

P59 Background Paper For 2nd Mods Group

1. INTRODUCTION

At the first Modification Group meeting there was general discussion of both P59 and also the associated NGC mechanism. A large proportion of this covered a number of the legal issues related to where an obligation to consider instructions beyond the wall should be placed.

One of the problems faced during this discussion is that the two mechanisms are not technically the same, and hence it is not purely a legal issue to decide where to place any obligations.

A couple of observations were noted during these discussions:

- the difference between the two mechanisms, both in terms of scope and implementation, makes it hard to determine at what level any comparison is can be made;
- the detail of how mechanisms like ATT and BSAD affect the calculation of imbalance prices and the effect they are currently having.

The following paper has been produced to provide an introduction to the proposed approaches and to define some structure to allow correct comparisons to be made. It is important to note that this paper has been produced to promote discussion at the next Modification Group meeting and should not in any way be considered to be definitive. Following discussion it is hoped that those sections considered appropriate can be used as background information in the Assessment Report.

This paper does not consider the legal/regulatory issues faced by either mechanism and concentrates on trying to define what the different mechanism are, and the practical issues to be faced in further consideration of P59.

2. P59 SCOPE

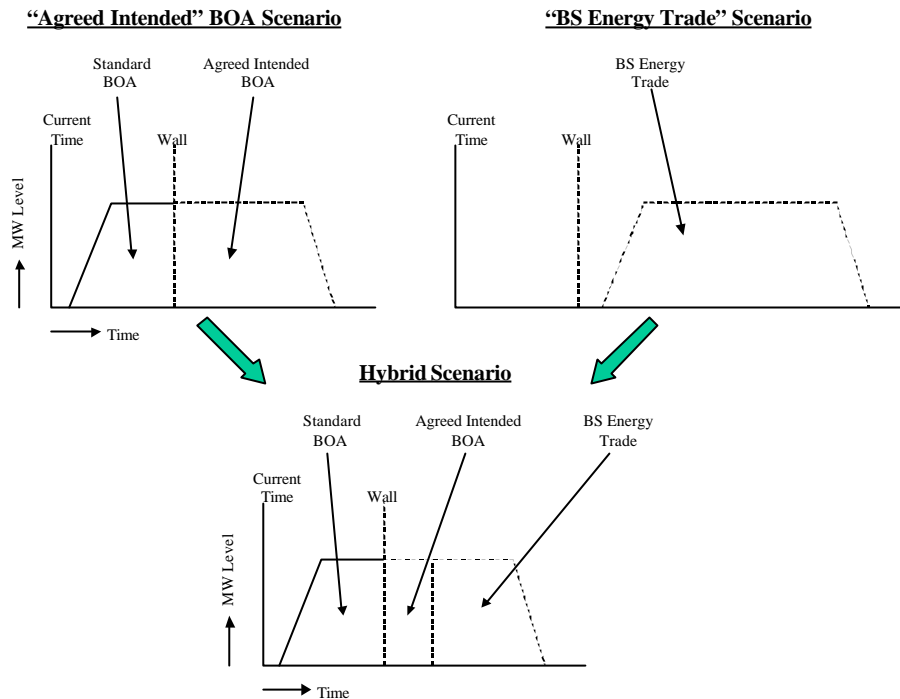
2a. What is the main difference between the NGC and P59 proposals?

As part of the assessment of P59 it is necessary to understand the related NGC proposals for addressing Beyond The Wall (BTW) and 1 hour Gate Closure (1HGC). Whilst P59 represents a single mechanism, the NGC solution proposes two different basic mechanisms, which can be combined to create a third:

