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P18A Review and Modification Proposal P38 - First Consultation

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d Changes Forecast

None.

e Related Documents

The following documents are referenced from within this document using the following convention [RD/*x*]:

0 Modification Proposal P38

1 Panel Paper 32/021 – P18A Review and P38 Assessment Phase

2 P15 / P18B Urgent Modification Report

3 Panel 31 Presentation (18 October 2001) - Implementation of Modifications (Pricing System)

4 Modification Group P38 Presentation (02 November 01)

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 Review of P18A and assessment of Modification Proposal P38. It is based on the ideas presented at the first Modification Group for P38, which was held on 02 November 2001, and also provides a narrative to the slides used during that meeting.

1.2 Disclaimer

The contents of this Consultation Document are intended to reflect the discussions held in the Modification Group. Additional supporting data analysis has also been undertaken by ELEXON based on data available from Go-Live in order to assist in the analysis of the Modifications, sometimes using data provided by third parties. In some cases, ELEXON has drawn conclusions based upon its view of the data analysis.

It should be recognised that this Consultation Document has been produced in relatively short timescales, consistent with the requirements of the BSC Panel and the Authority for progressing the Modification. The data analysis by ELEXON has also been undertaken in the same short timescales.

Given the above, it is possible that the views of the Modification Group have not been fully captured in this paper, or that errors may appear in this document (or that the data and analysis appearing in this document is not comprehensive and is not therefore authoritative). Where this has occurred, ELEXON hopes that recipients of this document will understand the trade-off to be made between accuracy and timescales of progression of the Modification Proposals. Clearly, in producing this document, ELEXON intends that no such errors are present. However recipients should recognise the possibility of such errors in relying in any way on the information contained in any part of this document.

1.3 Structure of Document

The document is structure as follows:

- Section 2 provides background to the review of P18A and the Modification Proposal P38.
- Section 3 provides a brief review of performance of P18A since it was first included in the calculation of imbalance prices on 25 September 2001. This is provided to as a baseline against which to compare alternatives and consider whether changes are required.

- Section 4 provides an overview of the various potential CAD definitions that were considered during the original P18A assessment and the new Modification Proposal P38.
- Section 5 provides a description of what is involved in prompt price reporting and some of the alternative approaches to achieving this.
- Section 6 provides an introduction of the issues related to implementation which need to be considered when comparing different prompt price reporting options
- Section 7 details the scope of the first consultation and provides the table, which is referenced in the consultation questions.
- Annex A is provided to give an impression of the probability of BOA crossing period boundaries and causing changes in the CAD value of the previous period.
- Annex B is provided to give an impression of how often there is a significant price change which may affect of BOA crossing a period boundary.
- Annex C provides a copy of the consultation questions

2 BACKGROUND

2.1 Introduction

This document is the first of two consultations that will take place in respect of the review of Modification Proposal P18A and the assessment of Modification Proposal P38. This first consultation attempts to seek market participant views as to the value of prompt indicative price reporting to an organisation. This consultation also seeks to understand:

- whether any trade off can be made between the accuracy of any indicative price calculations and the time to allowed to publish them on the Balancing Mechanism Reporting System (BMRS);
- to understand the rationale for making any change to the definition of Continuous Acceptance Duration (CAD) and whether it is appropriate to change this definition. The direct consequence of making any change in definition would be to introduce a change in the prices for particular settlement periods in order to provide earlier reporting of indicative Energy Imbalance Prices.

The second consultation will look to address whether any alternatives, including the P38 definition and any of its alternatives, better facilitate the achievement of the Applicable BSC Objectives.

2.2 Background to P18A Review

Modification Proposal P18 – "Removing / Mitigating the Effect of System Balancing Actions in the Imbalance Price Calculations", was raised by the National Grid Company (NGC) on 23 May 2001 and sought to remove / mitigate against system balancing actions influencing the calculation of energy imbalance prices. The modification was made up of two options for implementation, Option A (P18A) and Option B (P18B). On 22 August 2001, the Authority determined to implement P18A with legal effect from the Settlement Day of 25 September 2001.

The implementation was initially made via an Interim Solution, which published prices to the market seven working days following a Settlement Date. This will be replaced in March 2002 by a solution (P18A Enduring Solution) within Central Systems that, due to the definition of the Continuous Acceptance Duration (CAD) would necessitate a delay of up to 30 minutes in the publication of prices on the Balancing Mechanism Reporting System.

The Imbalance Settlement Group (ISG), concerned about the delay in the availability of pricing information to the market in both the Interim Solution and the Enduring Solution, requested that the Panel consider a review of Urgent Modification P18A under Section F paragraph 2.9.7 of the Balancing and Settlement Code. It should be noted that ELEXON are undertaking some work to achieve the earlier delivery of indicative prices from seven working days down to two working days for Settlement Days until 27 March 2001. The review process for an Urgent Modification allows the modification group to determine whether any alternative modification better facilitates the BSC Objectives. It should be noted that it is not the intention that such a review should apply any solution retrospectively to the implementation of P18A.

2.3 Background to Modification Proposal P38

Modification Proposal P38 – "Redefinition of CAD to allow prompt price reporting" was raised by Slough Energy Supplies Limited on 19 September 2001. Whilst the title of the modification implies that it seeks to provide prompt prices to the market it should be noted that the definition of the modification and the subsequent justification seek to address a wider issue in addition to this. The issue that the modification proposal also seeks to address is that the proposer believes the basis of exclusion decisions is distorted because bids and offers are priced separately for each settlement period and so should be treated separately for each settlement period. To address this issue, the proposal seeks to limit the calculation of CAD to single settlement periods.

3 REVIEW OF P18A PERFORMANCE

3.1 Background

A fundamental part of any review of P18A must be a review of how it is performing, both in terms of separating "system" and "energy" balancing, and also the resulting impact on imbalance prices.

In addition, although Modification Proposal P38 is about prompt price reporting, it also suggests an alternative approach to calculating the CAD values for each Bid-Offer acceptance (BOA). It is important to understand that this is a fundamental change to the CAD definition and results in a different CAD value being calculated for each Period that the BOA impacts, rather than the single CAD value calculated by P18A. In order to understand whether P38, or any Alternative Modification, can better achieve the BSC objectives, it is important to understand how the current baseline (which includes P18A) is performing.

The remainder of this section is split into four areas and is restricted to consideration of the Offer stack and the System Buy Price (SBP). This is because the System Sell Price (SSP) has largely been unaffected by the implementation of P18A. This section is split as follows:

- the impact of P18A on SBP prices for Settlement Days since 25 September 2001;
- the effectiveness of identifying "system" balancing actions, and the type of Offer volumes removed;
- the overall impact of P18A on the size of the Offer stack used to determine the SBP;
- review of P15/P18B data analysis.

All data analysis is based on the 27 days of operation since the inclusion of P18A, commencing 25 September 2001 and ending on 21 October 2001.

3.2 Impact of P18A on SBP Prices

Figures 3.1 and 3.2 use the graphical format first introduced during the assessment of P18A. It uses a shaded grey band to indicate the middle 50% of SBP prices for each Settlement Period (i.e. between the 25th Percentile and the 75th Percentile). In addition the solid line without markers, which lies between these two extremes, is the median of prices (50th Percentile). These Percentile points give a good impression of the degree of variation in prices, without the influence of any outlying data. In addition the two lines with circular markers are the arithmetic means, or averages, for the data both before and after the effect of P18A has been taken into account. These averages are influenced by the outlying data, especially for the SBP where price spikes can be significantly higher than any neighbouring values.

Figure 3.1 shows these descriptive statistics applied to the SBP prices for each Settlement Day, whereas Figure 3.2 shows the same statistics applied to the SBP prices for each Settlement Period aggregated over the sample set.

The change in the average values between the pre and post P18A BSC rules is shown in figure 3.1 and indicates how P18A has been quite effective at reducing the influence of the outlying points, for instance 11 October 2001 where a spike of £1361 was removed.

However, the plot of the 25th - 75th Percentiles also shows there is still a significant variation in the SBP prices due to other factors. For instance the data on the 26 September 2001 was heavily influenced by 6-7 hours worth of Offers priced at £240/MWh. Further analysis of this Settlement Day is included in Annex 3 of the P15 / P18B Urgent Modification Report [RD/3] and suggests that this was due to a system constraint. Analysis of the peaks on 2 October 2001 and 7 October 2001 suggests similar causes. Further investigation of the price spike not removed on 15 October 2001 shows that although it was also caused by expensive plant generating for around 2 hours, the overall duration was sufficiently short for it not to influence the 75th Percentile point.

