MODIFICATION PROPOSAL P90 'IMPROVING THE REPRESENTATION OF ENERGY BALANCING ACTIONS IN CASHOUT PRICES'

SUPPORTING CONSULTATION DOCUMENT: DATA ANALYSIS

This document is intended to provide context and supporting data analysis in respect of the mechanism proposed by Modification Proposal P90, currently being assessed and considered by the Pricing Issues Modification Group (PIMG). It should be noted that the Requirements Specification (P090AS, V1.0) is provided as additional support, and this sets out the (detailed) methodology, as proposed by Modification P90.

It is intended that this document be utilised, in conjunction with the Requirements Specification, as a basis for responding to the attached consultation on Modification Proposal P90.

MODIFICATION P90 – PROPOSED METHODOLOGY

Modification P90 proposes that all Bid – Offer Acceptances (after Arbitrage and De Minimis tagging has been applied) are stacked in price order with individual (system and energy) BSAD trades included in the relevant points in the stack. The stacks then have Trade Tagging applied to the level of the Balancing Reserve Level. For the avoidance of doubt, this mechanism removes the requirement for the application of the Continuous Acceptance Duration Limit (CADL) to Bid – Offer Acceptances.

The proposed mechanism stacks all energy and system balancing actions, i.e. all Bid – Offer Acceptances and all system and energy (individual) BSAD trades, and then uses the existing Trade Tagging mechanism (i.e. tagging to the level of the Balancing Reserve Level (BRL)) to derive the Remaining Imbalance Volume (on the larger stack), and balancing actions to the level of BRL on the smaller stack.

The balancing actions taken to alleviate the Remaining Imbalance Volume are then used to calculate the main Energy Imbalance Price, and the balancing actions (to BRL) on the smaller (reverse) stack set the reverse Energy Imbalance Price. Where the Remaining Imbalance Volume is zero, or there is no volume on the smaller stack, then the current Energy Imbalance Pricing default rules are invoked.

For the avoidance of doubt, Modification P90 utilises all forwards trades undertaken by the Transmission Company, for both system and energy balancing purposes in the mechanism for deriving the Energy Imbalance Price, as if they were Bid – Offer acceptances, i.e. stacked and tagged, as described above.

This methodology is explored in more detail in the attached Requirements Specification.

CONTEXT AND APPROACH

The above methodology cannot be modelled using any approximation of the current Settlement Calculations, therefore the methodology had to be replicated using a manual (Access database oriented) approximation. The following steps were undertaken:

- Disaggregated Balancing Services Adjustment Data (BSAD) trades were requested from the Transmission Company. These were provided for the period 2 July 2002 to 14 July 2002, inclusive;

- All Bid – Offer Acceptances for the period 2 July to 14 July inclusive were obtained. These were all Bid – Offer Acceptances, (i.e. prior to the application of the Continuous Acceptance Duration Limit (CADL), De Minimis Tagging and Arbitrage Tagging);

- **CADL WAS NOT APPLIED TO ANY BID – OFFER ACCEPTANCES**. Modification Proposal P90 negates the requirement for CADL to be applied, as it utilises the Trade Tagging mechanism to differentiate between system and energy balancing actions;

- The Bid – Offer Acceptances then had De Minimis Tagging applied (i.e. all acceptances with an acceptance volume of less than 1 MWh were removed);

- **NO ARBITRAGE TAGGING WAS PERFORMED**. Due to the (enforced) manual approach, including Arbitrage Tagging in the approximation proved too complex. It should be noted that an assessment of the impact of not undertaking Arbitrage Tagging was performed and this indicates that the effect of not Arbitrage Tagging is minimal, as the level of Arbitrage tagging for the relevant time period is relatively low;

- The Bid – Offer Acceptances and disaggregated BSAD trades were stacked, in price order, Bids and Sales on one stack, and Offers and purchases on the other. The Remaining Imbalance Volume was determined on the larger stack, and an Energy Imbalance Price derived from those actions. Actions to the 5 MWh Balancing Reserve Limit on the smaller stack set the other Energy Imbalance Price.

