Single Electricity Market Committee

SMP Uplift Parameters 2009

Consultation Paper

SEM-08-080

25 June 2008

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1. Introduction

The Regulatory Authorities are required to determine three parameters used in the calculation of Uplift under the SEM Trading and Settlement Code (the Code).[1] These are:

- The Uplift Alpha value α, which governs the importance of the Uplift Cost Objective, such that $0 \leq \alpha \leq 1$;
- The Uplift Beta value β, which governs the importance of the Uplift Profile Objective, such that $0 \leq \beta \leq 1$ and such that $\alpha + \beta = 1$; and
- The Uplift Delta value δ, to constrain the overall impact on revenue in each Trading Day t arising from the Uplift calculation, such that $\delta \geq 0$.

Following consultation, the Regulatory Authorities last year decided for the period from 1st November 2007 to 31st December 2008 that:[2]

- of the four methodologies set out in the paper AIP/SEM/60/06, option D should be used;

- α should be set to a value of zero;

- β should be set to a value of 1;

- δ should be set to a value of 5; and that

- these values would remain valid for the period to end 2008.

The Regulatory Authorities also stated last year that they intended to monitor the effectiveness of the proposed Uplift Methodology, including the parameter values set out in that document, both in the context of the desired objectives and having regard to the stability of SEM prices. In particular, the Regulatory Authorities noted that while the profile objective had been prioritised in this instance, the zero weighting given to the cost minimisation objective may be revisited in the light of market data.

This paper presents some analysis of the behaviour of Uplift since the start of the market on 1st November 2007 and proposes values for the three Uplift Parameters (α, β and δ) for the year 2009.

The Regulatory Authorities are conscious that at the time of the start of this process for the determination of the Uplift Parameters for the year 2009, the SEM has been operational for only seven months. This means that the data available on the operation of the Uplift Methodology will be limited, and any conclusions would be largely reliant on the ability of a model to accurately simulate the dispatch and pricing behaviour of the MSP software at a detailed level. In addition, the Regulatory Authorities are aware of the need for regulatory stability in the early days of a new market

For these reasons, the Regulatory Authorities are approaching this consideration of the Uplift Parameters from the perspective of seeking to determine whether there is evidence that change is required, rather than from the perspective of a repeat of the full review process that concluded with the Decision Paper of 15th March 2007.

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[1] See paragraph 4.70 of the Code
[2] See SMP Uplift Parameters, Decision Paper, 15th March 2007, AIP/SEM/07/51

The SEM Committee welcomes the views of interested parties on these proposals.[3] It is intended to publish all responses received. If any respondent wishes all or part of their submission to remain confidential, then this should be clearly stated in their response. Comments on this paper should be sent to Philip Newsome and Colin Broomfield, preferably electronically, to arrive no later than noon on Friday 18th July 2008.

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[3] The SEM Committee is established in Ireland and Northern Ireland by virtue of section 8A of the Electricity Regulation Act 1999 as inserted by section 4 of the Electricity Regulation (Amendment) Act 2007, and Article 6 (1) of the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 respectively. The SEM Committee is a Committee of both CER and NIAUR (together the Regulatory Authorities) that, on behalf of the Regulatory Authorities, takes any decision as to the exercise of a relevant function of CER or NIAUR in relation to an SEM matter.

## 2.	Background

On 10th July 2006 the Regulatory Authorities published a proposed decision document entitled "Objectives of the Function to Include Start-Up and No-load Costs in SMP" (AIP/SEM/92/06), which considered the objectives that should be set for the calculations under the Code for the inclusion of the Start-Up and No-Load Costs of Price-Maker Generator Units in the SMP.

On 18th September 2006, the Regulatory Authorities issued the paper "SMP Uplift Objectives – Decision Paper" (AIP/SEM/142/06) which concluded on those objectives.

