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# Modification Proposal P80 - First Consultation

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### e Related Documents

| Reference | Document |
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| Reference 1 | Initial Written Assessment of Modification Proposal P80 (P080IB) |

### f Intellectual Property Rights and Copyright

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# 1 INTRODUCTION

## 1.1 General

This Consultation Document has been prepared by ELEXON Ltd, on behalf of the Modification Group, in accordance with the terms of the Balancing and Settlement Code ('BSC'). The BSC is the legal document containing the rules of the balancing mechanism and imbalance settlement process and related governance provisions. ELEXON is the company that performs the role and functions of the BSCCo, as defined in the BSC.

An electronic copy of this document can be found on the BSC website, at www.ELEXON.co.uk

The document supports the first consultation process in the definition of Modification Proposal P80. It is based on the first Modification Group meeting held on 27 May 2002.

## 1.2 Structure of Document

The document is structure as follows:

- Section 2 provides background to the Modification Proposal P80;
- Section 3 provides an overview of the current process for intertrips;
- Section 4 details the first Modification Group meeting; and
- Annex A contains the questions for industry consultation.

# 2 DETAILS OF MODIFCATION PROPOSAL P80

## 2.1 Modification Proposal P80

Modification Proposal P80 was raised by British Energy Power & Energy Trading Ltd on 01 May 2002. This proposal aims to obligate the Transmission Company to issue a deemed Bid-Offer Acceptance when a BM Unit is forced to deviate from its Final Physical Notification due to faults on the Transmission System outside its control. System faults could lead to a participant being left out of balance and exposed to energy imbalance prices by preventing a BM Unit from exporting or importing notified contracted energy.

BSC Section Q5.1.5 details the current process for dealing with intertrips[1], and the Modification proposes that BSC Section Q5 could be redrafted to include all other "system faults".

The justification for Modification Proposal P80 is that without an obligation on the Transmission Company to issue a Bid-Offer Acceptance when a system fault affects the imports or exports of a BM Unit, there is a material risk of being left out of balance. Removal of this risk would remove an unmanageable risk from participants and also expose the Transmission Company to the economic consequences of Transmission System failures.

[1] Intertripping - is defined in the Grid Code as '(a) the tripping of circuit-breaker(s) by commands initiated from Protection at a remote location independent of the state of the local Protection; or (b) Operational Intertripping.

## 2.2 Background

Both the NETA Programme and the Authority have in the past noted that there is a requirement to resolve the general concept of Transmission Access Rights. Under the current arrangements, no firm access rights are conferred, except to the extent that BM Units submitting Bids and Offers into the Balancing Mechanism may be issued with Acceptances and may thereby be compensated, for lack of access, in those particular circumstances where such an Acceptance can be issued.

A number of Ofgem documents covering the subject of Transmission Access Rights and the treatment of transmission "system faults" are referenced by the Proposer in the Proposal (Reference 1). These references suggest that the issue of Transmission Access requires further industry discussion and that the current treatment of transmission faults and failure under NETA (as proposed before go-live and now implemented) is not an acceptable long-term solution. Furthermore, in the event of failure participants should be entitled to compensation at market prices.

## 2.3 Terms of Reference for Modification Proposal P80

P80 was submitted to a two-month Definition Procedure to enable the definition of a number of issues in relation to the scope and definition of Transmission System fault. P80 must be assessed against the Terms of Reference, independent of any other Modification Proposal, or initiatives outside the governance of the BSC. However, it was noted that P12 'Reduction in Gate Closure from 3.5 hours to 1 hour' will be implemented on the 02 July 2002 (Settlement Period 31), and the examples in this document assume that Gate Closure is 1 hour.