- The first mechanism is related to BTW and has been referred to as **“Agreed Intended”**. This is where NGC would agree to issue additional BOA for those parts of the overall instruction that are initially outside the Balancing Mechanism window as long as the Party did not change their indicated position, i.e. as notified in their initial submissions. This would formalise the “Gentleman’s Agreement”.
- The second mechanism is related to 1HGC and addresses those situations where the instruction can be agreed sufficiently far in advance, such that the whole of the instruction would occur outside the current Balancing Mechanism Window. This is referred to as a **“BS Energy Trade”** and would require a bilateral contract to be notified through ECVA, a re-submission of the PN profile, and inclusion of the costs and volumes in BSAD.
- The third variant is a hybrid of the first two approaches, where there is not sufficient notice to issue the whole instruction as a “BS Energy Trade”. For those periods where Gate Closure had already occurred, then a standard BOA is required. In addition it is likely that there would be insufficient notice to construct and notify the required forward trade for the period of time immediately following the last Gate Closure (and possibly the one following that). This additional energy would need to be instructed using an “Agreed Intended” BOA, once the Balancing Mechanism Window had moved on. The combination of these 3 types of instruction has been referred to a hybrid trade and is only relevant within a 1HGC.

The NGC mechanisms are summarised in Figure 2.1

Figure 2.1 – Proposed NGC mechanisms



NGC recognise there is further work to develop these proposals, especially with respect to 1HGC.

The mechanism proposed by P59 is closest to the first of these i.e. “Agreed Intended”, and it is with this mechanism that a direct comparison is possible.

However, it should be recognised that should P59 be approved, then it would become part of the BSC baseline and an important factor in the consideration of 1HGC within the BSC (i.e. P12).

2b. What is the relevance of the “Agreed Intended” BOA to the assessment of P59

Both “Agreed Intended” and P59 attempt to achieve the same underlying principle:

A minimal BOA (consistent with the BMU dynamics at that time) that is required to return the BMU to the expected PN (as predicted using IPN) using Bids/Offer prices known prior to the wall.

They differ in that NGC intended to use obligations in the Balancing Principles Statement to indicate that additional BOA will be issued, as long as the Party does not alter its prices or dynamics to enable it to return to its physical position without incurring imbalance charges.

In contrast, the P59 solution proposes a series of changes to the algebra within section T that define how to calculate the cashflow figures and imbalance prices when an instruction is taken BTW. This is achieved by rolling forward the latest firm data (i.e. from before the wall) to ensure no changes in the underlying data are possible.

In the case where the relevant data (i.e. FPN/IPN, Bid Offer Ladder and Dynamic Data) does not change between the periods covered by the instruction, then both

mechanisms will deliver the same bid and offer cashflow figures and imbalance prices. They differ in how they cope with changes that occur BTW.

2c. What is the relevance of the new “BS Energy Trade” to the assessment of P59

From a formal BSC perspective it can be argued that there is no relevance, as the new “BS Energy Trade” is simply an NGC trade in the forward market and notified to the Balancing Market using BSAD. In addition it is designed to address the 1HGC and not BTW issue. Hence knowledge of the new, and alternative, Balancing Services Trade should not be required to assess P59.

It also needs to be recognised that this is an initial proposal related to 1HGC (not BTW) and is still being developed by NGC in conjunction with the industry.

It is however noted that this is useful background information in helping to form an overall picture of the BTW and 1HGC issues. Any views a Party may have on this new balancing service should be passed directly to NGC through their own consultation processes.

2d. What is the relationship between P59 and P12

The principle that a BMU should not be left hanging at the wall, and expected to face imbalance as a result, is widely accepted.

Significant time was spent during the design of NETA on this issue, and one of the reasons behind the original 3½ hour Gate Closure was that it allowed NGC to issue BOA for the majority of plant types, without the wall being considered an issue.

It is recognised that the wall would become more of an issue with a reduced Gate Closure and may be considered by some that addressing this issue is a pre-requisite to such a change.

Should P59 be approved then it would become part of the BSC baseline and hence the proposed mechanism would need to be resilient to the impact of a 1HGC.

However, the formal position for assessment of P59 is that the Modification Group can note the impact of a reduced Gate Closure (i.e. P12), however, it cannot make a recommendation based on any future determination that may be made in respect of P12.

It is important to ensure that any views a Party may form on shorter Gate Closure, as a result of assessing P59, are expressed to the P12 Modification Group.