Figure 3.1 – Daily P18A Compliant SBP Prices

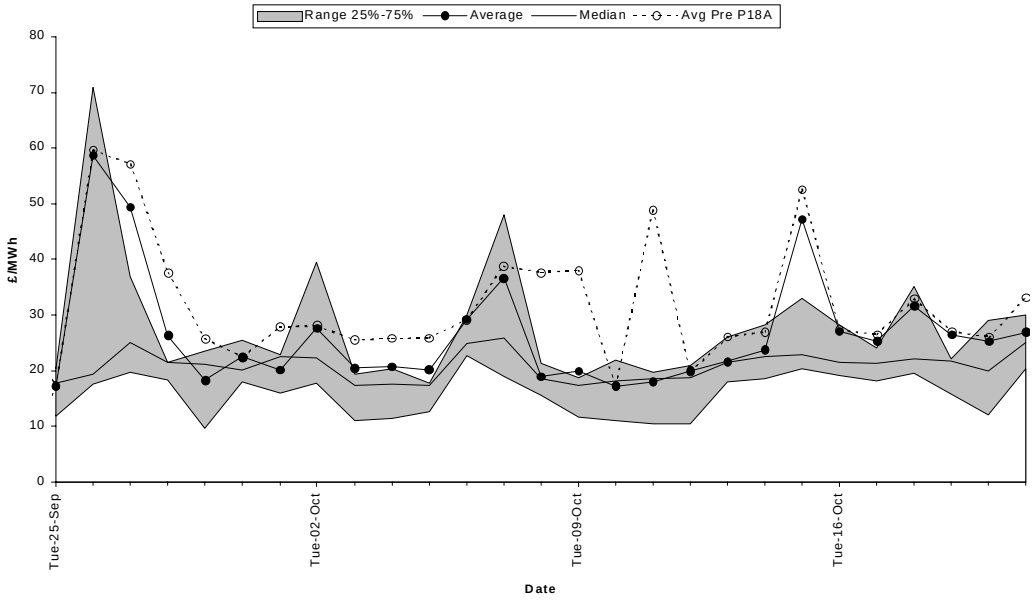
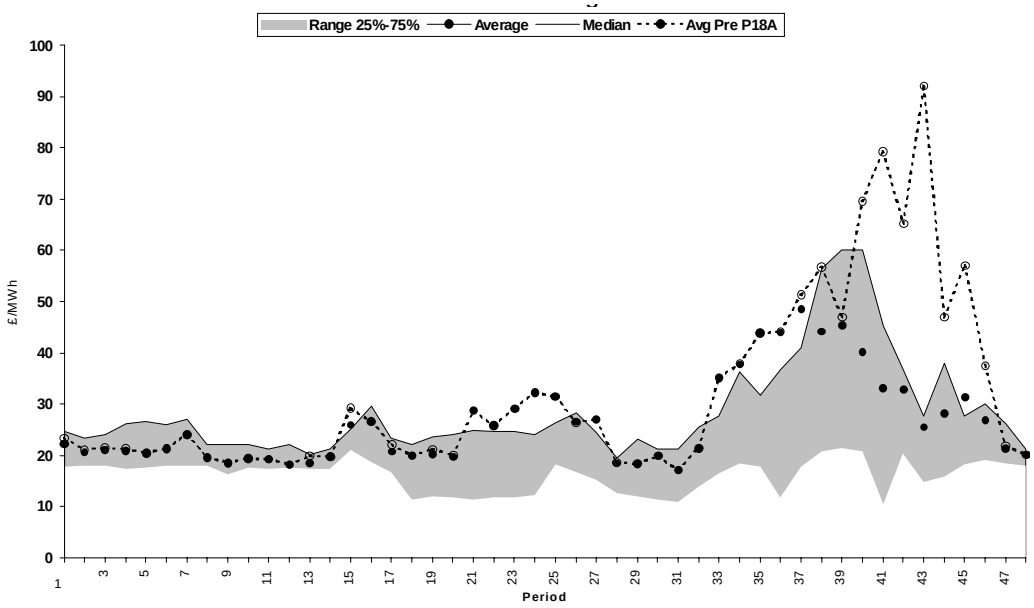


Figure 3.2 presents a similar analysis, but based on Settlement Periods, and shows that the main impact of P18A, so far, has been between periods 40 and 46. This occurs slightly after the evening ramp down and is in all probability due to TV Pickup.

Figure 3.2 – Period Based P18A Compliant SBP Prices



3.3 Effectiveness of P18A At Identifying "System" Balancing Actions

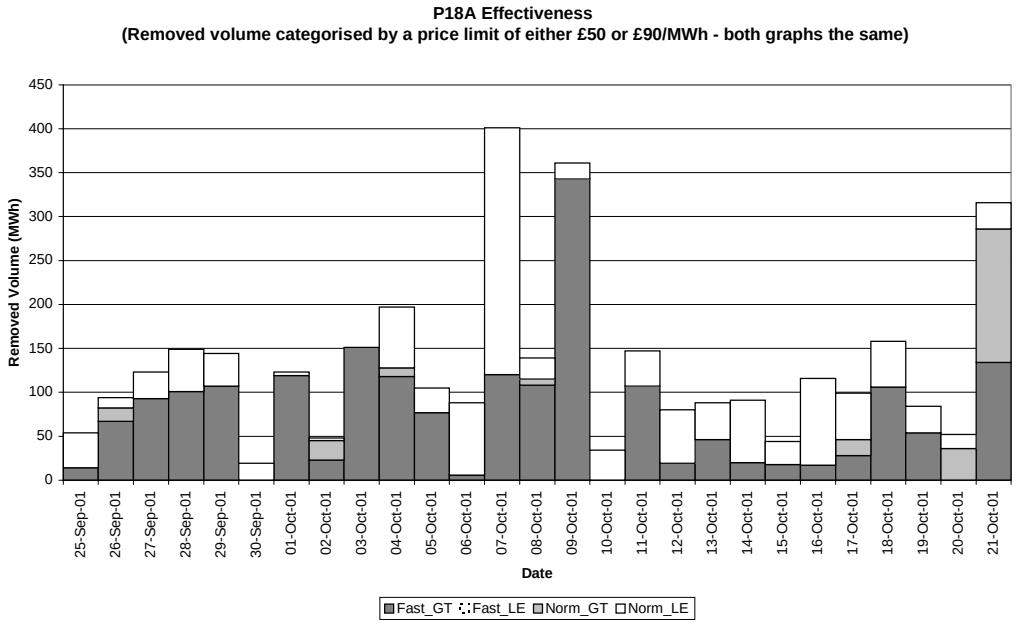
The next stage of analysis looks at the actual BMU volumes that are removed by P18A. Figure 3.3 categorises every Bid Offer volume *removed* from the Offer stack (there is little activity on the Bids stack). There are 4 categories possible: those due to "fast" or "normal" response plant, and those above and below a defined price limit. The definition of "fast" response plant is the same categorisation used during the P18A Modification Group discussions and is simply based on 11 BMUs defined to be capable of delivering extremely fast response. It is a crude measure, however, it does give an impression of the impact of P18A. The key to the bars is:

- Solid Dark Grey – Removed Offer volume for "fast" plant with a price greater than (GT) a set limit;
- Solid Light Grey - Removed Offer volume for "normal" plant with a price greater than (GT) a set limit;
- Hatched Light Grey - Removed Offer volume for "normal" plant with a price less or equal to (LE) a set limit.

The fourth possible category of Offer volume removed for "fast" plant with a price less or equal to the set limit is not included, as there are no values for the data set concerned.

The price limit used in the categorisation was initially set as £50/MWh, however, subsequent analysis showed that for this particular data the data did not alter if the price limit was set to £90/MWh, hence the graph is equally valid for both limits

Figure 3.3 – Effectiveness of P18A At Identifying "System" Balancing Actions



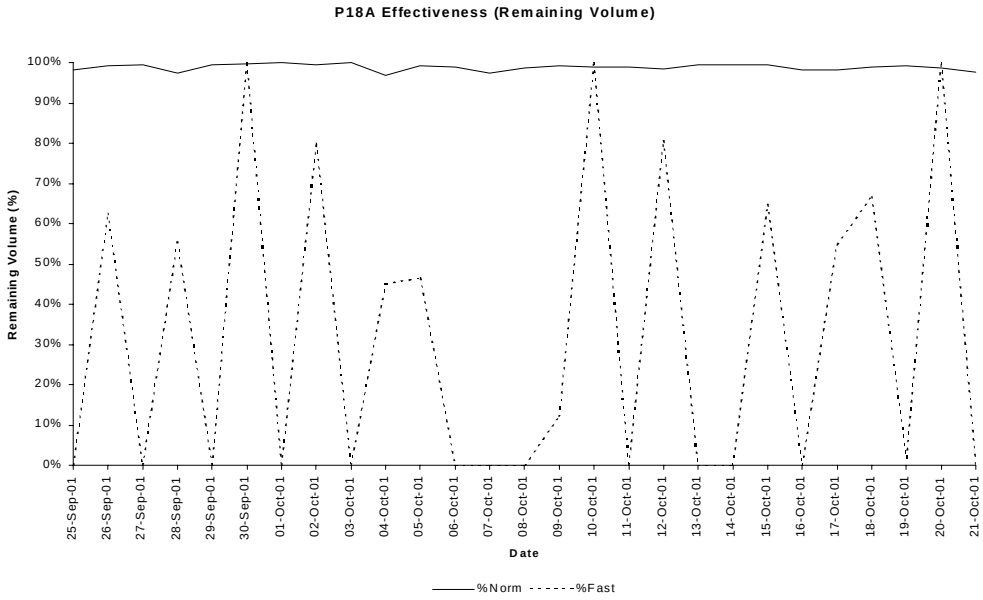
The graph illustrates that in general there is slightly more removed volume attributed to "fast" plant (57%) as for "normal" plant (43%).

In addition 21 October 2001 shows that on some occasions a significant amount of the more expensive Offers from "normal" plant can be removed. Further analysis of this particular day showed this was largely due to the use of Interconnectors and some fast response provided as demand side reduction. This suggests that a wider definition of "fast" response plant could have included these Offers (64%).

The fact that P18A seems to remove a similar volume of "fast" and "normal" plant may initially seem worrying. However it needs to be considered that there is a much larger volume of "normal" energy, and so this removed volume represents a much smaller proportion of overall "normal" volume, than it does for the equivalent "fast" response energy.

Figure 3.4 shows the percentage of Offer volume of energy *remaining* after P18A, as categorised by "fast" and "normal". Although P18A regularly removes all the "fast" Offer volume for a day, it only removes 2-3% from the "normal" plant during the same period.

Figure 3.4 - Impact of P18A Removing "System" Balancing Volume



3.4 Impact of P18A on number of BMUs on Offer Stack.

The last aspect to be considered during the analysis is the impact on the number of Offers being used to calculate the SBP. Figure 3.5 counts the number of different BMUs used to set the SBP during each Period, and then categorises that information as the % of periods set by x BMUs or less. The lower light shaded area, just above the x-axis, represents the percentage of periods set by 0 BMUs (i.e. defaulted). This shows that for periods 18-20 the SBP price was defaulted for 40% of the 27 days analysed. The next two darker shaded areas show the percentage of periods set by 1 or 2 BMUs, a small number for a weighted average to be representative.

Figure 3.5 shows the impact for the first 27 days of P18A had the P18A rules not been effective. It shows that the majority of defaulting occurs between period 17 and 37. Further details on the impact of this can be found in the next section.