The Panel agreed to the Terms of Reference, and the Definition Procedure should consider and attempt to define an agreed approach for the criteria determining;

- Modification Proposal P80 only includes consideration of Transmission System faults;
- What constitutes a "system fault"?;
- The duration of compensation for a "system fault";
- What is the level (MW) of production/consumption loss due to "system faults" based on, for example, initial Physical Notification, Final Physical Notification or contract level?;
- The interaction with the Grid Code requirement for Physical Notifications to “represent the User’s best estimate of expected input or output of Active Power” (Grid Code BC1.4.2);
- The extent that the metering system can identify the impact on SVA BM Units (Current GSP Groups each act as local “risk-sharing” arrangement);
- The price (£/MWh) of compensation for a "system fault" during the Balancing Mechanism Window Period and beyond the "wall";
- The potential impact of widespread disruption to the Transmission System on BSUoS charges and imbalance prices;
- Who are the potential beneficiaries: Generators, Suppliers, embedded Generators?; and

- The acceptable timescale for notifying a "system fault" and then subsequently determining/taking any necessary actions.

## 2.4 Modification Proposal P87

A separate Modification Proposal P87 'Removal of market risk associated with operation of a Generator intertrip scheme' has been raised by National Grid. This proposal addresses a related issue to P80 by proposing a new intertrip methodology to that stated in BSC Section Q5.1.5. P87 seeks to enable the Transmission Company to issue post-event contract notifications due to the operation of an intertrip. Therefore, P87 aims to remove the problems associated with the current method of calculating compensation due to the operation of intertrips, namely the possibility of "windfall gains" and the setting of extreme negative values for System Sell Price.

It is important to note that P87 and P80 should each be progressed in isolation. However, if P87 is progressed and agreed in advance of P80 this would have an impact on the baseline against which P80 is being considered, and in particular the idea of extending the principles in Q5.1.5 to handle all other system faults.

An electronic copy of Modification Proposal P87 can be found on the BSC website, at www.ELEXON.co.uk.

# 3 CURRENT PROCESS FOR INTERTRIPS

As stated in Modification Proposal P80 'BSC Section Q5.1.5 already contains obligations in relation to the operation of intertrips, and the proposal argues that Section Q5 should be extended to include all other system faults outside the control of the BM Unit lead party'.

The Transmission Company has advised that the intertrip process considered in BSC Q5.1.5 has not been invoked during the time since NETA Go-Live and therefore compensation for intertrips has not occurred. The Generator would notify the Transmission Company of the event and if the conditions of the Grid Code are met the Transmission Company will issue a deemed Acceptance to cover the intertrip. The Transmission Company has indicated there are currently no Balancing Services Agreements that relate to intertrips implemented as a connection condition.

The current process for intertrips in BSC Section Q5.1.5 and Grid Code BC2.5.2.3 'Post Gate Closure Process', states that when an intertrip occurs that is not due to the fault of a BM Unit then a single Acceptance Volume Pair (BSC) / Bid-Offer Acceptance (Grid Code) will be treated as having been issued (see section 3.1). The Bid/Offer Prices against which deemed Acceptances may be issued may themselves be extreme and never would have been commercially used by the Transmission Company. This creates the potential for very high balancing costs and "windfall" payments being made to the BM Unit concerned[2].

As P59 established there is no BSC obligation for the Transmission Company to issue an Acceptance beyond the "wall" (i.e at the end of the Balancing Mechanism Window Period), and therefore the use of a single acceptance appears to rule out compensation beyond the wall. However, the Balancing Principles Statement (BPS) includes a process to honour a BM Unit's dynamics beyond the wall, and return a BM Unit to its Physical Notification level (see section 3.2).

[2] This has resulted in the Transmission Company raising P87 to replace this approach.

The relevant paragraphs from BSC Section Q, Grid Code BC2, and Balancing Principles Statement are listed below.

## 3.1 Relevant Sections from the BSC and the Grid Code

BSC Section Q5.1.5

> The operation of an intertrip in the circumstances described in BC2.5.2.3 of the Grid Code shall be treated as being an Acceptance falling within paragraph 5.1.3(b), and for the purposes of determining Acceptance Data pursuant to paragraph 5.3 in relation thereto there shall (subject to paragraph 5.3.3) be a single Acceptance Volume Pair for which the 'from' and 'to' times are the time of operation of the intertrip and the 'to' volume is the MW level implied by the operation of the intertrip.