The resulting (P90) Energy Imbalance Prices were then compared with those Energy Imbalance Prices derived from the current baseline for the same period (i.e. 2 July to 14 July inclusive). It should be noted that the prices are derived from the current baseline plus a BRL of 5 MWh (as the baseline for 2 July to 14 July was BRL = 180 MWh).

The comparison of the two System Sell Prices (ie. P90 SSP and current (BRL = 5) SSP) showed differences of pence between the two mechanisms, therefore this analysis is not provided.

A comparison of the System Buy Price derived from each of the mechanisms was then undertaken:

- C15SBP – is the System Buy Price calculated, using the current mechanism with BRL = 5 MWh for the period 2 July to 14 July 2002; and

- P90SBP – is the System Buy Price calculated for the period 2 July to 14 July 2002, using the Modification Proposal P90 mechanism.

For the avoidance of doubt, the Modification Proposal P90 methodology is the only one that utilises disaggregated BSAD, including system BSAD (not currently reported / utilised), and does not use CADL.

It should be noted that as a consequence of commercial sensitivity regarding the disaggregated BSAD, it is not possible to provide the underlying data analysis.

DATA ANALYSIS: GRAPHS

Graph 1: System Buy Price Comparison by Daily Average

The System Buy Price for each of the three mechanisms was calculated (as described above) and a daily average calculated for each of the mechanisms.

This initial analysis indicates the effect on the System Buy Price, noted for Modification P90, is materially a consequence of the increase in BSAD volumes, and, in some cases, the effect of these additional volumes on the market length (Graph 2). An illustration of this effect can be seen for 8 July 2002, where an overnight (system) BSAD trade caused a change in reported market length over that derived from the current baseline. The current baseline methodology reports that the market was short for the same period, as a consequence of system BSAD trades not being considered. The aspect of the changing of market length resulting from the methodology utilised, is explored further in Graph 4.

Graph 2: System Buy Price Comparison for 8 July 2002

The 8 July 2002 was chosen for a more in depth representation as a consequence of the effect of Pre Gate Closure BM Unit Transactions (PGBTs), which caused the reported market length to change from that reported under the current methodology (i.e the reported market length under the current baseline is in the opposite direction to that reported for P90, as a consequence of the inclusion of 'system' BSAD (PGBTs in this case) in the P90 methodology).

Graph 3: System Buy Price Comparison for 9 July 2002

The 9 July 2002 was chosen for a more in depth representation, as it reflects the effects of the differing mechanisms applied. The mechanism for Modification Proposal P90 'removes' a set of relatively high System Buy Prices (Settlement Periods 25 to 27), as a consequence of the inclusion of the BSAD in the Trade Tagging mechanism.

Settlement Period 35 reflects the effect of a Pre Gate Closure BM Unit Transaction (PGBT). The only Offer Acceptance / BSAD purchase in Settlement Period 35 on 9 July 2002 was a high value PGBT, which set the System Buy Price.

Graph 4: Number of Times Reported Market Length Changes Between Current Mechanism and Modification Proposal P90

This graph explores further the affect on the reported market length from the inclusion of all (disaggregated, system and energy) BSAD trades in the P90 Energy Imbalance Price mechanism. The graph represents the number of Settlement Periods (represented as a total of changes through the Settlement Day) where the P90 methodology has a different reported market length to that derived under the current baseline.

Graph 5: Comparison of Current (Energy) BSAD and Modification Proposal P90 (System and Energy) BSAD Volumes

This graph explores the effect on the total BSAD volumes from the inclusion of system BSAD trades under the mechanism proposed by Modification P90. The graph compares the BSAD volumes, for the

period 2 July 2002 to 14 July 2002 inclusive, for the current baseline, i.e. gross reported energy BSAD, against the total volumes of trades, i.e. both system and energy, for Modification Proposal P90.

Graphs 6 and 7.

The Settlement Day of December 17 2001 was used during the analysis for Modification Proposals P74 and P78 as an arbitrarily chosen, typical representation of a Settlement Day in winter, where the system was under relative stress. On this basis, it seems reasonable to use this Settlement Day to provide a comparative analysis of the Energy Imbalance Prices derived from the current mechanism (with BRL = 5 MWh), with those derived from the mechanism for Modification Proposal P90, for a Settlement Day during a different BSC Season and therefore with a different generation / demand profile to that of the analysis for 2 to 14 July 2002.

