Settlement Recalculation Threshold

Document History

Version	Date	Author	Comment
0.1	27 Aug 2008	SEMO	Issued to Regulatory Authorities

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1 INTRODUCTION

1.1 Purpose

This document proposes a value of the Settlement Recalculation Threshold for 2008/9 and provides supporting study data.

1.2 Audience

The target audience for this document are the Market Participants, the two TSOs (SONI and EirGrid), the Interconnector Administrator (IA), SEMO and the Regulatory Authorities (RAs).

1.3 Scope

This document sets out the value being proposed by SEMO with supporting justification for this proposal.

2   SEMO PROPOSAL

For 2007/2008, the SEMO proposed the following -

The Market Operator proposes to use 3% as the Settlement Recalculation Threshold. The Settlement Recalculation Threshold is a figure which mandates the Market Operator to do a re-run if the schedule quantities or prices for a unit or on the system on a whole are proven to be in error by greater than this. The selection of 3% is trying to achieve a balance between the early resettlement of a material data error and the operational overhead. As the Settlement Recalculation Threshold covers both unit and system wide data issues it is unlikely that there is a universal value that will automatically achieve the correct balance. Notwithstanding that where a data error occurs which does not breach the Settlement Recalculation Threshold level the participant considered is capable of using the settlement query and dispute process to mandate a re-run.

The MO proposes that this Settlement Recalculation Threshold value is reviewed on a regular basis to see how well it is meeting the conflicting objectives of early settlement for data errors and efficient operation of the market.

The SEMO proposes to continue to use 3% as the Settlement Recalculation Threshold for 2009 to assess whether a re-pricing is required on foot of an upheld Data Query.

3   SEMO PROCESS

The SEMO process is that, on receipt of a Data Query relating to an input to the MSP software, the inputs are checked and confirmed to see if the query is correct. If the Data Query is upheld, SEMO will complete a study run of the date under query with updates to the relevant input data. A study of the results checks the impact on the MSQ of the Generator Unit against which the query has been lodged and against the SEM as a whole.

If the MSQ of the Generator Unit against which the query has been lodged has changed by an amount greater than the Settlement Recalculation Threshold, then the upheld Data Query will result in a re-pricing of the SEM. If not, then the sum of Energy Payments to all Generator Units is assessed (the term Generator Units in this instance is taken to include all Price Maker, Price Taker Generator units, including Interconnector Units and Demand Side Units). This value is determined by taking the sum of the MSQ for each Generator Unit, multiplied by the System Marginal Price, factored for the Trading Period Duration. This can be expressed as -

$$TPD \times \sum_{u,h\,int} MSQuh \times SMPh$$

Where

- TPD is Trading Period Duration;
- MSQuh is the Market Schedule Quantity for Generator Unit u in Trading Period h;
- SMPh is the System Marginal Price in Trading Period h.
- the summation $\sum_{u,h\,int}$ is a summation over all Generator Units u, and across all Trading Periods h within Trading Day t.

If the sum of Energy Payments to all Generator Units is observed to have changed by more than the Settlement Recalculation Threshold, then the upheld Data Query will result in a re-pricing of the SEM. If not, then no re-pricing is required.

Because any change to the inputs to the MSP software will change the outputs of other Generator Units, it is not practical to consider reviewing the MSQ of all other Generator Units independently as it would be expected that in a run of the MSP software with different inputs, there is a high probability that there will be at least one Generator Unit that will have changed by more than the Settlement Recalculation Threshold. To allow the Settlement Recalculation Threshold be applied to the MSQ of any Generator Unit in the schedule could in effect mean that all Data Queries could require a re-pricing of the SEM. SEMO believes this would not deliver the objective of the Trading & Settlement Code "to facilitate the efficient, economic and coordinated operation, administration and developement of the Single Electricity Market in a financially secure manner" as the lack of certainty around the final System Marginal Price could lead to a lack of financial security.