BC2.5.2.3

> **BM Participants** must only **Synchronise** or **De-Synchronise BM Units** at the times indicated to **NGC** (within a tolerance of +/- 5 minutes) or unless that occurs automatically as a result of intertrip schemes or **Low Frequency Relay** operations or an **Ancillary Service** pursuant to an **Ancillary Services Agreement**. For a **BM Unit** in relation to which the intertrip has been instructed to be switched into service under BC2.10 in order to protect the **NGC Transmission System**, if it is **De-Synchronised** due to an operation of the intertrip that is not due to a fault at the **BM Unit** then a **Bid-Offer Acceptance** will be treated as having been issued. This will reflect the operation of the intertrip in order to form the **Bid-Offer Acceptance** data to be given to the **BMRA** under the **BSC**.

BC2.10.1

> **NGC** may, from time to time, need to issue other instructions or notifications associated with the operation of the **NGC Transmission System**.

BC2.10.2

> Such instructions or notifications may include**:**
> Intertrips
> (a) an instruction to switch into or out of service an **Operational Intertripping** scheme;

BC2.10.3

> Where an instruction or notification under BC2.10.2 (a), (c) or (d) results in a change
> to the input or output level of the **BM Unit** then **NGC** shall issue a **Bid-Offer** Acceptance or Emergency Instruction as appropriate.

An intertrip is a trip switch on a Generator linked to a protection circuit on a network. However, there is no definition for intertrip in the Grid Code, but there are a number of related definitions.

Definitions from the Grid Code

> **Intertripping** - (a) the tripping of circuit breaker(s) by commands initiated from Protection at a remote location independent of the state of the local Protection; or (b) Operational Intertripping.
>
> **Operational Intertripping** - the automatic tripping of circuit-breakers to prevent abnormal system conditions occurring, such as voltage, overload, System instability, etc after the tripping of other circuit-breakers following power System fault(s) which include System to Generating Unit, System to CCGT Module and System to demand intertripping schemes.

  

**Protection** - The provision for detecting abnormal conditions on a system and initiating fault clearance or actuating signals or indications.

## 3.2 Balancing Principles Statement

P59 'The Acceptance of Bids and Offers to Honour a BM Unit's Dynamic Parameters Beyond the Balancing Mechanism Window' was raised to address the issue of BM Units with long dynamics being exposed to imbalance beyond the wall. The Authority's provisional thinking for P59 stated that changes to the operation of the Balancing Mechanism should be incorporated in the Balancing Principles Statement as this document represents a complete set of principles and criteria used by the Transmission Company when selecting Balancing Services. Therefore, the Balancing Principles Statement (BPS) includes the process to honour a BM Unit's dynamic parameters and return a BM Unit to its Physical Notification at the end of the Balancing Mechanism Window Period.

### Beyond the Wall Actions

On occasion, National Grid will issue BOAs that extend to the end of the current BM window ('the wall'). On these occasions, National Grid will issue BOAs to return the BMU to its PN level in line with submitted dynamics (subject to no change in the prevailing BMU data). Further details of these circumstances are provided below. National Grid continually assess the various factors that affect system conditions. This may lead to a requirement for a continuing increase or decrease in BMU output, from it's PN level, some time in the future that extends beyond the end of the current Balancing Mechanism window ('beyond the wall'). In order to reflect the relevant BMU dynamics, National Grid may be required to issue a further BOA "beyond the wall". System Conditions and special circumstances will also be taken account of in these situations. Beyond the wall actions will be taken on a BMU specific basis, subject to the following information:

- indicative Physical Notifications
- dynamic data
- indicative Bid/Offer prices
- export and import limits
- location of BMU
- reactive capability
- frequency response performance
- system conditions
- predicted weather conditions
- ancillary service contracts

The intention to issue a further BOA "beyond the wall" will be communicated to the relevant BMU Transaction Point in cases where a current BOA has been issued that extends up to the end of the current Balancing Mechanism window ('the wall'). The intention to issue a BOA "beyond the wall" will be based on the submitted dynamic and price data for all anticipated BOA timescales. It is assumed that all dynamics and prices remain as submitted for all anticipated BOA timescales. For the avoidance of doubt, if the intention is to extend a BOA beyond the wall, indicative prices, dynamics and PN for periods beyond the wall must not change from those that were used in assessing the requirement for the BOA. This intention to issue a BOA "beyond the wall" will be translated into an actual BOA after the start of each applicable gate closure period. Prior to the BOA being issued, all BMU data will be checked against that used during the initial assessment. Any material changes made

  

from the data used during the initial assessment will lead to a review of the requirement.