On 22nd December 2006, the Regulatory Authorities then issued the paper "SMP Uplift Parameters Consultation" (AIP/SEM/230/06) which considered a number of Uplift Methodologies and the values of the parameters that should be applied to with those methodologies.

On 15th March 2007, the Regulatory Authorities issued the paper "SMP Uplift Methodology and Parameters – Decision" (AIP/SEM/51/07), which concluded that the Uplift Methodology to be used should be the Option D laid out in the consultation document and that the values of the three Uplift Parameters should be zero for α, 1 for β and 5 for δ. The paper also stated that the Regulatory Authorities intended to monitor the effectiveness of the Uplift Methodology as measured against the stated Objectives.[4]

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[4] See the Code Paragraph 4.68 1. Energy prices should be reflective of underlying market dynamics; consequently the recovery of Start Up Costs and No Load Costs through SMP should not deviate significantly from the Shadow Prices (the Uplift Profile Objective) and 2. the revenue paid through Uplift revenues should be minimised (the Uplift Cost Objective).

3. Uplift performance and Consideration of Issues

i. Performance of Uplift Methodology

In last year's Decision Paper on the Uplift Parameters the RAs undertook to review the effectiveness of the Uplift Methodology as measured against the stated objectives set out in the Code and the stability of SEM prices. Figure 1 below shows the values for SMP and Shadow Price for the period from 1st November 2007 to 3rd May 2008.

Figure 1.
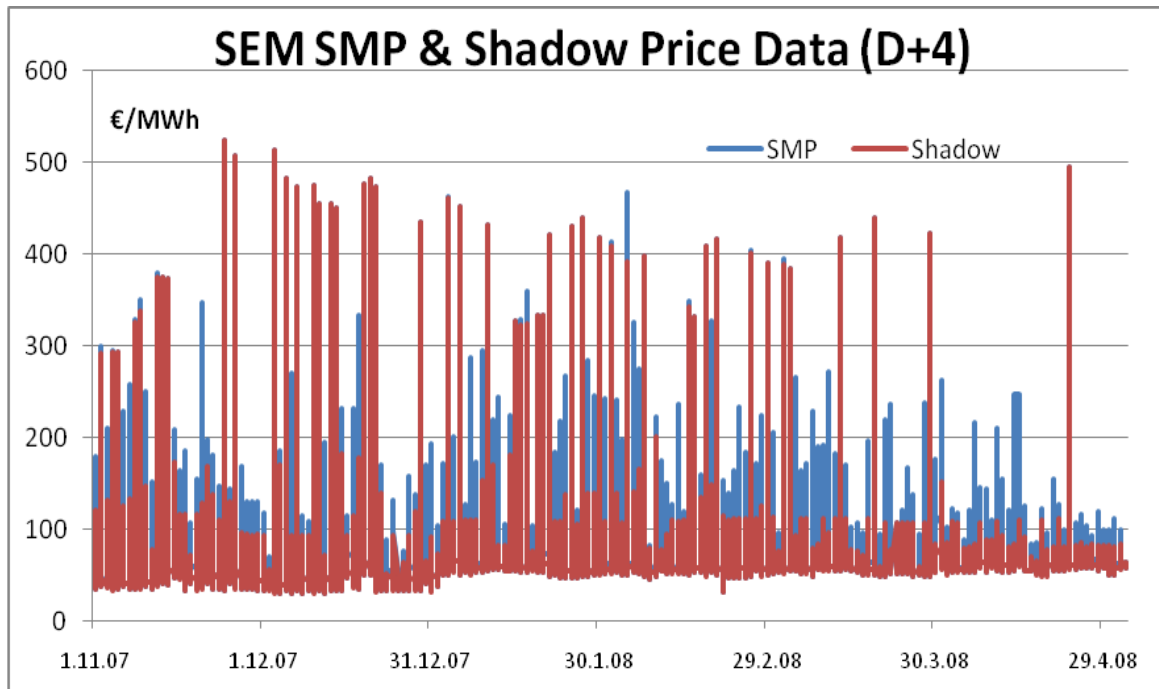
The following statistics summarise the behaviour of the Shadow Price, SMP and Uplift for this period.