4   SUPPORTING DATA

Since the start of the SEM on November 1st, 2007. There have been three instances on which SEMO had to utilise the above process to assess if a market re-pricing was required.

In all cases, errors in input meter data for Price Maker Generator Units was the reason for the Data Queries. The first case covered the dates from November 1st to November 27th inclusive. The second case covered March 6th to March 9th inclusive. In both these cases, the SEM was re-priced as the total change for all Participants (the total Energy Payments to all Generator Units explained above) changed by more than 3%

The third case covered June 27th and June 30th. Although both days had a similar error value in the metering, only June 30th was required to be re-priced as the change to the sum of payments for Participants was 5.9%.

In each case, the value of the meter error was only a small percentage of the total SEM system load (well below 3% for example). However, making this change to the input data in the MSP software changed the way in which Generator Units were committed. Principally, this the value of the System Marginal Price, though individual Generator Units may have observed significant changes in how they were scheduled.

SEMO have found that in the practical operation of the SEM, the 3% Settlement Recalculation Threshold has ensured that the decision to re-price is evenly considered against the value of the SEM, taken as the sum of Energy Payments to all Generator Units. This can be demonstrated by observing the results of the tests for June 27th and June 30th.

On June 27th, the metered demand was incorrect by 20MW over the full Trading Day. This represents a total change of approximately 0.01% to the input data. The small changes to the system load can be observed on the graph below.
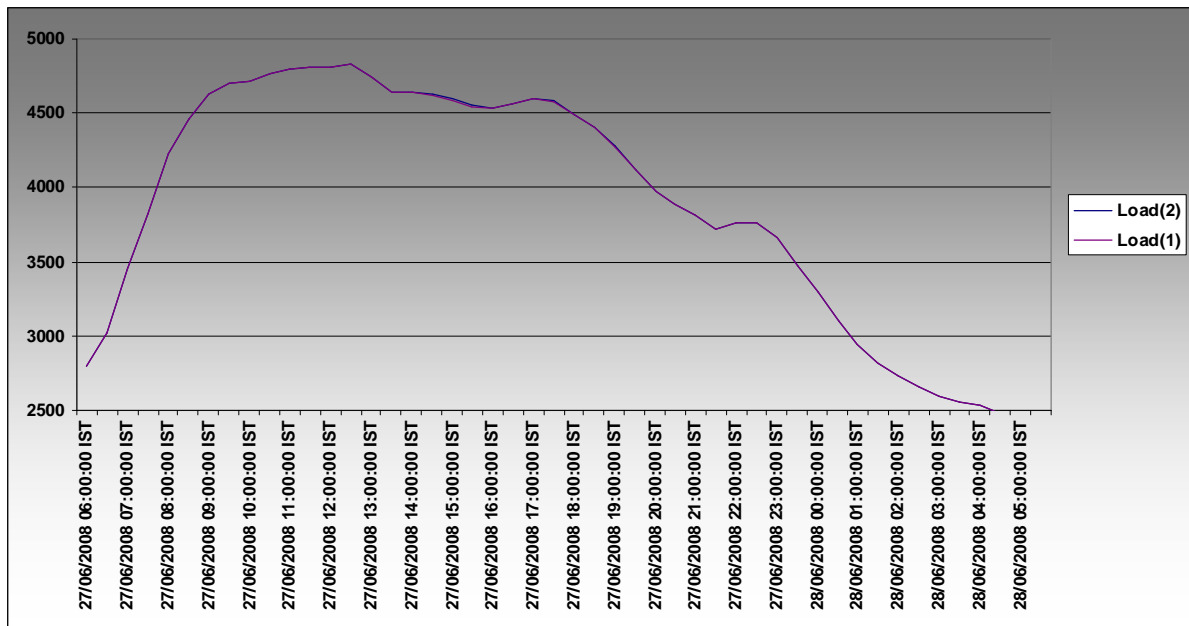
Figure 1 - Changes to System Load, June 27th study.

A study was completed the results of which showed no change to the MSQ of the Generator Unit that was queried.