Figure 3.5 – Number of BMUs on Offer Stack Prior To P18A

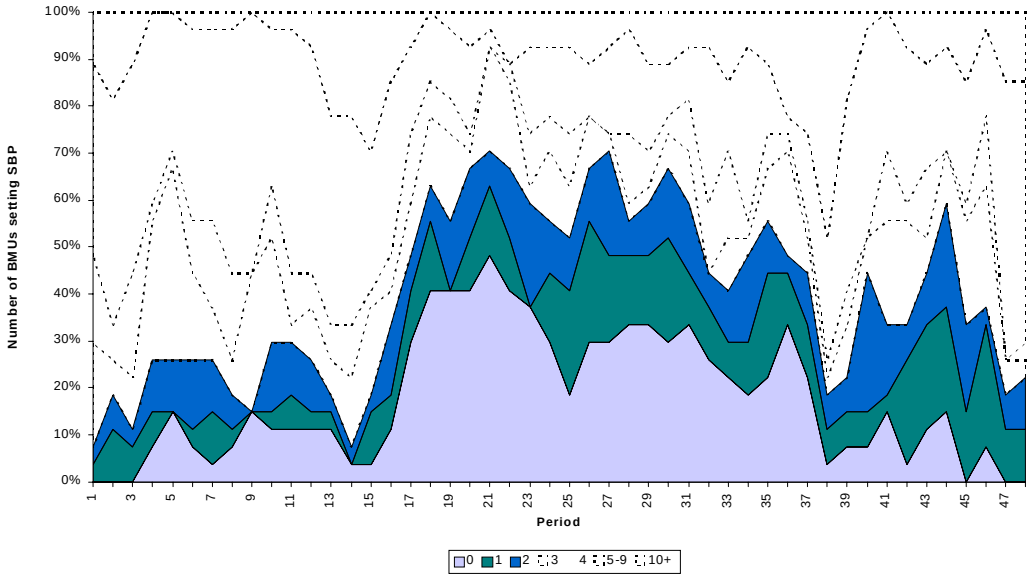
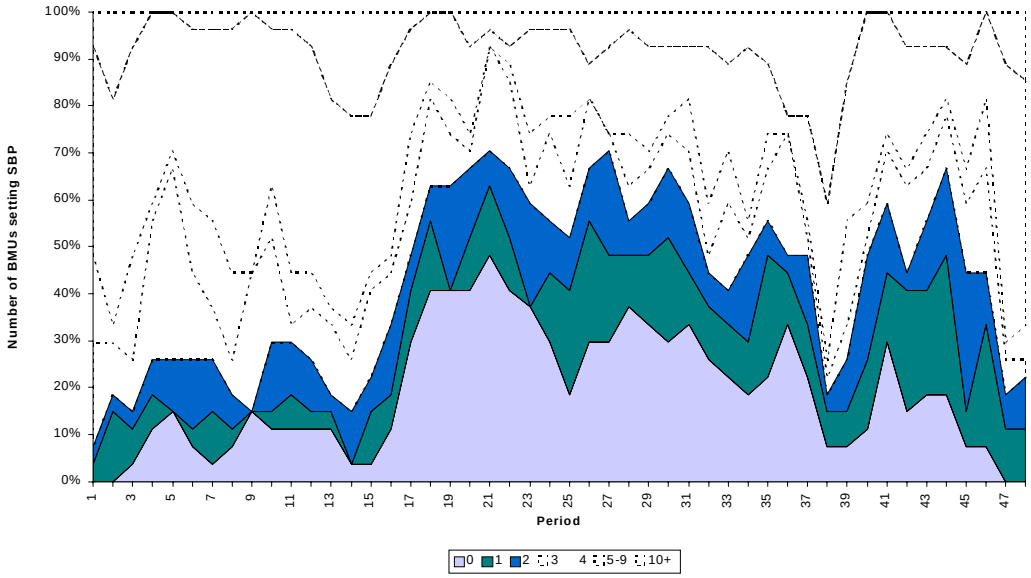


Figure 3.6 shows the same data but *with* the effect of P18A included. As can be seen there is little change. The diagram shows that what change there is, is restricted to a small increase in the level of defaulting for periods 40-46.

Figure 3.6 – Number of BMUs on Offer Stack Subsequent To P18A



3.5 Review of P15/P18B Data Analysis

The P15/P18B Urgent Modification Report [RD/3] includes an annex detailing the data analysis performed during the assessment of these modifications.

The analysis raised a number of issues relating mainly to the analysis of P18B, but wider in scope than “mitigating the effect of system balancing actions”. The Modification Group recommended that these findings were carried forward into the review of P18A:

- The number of periods where a default SBP is set is very high, especially between periods 25-36. In addition the average default SBP is significantly lower than 99% of non-default prices. This was also raised in ISG paper 09/076.
- A number of the price peaks are now being caused by what appears to be “system constraints” and as the level of BRL is rarely reached it means that the automatic trade tagging (ATT) system is not able to remove their influence.

The result of P18A removing the price spikes directly attributed to “system” balancing means these effects are now more noticeable and as a result they may start to attract more attention than any shortcomings in the definition of P18A.

4 DEFINITION OF CONTINUOUS ACCEPTANCE DURATION

4.1 Background

In order to understand P18A, and the discussions held during P18A considerations, it is necessary to go back to the first principles of the P18A Modification Proposal. P18A proposed that BOA of a short duration should be "deemed" to be for "system" balancing reasons and therefore should not enter the energy imbalance price calculation.

The Modification Group discussed at length the definition of "system" and "energy" balancing. In doing so they developed a number of mechanisms for determining the duration of an instruction issued by NGC.

These definitions ranged from a simple measure of the duration of overlapping BOA, to an approach that analysed the overall deviation from FPN of the combined set of BOA, and only included the Bid-Offer volumes for those individual minutes that were part of a continuous deviation from the FPN of more than a defined limit. This represented a wide variation in both complexity and intellectual purity[1].

These alternative definitions are discussed in the remainder of this chapter and are referred to as CAD definitions[2].

4.2 Initial CAD Definitions

In the initial work on analysing how to define the CAD for a group of BOA the following three categories of CAD definition were identified. They were allocated numbers that represented their increasing order of intellectual purity. These categories were first presented to the Modification Group on 28 June 2001.

Table 4.1 – CAD Categories 1-3

Category	Characteristics
1	**Simple BOA analysis** – this category only considers the start and end times of single, or groups of overlapping BOA, and does not attempt to measure how the BOA deviate from FPN.
2	**BOA and FPN analysis** – this category analyses what the BOA is delivering and only considers the duration of periods that deviate from FPN, or a previous BOA. Once the duration is established a BOA is either completely removed, or allowed to contribute to the imbalance prices.
3	**Redefining acceptance volumes for non-zero profiles** - this category allows the Bid Offer volumes to be divided into minute by minute durations. The approach analyses the overall deviation from the FPN of the *combined* set of BOA, and only includes the Bid-Offer volumes for those individual minutes that were part of a continuous deviation from the FPN of more than a defined duration. As a result a percentage of each BOA is included in the calculation of imbalance prices.

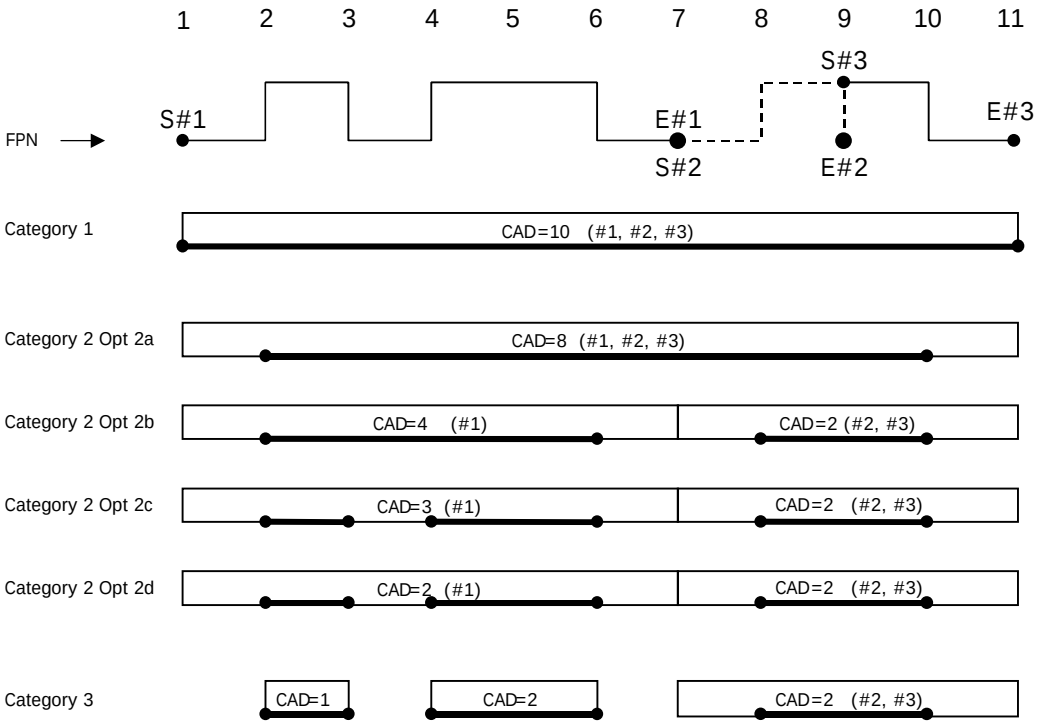
[1] Intellectual Purity was the mechanism by which the Modification Group attempted to distinguish between the relative merits of each definition by measuring how "pure" a solution was in terms of accurately distinguishing "energy" from "system" balancing actions.

[2] Each specific definition belongs to a Category i.e. CAD0, CAD1, CAD2 or CAD3 that define its general characteristics. Within this there are normally a number of sub-options i.e. CAD1 Option 1A or CAD1A which refine the definition to a level capable of being turned into BSC legal text.

Each category can have one or more options and each of these further refine the detail of how the precise CAD for a group of BOA is calculated.

Figure 4.1 shows how each category of CAD, and some options, were initially defined within the Modification Group. The top of the diagram shows 3 BOA, each with a start time S#k (where k is the acceptance number) and with an end time E#k. Below this are shown the various definitions of CAD, with the duration of the CAD being shown with a solid black line. It is assumed that the FPN is stable over this period and at a level shown by the "FPN" label. The CAD values (i.e. the duration in minutes) are shown for each definition as CAD=x, where x is the number of minutes. In addition the BOA which are continuous and form the CAD are shown in brackets following the value.