€	Shadow Price	SMP	Uplift
Mean	64.95	72.57	7.62
Median	57.21	60.95	0.01
Max	524.65	524.65	219.38
Min	29.31	29.31	0
Standard Deviation[5]	36.40	42.76	17.86

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[5] Standard deviation is a statistical term that provides a good indication of volatility. It measures how widely values (half hourly prices in this instance) are dispersed from the average. Dispersion is the difference between the actual value (price) and the average value (mean price). The larger the difference between prices in each half hour and the average price, the higher the standard deviation will be and the higher the volatility.

Coefficient of Variation[6]	0.56	0.59	2.34

In addition, the correlation coefficient between Shadow Prices and SMP is 0.91 and the correlation coefficient between Shadow Prices and Uplift is 0.54.

While the above cannot provide comprehensive conclusions as to the performance of the Uplift Methodology and Parameters, it provides some indication of the effect on price stability of the Uplift component of the SMP and the degree to which the stated objectives are met over the period examined.

Factoring in the limited market data thus far available, the correlation coefficient of SMP to Shadow Price of 0.91 compared with the correlation coefficient of SMP to Uplift of 0.54 indicates that there is a stronger correlation between Shadow Price and SMP than between Uplift and SMP. This is reinforced by the coefficient of variation for the SMP and that for the Shadow Price which show that the SMP is slightly more volatile than the Shadow Price, but not to any significant degree. Uplift, however, with a coefficient of variation of 2.34 is shown to be substantially more volatile than the Shadow Price. All of this illustrates that the current methodology has performed well in meeting the Uplift Profile Objective i.e. that energy prices should reflect the underlying market dynamics.

At this juncture, the RAs are satisfied that there is no over-riding justification for changing the Uplift Methodology for reasons of inadequate SEM price stability.

In addition, as pointed out in the Decision Paper on the 2008 parameters, adherence to the Uplift Profile Objective in itself should to some extent ensure the minimisation of Uplift revenue, since this objective is captured within the Uplift Profile Objective as a minimisation of the sum of the values of Uplift squared, thereby targeting a profile of Uplift values which are both flat and low.

ii. Setting Values for Uplift Parameters

As stated earlier in this paper, the current seven-month period of market data is not considered by the RAs to be sufficient on which to carry out a rigorous review of the Uplift parameters. The RAs are, furthermore, aware of the overarching need to ensure market stability in this early phase of the SEM. With this in mind, the RAs do not propose a change to the current Uplift parameters as determined in the Decision Paper of 15th March 2007.

That said, the RAs intend and consider it prudent to conduct further ongoing analysis, once sufficient market data becomes available, on the effects of using differing values for α and β and δ using the "goodness of fit" metrics presented in the March 2007 paper, as set out below.

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[6] The coefficient of variation, which is a normalised measure of volatility, is the ratio of the Standard Deviation to the Mean and can be used to compare Standard Deviations.

The Figure below shows results from the review conducted by the RAs in 2007[7] of various values for α and β using the behaviour of SMP profiles to judge the performance of the algorithm under alternative parameter values.

The RAs stress that Figure 2 below is based on modelling conducted last year using forecast schedules from the PLEXOS model prior to real market data becoming available. It is included here for reference purposes.