A point of note in respect of the 17 December 2001 is that the Transmission Company did not undertake any system forward trades for the Settlement Day. All of the BSAD on 17 December 2001 was deemed to have been attributable to energy balancing, and was therefore reported in BSAD.

An additional point of note is that the Energy Imbalance Prices for a number of Settlement Periods, derived for Modification Proposal P90, are affected by the lack of Arbitrage Tagging (highlighted above). The affect has been calculated and is represented as a (£/MWh) price difference on the P90 Energy Imbalance Price (a minus sign indicates a decrease against the derived Energy Imbalance Price), as follows:

System Buy Price:

Settlement Periods **13** (£-2.02), **15** (£-0.68), **26** (£0.02), **35** (£-20.30), **36** (£-20.30) and **39** (£-6.20).

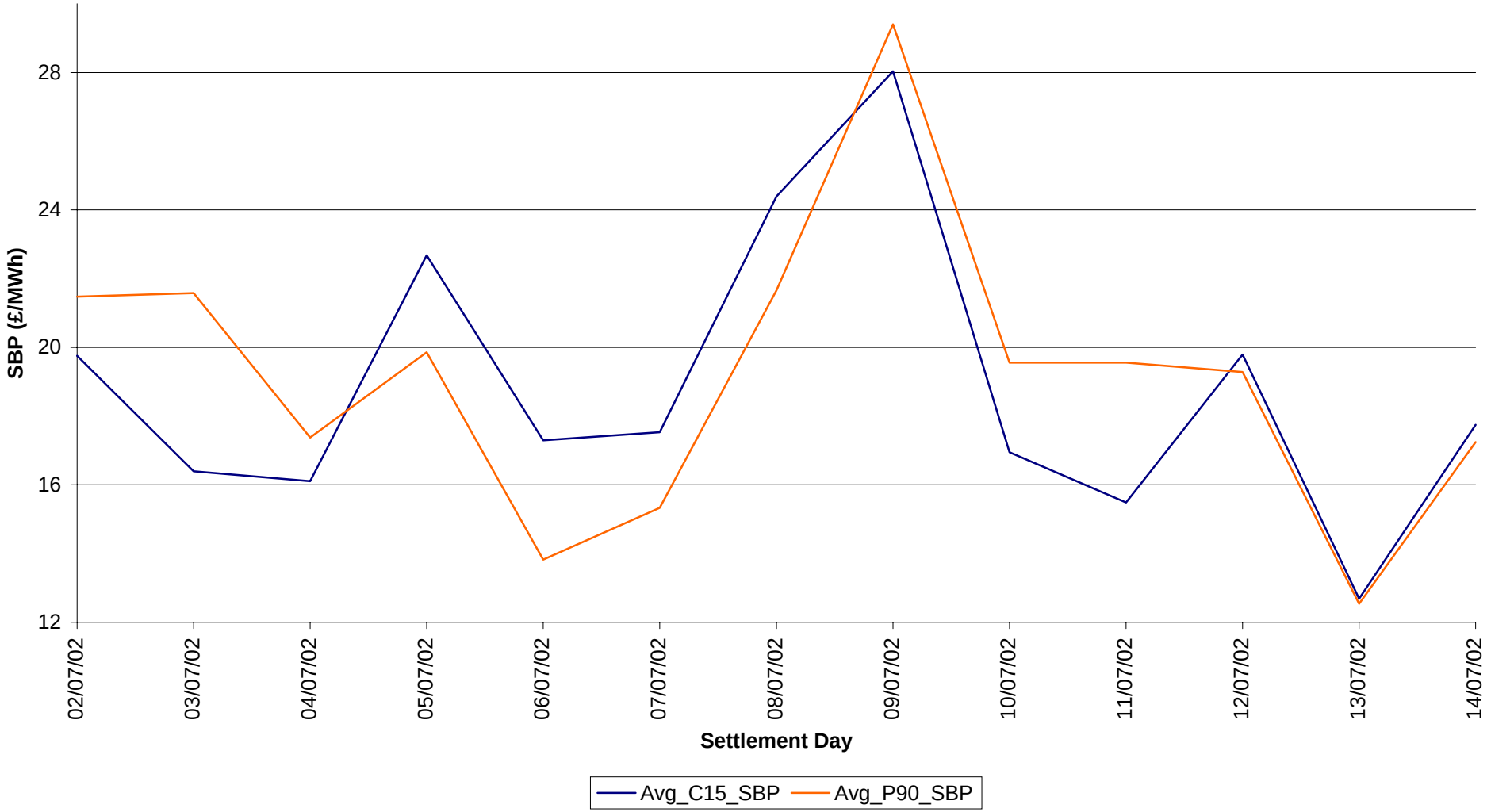
System Sell Price:

