

# P350 FREQUENTLY ASKED QUESTIONS (FAQS)

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We have put together some FAQs on the key aspects of P350 'Introduction of a seasonal Zonal Transmission Losses scheme'.

## General

### 1. What is P350?

P350 introduces locational pricing for transmission losses. The basic principle is that the greater the distance electricity needs to be transported, the higher the transmission losses. The cost of these losses varies by geographical location.

P350 introduces a Transmission Loss Factor (TLF) for each TLF Zone (a Zone is the geographic area covered by a GSP Group with a 1:1 relationship) for each BSC Season in order to allocate transmission losses on a geographical basis.

### 2. Where do I find more information?

A description of the solution can be found in the [Final Modification Report](#). This provides:

- A summary of the justification for the change, solution, impacts and costs, implementation and the Panel's recommendation.
- Background and history to the Modification (quite a lot for P350), summary of what transmission losses are and how they are currently calculated under the BSC, and the Competition and Markets Authority's (CMA) conclusions.
- Description of the solution (based on P229 'Introduction of a seasonal Zonal Transmission Losses scheme') including the additional solution elements to allow for regulatory and technical developments since P229 was developed (treatment of Interconnectors, treatment of HVDC circuits connected to the Transmission System, National Grid's Step In provisions, and the interaction with Contracts for Difference (CFDs). This section also includes a summary of the alternatives discussed by the Workgroup.
- Results of the impact assessment for P350, including impacts on Parties, Party Agents, ELEXON, National Grid, BSC central systems, and the BSC and Code Subsidiary Documents.
- Summary of the Workgroup discussions, Assessment and Report Phase Consultation responses and the Workgroup's and Panel's conclusions.

You can also find more detailed descriptions and processes in the Code Subsidiary Documents:

- [TLFA Service Description](#)
- [Load Flow Model Specification](#)

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## 2. Let's Get Technical

### 1. What are nodes?

The BSC talks about three types of 'nodes': nodes, slack nodes and Nodes.

A '**node**' is a point on an electrical network at which a power flows on to or off the network can occur or where two or more circuits meet.

A '**slack node**' is a node that acts for the purposes of a load flow model , as a sink/source for power flow surpluses/deficits arising from inaccuracies in the load flow model. This type of node also acts as the reference node for calculating the phase angle of the power flow between each pair of adjacent nodes in a load flow model.

A '**Node**' is a node on the AC Transmission System.

### 2. What is the Load Flow Model?

A load flow model is mathematical model of an electrical network, which represents power flows between pairs of adjacent nodes on the network, and from which nodal TLFs can be determined for each node for given power flows.

The Load Flow Model is a load flow model operated by the TLF Agent (TLFA) in accordance with the [Load Flow Model Specification](#).

### 3. What is the Load Flow Model Specification?

The [Load Flow Specification](#) is a document that details how the Load Flow Model shall model the AC Transmission System. It describes the data inputs, assumptions and approximations to make and the requirements for the Load Flow Model. The Load Flow Model Specification is a new Code Subsidiary Document.

