

Single Electricity Market Committee

SMP Uplift Parameters 2010

Consultation Paper

17 June 2009

SEM-09-066

Table of Contents

1. Introduction	4
2. Analysis	6
3. Conclusions	10
4. Proposed Parameters for 2010	10

1. Introduction

The Regulatory Authorities are required to determine three parameters used in the calculation of Uplift¹ under the SEM Trading and Settlement Code (the Code).² 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 January 2009 to 31 December 2009 that:³

- 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 2009.

The Regulatory Authorities have stated in previous consultations that they intended to monitor the effectiveness of the proposed Uplift Methodology, including the parameter values set out in that document. This paper presents some analysis of the behaviour of Uplift for the period 1 November 2007 to 15 May 2009 and proposes values for the three Uplift Parameters (α , β and δ) for the year 2010.

The Regulatory Authorities are approaching this consideration of the Uplift Parameters from the perspective of seeking to determine whether there is evidence that change to the uplift parameters is required, rather than a repeat of the full review process that concluded with the Decision Paper of 15th March 2007 (AIP/SEM/51/07).

The SEM Committee welcomes the views of interested parties on these proposals.⁴ 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.

¹ For more on the background to the methodology and objectives of Uplift in the SEM see the following: Objectives of the Function to Include Start-Up and No-load Costs in SMP(AIP/SEM/92/06), SMP Uplift Objectives – Decision Paper (AIP/SEM/142/06), SMP Uplift Parameters Consultation (AIP/SEM/230/06), and SMP Uplift Methodology and Parameters – Decision Paper (AIP/SEM/51/07)

² See paragraph 4.70 of the Code

³ See SMP Uplift Parameters, Decision Paper, 1st September 2008, (SEM-08-089)

⁴ 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.

Comments on this paper should be sent to Philip Newsome and Colin Broomfield, preferably electronically, to arrive no later than noon on Monday 20th July 2009.

Philip Newsome
Commission for Energy Regulation
The Exchange
Belgard Square North
Tallaght
Dublin 24

pnewsome@cer.ie

Colin Broomfield
Northern Ireland Authority for Utility Regulation
Queens House
10-18 Queen Street
Belfast
BT1 6ED

colin.broomfield@niaur.gov.uk

2. Analysis

The Uplift element of SMP is explicitly designed to cover the costs of start-up and no-load, and is defined such that all price maker generator units should, within each period of continuous operation, recover their scheduled costs of operation from SMP payments (i.e. without resort to make whole payments to individual generators). Uplift is calculated in an optimisation which minimises a weighted sum of total generator revenue and the sum of the square of the uplift price, reflecting the objectives set out in the Code

Under the TSC rules, the Uplift values calculated over the 30 hour optimisation time horizon are optimised to meet two objective functions: minimising Uplift revenues, (the Cost Objective); and minimising Shadow Price distortion, (the Profile Objective). These functions are weighted within the optimisation by two Uplift parameters, α and β . In addition, a third Uplift parameter, δ , constrains the overall impact on revenue of the Uplift calculations.

The TSC defines that α and β are complementary, such that $0 \leq \alpha \leq 1$, $0 \leq \beta \leq 1$ and $\alpha + \beta = 1$. As stated above, the Regulatory Authorities concluded in the decision paper on the 2009 Uplift parameter values (SEM-08-089) that $\alpha = 0$, $\beta = 1$, $\delta = 5$ were the most appropriate Uplift parameters and that they provided the most appropriate balance of costs and price stability.

In considering the Uplift Parameter values for 2010, the RAs have undertaken further statistical analysis to examine the performance of Uplift to date and to determine whether the relationships between SMP, Shadow Prices and Uplift values have changed from the previous analysis undertaken for the 2009 values.

Original Dataset and Analysis

The analysis in the 2009 consultation paper on the Uplift Parameters (SEM-08-080) was undertaken using a limited dataset covering the period 1 November 2007 to 3 May 2008. The statistics presented in SEM-08-080 are set out below, in Table 1.

Table 1 – Summary statistics (November 2007 to May 2008)

	€/MWh			
	where appropriate	Shadow	SMP	
			Uplift	
Mean		64.96	72.59	7.63
Median		57.21	60.95	0.01
Maximum		524.7	524.7	219.4
Minimum		29.31	29.31	0.00
Standard deviation		36.43	42.79	17.87
Coefficient of variation		0.561	0.590	2.342
SMP correlated with...	...Shadow		..Uplift	
Correlation	0.910		0.538	

November 2007 to May 2009

The full series of SMP and Shadow Prices from the start of the SEMO to 15 May 2009 are presented in Figure 1 below.