Settlement Periods **15** (£9.53), **36** (£0.02) and **39** (£-6.20).

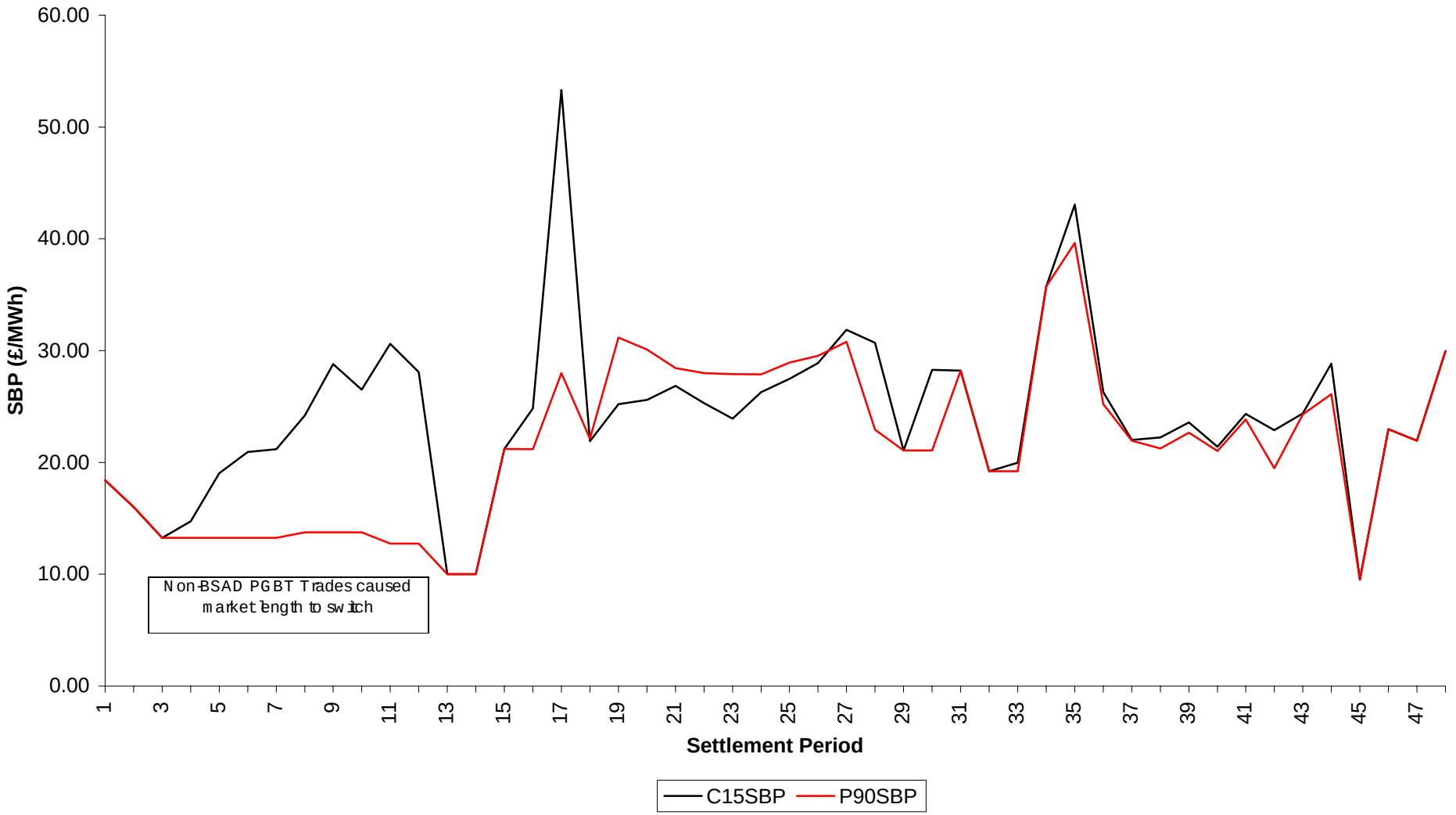
Graph 6: System Buy Price Comparison for 17 December 2001