**Cancelling of BOAs that extend beyond the wall**
The unwinding of BOAs that are issued beyond the wall will be in line with that of standard Bid/Offer acceptances. BOAs that are issued beyond the wall will be cancelled by returning the BMU to its PN in line with submitted dynamics taking into consideration any applicable price changes.

# 4 P80 MODIFICATION GROUP (P80MG) DISCUSSION 27 MAY 2002

This Modification contains a number of complex issues. Whilst the underlying principle may be simple (i.e. a system fault may lead to compensation), it is necessary to ensure that the mechanics of such a process are feasible and do deliver on this principle. In this case there are a number of factors to be balanced, and interactions between these factors. At this stage the P80MG have identified the factors and some of the interactions will be clear.

## 4.1 What constitutes a "system fault"?

The Transmission Company's representative proposed a physical definition that related to de-energised busbars at the point of connection to the Transmission System. However, a more generic definition relating to the non-availability of the Transmission System was considered to be more appropriate. Non-availability would not necessarily mean wholesale disruption in generation or supply.

The definition of a fault should not include intertrips, System Constraints and Black Start, as there are already processes to compensate in these different circumstances. It was also discussed whether the wording 'instantaneous' or 'post-fault action' should be included in the definition, but P80MG regarded the definition below to be a good starting point.

> "Non-availability of the Transmission System which brings about a forced deviation from FPN, as amended by previous Bid-Offer Acceptances, not due to System Constraints, intertrips or Black Start".

P80MG accepted this definition would need to be refined and that within the Transmission Company's documentation it would need to be expanded to make it more precise.

The initial view of the Modification Group is that deviations from Physical Notification (PN) caused by BM Unit protection being more sensitive to system conditions than the system protection itself should be excluded.

## 4.2 The duration of compensation for a "system fault"

The P80 proposal suggests that a deemed Bid-Offer acceptance constituting compensation should “reflect the forced deviation, for as long as the situation continues”. A transmission fault may physically last from fractions of a second to many hours or days, and may be intermittent or continuous. Upon restoration of the transmission system, the dynamics of a BM Unit may restrict its ability to return immediately to its PN level. These issues will need to be considered as part of the assessment process.

Compensation could be achieved by obligating the Transmission Company to issue a single deemed Acceptance up to the "wall" which covers areas (a) and (b) in the example shown

  

in Figure 1. The areas (c) and (d) could then be covered by normal constraint management process contained within the BPS.

The Proposer suggested that the BPS would provide compensation "beyond the wall" because Acceptances would be treated as honouring a BM Unit's Dynamics. For example, if the BM Unit had been disconnected and had a Notice to Deviate from Zero, that notice and the subsequent time to ramp up to the previously submitted PN should be taken into account under the BPS and result in appropriate Bid Acceptances being issued. However, caution was expressed over whether the BPS principles for Accepted Bids and Offers could be extended to encompass deemed Acceptances.

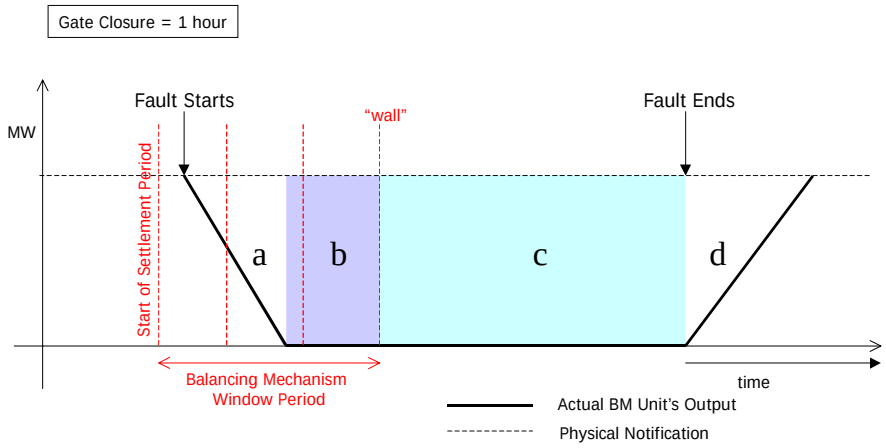


Figure 1. Duration of compensation for a fault

Another issue to be considered in assessment of appropriate compensation for transmission faults is the difference between the true dynamic parameters of a BM Unit and those allowed by the electronic systems used by the System Operator. For example, software systems limit 'minimum zero time' to 999 minutes, whereas true values may be considerably longer.