Figure 1 – SEM SMP & Shadow Prices

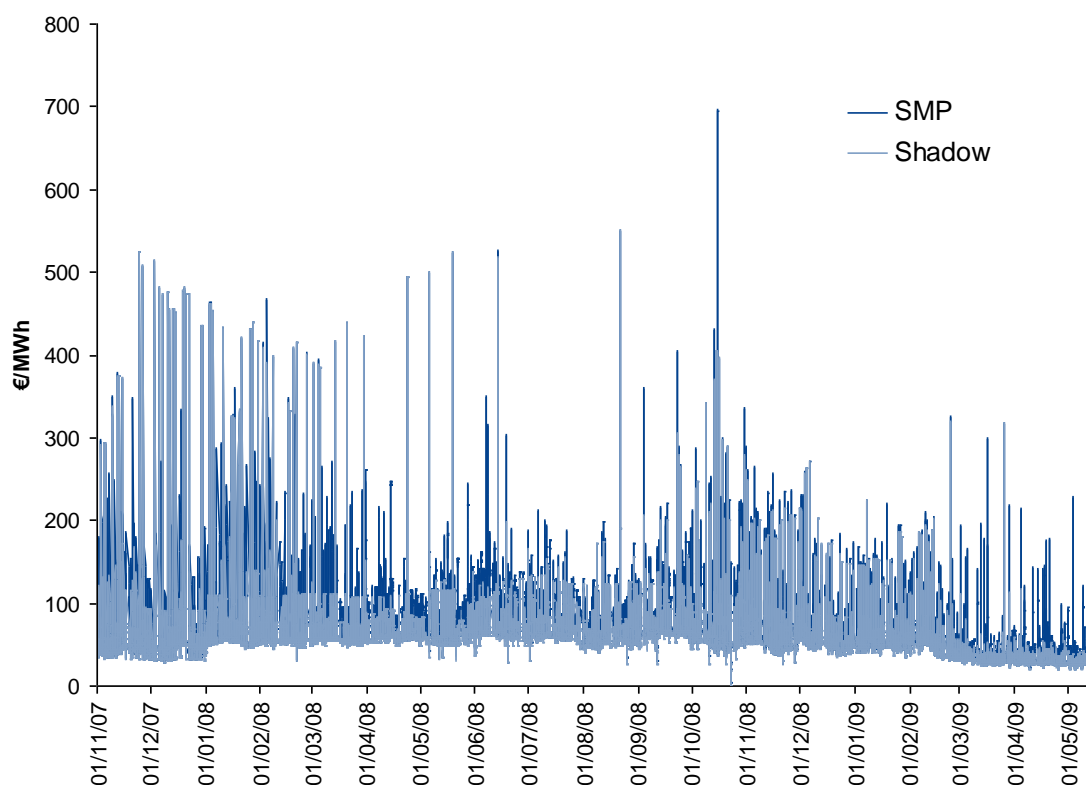
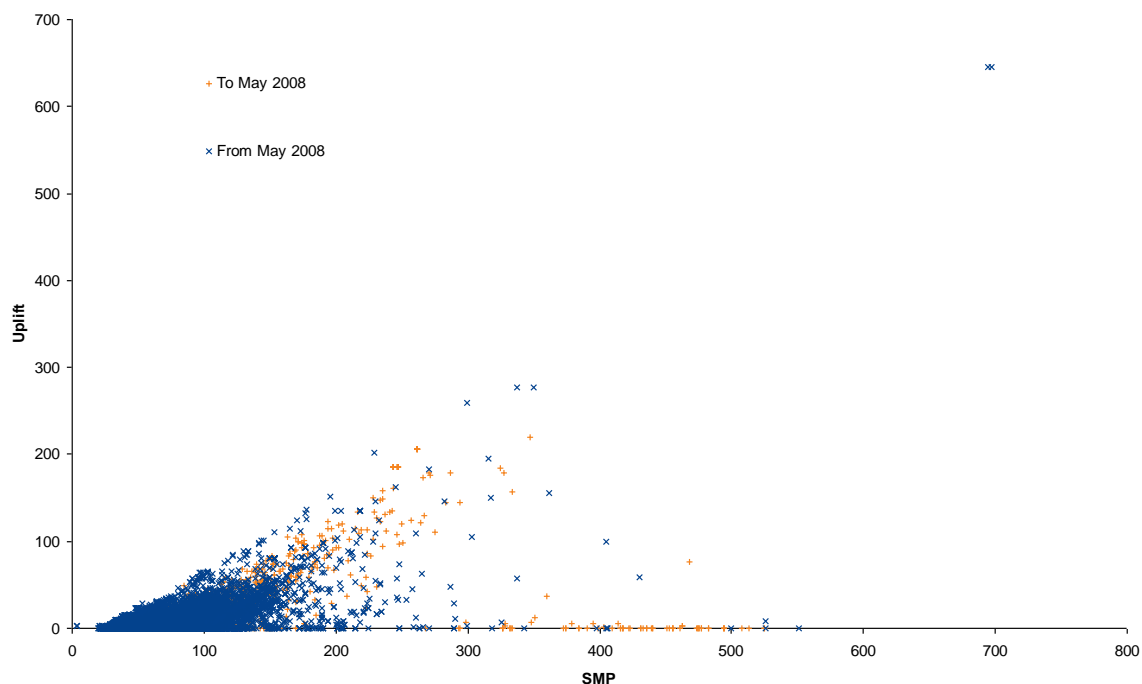


Figure 2 shows the plot of SMP against Uplift and shows that Uplift clearly correlates to SMP except for times where Uplift is zero.