Graph 7: System Sell Price Comparison for 17 December 2001

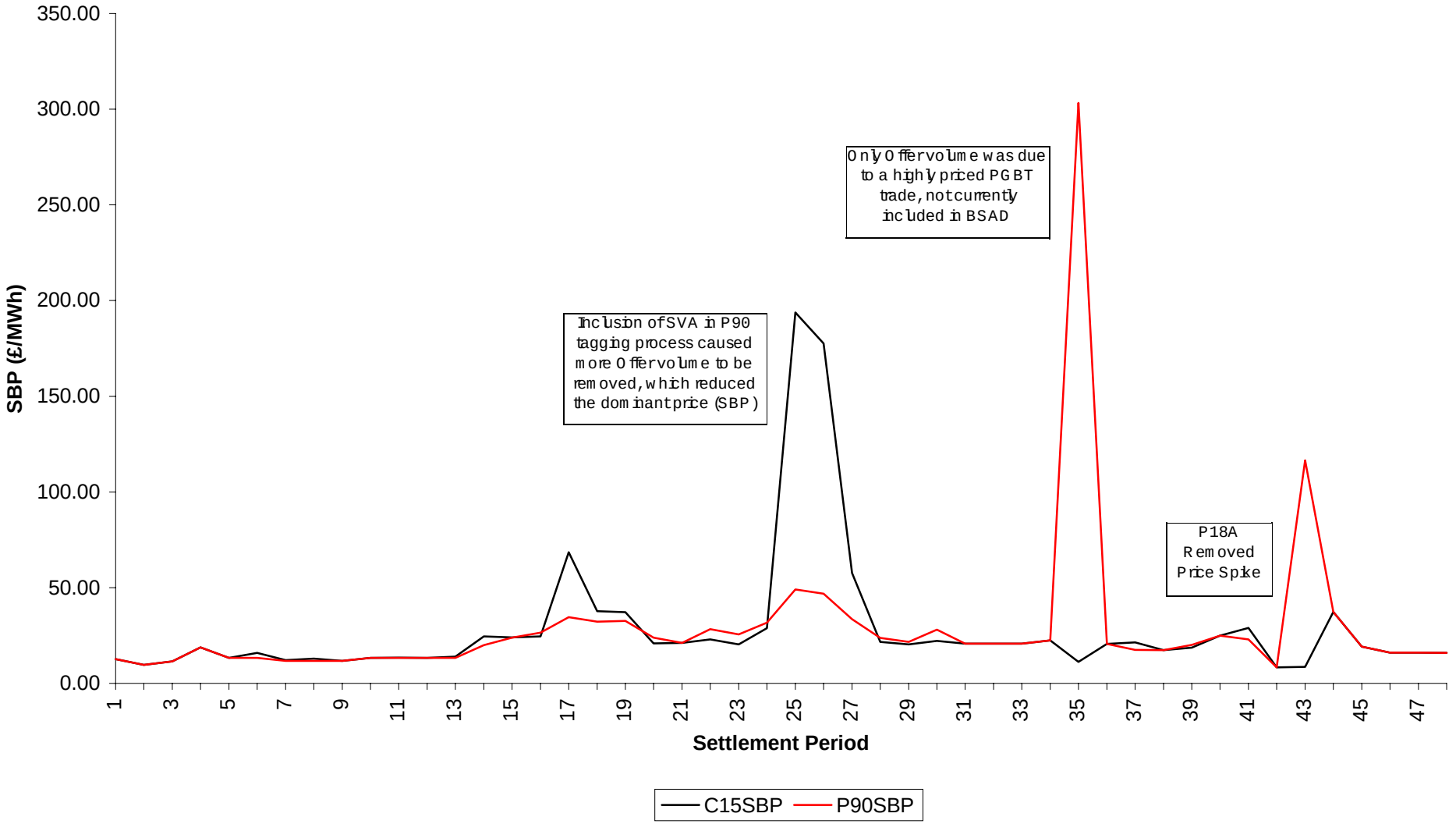
Graph 1: System Buy Price Comparison by Daily Average