Figure 4.1 – CAD Categories 1-3



The initial definition proposed by NGC had not been considered to this level of detail and hence it is not possible to precisely map it onto a single definition. However it was considered that the closest definition was probably CAD category 2 option 2b.

Further discussion on categories CAD2 and CAD3 is not included in this document, but has been included for completeness.

4.3 CAD Category 1

The category CAD1 was introduced as a mechanism which allowed the calculation of the CAD by simply considering start and end times of each BOA, and avoided the need to establish when a BOA was causing the output profile to deviate from the predicted FPN.

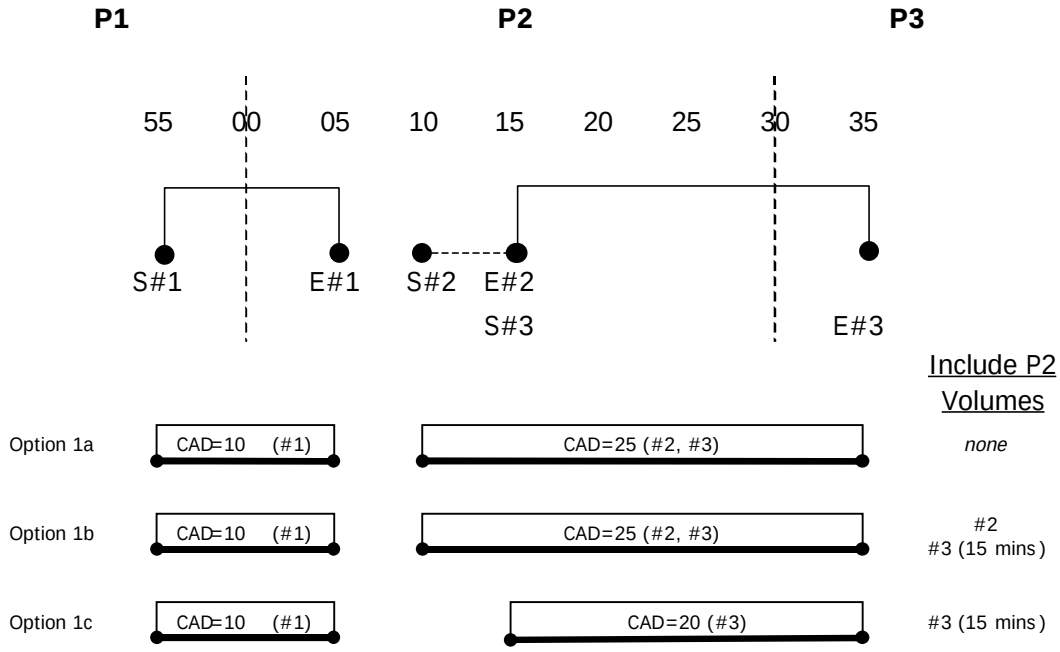
It was recognised that if an Interim Solution was going to be proposed it would need to be simple and that would probably limit it to Category 1. Two other issues concerning the implementation of an Interim Solution were also identified:

- the analysis assumes that once a BOA with a CAD less than CADL has been identified, the software would remove only the volume associated with that particular BOA. However, the SAA-I014 report against which any Interim Solution would need to work, only contains the sum of Bid-Offer volumes for each BMU (QAO^{n}_{ij} / QAB^{n}_{ij}), and the level of granularity associated with the Acceptance Number (QAO^{kn}_{ij} / QAB^{kn}_{ij}) is not provided;
- when NGC are instructing Dinorwig they also have to issue enter/ exit spin mode instructions as standard BOA. Although these are issued with a zero output level, they can still join with other true BOA and increase the overall CAD value.

In reaction to these issues, Category CAD1 was sub-divided and options 1a to 1c were developed. The issue with the SAA-I014 report meant that the Interim Solution had to adopt the principle of removing all BOA from that BMU for that period (i.e. CAD definition 1a) [3].

Figure 4.2 uses a similar convention to figure 4.1, but has been enhanced to show the effect of BOA taken within different Settlement Periods (P1 – P3). As for figure 4.1, the measurement of the CAD for each option is shown below the BOA profile. To the right of the diagram is shown which Bid-Offer volumes are included in the imbalance price calculations for period 2.

Figure 4.2 – CAD1 Options 1a to 1c



It should be noted that a variant of CAD1A was briefly considered that in the case of the above example would include the volumes for BOA #1, #2 and #3 in Period 2. Data analysis of this variant suggested the actual materiality was small and so it was considered more appropriate to be conservative by removing all volumes. This variant was not issued a formal identity and is not discussed further.

[3] Subsequent to the determination by the Authority is was noted that any BOA which starts or ends on the period boundary, i.e. at minute 0 or 30, will be considered part of *both* Settlement Periods. This interpretation of the BSC legal text was checked and found to be correct. As a result both the Interim and Enduring Solution will remove the Bid-Offer volume from both Settlement Periods if the CAD for such a BOA is less that CADL.

4.4 CAD Category 0

At the Modification Group meeting on 28 June 2001 there was some concern expressed that all identified CAD definitions required a delay in calculating indicative imbalance prices until $CADL_{max}$ minutes into the next period. At that time the majority of those present at the meeting considered the intellectual purity of the CAD definition to be more important and hence there was little appetite for further consideration. However in response to this concern a new CAD Category 0 was introduced within the 2nd Consultation Document. This was defined as any CAD Definition that would allow the derived imbalance prices to be reported promptly on the end of the Settlement Period. However, within the document only a simple definition was provided.

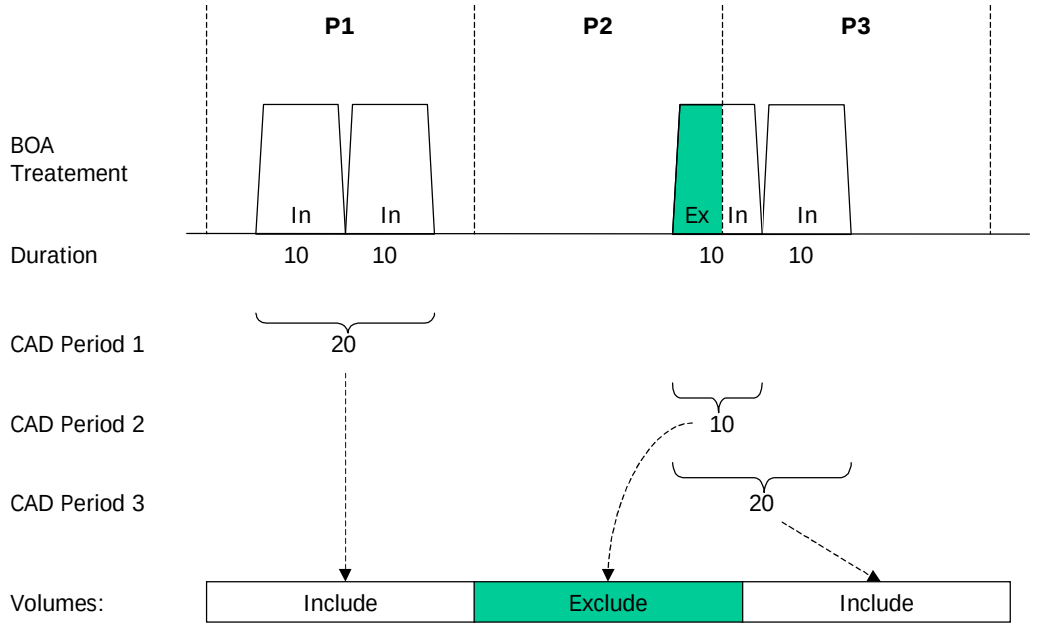
All of the previously identified CAD definitions could in theory be converted to an equivalent category CAD0 definition that could report indicative imbalance prices shortly after the Settlement Period end, by limiting them to information known at the end of each real-time period. Figure 4.3 shows how this would work. It is valid for all the existing CAD1 definitions and also shows the first anomaly that the introduction of such a definition can create.

The figure shows 4 different BOA in 2 continuous groups. The first pair occur entirely within Period 1, whereas the second pair span Periods 2 and 3, with the first BOA crossing the boundary. For each BOA the duration is 10 minutes and the label to the left, and number below the axis indicate this.

The label “BOA Treatment” is used to flag which parts of a BOA will be deemed to be less than 15, and in line the definition being tested the first part of the third acceptance will be excluded from Period 2.

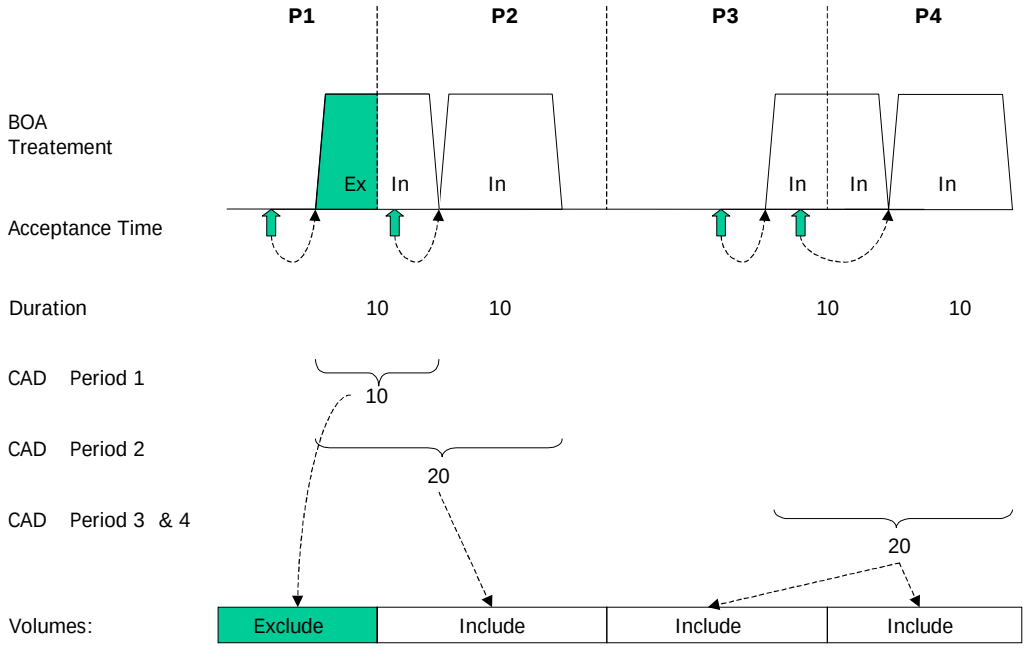
Below the representation of the BOA are labels for the different CAD values that will be calculated in each period, and this shows that the CAD for the third BOA will change between Periods 2 and 3, because of the information “known” at the end of the period 2. Lastly the figure indicates the impact on the Offer volumes.