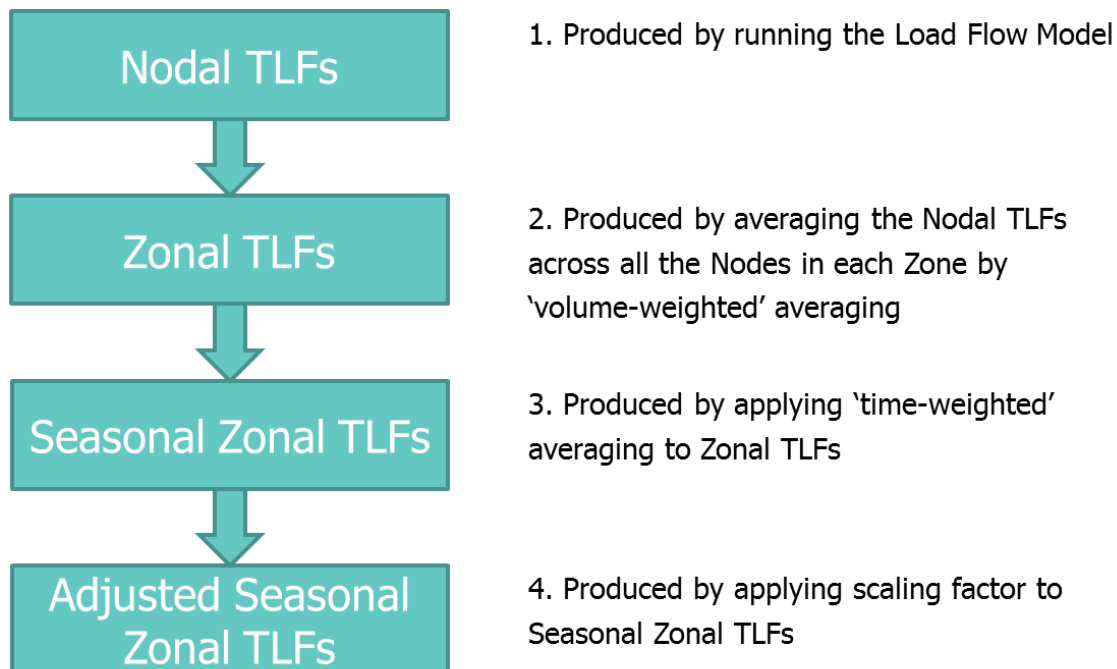
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### 4. How does P350 calculate Transmission Loss Factors?

The calculation of Transmission Loss Factors is a multi-step process, requiring input from National Grid, Distribution Network Operators (DNOs), the Central Data Collection Agent (CDCA) and ELEXON. A more detailed description can be found in section three of the [Final Modification Report](#) and in Annex T-2, paragraph eight of the P350 legal text (attachment C in the Final Modification Report).

It can be summarised as:



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### 5. How will P350 impact me?

If you are a BSC Party with Metered Volumes you will be impacted by P350. This includes Suppliers and generators. P350 does not affect the values of BM Unit Metered Volume (QMij) – these will still be values at the point of delivery onto the Transmission System. However, these BM Unit Metered Volumes will be adjusted for TLM before being used in settlement i.e. the energy volumes used in the calculation of Energy Imbalance Charges is  $QMij * TLMij$  (not QMij).

#### Suppliers & Generators

As part of the analysis conducted for the P350 Assessment Procedure some load flow modelling was conducted. Although there is no guarantee that the outputs of this modelling will match the 'live' TLFs for the first operational year (which was published in December 2017), they may help you to prepare for the impact P350 may have on your business. The output from this modelling 'P350 Historic TLF, TLMO & TLM Value Analysis' is available on the [P350 page](#).

The modelling considered three tasks to aid the Workgroup during the Assessment Phase:

- Task 1: Baseline scenario based on the P229 solution using latest available year of input data at time of modelling (1 June 2015 to 31 May 2016).

Please note data the first operational year, 1 April 2018 to 31 March 2019, is based on a Reference Year of data from 1 September 2016 to 31 August 2017. As such, the TLMs and TLFs published for the P350 modelling are indicative only and do not provide you with actual values that is used in Settlement from 1 April 2018.

- Task 2: Baseline scenario with Interconnector flows excluded from the Zonal average. The P350 solution adopted this approach to Interconnectors.
- Task 3: Baseline scenario with Inclusion of HVDC Western Link. Two options were considered. The P350 solution adopted the method used in Option A: HVDC circuits connected to the Transmission System should be modelled as sources and sinks at the relevant Nodes.

Unless the HVDC Western Link becomes operational before 31 August 2017, the TLFs produced under Task 2 are the most indicative values. ELEXON is exploring the possibility of providing future forecasts of transmission loss data. See the question 'When will TLFs be available?' below for more information.

#### Distributors

If you are a DNO you are required to submit Distribution Network Data to BSCCo by 5 October each year. See question 'What is Distribution Network Data' below for more details. This must be done in accordance with Annex T-2 paragraph 6. You are only required to provide this if you have offshore transmission circuits connected to your network.

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### 6. How does P350 interact with Contracts for Difference?

There are two mechanisms within the CFD where transmission losses are used.