3. AGREED INTENDED BOA AND P59

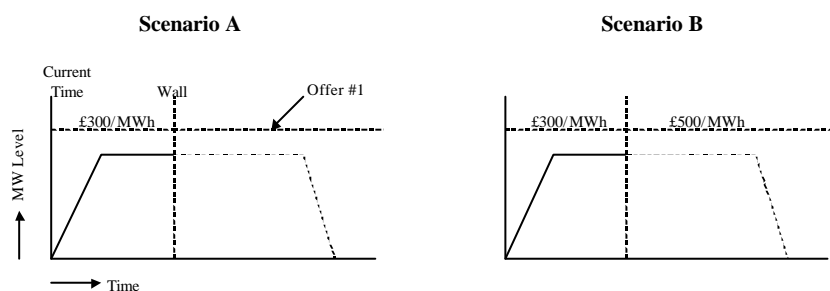
3a. What is the main issue that both the NGC “Agreed Intended” and P59 mechanism must resolve?

As stated in section 1b both solutions have the same financial outcome as long as data is constant for the period of the instruction. However, both face the same issue of predicting the future FPN profile, dynamics and prices. Although NGC is provided with initial values prior to Gate Closure for planning purposes, the Party is entitled to change any until the point of Gate Closure. In addition this data prior to Gate Closure is not recognised within the BSC.

Figure 3.1 shows two scenarios:

- Scenario A shows an instruction being planned where the PN and Bid/Offer ladder is constant throughout the sample period (i.e. before and after the wall)
- Scenario B shows an instruction being planned where the prices in the Bid/Offer ladder are known to change shortly after the initial wall. For the purposes of this scenario it is assumed that this change was visible in the initial data, and hence was factored into the NGC’s decision to bring the plant on-line.

Figure 3.1 - Simple Scenarios – Initial Data Does Not Change



For each of scenarios Table 3.1 shows how it is anticipated that the two different mechanisms would interpret the data when finally attempting to price the instruction.

Table 3.1 – Interpretation of the Simple Scenarios

Scenario	NGC Mechanism	P59 Mechanism
A	Correctly interpreted as A	Correctly interpreted as A
B	Correctly interpreted as B	Incorrectly interpreted as A

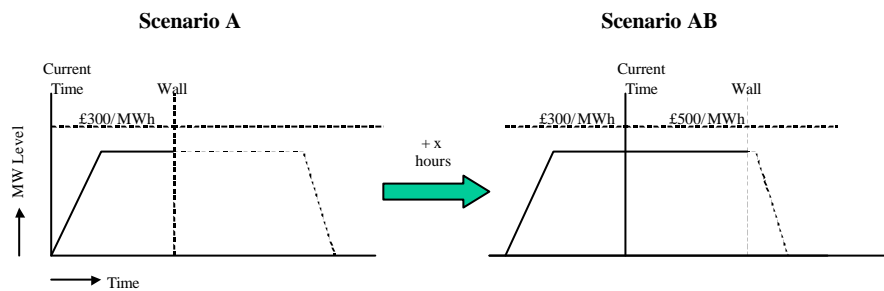
As the table shows, both mechanisms would interpret Scenario A as intended, and in addition the NGC mechanism would also interpret scenario B correctly. However, the P59 mechanism would incorrectly interpret Scenario B by processing the data as if it were for Scenario A, i.e. it would miss the price change. This occurs because the P59

mechanism would roll forward the Bid-Offer ladder from the period preceding the wall, into the periods BTW¹.

It must be recognised that the BSC has no concept (or record) of the initial data that NGC uses for its pre-Gate Closure planning. In terms of the BSC, such data only has meaning after Gate Closure has occurred for the time period concerned. As a result this interpretation is understandable.

However, figure 3.2 shows how a different outcome can occur with a different series of events. In this scenario it is assumed that the initial data originally indicates that Scenario A is to be expected, however at the last moment the Party changes the initial data to represent Scenario B. This will be referred to as Scenario AB.