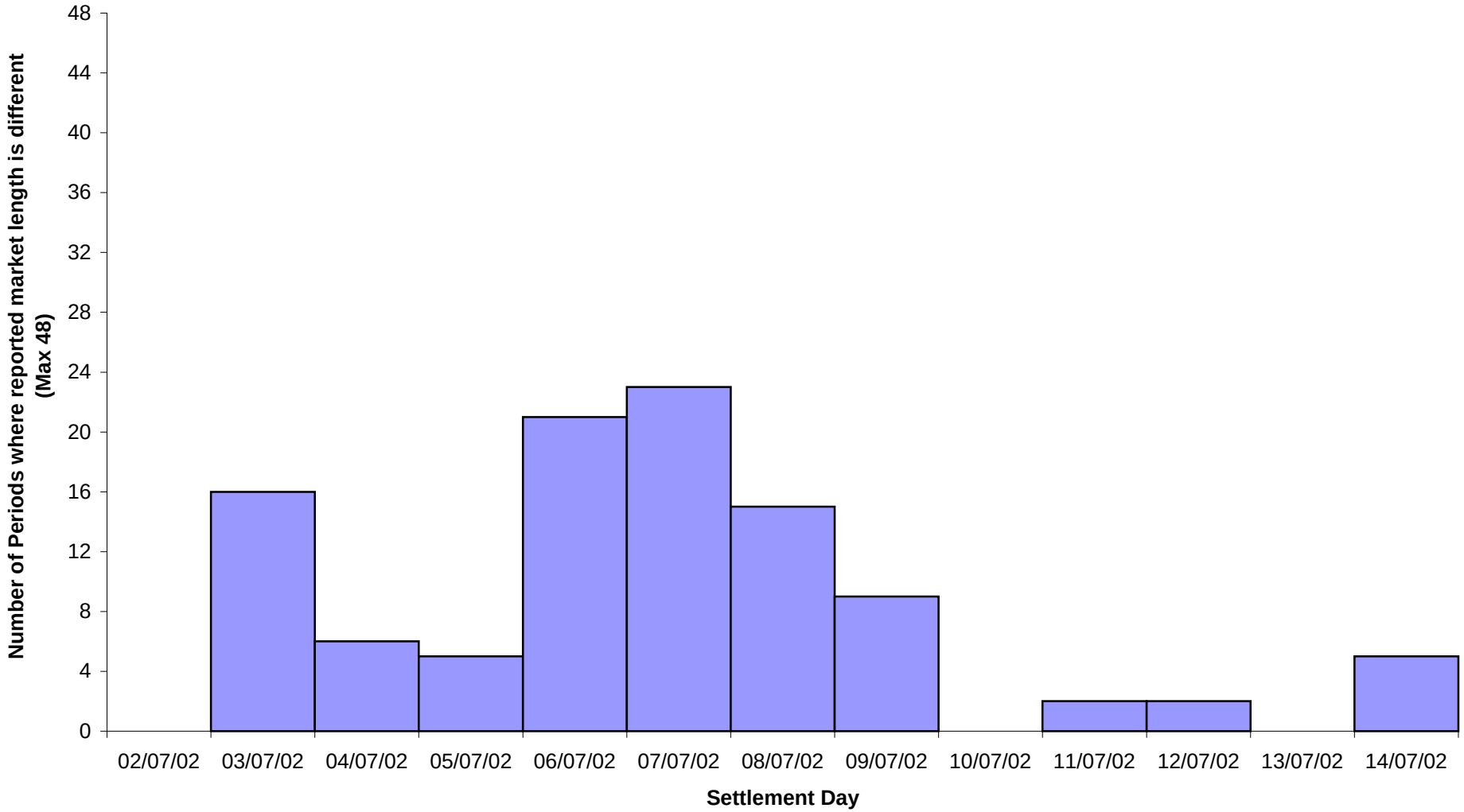
Graph 2: System Buy Price Comparison for 8 July 2002