## 4.3 What is the level (MW) of production/consumption loss due to "system faults"

P80 states that deviation from Final Physical Notification (FPN) as amended by previous Bid-Offer Acceptances should be the level to compensate against. However, FPN is only the Physical Notification (PN) applying until the next Gate Closure and initial Physical Notifications (IPN) are only submitted for the day ahead. The process for P80 would need to ensure that for long running faults the FPN represented the level at which the BM Unit had "expected" to be exporting or importing at. This was very similar to the arguments made during the assessment of P59 'The Acceptance of Bids and Offers to Honour a BM Unit's Dynamic Parameters beyond the Balancing Mechanism Window', as it was not possible to reliably determine what a BM Unit's intentions were for Settlement Periods following the current Gate Closure. This proposal should also consider Parties who contract in the long-term as imbalance prices take into account notified contracts.

  

The definition of Physical Notification[3] under the Grid Code BC1.4.2 “represent the User’s best estimate of expected input or output of Active Power” (Grid Code BC1.4.2). The Grid Code currently expects a BM Unit to submit a FPN, which reflects their expected physical position. In order for a BM Unit to receive compensation such that the Transmission Company can issue an Acceptance against it, the BM Unit's IPN would be taken to be the expected physical position prior to a fault and not the real position after the fault. This process is currently stated in the BPS 'Beyond the wall'.

## 4.4 The extent that the metering system can identify the impact on SVA BM Units

It is difficult to allocate the demand to specific Supplier BM Units in Supplier Volume Allocation (SVA) because non half-hourly metering is aggregated on a GSP Group basis. Also, it would be difficult to determine which Suppliers in a GSP Group were affected by a fault, as the loss of demand would eventually be spread across all the Suppliers in the affected GSP Group. P80MG suggested that the Transmission Company should issue a deemed Acceptance to all Suppliers affected in a specific GSP Group, if a fault had occurred on the Transmission System.

Any acceptances generated by this process would need to be agreed and in all likelihood would not occur until after the Settlement Period had finished and indicative imbalance prices published. It is reasonable to believe that such agreement may itself take some days. Supplier Volume Allocation data upon which any apportionment of deemed acceptance volumes could be made does not become available until shortly before the Initial Settlement (SF) run, and compensation for suppliers may not be practical until a subsequent reconciliation run.

## 4.5 The price (£/MWh) of compensation for a "system fault" during the Balancing Mechanism Window Period and beyond the "wall"

The Modification Proposal states that compensation should be at submitted Bid and Offer Prices in the same manner as for intertrips in BSC Section Q5.1.5[4]. This could cause some high payouts for extreme Bid/Offer prices, which would not normally be accepted by the Transmission Company. It can be argued that a Bid-Offer Price only becomes a market price once it has been accepted.

At the moment some Parties present extreme Bid-Offer prices from time to time. P80MG noted that these prices do not represent the cost to deviate from FPN but an indication that the BM Unit does not want to deviate from FPN, for instance a Generator whilst ramping their output (Figure 2).

[3] Physical Notification - Data that describes the BM Particpant's best estimate of the expected input or output of Active Power of a BM Unit.
[4] BSC Section Q5.1.5 is the subject of P87, which attempts to limit the potential for "windfall gains".