CFD generator's daily payments are calculated using its metered volumes. Where the metered volumes are recorded by Settlement Meters, these volumes will be adjusted for transmission losses using the BSC calculated TLM value in CFD Settlement (conducted by [EMRS](#)). The Low Carbon Contracts Company (LCCC), who is the counter-signatory to the CFDs, confirmed that the effect of P350 will be felt by CFD generators in its daily payments and that this is the intent of the CFD drafting.

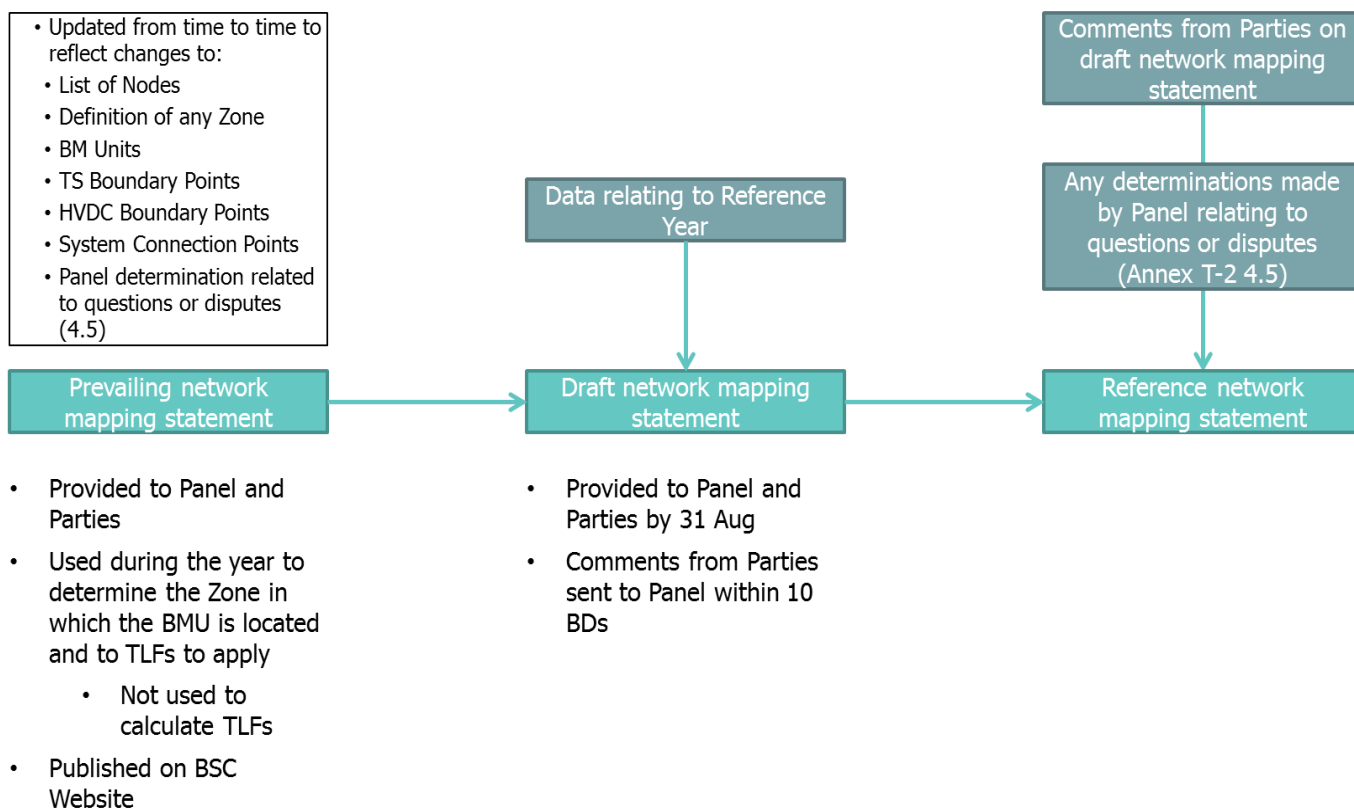
Certain CFD generators (generators who are transmission-connected and/or Licensable, but not those who are embedded Exempt Export) also have their strike prices adjusted annually for the average annual transmission losses allocated to generators. This creates unintended consequences on the strike price calculations, as the strike price adjustment calculations are based on  $TLMO^+_j$ , which will no longer be equal to TLM under P350. Attachment B of the Final Modification Report contains the materiality analysis of the impact of this issue on CFDs.