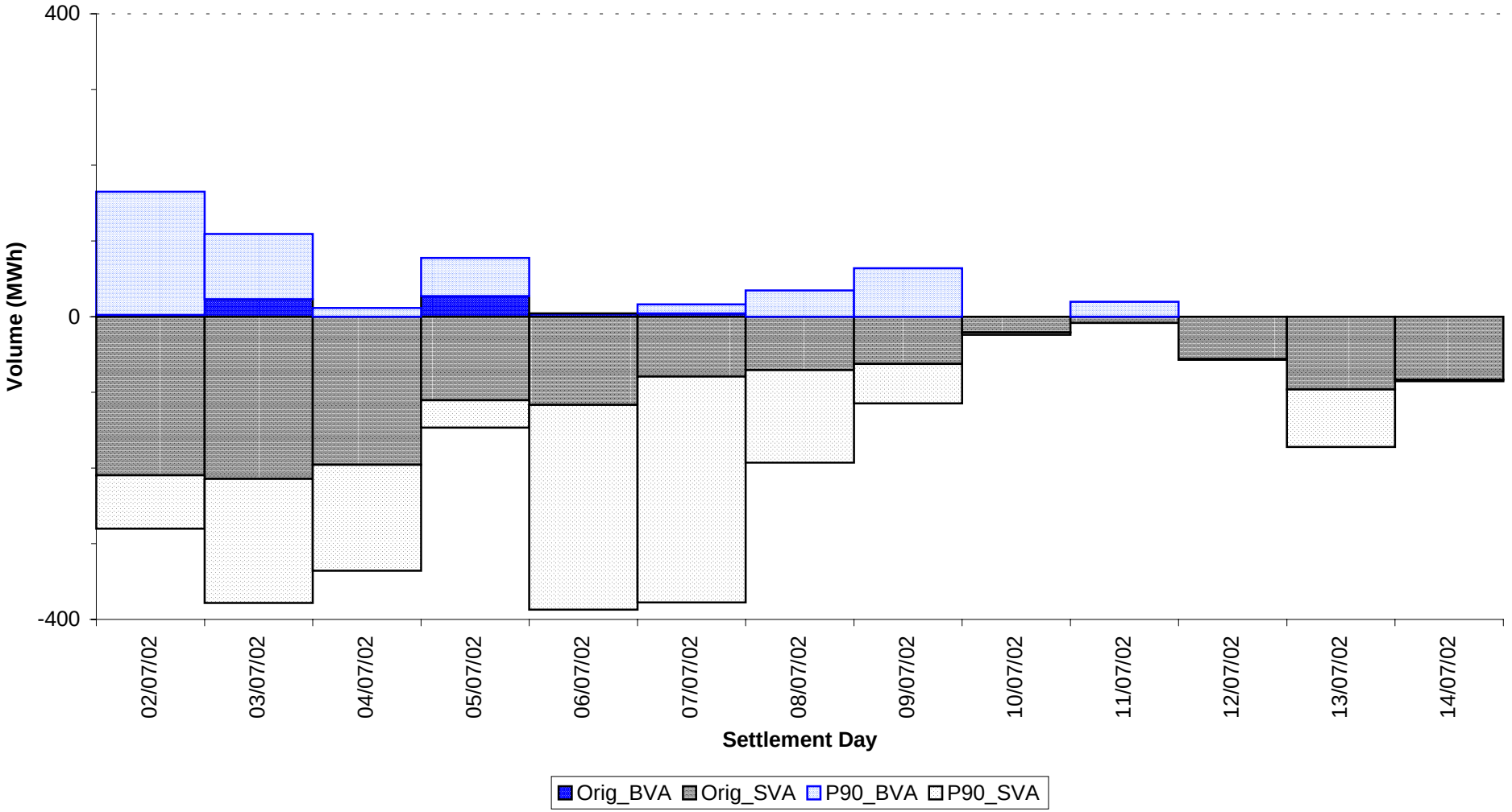
Graph 3: System Buy Price Comparison for 9 July 2002