Figure 4.3 – CAD0 Anomaly 1



The manner in which two identical sequences of BOA can be treated differently, depending on their relation to the period boundary was considered an obvious disadvantage. In addition this was further complicated if the Acceptance Time was taken into account, as a BOA could be considered to be “known” about before it was due to take effect, as shown in figure 4.4. Figure 4.4 uses the same basic conventions as Figure 4.3 and has been enhanced to show the acceptance time (indicated by the arrow), this is about 2 minutes for the example BOA, except for the last that is taken at least 5 minutes early to allow it to be issued in the previous period.

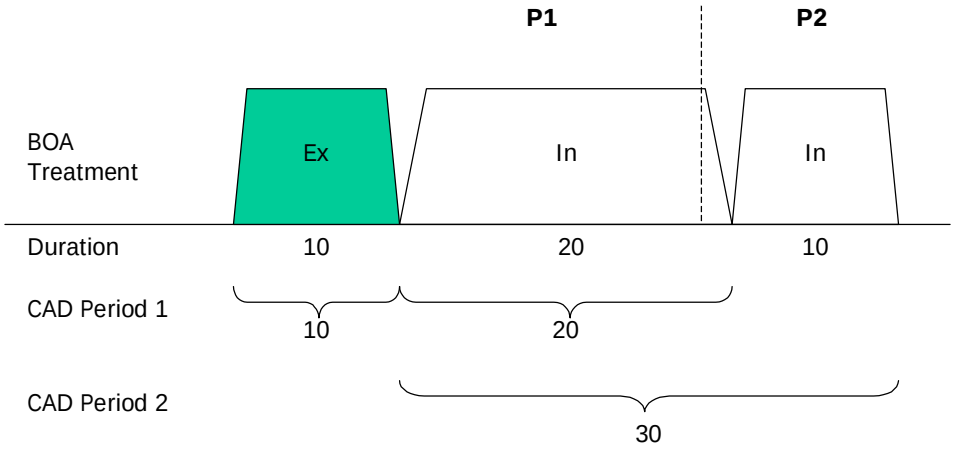
Figure 4.4 – CAD0 Anomaly 2



The figure shows that decisions about when a BOA was issued could have an effect on the calculation of the imbalance prices.

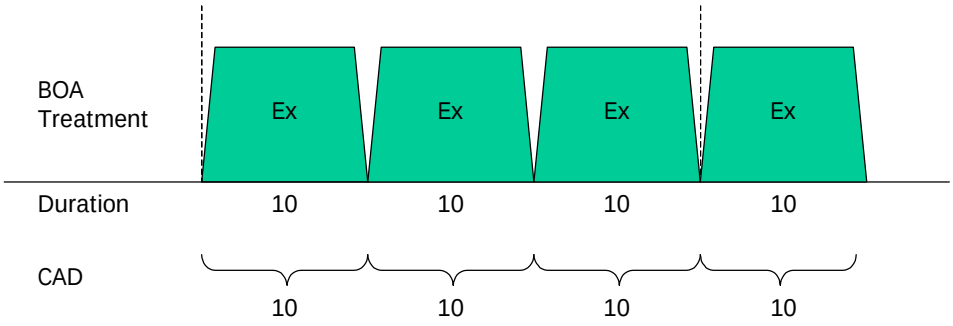
As a result of the issues associated with this type of definition, the 2nd Consultation Document described an alternative form, which was less arbitrary with respect to the period boundaries. This would effectively only allow the CAD calculation to start once a BOA was greater than CADL minutes in duration, as shown in figure 4.5.

Figure 4.5 –CAD0 Definition as Proposed in 2nd Consultation



Although this solved the boundary issues, during consideration by the Panel it was considered that it was too open to gaming, as shown in Figure 4.6.

Figure 4.6 – Proposed CAD0 Gaming Opportunity



Whether this really represents a significant opportunity for gaming, when compared to other CAD definitions is a matter of debate. However, this combined with its late consideration within the assessment of P18A was a major disadvantage.

4.5 Panel Consideration of P18A

The final consideration of P18A by the Panel on 12 July 2001 was a complex affair, with the need to address and balance many conflicting issues. The following provides a summary of the considerations and the final recommendations concerning the CAD definition, which were documented in the report to the Authority on 13 July 2001:

- there was little desire to wait for an Enduring Solution to be developed before P18A compliant prices could be implemented;

- as a result an Interim Solution was required to reduce exposure to non-P18A prices;
- an Interim Solution would only be capable of implementing a CAD0 or CAD1A definition;
- the Panel wanted to maintain consistency in the legal text between the Interim and Enduring Solutions, in particular:
  - the CAD definition for a group of Settlement Days should not be changed once they had initially been processed by the Interim Solution;
  - the CAD definition should not be changed for Settlement Days after the Enduring Solution was implemented;
- as a result of these implementation issues it followed that it was necessary to choose either the proposed CAD0 definition or CAD1A;
- the discussion about the principles of CAD0 concluded that the proposed definition was not suitable for a number of reasons, it:
  - was introduced too late in the assessment with insufficient time to consider it in the necessary level of detail;
  - represented too much compromise on the intellectual purity of the CAD definition, especially when compared to CAD3;
  - introduced too much potential for gaming.

As a result of the above discussion, the Panel determined that CAD1A should be adopted for both the Interim and Enduring Solutions.

4.6 Modification P38

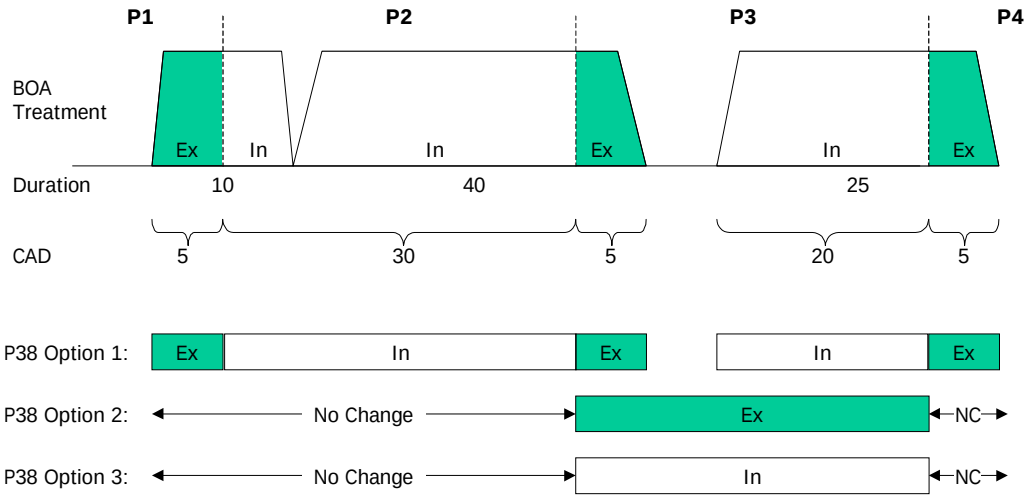
P38 was raised by Slough Energy Supplies Limited on 19 September 2001 and offers a CAD definition that is significantly different from all definitions considered so far. Specifically:

- the purpose of the Modification Proposal as indicated by the Title, and one of the justifications within the body of the proposal, is to allow prompt price reporting;
- the description of the Proposed Modification includes a new CAD definition which states that the CAD should only be measured *within* settlements periods, a mechanism which will effectively limit the maximum CAD value to 30 minutes. The body of the proposal justifies this based on principle that as bids and offers are priced separately for each Settlement Period, they should be treated separately.

When P38 is used in the context of a specific CAD definition it is assumed to mean the proposed definition that only measures the CAD *within* Settlement Periods. This document avoids using the term P38 to refer to the purpose of achieving prompt price reporting, as by definition all CAD0 definitions can achieve this.

As was found with the original CAD Definition proposed by NGC in P18A, the interaction of overlapping BOA within a period is not clear cut, and a number of different options are available to calculate the Bid-Offer volume to include in the imbalance price calculations. Figure 4.7 gives some options on how P38 could be expected to process a range of related BOA and periods. If P38 is to be progressed as a CAD definition then one of the first tasks is to define which definitional alternative to use.

Figure 4.7 – P38 Options



This figure shows the effect on the Offer volumes with 3 possible definition alternatives. For these options it is assumed that the current P18A value of CADL would be used, i.e. 15 minutes. This is based on the premise that any group of BOA contained entirely within a period should be treated in the same way by both P18A and P38.

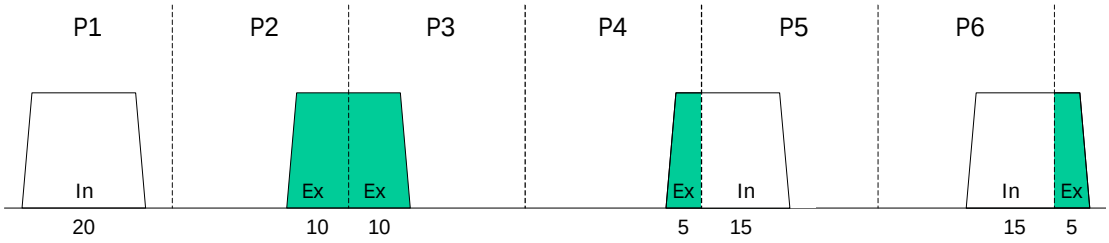
In all 3 options the treatment of Offer volumes for Periods 1,2 & 4 are the same and the difference is limited to Period 3:

- P38 Option 1 uses the logic of CAD option 1b in that only the volume associated with each individual short acceptance (QAO^{kn}_{ij}) should be excluded. Hence the second part of the second BOA can be excluded, whilst keeping the first part of the third.
- P38 Option 2 uses the logic of CAD option 1a, which is the baseline solution within the BSC, that if one BOA is too short to be included, then all volume for that BMU within that Period (QAO^{n}_{ij}) should be excluded.
- P38 Option 3 recognises that if one is willing only to consider the data within each period, then it may be more natural to sum all duration within that period and make a decision based on the overall duration. In this example this would make a CAD of 25 for Period 3, enough for QAO^{n}_{ij} not to be excluded.