Changes were observed in the commitment status of other Generator Units, as is not unexpected when rerunning an optimisation with different inputs. For some units, this resulted in changes of the order of 100% to their MSQ, making it impractical to consider these units when assessing whether the Settlement Recalculation Threshold has been exceeded.

This change in commitment status in turn lead to different System Marginal Prices (and Shadow Prices) as shown in the graph below. (The Ex-Post Initial values are labelled (1) where the re-pricing study is labelled (2)).
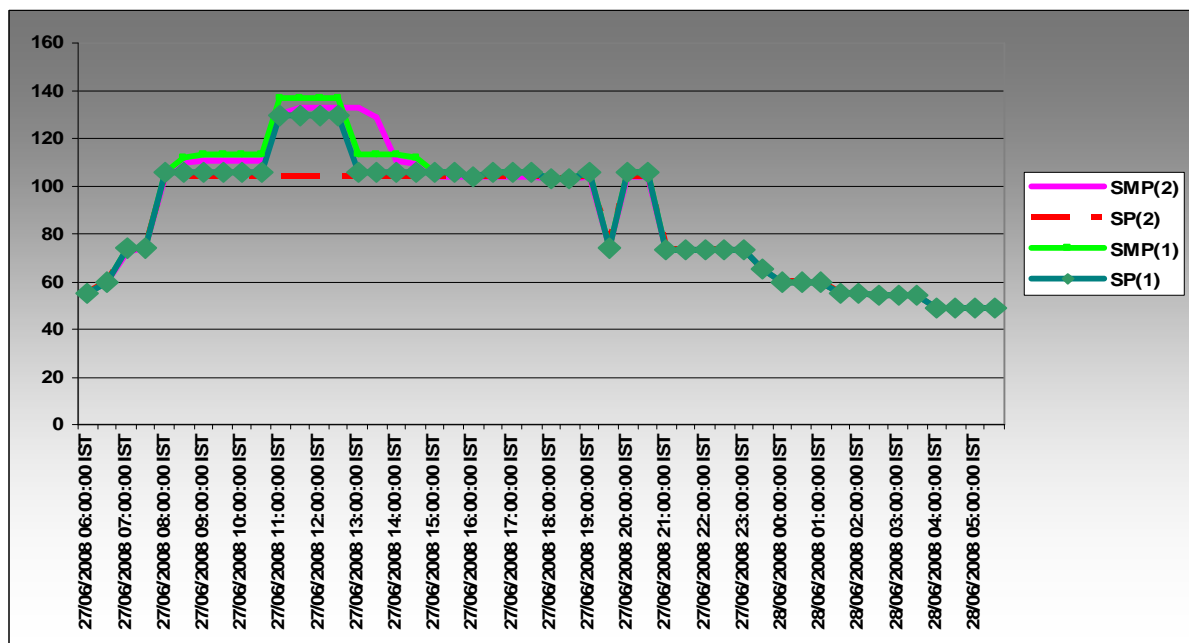

Figure 2 - Changes to System Marginal Price and Shadow Price, June 27th study

The change in SMP in turn would lead to a change to payments to Generators. Assessing each individually is not practical because the changed commitment status of certain units will always give the appearance that the market has changed by more than the Settlement Recalculation Threshold.