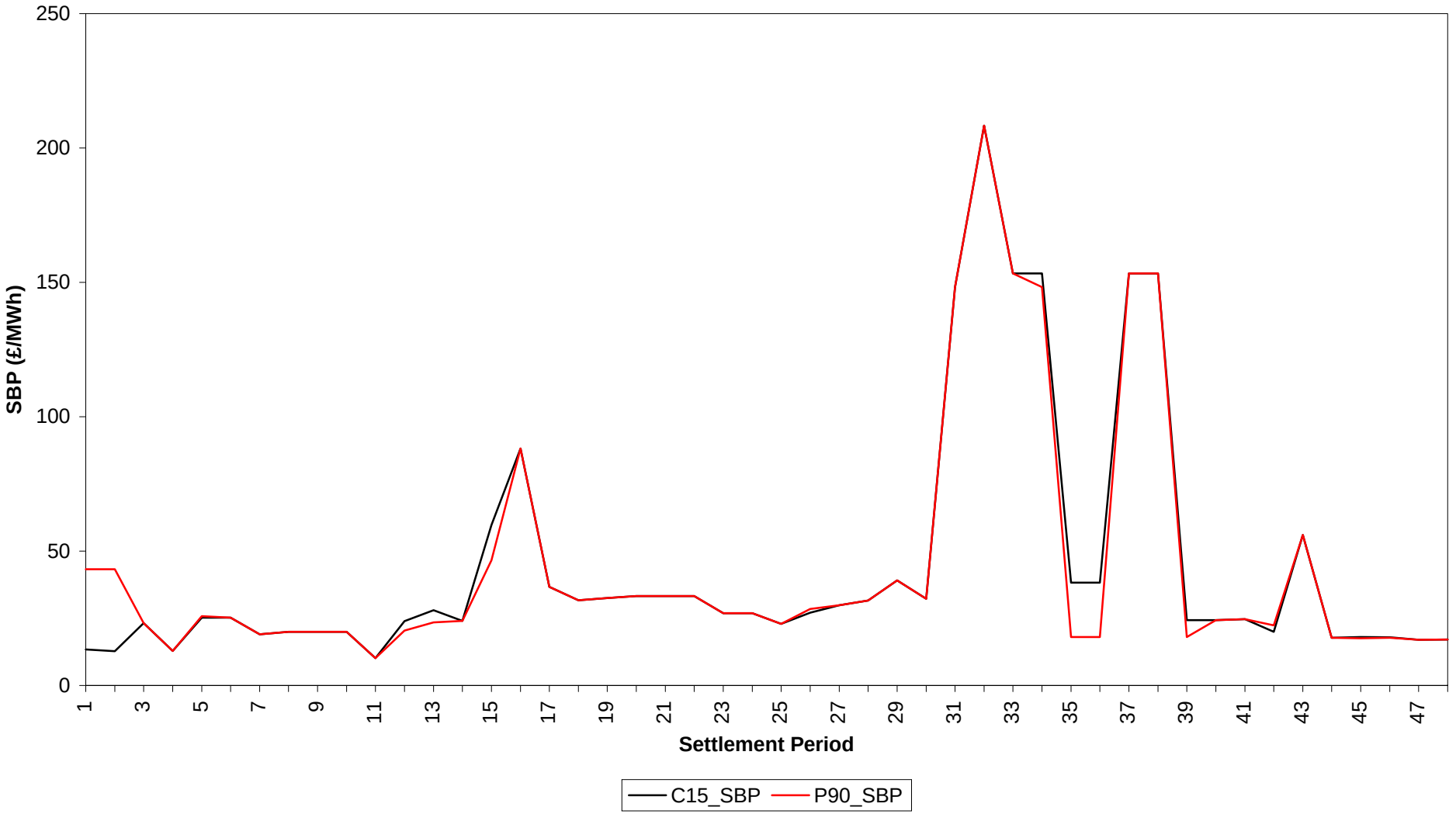
Graph 4: Number of Times Reported Market Length Changes between Current Mechanism and Modification Proposal P90



Graph 5: Comparison of Current (Energy) BSAD and Modification Proposal P90 (System and Energy) BSAD Volumes



Graph 6: System Buy Price Comparison for 17 December 2001



Graph 7: System Sell Price Comparison for 17 December 2001