It is important to note that none of these definitional alternatives produce the same results as P18A. In addition an anomaly caused by period boundaries still exists, as shown in Figure 4.8 for the same BOA taken at 4 different times. In fact in the same way as P15 truncates volume from the front of the majority[4] of BOA, P38 would truncate volume from the start and end of approximately 50%[5] of a group of BOA which cross a period boundary. It is also worth noting that P18A would not have tagged any of the BOA in Figure 4.8 for exclusion.

[4] With 75% of BOA having a lead-time of 2 minutes or less, some volume will be truncated from the majority of BOA.
[5] Assuming a CADL of 15 minutes, then any group of BOA starting in the last 15 minutes, or ending in the first 15 minutes, will have the start/end of the BOA truncated.

Figure 4.8 – P38 Anomaly



It is too early in the Assessment process to have detailed data analysis of how much difference any of the P38 definitions would make. If we use the assumption described above that the CADL would be the same as for P18A, then:

- all groups of BOA within a period would be treated the same by P38 option 2 and P18A.
- those BOA which cross a boundary may have volume removed by P38 that P18A would have not excluded.

It is therefore probably safe to assume that P38 would result in additional volume being excluded. It is not possible at this stage to quantify that precise difference, or the effect of the other definitional alternatives. However, it is expected for this effect to be significant.

However, some basic analysis has been done into how often a BOA that crosses a period boundary is also priced significantly different in each period. This gives some idea of the materiality of one of the main justifications for P38. Details of this limited analysis are included in Annex B. This analysis concludes that in almost 4 months there have only been two instances of BOA spanning different Settlement Periods where a "significant" price change occurs:

- In the first case it was a case of a "system" balancing BOA being taken 1 minute before the period end, when the price was high. This created a 1.25MWh volume, too large to be removed by P10. However, when joined to another BOA in the next period the overall CAD was still only 10 minutes. If P18A had been active for that Settlement Day, then it would have excluded the BOA from the calculation of imbalance prices.
- The second occurrence is more interesting as it includes significant volume in both the high and low priced periods. It differs slightly from the described scenario as the second period was the highly priced one and in addition the BOA was also extended in the second period. Even with the extension it only covered 8 minutes of the high priced period and hence P38 would have excluded it. However, the overall CAD for all 3 periods covered was 40 minutes, and hence P18A would not have excluded it.

It is important to note that this has rarely occurred and hence its materiality is of the same order as some of the other short comings already accepted for CAD definition 1A.

It is important to note that these findings do not imply anything about how much Bid-Offer volume, where the prices does not change, would be excluded by P38 in order to "find" these two occurrences. This has already been stated to be significant.

4.7 Revisit CAD0 Definitions

As is evident in section 4.5 the decision on P18A was very complex and the concept of CAD0 was introduced too late to gain any momentum.

The introduction of P38 as a means to gain prompt price reporting means the previously considered CAD Definitions should be reconsidered:

- the concerns over the ability to game the proposed CAD0 definition were never quantified;
- the concept of converting any of the existing CAD definitions into a type CAD0 definition was never considered in any great detail.

In parallel with P38 it is recommended two other approaches are considered:

- converting the baseline CAD1a definition into an equivalent CAD0 definition (precise definition is still to be decided). If the CAD definition has to be changed then this would represent the least change and the analysis in Annex A suggests the materiality may be small;
- other CAD0 definitions, such as the originally proposed definition, converting CAD1b / CAD1c to a CAD0 equivalent[6] and any other Alternative Modification. The Modification Group will need to decide which of these definitions to assess and guidance from the 1st consultation should be sought to help influence this decision.

[6] If it is decided that prompt price reporting is sufficient to justify a change in the CAD definition, then CAD1b and CAD1c offer a good starting point. Both of these could represent simple enhancements to the CAD0 equivalent of CAD1a and were only ruled out of the original P18A assessment due to the limitations imposed by the Interim Solution.

5 PROMPT PRICE REPORTING

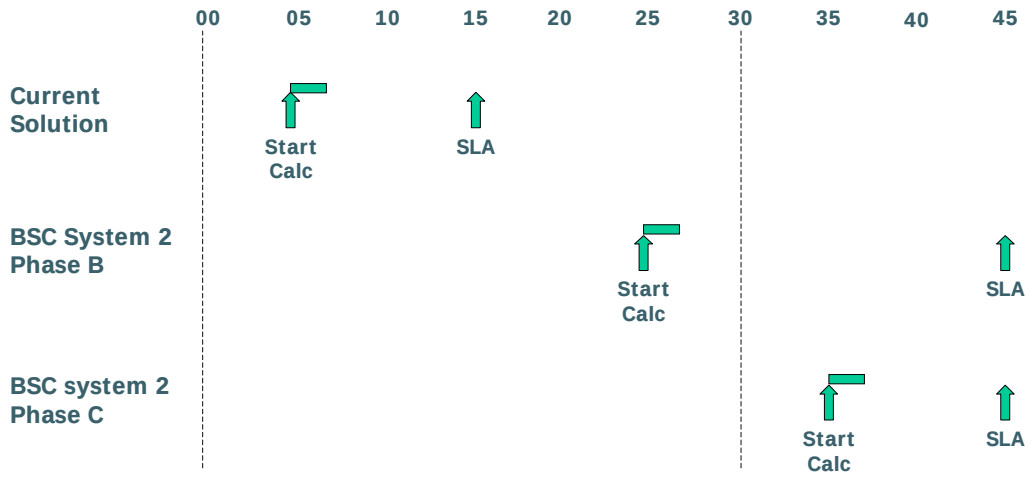
The P18A Interim Solution currently reports imbalance prices after 7 working days. It should be noted that some work is being progressed within the ISG as to whether it is possible to improve this. Consideration of the Interim Solution is outside the scope of the P18A review or Modification Proposal P38.

The existing definition of CAD within the BSC requires the calculation of imbalance prices to be delayed as it is not possible to calculate the CAD for a group of short acceptances which cross the settlement period boundary until CADL minutes into the next period. This was a recognised issue during the P18A assessment, the consultation, and also the Panel meeting and subsequent recommendation to the Authority.

The BMRS also needs to wait 5 minutes before it can start to calculate the indicative prices in order to be sure it has received all relevant data. The BSC[7] allows the BMRS 15 minutes from the period end in which to calculate the indicative prices[8] – this is referred to below as the Service Level Agreement (SLA).

It is possible to accurately calculate indicative prices after CADL minutes, however in order to avoid future system changes, should CADL be increased, it is sensible to delay the calculation until $CADL_{max}$ minutes after the period end. Given the two-phase release of changes to Central System Software in BSC Systems Release 2, further complication is added. Figure 5.1 shows the start of calculations relative to the end of a Settlement Period as well as showing the SLA.

Figure 5.1 – Current Price Reporting Times



This planned schedule is based on the assumptions that:

- indicative prices should only be published once;
- indicative prices should be published as correct as possible;

[7] Section V2.3.3b – an omission in the original drafting of P18A left this value as 15 minutes, even though the definition of CAD required a delay of at least CADL minutes before being able to start the calculation. Modification P49 seeks to rectify this omission.
[8] The BMRS can typically calculate indicative prices in around 1 minute

- the maximum value of CADL is 30 minutes;

Table 5.1 shows that it is possible to reduce the time to publish the indicative price data on BMRS, if these basic assumptions are re-examined. The variations on the current regime are shown, along with the impact on the start time of the calculation for each variant. The last row is included to show that in order to improve on these options a new CAD definition is required.

Table 5.1 – Prompt Price Reporting Options

CAD Definition	Option	Start calculation after 5 mins	Start calculation after 35 mins	Comments
Existing	Current	-	Y	Enduring Solution
	P18A Indicative[9]	Y	-	BMRS indicative prices will be more "indicative" and potentially less accurate
	Report Twice	Y	Y	Reporting indicative prices twice will mean a change to BMRS volumetrics
P38 or Alternative	"Prompt"	Y	-	

In addition to these approaches it would be possible to reduce the $CADL_{max}$ value and this would allow the Enduring Solution to report the prices earlier than currently planned. It may also be worth investigating the implications of reporting indicative prices after CADL minutes, and whether the BMRS could subsequently increase the value of CADL without requiring additional changes.

It is not possible at this stage to state how accurate the "indicative" option would be if it attempted to calculate the imbalance prices early. Similarly no calculation has been performed to measure the accuracy of indicative prices on BMRS against those reported in the SF run pre P18A. Annex A provides an initial assessment of the materiality by analysing the number of short duration BOA which cross the period boundary.

It should also be noted that if both Modification Proposals P49 and P38 are rejected, and no changes are made to the BSC, then the "P18A Indicative" option would be the most accurate interpretation of the BSC.

[9] All imbalance prices reported on the BMRS are indicative. The BMRS uses estimated Transmission Loss Multipliers (TLM), day before BSAD data (see P48) and is not updated if there are any manifest errors, or corrections applied through Workaround W018. The term "P18A Indicative" is used within this document to describe the reporting option that allows the imbalance prices to be calculated early, such that not all the CAD values will be calculated accurately. The materiality of this is discussed further in Annex A.

6 IMPLEMENTATION ISSUES

Should an alternative solution to P18A be proposed then it would need to be implemented into a baseline of the Central Systems which includes P18A rules. Software implementation of changes that affect settlement data, such as imbalance prices, is a complex issue. This issue has been recently discussed at the Panel and within the Pricing Issues Modification Group and the issues are illustrated in the following two Powerpoint presentations:

- [RD/4] - This presentation to the Panel on 18 Oct 2001 highlighted a number of concerns over how changes are implemented, both in terms of the BSC Implementation Date and software installation date.
- [RD/5] – The initial presentation to the Modification Group for P38 showed some examples of how a "medium" complexity change, such as P38, may be implemented in relation to other ongoing work.

