement	A new Code Subsidiary Document will be established to cover the allocation of BM Units to zones.

Other Impacts	
Item impacted	Potential Impact
BSC Guidance Notes	BSC Guidance Notes relating to transmission losses will need to be updated.

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## 6 Recommendations

We invite the Panel to:

- **AGREE** that P350 progresses to the Assessment Procedure;
- **AGREE** the proposed Assessment Procedure timetable;
- **AGREE** the proposed membership for the P350 Workgroup;
- **AGREE** the Workgroup's Terms of Reference and the activities it is and is not to perform;
- **APPROVE** the expenditure for the load flow modelling exercise; and
- **AGREE** to seek confirmation from Ofgem and the CMA on the relevant points noted in this IWA.

# Appendix 1: Glossary & References

## Acronyms

Acronyms used in this document are listed in the table below.

Acronym	
Acronym	Definition
BMRA	Balancing Mechanism Reporting Agent ( <i>BSC Agent</i> )
BSC	Balancing and Settlement Code ( <i>industry Code</i> )
BSCCo	BSC Company ( <i>Code Administrator, ELEXON</i> )
CDCA	Central Data Collection Agent ( <i>BSC Agent</i> )
CMA	Competition and Markets Authority
CRA	Central Registration Agent ( <i>BSC Agent</i> )
GSP	Grid Supply Point
HVDC	High Voltage Direct Current
IWA	Initial Written Assessment
SAA	Settlement Administration Agent ( <i>BSC Agent</i> )
SCR	Significant Code Review

## External links

A summary of all hyperlinks used in this document are listed in the table below.

All external documents and URL links listed are correct as of the date of this document.

External Links		
Page(s)	Description	URL
3	BSC Sections page on the ELEXON website	<a href="https://www.elexon.co.uk/bsc-related-documents/balancing-settlement-code/bsc-sections/">https://www.elexon.co.uk/bsc-related-documents/balancing-settlement-code/bsc-sections/</a>
3	Losses page on the ELEXON website	<a href="https://www.elexon.co.uk/reference/technical-operations/losses/">https://www.elexon.co.uk/reference/technical-operations/losses/</a>
3, 8	P278 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p278-treatment-of-transmission-losses-for-interconnector-users/">https://www.elexon.co.uk/mod-proposal/p278-treatment-of-transmission-losses-for-interconnector-users/</a>
4	P75 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p075-introduction-of-zonal-transmission-losses/">https://www.elexon.co.uk/mod-proposal/p075-introduction-of-zonal-transmission-losses/</a>
4	P82 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p082-introduction-of-zonal-transmission-losses-on-an-average-basis/">https://www.elexon.co.uk/mod-proposal/p082-introduction-of-zonal-transmission-losses-on-an-average-basis/</a>

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4	P105 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p105-introduction-of-zonal-transmission-losses-on-a-marginal-basis-without-phased-implementation/">https://www.elexon.co.uk/mod-proposal/p105-introduction-of-zonal-transmission-losses-on-a-marginal-basis-without-phased-implementation/</a>
4	P109 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p109-a-hedging-scheme-for-changes-to-tlf-in-section-t-of-the-code/">https://www.elexon.co.uk/mod-proposal/p109-a-hedging-scheme-for-changes-to-tlf-in-section-t-of-the-code/</a>
4	P198 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p198-introduction-of-a-zonal-transmission-losses-scheme/">https://www.elexon.co.uk/mod-proposal/p198-introduction-of-a-zonal-transmission-losses-scheme/</a>
4	P200 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p200-introduction-of-a-zonal-transmission-losses-scheme-with-transitional-scheme/">https://www.elexon.co.uk/mod-proposal/p200-introduction-of-a-zonal-transmission-losses-scheme-with-transitional-scheme/</a>
4	P203 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p203-introduction-of-a-seasonal-zonal-transmission-losses-scheme/">https://www.elexon.co.uk/mod-proposal/p203-introduction-of-a-seasonal-zonal-transmission-losses-scheme/</a>
4	P204 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p204-scaled-zonal-transmission-losses/">https://www.elexon.co.uk/mod-proposal/p204-scaled-zonal-transmission-losses/</a>
4, 6	P229 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p229-introduction-of-a-seasonal-zonal-transmission-losses-scheme/">https://www.elexon.co.uk/mod-proposal/p229-introduction-of-a-seasonal-zonal-transmission-losses-scheme/</a>
4, 8	The CMA's Energy Market Investigation Final Report via the Assets Publishing Service website	<a href="https://assets.publishing.service.gov.uk/media/576d3f15e5274a0da9000092/energy_market_final_report.pdf">https://assets.publishing.service.gov.uk/media/576d3f15e5274a0da9000092/energy_market_final_report.pdf</a>
4	Appendix 5.2: Locational pricing in the electricity market in Great Britain via the Assets Publishing Service website	<a href="https://assets.publishing.service.gov.uk/media/576bcac940f0b652dd0000a8/appendix-5-2-locational-pricing-fr.pdf">https://assets.publishing.service.gov.uk/media/576bcac940f0b652dd0000a8/appendix-5-2-locational-pricing-fr.pdf</a>
6	P350 page on the ELEXON website	<a href="https://www.elexon.co.uk/mod-proposal/p350/">https://www.elexon.co.uk/mod-proposal/p350/</a>

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