The change to the sum of Energy Payments to all Generator Units across the SEM is graphed below.
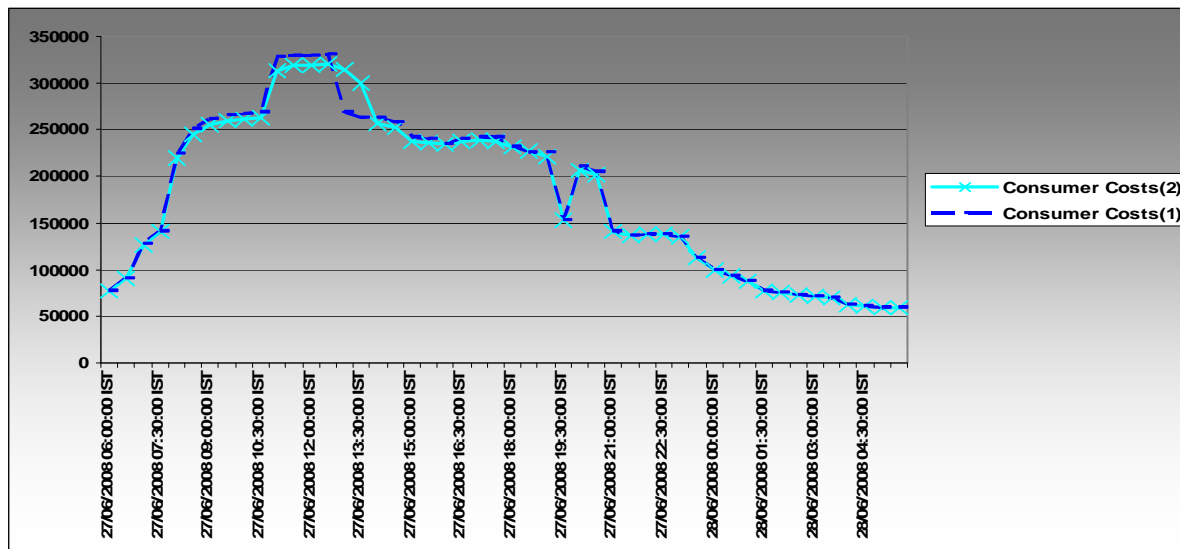

Figure 3 - Changes to Total Energy Payments to all Generator Units, June 27th study

As can be observed above, the overall change in total payments follows the changes to the SMP. In this case, across the trading day this change in total Energy Payments is less than 0.5% in the value of the SEM. The total Energy Payments to all Generator Units for the Ex-Post Initial were €8,717,195.54, whereas the value for the re-pricing study was €8,676,016.82 which represents a reduction in the total Energy Payments to all Generator Units of €41,178.72. Considering the total value of the SEM (as noted above, taken as the sum of Energy Payments to all Generator Units), re-pricing for such a small change is impractical.

On June 30th, the metered demand was incorrect by 23MW over the full Trading Day. This represents a total change of approximately 0.01% to the input data. The small changes to the system load can be observed on the graph below.
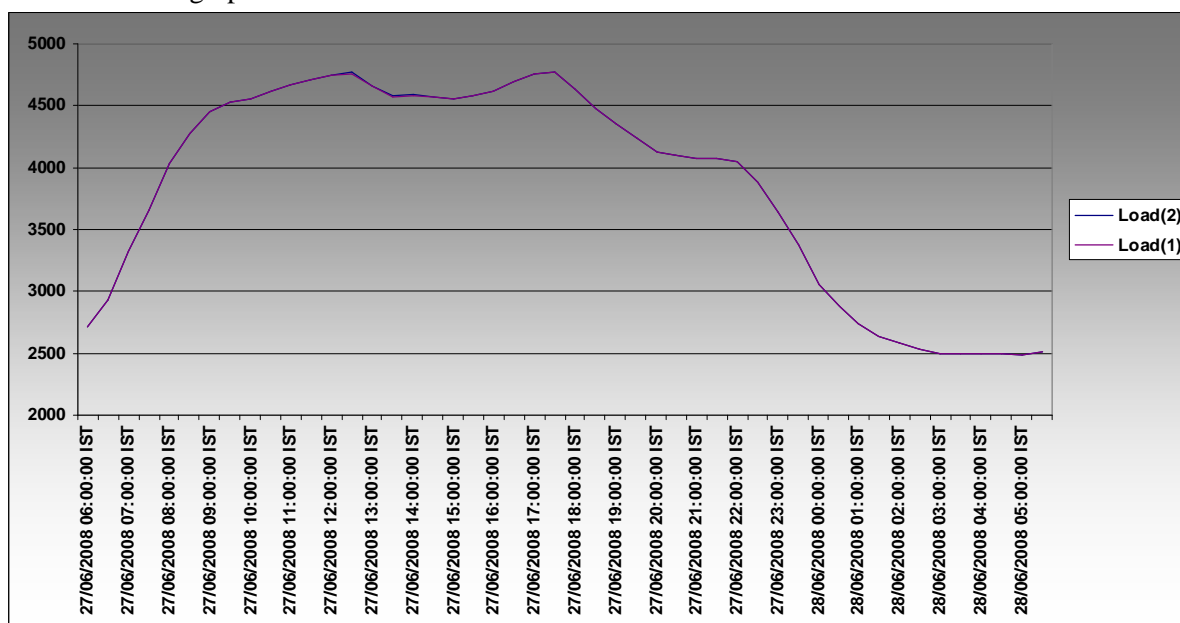