Figure 3.2 – Changes in Initial Data Prior to Gate Closure



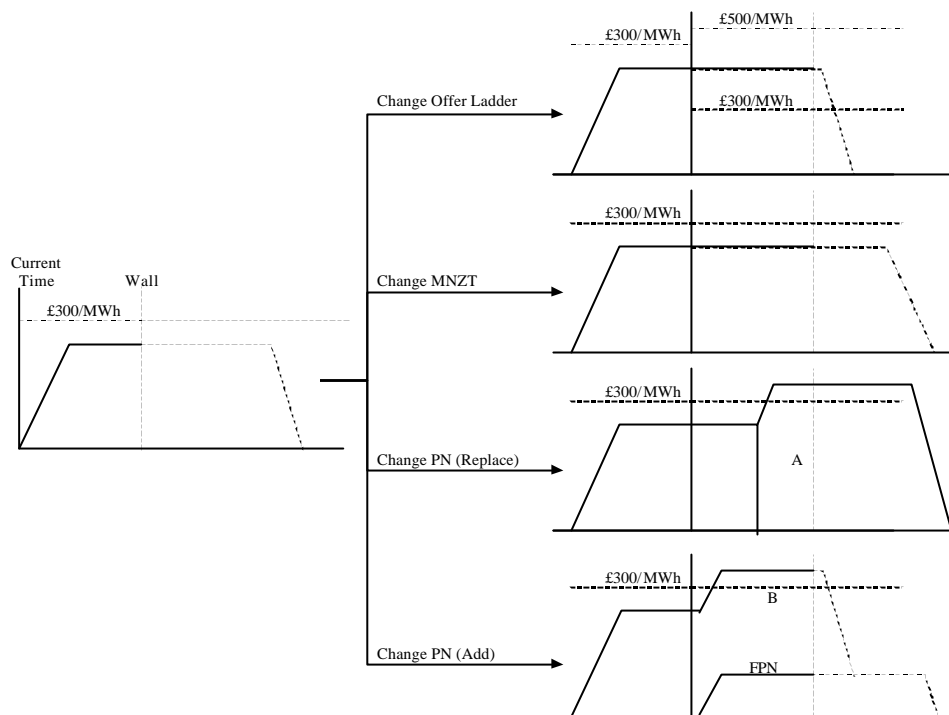
In this scenario the data that would eventually enter the Central Systems would be that of Scenario B. As a result each mechanism would again interpret the data in the same manner as for Scenario B. In light of these changes to the timing of events, it would now appear that the P59 interpretation is now the correct interpretation.

In the case of the NGC mechanism / Scenario AB, the obligations within the Balancing Principles Statement would include conditions to cover changes to the Bid/Offer ladder, and that NGC could leave the Party hanging at the wall. However, it should be recognised that other factors may mean this change in data was simply a case of bad timing (i.e. instructions crossing), or that to maintain system security NGC are forced to take the continuation BOA at the higher cost. If NGC do issue the acceptance, then the data that enters the Central Systems would indicate the offer should be processed at £500/MWh.

These scenarios indicate the underlying issue in trying to predict the future of instructions beyond the wall and how the mechanism should interpret changes. As the examples in Figure 3.3 illustrate this problem is not limited to price changes in the Bid-Offer ladder.

¹ It is recognised that the INNOGY presentation on P59 does provide a way for NGC to instruct the plant before the automatic extension occurs, and hence incorporate the price change. However, as the change represents a price rise, the incentive would be to use the automatic method.

Figure 3.3 – Future Changes Prior To Gate Closure



The 4 scenarios shown in figure 3.3 indicate the effect of changes in:

- **Bid Offer Ladder** – Unlike figures 2.1 and 2.2 in this case the volumes within the Bid-Offer Ladder are changed, so that the maximum volume for the £300/MWh pair number 1 is lowered, meaning some of the BOA will now be priced at pair number 2 and £500/MWh.
- **MNZT** – In this case the minimum non-zero time is increased meaning that the plant must be kept on line for longer if the new dynamics are used.
- **PN (Replace)** – In this case the Party makes use of the fact the plant is now on line to continue operation once NGC have finished. In this case they simply make use of NGC synchronising the plant and sell all the energy in box (A) and also take responsibility to desynchronise the plant once finished. In this case NGC would join a BOA to the new PN and hence the plotted profile for box (A) would represent both the newly submitted PN, and also the expected output level.
- **PN (Add)** – In this case the Party sell only a small amount of additional energy, expecting NGC to continue to provide the core BOAs, originally required to take the plant back to zero and desynchronise. In this case the Party may submit a PN to represent the additional energy and expect the BOA to be instructed on top of this. An alternative view could be that the acceptance level should remain constant and hence NGC would pay for less overall volume. Another issue to consider is what happens if the newly submitted PN is lower, effectively increasing the volume of a BOA against a fixed level.