Figure 2: Uplift Revenue v Goodness of fit - From Uplift Parameters Decision March 2007
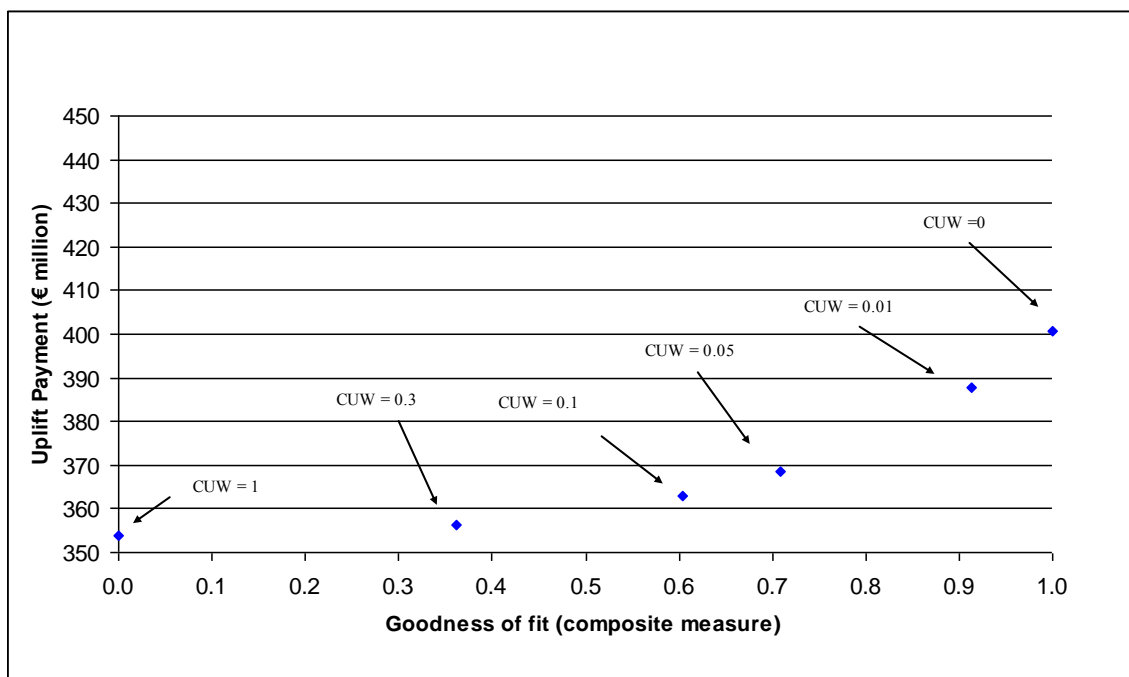
Source: Pöyry Energy Consulting

Figure 2 above was published in the Regulatory Authorities' Decision Paper on the 2007/2008 Uplift Parameters and illustrates the affects of using different α and β values comprising the Composite Uplift Weighting (CUW)[8]

$$CUW = \frac{\alpha \text{ (Cost weight)}}{\alpha \text{ (Cost weight)} + \beta \text{ (Profile weight)}}$$

As stated above, in light of the performance of the current Uplift Methodology and parameters when considered through the paradigm of SEM price stability and the stated SMP objectives, the RAs see no reason to depart from the value of CUW =0 (α= 0 and β=1). Additional modelling commissioned by the RAs last year showed that these values brought

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[7] See AIP/SEM/07/051 and AIP/SEM/230/06

[8] See AIP/SEM/07/051 and AIP/SEM/230/06

the best "Goodness of Fit" when measured against the current SMP Objectives, and so the RAs are minded to leave the current weightings for α and β unchanged. Further, the RAs are minded to recommend that δ be continued to be set at 5 as such a figure means that the Uplift Profile Objective is paramount.[9]

The RAs will be building on this previous analysis undertaken in its ongoing review of the performance of differing values for CUW and δ as more market data becomes available.

4. Proposed Parameters for 2009

Based upon the above considerations, the SEM Committee proposes that the values of the Uplift Parameters for the year 2009, should remain unchanged at:

- α should be set at zero;

- β should be set at 1; and

- δ should be set at 5.

The Regulatory Authorities would welcome any comments on these proposals.

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[9] The nature of δ is that it applies as a constraint on the Uplift revenue; by setting it to a high number (such as 5) it ensures that the Uplift Profile Objective can be prioritised over the Uplift Cost Objective.