Figure 4 - Changes to System Load, June 30th study

A study was completed the results of which again showed no change to the MSQ of the Generator Unit that was queried (metered generation had been missed for the same Generator Unit in both days).

Changes were observed in the commitment status of other Generator Units, as is not unexpected when rerunning an optimisation with different inputs

This change in commitment status in turn lead to different System Marginal Prices (and Shadow Prices) as shown in the graph below. (The Ex-Post Initial values are labelled (1) where the re-pricing study is labelled (2)).
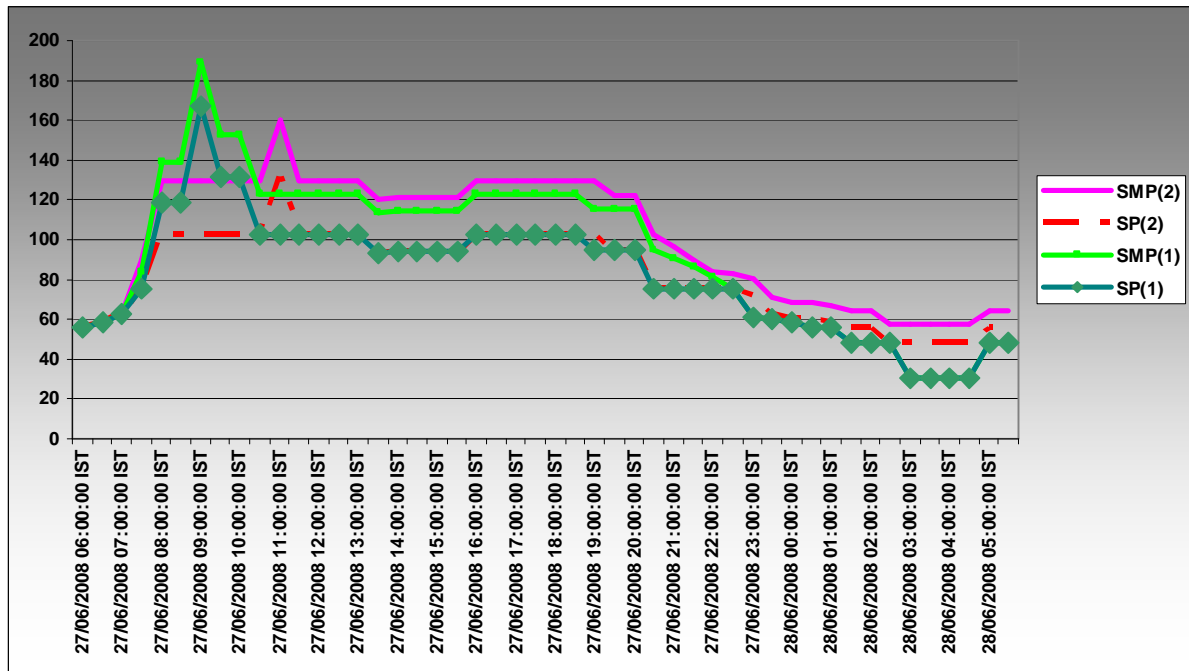

Figure 5 - Changes to System Marginal Price and Shadow Price, June 30th study

The change in SMP in turn would lead to a change to payments to Generators. As can be noted, the changes to the SMP on this day were more significant than the changes on June 27th.