These give some examples of the wide range of scenarios that can be created once you start to accommodate changes that can occur beyond the wall.

This section does not try to judge which of these should be considered legitimate. However, it should be recognised that it is possible for incorrect data to enter the

Central Systems and hence rules must be in place to deal with this (i.e. Manifest Error?).

How each mechanism will deal with these scenarios will depend on the sophistication of the eventual solution, or in the case of the NGC mechanism, the new obligations in the Balancing Principles Statement. The important part is ensuring the chosen solution represents a good balance between not allowing the Party to dictate post-event conditions to NGC, and also not restricting the ability to make short-term trades once the Party have agreed such an instruction with NGC.

This balance should also recognise the materiality of the underlying problem and take into account the frequency of such instructions and late changes in the initial data.

This is an area that needs to be developed with the Mods Group

3b. What is the materiality of these long duration BOA?

It should be noted that NGC issue about 500 BOA a day, however, as the following tables and figures indicate the number of times they have had to sync / de-sync plant is small in comparison².

Table 3.2 – Sync / De-Sync Instructions

Type	Number	Number a Day	Percentage	Avg Notice
Sync	74	0.3	0.06%	70 mins
De-sync	742	3.2	0.6%	12 mins

Within the context of the current BSC baseline neither of these represent a significant issue for BTW.

The fact that there are more de-sync instructions is not surprising, as the market has been consistently long, with NGC having to remove energy to balance the system. In addition once the frequency of non-constant submissions to initial data is included the materiality sync and de-sync instructions related to P59 should reduce further.

It is interesting to note that for “sync” instructions there may be sufficient notice with a 1HGC to issue the instruction as a “BS Energy Trade”. However the shorter notice for the “de-sync” instructions suggests an “Agreed Intended” instruction would be required.

² This is one of the main causes for NGC not being able to instruct a plant within the Balancing Mechanism Window, however it should be noted that this is more relevant to 1HGC and not to BTW within the current BSC baseline. However, it is relevant to P59 as the P59 solution should be resilient to a 1HGC.