Modification Proposal P38 does not ask for Retrospection, and there has been no suggestion that it would be appropriate for this modification. This means that should this new modification be implemented then the Settlement Days between 25 September 2001 and the Implementation Date for the new modification would need to continue to be reconciled according to the P18A rules, and also within the BSC Central Systems[10].

Further to this it is suggested that the most feasible approach for P38, or any Alternative Modification, would be a "natural" implementation approach, where the BSC Implementation Date is the same as the Software Installation Date.

Any alternative approach, to bring forward the BSC Implementation Date, would result in a further temporary delay in prompt price reporting, an unwelcome side-effect when the stated purpose of modification proposal P38 is to improve prompt price reporting. In addition the materiality of further changes in terms of prices should be less, since the implementation of P18A, and hence the urgency to implement using an Interim Solution should not be so great.

It is not possible at this stage to provide an estimate of a likely BSC Implementation Date. However, the following factors would need to be taken into account:

- The first stages of this assessment are to review P18A and consider the value of prompt price reporting. If after the interim report to the Panel on 13 December 2001 it is recommended to continue the assessment of P38, or an alternative, then an extension to the current timetable would be sought in order to produce a requirements specification and obtain the necessary impact assessments.
- As the stated *purpose* for Modification Proposal P38 is about prompt price reporting, as such it is not expected to make a significant change in the value of the calculated imbalance prices[11]. This may result in it being treated at a lower priority than other modifications with a material impact on imbalance prices, or their application to imbalance volumes.

[10] One of the assumptions underlying the P18A Interim Solution is that the TOMAS system would not be expected to calculate the imbalance prices for any Final Reconciliation Settlement Runs.
[11] It should be noted that in practice this may not be the case if a new CAD definition was to restrict the calculation of CAD values to individual Settlement Periods, as proposed in P38.

- It would be premature to *complete* detailed implementation planning, and contract / schedule any work, until there is a firm determination from the Authority. The Implementation Date of any new modification proposed to the Authority would need to recognise this, and hence provide a suitably conservative estimate.

These factors, which will determine when a modification will start to take effect, should be considered when assessing the complexity of any approach.

It also needs to be recognised that there is a step change in complexity once a solution that contains a new CAD definition is recommended. The following is a list of factors that illustrate why this occurs:

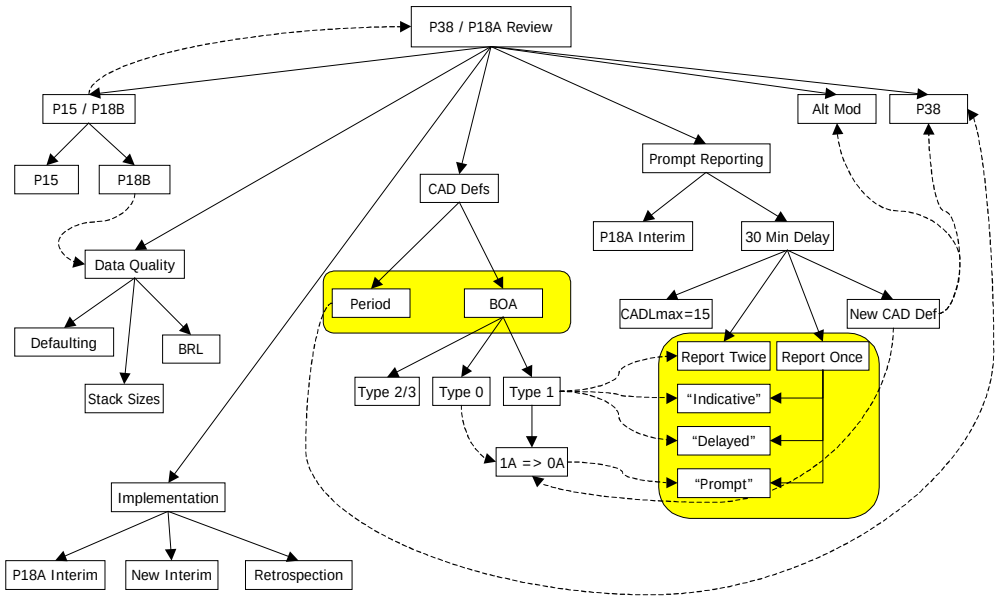
- any change in CAD definition will alter the *value* of the imbalance prices, rather than simply altering *when* the prices are reported. The sensitivity of this, and different views, may result in additional work both before and after the Authority determination;
- the more radical the change in any CAD definition, the more data modelling will be required during any assessment to show it really is capable of better achieving the BSC objectives. Failure to do this could result in implementing a solution that in practice does not perform as intended, as well as the existing solution, or introduces unforeseen side-effects. The risk and the complexity of the analysis is increased if the baseline P18A definition is already considered to be working well;
- the Central Systems will need to support both old and new CAD definitions to allow each Settlement Day to be processed by the correct set of rules:
    - the testing of the pricing engine will need to show it works correctly under all conditions, such as long/short clock change days;
    - the existing P18A pricing engine will need to be re-tested to ensure no side-effects are introduced.

7 SCOPE OF FIRST CONSULTATION OF P18A REVIEW AND P38 MODIFICATION

Figure 7.1 was used during the Modification Group meeting on 2 November 2001 to illustrate the complexity and interaction of the individual components of the P18A Review and assessment of Modification Proposal P38. The figure provides a hierarchical representation of the different issues that are discussed within the document and uses dotted lines to show some of the links between subjects. The two shaded areas represent the two areas that need to be considered during this first consultation:

- the business value of prompt and accurate price reporting;
- whether the definition of CAD should be limited to information within each Settlement Period, or whether it should continue to be based on the overall BOA duration.

Figure 7.1 – P38 / P18A Review Issues



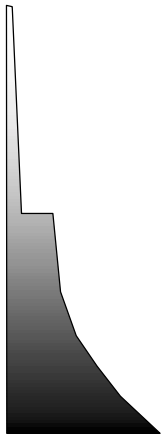
In general it is not possible to consider the value of anything, without also considering the associated cost. However as stated in section 6 it is too early in the assessment process to have a detailed understanding of what the associated costs may be for any of the definitional alternatives discussed in this consultation.

Table 7.1 extends the concepts introduced in Table 5.1 in order to give some idea of the range of options and potential complexity of any change. It is not possible to equate this complexity to true costs, however, the original P18A costs and timescales for the Enduring Solution may provide some guidance.

The left-hand column indicates whether for any particular option, the baseline P18A CAD definition is used (consultation options (i) to (iv)), or whether a new definition is required (consultation options (v) to (vii)). As stated in section 6 the introduction of a new CAD Definition will create a step change in complexity and this is shown in the right-hand column. In addition the level of complexity may rapidly increase the more sophisticated the CAD definition becomes.

The second column builds on options presented in section 4 to indicate how they relate to the CAD definition and increase the overall complexity.

Table 7.1 – Consultation Options

CAD	Consultation Option	Price Reporting				Complexity
		5/15 Mins P18A Correct	5 / 15 Mins P18A Indicative	x / y Mins P18A Correct	35 / 45 Mins P18A Correct	
Baseline P18A Definition	(i) continue with current baseline solution	-	-	-	Y	None – No change
	(ii) set an explicit $CADL_{max}$ to a value less than 30 minutes	-	-	Y	-	
	(iii) calculate "P18A Indicative" prices soon after the period end	-	Y	-	-	
	(iv) calculate prices twice to produce "P18A Indicative" and corrected	-	Y	-	Y	
New Definition of CAD	(v) redefined the baselined P18A definition to create a CAD0 alternative definition	Y	-	-	-	
	(vi) propose a new CAD definition capable of prompt price reporting	Y				
	(vii) propose CAD definition P38 – a period based CAD definition	Y	-	-	-	

It is not possible to provide simple decision tree on how to interpret this table, as too much depends on how you weight or value individual criteria.

In order to help explain the thinking behind the table the following guidance is provided. It should be noted there is a deliberate slant towards proposing no, or minimal, change:

- You will probably favour consultation options (i) to (iv) if you believe strongly in any of the following:
    - there is insufficient experience using the existing P18A rules, and few known deficiencies, to justify a change in the CAD definition so soon. It will be very hard to determine if a new approach is not only capable of better achieving the BSC objectives, but that it really does;
    - implementation timescales could be sufficiently long that they risk unsettling market confidence for a protracted period of time, and that by the time the new changes are implemented, the market may have successfully adjusted to the existing definition.
    - the current P18 definition is sufficient, and will be hard to better, such that other aspects of pricing are now seen as more significant.

- If you believe that *firm*[12] indicative prices *must* be reported 5-15 minutes following the period end, and are not dissuaded by the above factors, then you probably favour consultation options (v) to (vii).
    - If the arguments for options that did not change the CAD definition were only just outweighed by the argument on prompt and accurate price reporting, then you may favour consultation option (v) as this represents the least level of change. Although it is still a new CAD definition, it is easier to see it as a correction to the existing definition.
    - If you are willing to contemplate a change in CAD definition, then you may favour the argument that this is an opportunity to have a definition with a better underlying rationale, i.e. consultation option (vi). To meet the prompt reporting requirement this could be a CAD0 variant of the existing CAD1b or CAD1c, or even a more sophisticated CAD2 or CAD3. These were excluded as part of the P18A process because of the requirement for an Interim Solution, this will probably not be a factor if a new modification is recommended.
    - Perhaps if you believe that the anomalies in section 4.4 are symptomatic of an approach that is based primarily on the dynamics of a BOA, and that instead an approach based entirely on information within the period being processed, should you favour consultation option (vii). Consultation option (vii) is a fundamental change in the CAD calculation philosophy. If the underlying motivation is purely prompt price reporting then consultation options (v) or (vi) should be considered.
- If you believe a solution based on one of the consultation option (i) to (iv) is most appropriate, then it is necessary to determine the level of compromise you are willing to accept with regard to prompt and accurate price reporting;
    - consultation option (i) represents the current solution where prices are reported correctly 35-45 minutes after the period end. This obviously represents no change;
    - if you believe that prices only need to be reported a little earlier, and that the value of CADL is unlikely to increase, then you could ask for an explicit limit of 15 or 20 minutes to be placed on $CADL_{max}$, in line with consultation option (ii). This would allow prices to be correctly reported after 15-25 or 20-30 minutes, i.e. within the Settlement Period immediately following the Settlement Period to which they relate;
    - in Annex A it is shown that only a few BOA will cross the period boundary and will be short enough to cause potential problems in calculating the prices earlier. If you believe that BMRS prices are only indicative and that this level of accuracy is acceptable you may favour consultation option (iii) as a simple change.