  

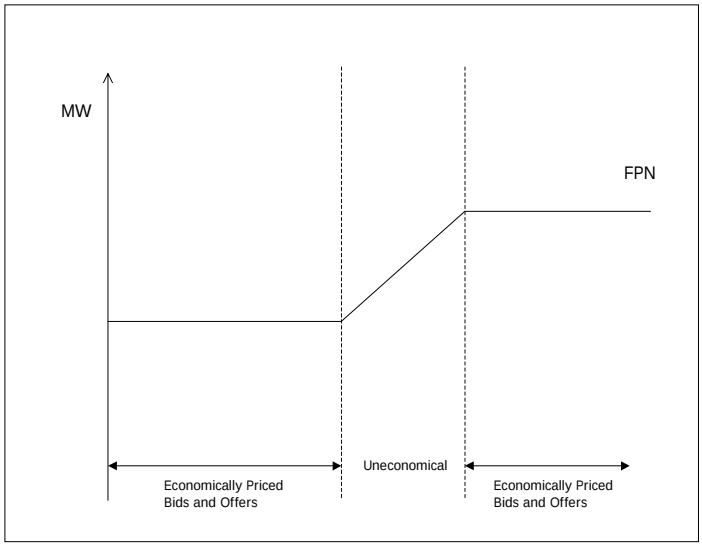


Figure 2. Bid and Offer Prices for a Generating BM Unit

In some cases, the Generators are submitting very high priced bid prices up to -£99,999 per MWh, which show quite strongly that they do not wish to deviate from their submitted FPN.

Table 1. Percentage (%) of Settlement Periods over 12 days for two BM Units (17 February 2002 - 28 February 2002) with certain Bid-Offer Prices

| | Bid Price per MWh | | | No. of changes between price categories |
|---|---|---|---|---|
| Plant Type | > £0 | -£9,999 | -£99,999 | |
| COAL | 3% | 74% | 23% | 18 |
| CCGT | 78% | 0% | 22% | 5 |

Table 1 shows Bid pricing for two BM Units over a 12-day period, one plant is a CCGT module, the other coal. It can be seen that for both plant types just under one-quarter of Settlement Periods have a Bid Price of -£99,999 per MWh, which could result in large multi-million £ payouts from the Transmission Company. This data also shows that the number of changes between price categories is significant for both types of plant.

It has been suggested that an appropriate Balancing Services Agreement may be able to cancel the effect of extremely priced Bids and Offers in the Balancing Mechanism prices. However, there would be a delay before the properly "adjusted" price became available if the Bid-Offer Acceptance was input to systems before the Balancing Services Adjustment Date (BSAD).

The assessment needs to consider to what extent energy "lost" due to a Transmission System fault should be classified as System balancing, and therefore tagged out. However, as actual energy is lost due to a Transmission System fault, then it might not necessarily be classed as System balancing.

  

When such large Bid and Offer prices could be involved the natural reaction is that these Bid-Offer Acceptances should not be used in the calculation of energy imbalance prices. However, in the case of disconnection of a large generator, for example, there would probably be a number of Offers accepted to replace automatic frequency response after the initial event. Therefore, the Offer stack would be affected as well as the Bid stack. However, it is hard to identify the Offers and this is the purpose of Automatic Trade Tagging (ATT). Deemed Acceptances due to faults may need to be included in the imbalance price calculations such that normal trade tagging could take place and might remove some or all of these Accepted Bids and Offers due to a system fault.

## 4.6 The potential impact of widespread disruption to the Transmission System on BSUoS charges and imbalance prices.

The Transmission Company stated that only 526 MWh was lost to faults in 2000-2001 out of an approximate total of 300 TWh produced that year (Report to the Director of the Office of Gas & Electricity 2000-2001).

P80MG noted that compensation for faults through deemed Acceptances would be carried through in to Balancing Services Use of System Charges (BSUoS) and high compensation prices could produce high BSUoS prices. P80 is effectively an insurance process and hence needs to consider freak events, i.e. just short of a Black Start.

Widespread disruption of the transmission system is considered to be covered under the Contingency Provisions referenced in Section G of the BSC (i.e. Black Start), which may effectively implement administered prices or suspend the Balancing Mechanism altogether.

P80MG agreed that there was no requirement to charge for 'giving firm access' in order to pay for the compensation due to Transmission System faults. The cost of compensation could be recovered through increased BSUoS charges.