Figure 3.4 – Distribution of Sync Instructions

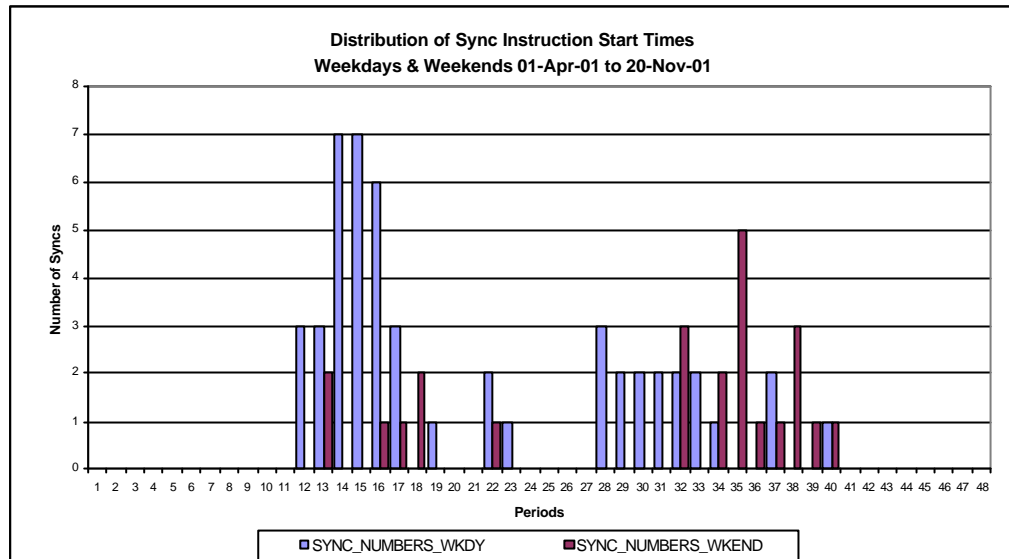
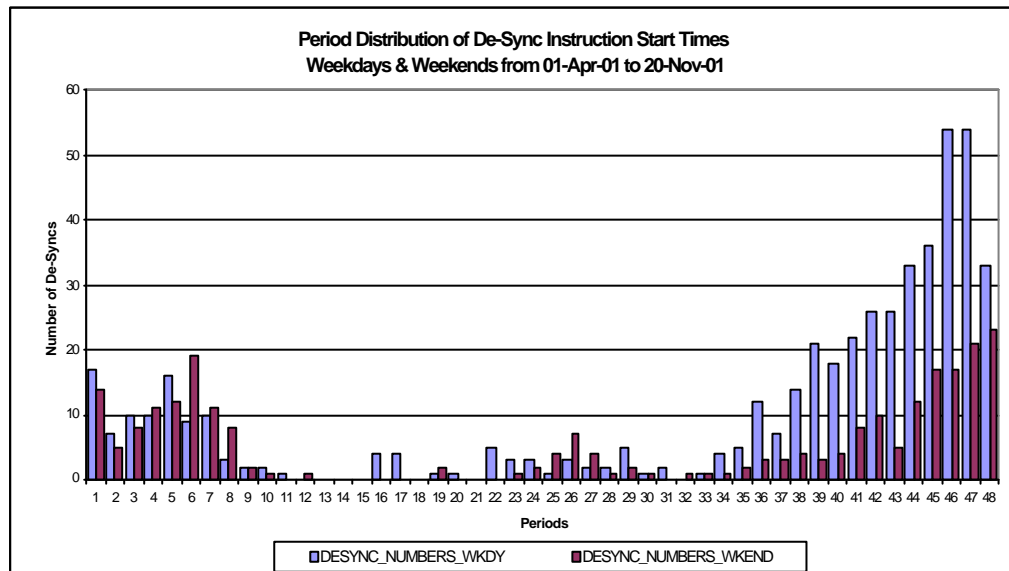


Figure 3.4 – Distribution of De-Sync Instructions



3c. What are the issues associated with representing the required rules, as obligations within contracts, or changes to section T?

There is no simple answer to this and it is necessary to consider a compromise:

- one of the advantages of not coding the rules in Section T (and hence the Central systems) is that they can be changed without needing software updates. This can be particularly useful for small amendments and also creating exceptions.
- by not coding any changes in the BSC/Central Systems it must be accepted that there will be no flexibility in how the BSC interpret the data once it is submitted. Therefore all the obligations and rules must aim to ensure that the data is correctly submitted in the first place and minimise the need to

take action on a Party for infringing any agreements, or to claim a [Manifest Error?] to correct the data.

- One of the advantages of coding the rules in Section T is that it is clear how data will be interpreted in each case and hence the BSC/ Central Systems can automatically accommodate last minute changes in data. For this to be done it must be possible to simply and unambiguously define the rules to be applied.

When this issue is first considered it may seem appropriate to use obligations and not to change section T. However, once all the necessary outcomes have been recognised and expressed as obligations, it may be considered that a manual solution is too cumbersome. The more flexibility allowed, for a Party to continue trading until Gate Closure when it is also subject to a “beyond the wall” instruction, the more conditions that may need to be imposed. However for this to occur it must be possible to agree and formalise the necessary rule changes.

The NGC solution for Agreed Intended BOA requires no change to the BSC or Central Systems. In this solution, a normal BOA will be issued (assuming prices and dynamics don't change) so it will be passed through to the central settlement in exactly the same manner as all other BOA, and settled at the prevailing prices.

This is a significant area that needs to be developed in conjunction with the handling of scenarios where data does change

4. FACTORS AFFECTING IMBALANCE PRICE CALCULATION

This section is provided as supporting information and is not directly related to P59/BTW.

4a. What is the impact of BSAD on the BM?