The CMA's Order and hence P350 introduces a Transmission Loss Factor Adjustment value ( $TLFA_S$ ) that effectively neutralises any unintended consequences of P350 on the LCCC's strike price adjustment calculations, by adjusting  $TLMO^+_j$  without impacting BSC Parties or BSC Settlement.

The CMA may direct the Transmission Loss Factor Adjustment value ( $TLFA_S$ ) to be zero, where LCCC confirm that they are able to neutralise the impact of P350 on the strike price adjustment calculations without the need for the Transmission Loss Factor Adjustment value ( $TLFA_S$ ). More details on this interaction can be found in the [Final Modification Report](#) and Annex T-2 paragraph 9 of the P350 legal text.

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### 7. What is the difference between the Prevailing, Draft Reference and Approved Reference Network Mapping Statements?



The Prevailing, Draft and Approved Network Mapping Statements are available on the BSC Website. The statement contains:

- List of Volume Allocation Units and the associated Nodes
- The Zone in which the Node lies
- List of BMUs and associated Zone

### 8. What is Transmission Network Data?

Each year by 5 October, National Grid is required to send to BSCCo the Transmission Network Data and the HVDC Boundary Data. This data will be used by BSCCo to compile the Network Mapping Statement.

The Transmission Network Data identifies each pair of adjacent Nodes on the Transmission System (assumed to be an intact network which disregards any outages) and the associated resistance and reactance between the Nodes.

The HVDC Boundary Data is the estimate of the flow of Active Energy to or from each HVDC Boundary.

Both the Transmission Network Data and the HVDC Boundary Data are compiled by National Grid in accordance with any relevant assumptions from the Load Flow Model Specification and operational knowledge. This data cannot be disputed by Parties, other than for manifest errors.

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### 9. What is Distribution Network Data?

Each year by 5 October DNOs must provide BSCCo the Distribution Network Data (assumed to be an intact network which disregards any outages). This data shows power flows from Offshore Transmission Connection Points to Grid Supply Points on its network. Each Node that represents an Offshore Transmission Connection Point is known as an Offshore Transmission Connection Point Node. The data is compiled in accordance with any relevant assumptions from the Load Flow Model Specification and operational knowledge. Any questions or dispute with the data will be determined by the Panel after consultation with the relevant Distributor, Lead Parties and National Grid.

Only Distributors who have offshore transmission circuits connected to their network need to provide this data.

### 10. What does the TLF Agent (TLFA) do?

The TLFA is a new BSC Agent, who will be responsible for operating the new TLF Determination service. In short the TLFA will calculate the TLFs. This involves running the Load Flow Model in accordance with the Load Flow Model Specification.

### 11. What does the Model Reviewer do?

The Panel appoints an independent expert to review the Load Flow Model in accordance with the Model Reviewer terms of reference (which must be approved by the Panel). The Model Reviewer will be responsible for checking that the TLFA has run the Load Flow Model in accordance with the Load Flow Model Specification. The Model Reviewer must report its findings to the Panel.

The Model Reviewer role is in addition to and not instead of the BSC Auditor.

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### 12. How are the Sample Settlement Periods selected?

The Panel approves the Sample Settlement Periods, which can be changed, once set, if necessary. BSCCo needs to provide the Sample Settlement Periods to the TLFA, National Grid and CDCA and publish on the BSC website by 31 August each year.

The TLFA determines TLFs for each BSC Year by reference to Nodal TLFs. Nodal TLFs are calculated by looking at Sample Settlement Periods in the Reference Year. A Reference Year is divided into a number of different periods, known as Load Periods, and representing (according to Panel) typically different levels of load on the Transmission System defined by:

- Time of day
- Day of week
- Season
- Other factors

Each Settlement Period in the Reference year must fall into only one Load Period. The Reference Year is divided into:

- EFA Days (23.00 – 23.00), and group the EFA Days within each week into Working and Non-Working Days. This has the effect of dividing the BSC Year into c. 104 blocks of consecutive EFA Days (each week will have a block with five Working Days and a block with two Non-Working Days, except where there are Bank Holidays).
- Split each of these blocks of days into six time bands, corresponding to the six four-hour blocks within the EFA Day. Each time band within each block of days will be treated as a Load Period, so there will be c. 624 Load Periods within the Reference Year.
- Randomly select Sample Settlement Periods from each Load Period. We propose to randomly select one Settlement Period from both EFA Block 1 and EFA Block 2, but two Settlement Periods from each of the four remaining EFA Blocks. This will increment the sample representativeness of all the Settlement Periods in the population, and will better represent demand over peak times when it is more variable. At the same time it reduces the risk of skewing the results by always picking an 'average' SSP within each LP and EFA Block.