P80MG expressed concern that longer-term system faults may enable a BM Unit to fix their Bid/Offer prices. However, in the first instance the P80MG considered that normal Bid and Offer pricing should prevail (i.e effectively rolling forward to those that applied when the fault occurred), along with regulatory oversight of any abuse.

## 4.7 Who are the potential beneficiaries?

The initial view of the P80MG is that Parties which do not have a Connection Agreement with the Transmission Company and are not paying Transmission Network Use of System Charges (TNUoS) should probably not be entitled to receive compensation for Transmission System faults. Furthermore, as the method of compensation involves a deemed Acceptance, if a BM Unit has not submitted any Bids or Offers in the Balancing Mechanism then they cannot be compensated for the loss of access. Therefore to qualify for compensation the BM Unit must:

a) be connected directly to the Transmission System; and/or

b) be paying TNUoS Charges; and

c) be participating in the Balancing Mechanism when the system fault occurs.

  

### 4.8 The acceptable timescale for notifying a "system fault" and then subsequently determining/taking any necessary actions.

An amount of time is required to determine whether a fault notified by a BM Unit is a Transmission System fault. P80MG noted that they would need to ask the Transmission Company how much time is needed to determine whether a fault has occurred. Furthermore, a process similar to Workaround 18 could be used to input deemed Acceptances.

It was suggested that it may not be possible to enter the deemed Acceptance for a fault into Settlement until the SF run. This may result in reported imbalance cash-out prices on the BMRS and at Interim Information (II) Settlement Run that would not contain any information on deemed Acceptances, other than, possibly an indication that a particular Settlement Period may be subject to such a deemed Acceptance. This could have a negative impact on all participants, since potentially large imbalance prices would not be known until the deemed Acceptance had been agreed upon and identified.

## 5 SUMMARY

Below is a summary of the main issues for definition.

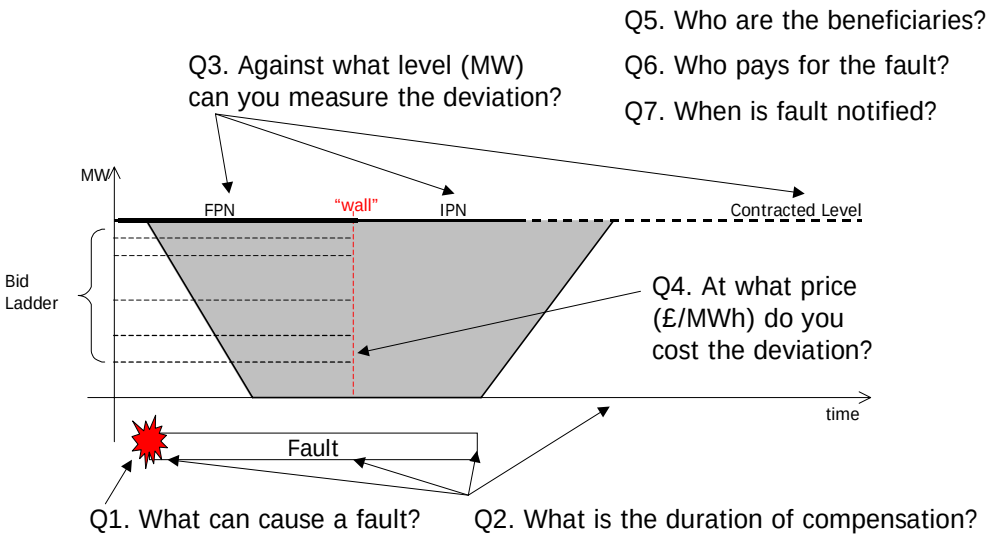


Figure 3. Summary of the issues for definition

The P80MG has identified a number of issues, which will be submitted to industry consultation (see attached pro-forma). These views will be considered in preparing the definition report to be produced for the BSC Panel meeting on 18 July 2002.

## 6 WAY FORWARD

Parties are invited to comment on their views of the issues raised by the Modification Group. Attached to this note is a pro-forma with the above issues raised to which you are invited to provide responses.

Please send your responses by close of business on Thursday 27 June 2002 to the following e-mail address: Modifications@elexon.co.uk. Please entitle your e-mail 'P80 First Consultation'.

  