The imbalance equations already take into account energy purchased in the forward market. Assuming the trade with the Party is for the same volume of energy at the same price, then the weighting given to energy purchased in the forward market or the BM should be the same. The following is a simplified version of the SBP equation:

$$\frac{[\text{Cost of the BM Bids and Offers}] + [\text{Cost of the NGC Forward Market trades}]}{[\text{volume in BM}] + [\text{Volume in NGC Forward Market}]}$$

At this level the algebra simply adds both sets of data together and hence is unaffected by the location of the purchase or sale. There are however other issues that can be raised in relation to this:

- there is limited transparency of the trades in the Forward Market as they are aggregated and passed into the BM as a simple cost/volume pair using BSAD.
- it may be possible for NGC to achieve better prices in the Forward Market, where the additional notice and certainty can be used to achieve a better deal.

As has been found with P12 care must be taken when interpreting the effect of these, as they can be considered to be outside the vires of the BSC. If the Modification Group wish to consult on this sort of issue, then they may need to request the information from NGC and then consult on the answers.

4b. What impact does BSAD have on the operation of the imbalance price calculations?

At a more detailed level four differences have been identified related to the operation of the algebra within Section T, when energy is procured in the Forward Market:

- The operation of Automatic Trade Tagging (ATT) only occurs when both the Bid and Offer stacks have more than [BRL] MWh of volume. The volume passed into the calculation from BSAD is not taken into account for this test and hence less volume in the BM will reduce the number of occasions ATT³ operates.
- When ATT operates it will reduce the volume of both stacks by an equal amount, removing the most extremely priced bids and offers first. This will not include trades in the Forward Market, as these are passed in to the BM using BSAD. This will make any higher priced plant energy immune to being removed by ATT.
- Any instruction that is included within BSAD will effectively be immune to non-delivery charges within the BM, as they will simply be treated as imbalance.

³ The combination of a long market with plenty of part-loaded plant has had a significant effect on the operation of ATT – see next section for details.

- The energy purchased in the BM is adjusted by the TLMs, whereas the BSAD data is not.

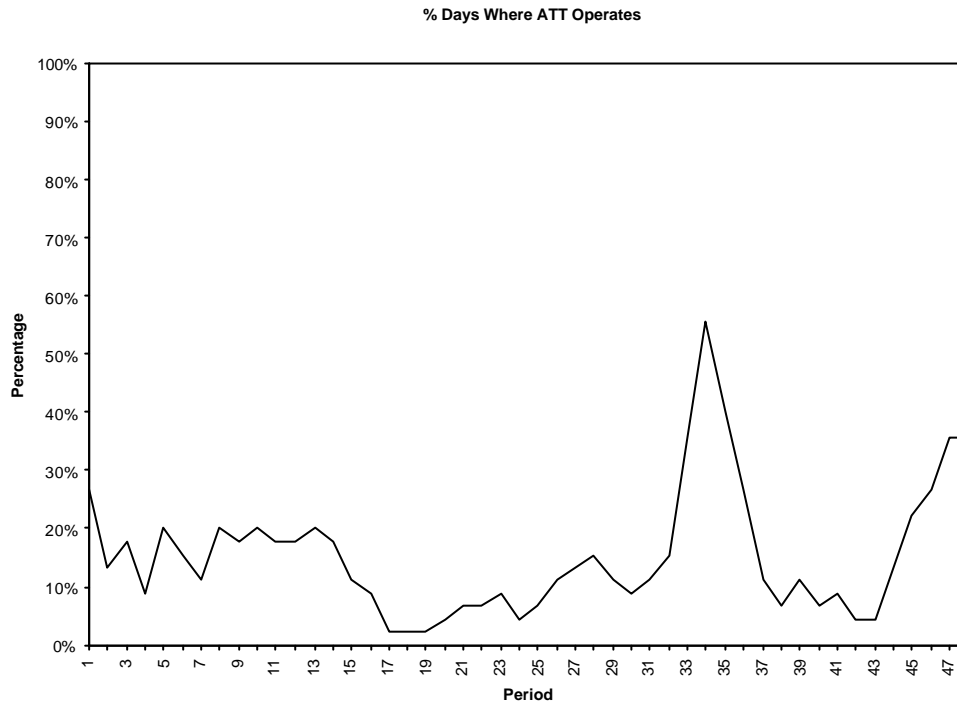
These four factors represent differences in the way data is processed when submitted through BSAD. These are not directly related to P59/BTW/1HGC and are applicable to any NGC trade in the Forward Market. In addition it is necessary to look at the operation of the BM to obtain a view on the materiality.