If the arguments for consultation option (iii) were compelling, but you felt firm prices must still be available, then you may favour consultation option (iv), which reports the "P18A Indicative" price 5-15 minutes after the period and then updates it with the "P18A Correct" price after 35-45 minutes. This would probably be done in a transparent manner such that the end user would only see one price, the latest.

[12] This is only referring to the effect of P18A. Other factors, such as changes in BSAD data and manifest errors, are not normally corrected on BMRS.

ANNEX A – SUPPORTING INFORMATION - MATERIALITY OF BOA CROSSING PERIOD BOUNDARIES

This Annex provides information that affects consideration of:

- the CAD0 equivalent of CAD Option 1A (see Section 4.4); and
- the option to report "P18A Indicative" prices on the BMRS (See Section 5).

The gives an idea of the probability of a BOA appearing to have a CAD of less than 15 before the period end, and subsequently changing early in the next period. It is only these BOA that will cause a change in the indicative prices on BMRS.

It has not been possible to alter the Elexon TOMAS system to identify which BOA are affected by this, however, this is planned for the next stage in the assessment.

As a result this section contains a simple analysis of the 6844 BOA used in the P15 / P18B data analysis to examine their distribution and the number which may present a problem.

For it not to be possible to determine that the eventual CAD will be less than 15:

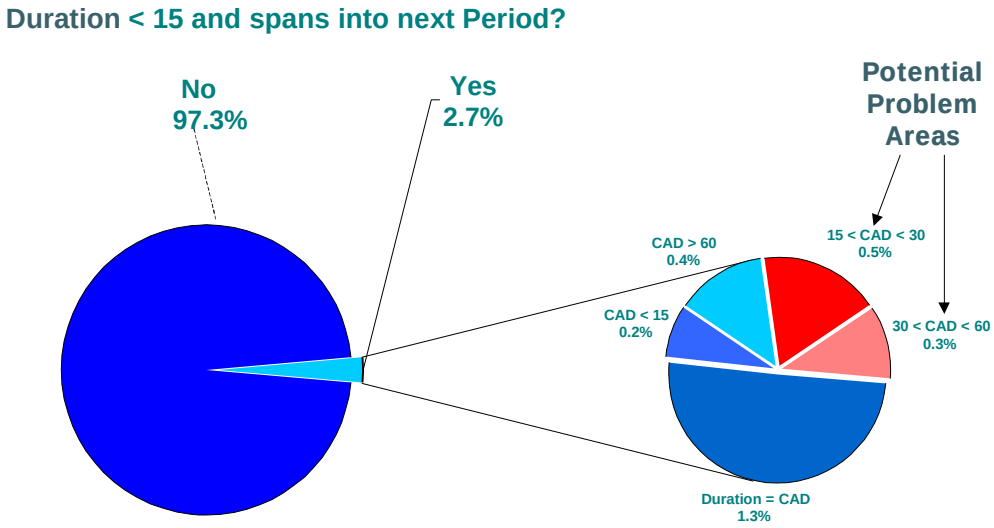
- the original duration of the BOA must itself be less than 15 minutes;
- the BOA must cross into the next period; and
- the CAD must not be extended past 15 minutes by one or more other BOA already known about in the current period.

In such circumstances the algorithm for this analysis will assume that the BOA is not extended and hence treat it as if it has a CAD of less than 15.

Without the support of TOMAS it is not possible to determine whether this last condition will apply, and so an initial analysis is limited to considering only the duration and start times.

Figure A.1 shows that for the chosen sample, the set of BOA that could potentially change from a CAD less than 15 to one greater than 15 is represented by 2.7% of the total BOA.

Figure A.1 – Materiality of Short Duration BOA Crossing Period Boundary



Not all of these 2.7% will actually cause a change in the treatment of the BOA, only if their eventual CAD is greater than 15. Analysis of these BOA shows:

- 50% or 1.3% of the total have an eventual CAD equal to their original duration and hence software will correctly exclude the BOA
- 8%, or 0.2% of the total, have an eventual CAD greater than their original duration but still less than 15 and hence the software will correctly exclude the BOA
- 13%, or 0.4% of the total, have an eventual CAD greater than 60. This means there is a high probability that sufficient of the BOA which form the overall CAD would have already been known about prior to the end of the period, and that a CAD greater than 15 could have been successfully calculated.
- 11%, or 0.3% of the total, have an eventual CAD less than 60, but still greater than 30. Like the previous category some of these stand a good chance of being joined to BOA already known at the end of the period, although their shorter CAD duration means the probability is not as high as for a CAD of 60 minutes.
- 18%, or 0.5% of the total, have an eventual CAD of greater than 15, but less than 30. Again these could still be joined to another BOA known about at the end of the period, however the probability is reduced.

In summary less that 1% have the potential to change their CAD value to one greater than 15, and statistically 50% of these could still join with a BOA within the current period and hence already have a CAD greater than 15.

The above is only a simple statistical analysis and only gives an impression of the materiality of this issue. However, it shows that it is only a small number of BOA which are capable of altering the imbalance prices once the period has ended. In addition once the

data can be analysed further it should identify the precise BOA which would cause problems, and then the materiality would reduce further.

ANNEX B – SUPPORTING INFORMATION - PRICE CHANGES BETWEEN PERIODS WHICH AFFECT P38

Detailed data analysis on the effect of P38 has not yet been carried out. However, one of the drivers behind P38 is that a BOA originally taken as high priced "system" balancing may be extended in a subsequent period because the new pricing structure is now considered suitable for "energy" balancing. A quick look at the Bid Offer volumes has been performed to attempt to find any examples.

Between 1 July 2001 and 22 October 2001 there were 44 BMU Offer volumes (QAO^{n}_{ij}) which were taken with an Offer price of greater than £500 / MWh (i.e. capable of having a "significant" price change). Further analysis of each of these established:

- 7 had a Bid-Offer number other than 1 and hence were not the main Offer;
- 4 had a volume of less than 1MWh and hence P10 would have removed them;
- 28 showed no change of price in the adjacent periods;
- 3 of the remaining BOA were entirely within the target period;
- this left 2 which crossed a period boundary where there was also a significant change in the Offer price.

The data and impact of these two examples is examined below.

During period 40 on 3 July 01 a BOA was taken for T_DINO-3 which crossed into the next period. Only 1 minute was initially taken in period 40 and the associated volume was 1.25MWh, this was too large to be excluded by P10. The BOA was subsequently extended and the overall CAD became 10 minutes. This is sufficiently small for both P18A and P38 to exclude the BOA from the calculation of imbalance prices.

Table B.1 – 3 July 01 – P40 – T_DINO-3

Acceptance Id	From Time (GMT)	To Time (GMT)
994	18:59	19:00
	19:00	19:05
995	19:04	19:09

From Time (GMT)	To Time (GMT)	Offer Price (£/MWh)
18:30	19:00	5000
19:00	19:30	145

During period 42 on 4 September 01 a series of 5 BOA were taken from T_DINO-3 for what would be considered "energy" balancing at £145/MWh. The last of these (1190) crossed into the next period with an associated Offer price of £5000/MWh. In addition this BOA (1190) was subsequently extended in period 43 by an additional 4 minutes (1191). The overall CAD for this sequence of BOA is 40 minutes and hence P18A would have not excluded them, however as only 8 minutes were in the second period P38 would have.

Table B.2 – 4 September 01 – P43 – T_DINO-3

Acceptance Id	From Time (GMT)	To Time (GMT)
1186	19:28	19:33
1187	19:33	19:48
1188	19:40	19:48
1189	19:47	19:57
1190	19:54	20:04
1191	20:03	20:08

From Time (GMT)	To Time (GMT)	Offer Price (£/MWh)
19:30	20:00	145
20:00	20:30	5000

ANNEX C – CONSULTATION QUESTIONS

Respondent:		
Representing (please list all parties):		
Q1) Do you have any general comments related to the P18A Review / P38 Modification you wish to make before answering the detailed questions?		
Q2) What do you regard to be an acceptable timetable to produce indicative imbalance prices on the BMRS?		
Q3) How much value do you place on <u>prompt</u> indicative price reporting on the BMRS?		
Q4) How much value do you place on the <u>accuracy</u> of the indicative prices reported on BMRS?		
Q5) Having answered Q2 to Q4, if it proves infeasible to meet all your requirements simultaneously, what trade-offs would you be willing to make between promptness of indicative prices and accuracy of indicative prices?		
Q6) How would your view to the questions 3 and 4 change if P12 were approved by the Authority and gate closure was reduced to 1 hour?		
Q7) Section 7 of the consultation document presents a table of potential options (i) to (vii). It is recognised that it is early in the assessment process, however, it would help gauge support if you could rate each of the solutions. Please use a rating of low / medium / high to indicate how well you feel the option MAY address the trade off between promptness of indicative prices, the accuracy with which they are reported, the intellectual purity of the CAD definition and the complexity of the potential changes.	**(i)**	
	(ii)	
	(iii)	
	(iv)	
	(v)	
	(vi)	
	(vii)	
Q8) It is expected that the Modification Group will assess consultation options (v) and (vii). However, some guidance on the scope of the CAD0 definitions to consider within consultation option (vi) would help. Do you agree that the scope should be limited to the consideration of those definitions that would have previously been of type CAD1, or should the scope be widened to cover CAD2 and CAD3?		
Q9) Do you believe that there is a material problem of BOA crossing Settlement Period boundaries, where price changes occur and affect the imbalance prices?		
Q10) If you believe Q9 do you further believe that the intellectual purity of P38 is sufficient to address this perceived issue without unduly affecting other imbalance prices?		
Q11) To what degree would you be willing to see a change to the imbalance price calculation in order to deliver more prompt prices?		
Q12) Do you have any further comments?		