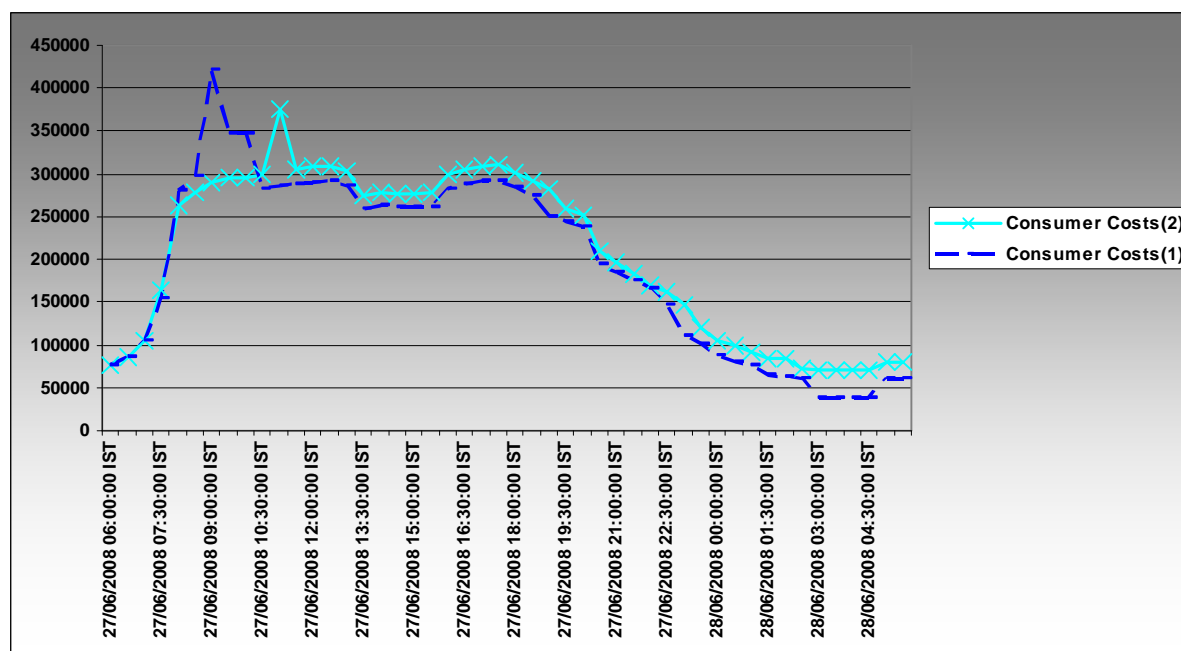The change to the consumer cost across the SEM is graphed below.

Figure 6 -Changes to Total Energy Payments to all Generator Units, June 30th study

As can be observed above, the overall change in total payments follows the changes to the SMP. In this case, across the trading day the total change of 5.9% in the value of total Energy Payments in the SEM. The total Energy Payments to all Generator Units for the Ex-Post Initial were €9,367,918.73, whereas the value for the re-pricing study was €9,920,156.43 which represents a reduction in the total Energy Payments to all Generator Units of €552,237.70.

5   CONCLUSIONS

Considering the value of SEM (as expressed as the total Energy Payments to all Generator Units), the 3% Settlement Recalculation Threshold will generally provide for a re-pricing of the SEM when the total market change exceeds €250,000. When considering values lower than this, the changes in payments to individual Generator Units (where the commitment status of that Generator Unit did not change) would be considered as a low materiality change under the Trading & Settlement Code (that is less than €50,000). Such changes should be addressed by updating data for Settlement Re-runs but would not warrant taking the step of re-opening the market for the given day.