5. SUPPORTING STATS

5a. How often is the ATT mechanism operative?

The ATT mechanism will only operate if both stacks have over [BRL] MWh on them. With the current level of BRL this means 180 MWh. Figure 5.1 shows how often (on a weekly basis) BRL has been operative during November and December.

Figure 5.1 Operation of ATT

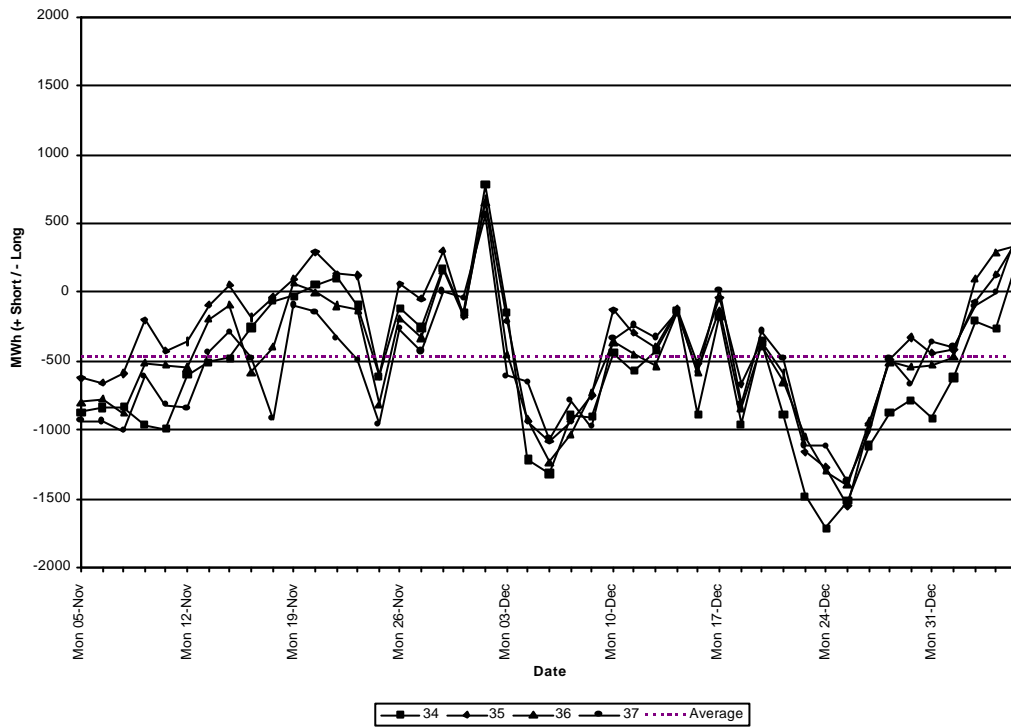


The effectiveness of ATT with the current level of BRL is still low. It has increased recently during the evening peak, and this is generally due to the instructions to synchronise oil fired plant to provide reserve over this period. However for a large number of sample periods these are the only offers on the stack, and although ATT may be operative, it cannot be effective without other offers to dilute the effect of the higher prices offers. Hence it is reasonable to assume the effectiveness of ATT is currently lower than indicated by figure 5.1

5b. How long is the market during the evening peak?

Figure 5.2 shows the total volume of Bids and Offer (including the effect of BSAD) over the weekday evening peak (i.e. periods 34-37). The plotted figure is positive when there are more offers than bids and hence the market is short, conversely the plotted figure is negative when there are more bids than offers and hence the market is long.

Figure 5.2 Volume of Bids and Offers During Evening Peak



As can be seen the market is still predominantly long even, during the months of November and December. In addition, although there is some variation between the periods, there is no obvious trend to be shorter for the peak two periods (35 and 36).