### 13. What happens if a BM Unit changes Zones?

There is very limited scope for a BM Unit changing Zones. Supplier BM Units and Interconnector BM Units could only change Zones if the GSP Groups were changed, for example increasing the number of GSP Groups or changing the GSP Group geographical area. This would likely be subject to a much bigger Modification.

Non-Supplier BM Units would be liable to the changes described above. They could also change if the Node which represent or best represents them was to change. For example, National Grid may make changes to its Transmission System resulting in the power flows for a Plant or Apparatus being assigned to a different Node. In order for this type of change to be picked up National Grid would have to provide updated Transmission Network Data to BSCCo, who would update the prevailing network mapping statement accordingly. The impacted BM Unit(s) would be assigned an existing TLF. The TLFs would not be re-calculated as a result of this change. TLFs are only calculated annually and would only be re-calculated if a manifest area was identified.



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### 3. Implementation

#### 1. When were the new and amended Code Subsidiary Documents and other Configurable Items for P350 published?

P350 required the following documents to be created or updated:

#### **New Code Subsidiary Documents for P350**

Document	Document Type	Impact	P350 Changes Approved By	Owned By	Consultation Period	Decision Date	Effective Date
TLFA Service Description (new)	Service Description (CSD – Cat 2)	New document to describe the new TLFA service	Panel	ISG – TBC	4 April 2017 to 21 April 2017	11 May 2017	12 May 2017
Load Flow Model Specification (new)	Load Flow Model Specification (CSD – Cat 2)	New document to specify the load flow model for the AC Transmission System	Panel	ISG - TBC	4 April 2017 to 21 April 2017	11 May 2017	12 May 2017

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### Amended BSCPs

Document	Impact	P350 Changes Approved By	Owned By	Consultation Period	Decision Date	Proposed Effective Date
BSCP01	Amend to reflect the derivation of non-zero TLFs and their use in Settlement calculations.	ISG / SVG	ISG / SVG	4 April 2017 to 21 April 2017	ISG: 23 May 2017 SVG: 30 May 2017	29 June 2017
BSCP11	Add TLFA as a BSC Agent in Footnote 13 and definitions	TDC	TDC	4 April 2017 to 21 April 2017	TDC: 1 June 2017	29 June 2017
BSCP15	Amend to include the process for allocating four Adjusted Seasonal Zonal TLF values to each BM Unit in the applicable BSC Year.	ISG / SVG	ISG / SVG	4 April 2017 to 21 April 2017	ISG:23 May 2017 SVG: 30 May 2017	29 June 2017
BSCP25	Amend to include the process for updating the Network mapping Statement when a new Transmission System Boundary Point, Grid Supply Point, GSP Group or Distribution Systems Connection Point is registered	ISG	ISG / SVG	4 April 2017 to 21 April 2017	ISG:23 May 2017	29 June 2017

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### Amended other BSC Configurable Items and Reporting Catalogue

Document	Impact	P350 Changes Approved By	Owned By	Consultation Period	Decision Date	Proposed Effective Date
NETA IDD Part 2 Word & Spreadsheet	Amend CDCA-I062 to change date of receipt of sample settlement periods and load periods from "5 October in the current year" to "31 August in the current year"  Add CDCA-I063, which is specified in the IDD Part 2 spreadsheet, but not the word doc.	ISG	ISG	4 April 2017 to 21 April 2017	23 May 2017	29 June 2017
Reporting Catalogue	Amend to reflect new/amended reporting requirements  Need to publish indicative ETLMO data.	ISG / SVG	ISG / SVG	4 April 2017 to 21 April 2017	ISG: 23 May 2017 SVG: 30 May 2017	29 June 2017

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### Amended Service Descriptions