Figure 2 – SMP and Uplift (November 2007 to May 2009)



Some resultant summary statistics⁵ are shown in Table 2 below.

Table 2 – Summary statistics (November 2007 to May 2009)

	€/MWh		
<i>where appropriate</i>	Shadow	SMP	Uplift
Mean	63.24	70.85	7.61
Median	57.43	61.36	0.77
Maximum	551.5	696.9	645.5
Minimum	0.00	3.29	0.00
Standard deviation	31.53	37.96	16.03
Coefficient of variation	0.499	0.536	2.107
SMP correlated with...	...Shadow		...Uplift
Correlation	0.910		0.578

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.

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 above provides an indication of the affect on price stability of the Uplift component of the SMP and the degree to which the stated objectives are met over the period examined. The following observations are noteworthy:

- there are minor changes from the observed data used for the setting of the 2009 parameters. In particular the coefficients of variation of Shadow Price, SMP and Uplift have all fallen, implying less volatility;
- the correlation coefficient between SMP and Uplift increased slightly from 0.538 to 0.578, and continues to show that Uplift has not had a significant destabilising affect on prices;
- the standard deviation of €31.53/MWh for shadow prices (and €37.96/MWh for SMP) indicates that market prices are determined primarily by the shadow price and hence the short run marginal costs of plant, thus reflecting underlying market dynamics.
- the correlation coefficient between Shadow Prices and SMP which remains at 0.91 illustrates that the current methodology has performed well in meeting the Uplift Profile Objective.
- whilst the Uplift Cost Objective was not prioritised by the uplift parameter values since the start of the market(α has been set to 0 since Go-Live), the mean values of €70.85/MWh and €63.24/MWh for SMP and Shadow respectively would indicate that Uplift has not been a significant proportion of overall market revenue.
- as pointed out in the Decision Papers on the 2007/2008 and 2009 parameters, adherence to the Uplift Profile Objective in itself should ensure the minimisation of Uplift revenue.

In light of the above considerations, the RAs are satisfied that there is no over-riding justification for changing the Uplift methodology for reasons of inadequate SEM price stability.

Potential outlying data

Consideration has also been given to the effect on the summary statistics of the specific outlier events which had particularly high Uplift values and caused the highest SMPs experienced to date. These values were observed at an SMP of nearly €700/MWh for two periods on 15 October 2008⁶. The effect of removing these two particular outliers from the data has been examined, and the resultant statistics are presented in Table 3 below. It is noted that there are minor differences in the summary statistics and conclude that the outliers do not have a material effect on the correlation between SMP and Uplift.

⁶Uplift in this case related to the recovery of start up costs for Tarbert Unit 3 over just two trading periods of the trading day as a result of a single station being shut down after one hour in the MSP Software run for that day. For more on this event, see the Market Monitoring Public Report, 14 April 2009 (SEM-09-039)

Table 3 – Summary statistics (November 2007 to May 2009, outliers removed)

	€/MWh			
	<i>where appropriate</i>	Shadow	SMP	Uplift
Mean		63.24	70.81	7.56
Median		57.43	61.36	0.76
Maximum		551.5	551.5	276.8
Minimum		0.00	3.29	0.00
Standard deviation		31.53	37.58	15.07
Coefficient of variation		0.499	0.531	1.992
SMP correlated with...		...Shadow		...Uplift
Correlation		0.920		0.569

3. Conclusions

As discussed above, the relatively strong correlation between SMPs and Shadow Prices shows that the SMP has to date been reflective of the underlying market dynamics, as would be expected given that the Uplift parameters used are designed to produce this effect. While different parameters could be used so as to prioritise the Uplift Cost Objective, this would be expected to drive a lower correlation and increase the volatility of SMPs. Furthermore, the current uplift parameter settings which ensure adherence to the Uplift Profile Objective should in themselves ensure the minimisation of Uplift revenue.

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 as of yet see no reason to depart from the existing values for the Uplift Parameters.

In view of this and the above analysis, the RAs are minded to leave the current Uplift Parameter values of $\alpha = 0$, $\beta = 1$ and $\delta = 5$ unchanged for 2010.

4. Proposed Parameters for 2010

Based upon the above considerations, the SEM Committee proposes that the values of the Uplift Parameters for the year 2010, 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.