Document	Impact	P350 Changes Approved By	Owned By	Consultation Period	Decision Date	Proposed Effective Date
CDCA Service Description	Amend paragraph 26.1(b) to change "05 November" to "05 October".  The title of Paragraph 26 "Support derivation of TLF" could be clarified to ""Support derivation of Transmission Loss Factors".	ISG	ISG	4 April 2017 to 21 April 2017	23 May 2017	29 June 2017
CRA Service Description	Amend definition in 5.1.1(k) to change "Transmission Loss Factor (TLF)" to Adjusted Seasonal Zonal TLF (ATLFZs)	ISG	ISG	4 April 2017 to 21 April 2017	23 May 2017	29 June 2017
SAA Service Description	Amend 2.7.3 to remove reference to TLFs being zero	ISG	ISG	4 April 2017 to 21 April 2017	23 May 2017	29 June 2017

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### Amended User Requirement Specifications

Document	Impact	P350 Changes Approved By	Owned By	Consultation Period	Decision Date	Proposed Effective Date
CDCA URS	The CDCA F038 Reported Aggregated Volumes function will be reinstated to provide the Metered Volume data for the Load Periods and sample Settlement Periods.	ISG	ISG	4 April 2017 to 21 April 2017	23 May 2017	29 June 2017
CRA URS	Amend to add functionality for loading the Adjusted Seasonal Zonal TLF (ATLFZs)	ISG	ISG	4 April 2017 to 21 April 2017	23 May 2017	29 June 2017
SAA URS	Amend F006 to remove reference to TLFs being zero	ISG	ISG	4 April 2017 to 21 April 2017	23 May 2017	29 June 2017

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### Other non-Configurable Items (not Code Subsidiary Documents as per BSC or Category 1 or 2 documents as per BSCP40)

Document	Impact	P350 Changes Approved By	Owned By	Consultation Period	Decision Date	Proposed Publication Date
Load Flow Model Reviewer Terms of Reference (new)	A new document that sets out the terms of reference for the model reviewer	Panel	Panel	n/a	n/a	n/a
Load Flow Model Report (new)	A document that the model reviewer will produce and provide to the Panel in accordance with its terms of reference.	Panel	Panel	n/a	n/a	n/a

The **Network Mapping Statement** will be used to allocate TLFs to BM Units and to operate the load flow model. ELEXON will provide a Draft Network Mapping statement for the Panel (and each Party) by 31 August each year. An approved Network Mapping Statement will be published by 19 October each year. We expect to take the first Draft Network Mapping Statement for Panel approval on 12 October 2017. The Draft Network Mapping Statement will be consulted on in August, with exact dates to be published later in the year. The Network Mapping Statement will be compiled based on a methodology that will also be taken to Panel for approval and subject to industry consultation.

The **Sample Settlement Periods** and Loads will be published by 31 August. These will be produced in accordance with a methodology that will be subject to Panel approval consultation. The methodology will go to the Panel for decision in May and will be published by 31 August.

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We originally identified impacts on the following documents, but no longer believe they need to be updated for P350:

- BSCP38
- BSCP41
- BMRA Service Description
- BMRA URS
- TLFA URS
- Communications Requirement Document

## 2. When will TLFs be available?

TLFs will be published by 31 December each year for the forthcoming year (1 April to 31 March), alongside indicative TLMs. The indicative TLMs will be produced by applying the coming year's TLF values to the historic Reference Year. The indicative TLMs will not be used in Settlement. They are produced to aid Parties. The actual TLMs will be calculated in accordance with the Settlement timetable using the relevant TLFs and TLMOs (which can only be calculated after the event using Metered Volumes) and included in the SAA-I014s.

At its meeting on 19 January, the Panel decided that ELEXON should explore the requirements for, and feasibility of, providing BSC Parties with a tool or service for forecasting/modelling Transmission Loss Factors. ELEXON will conduct a short survey with industry to gather views and requirements on what they would like before presenting the results and next steps to the ISG.

If you are trying to understand how P350 will impact your company please refer to ['How will P350 impact me?'](#) question above.

## Need more information?

For more information please contact the **BSC Service Desk** at [bscservicedesk@cqi.com](mailto:bscservicedesk@cqi.com) or call **0370 010 6950**.

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