# Single Electricity Market Committee

# A Review of the Effectiveness of PCAP & PFLOOR

## A Consultation Paper

**SEM-08-071**

**11 June 2008**

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# A Review of the Effectiveness of PCAP & PFLOOR

## 1 Introduction

The Regulatory Authorities are required under the Trading and Settlement Code to determine three administered prices. These are:

- the value of lost load (VOLL);
- the market price cap (PCAP); and
- the market price floor (PFLOOR)

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

- VOLL would be set to €10,000/MWh;
- PCAP would be set to €1,000/MWh;
- PFLOOR would be set to minus €100/MWh; and that
- these values would remain valid for the period to end-2008.

The Regulatory Authorities also decided that:

- in the case of VOLL, its value in subsequent calendar years would be determined by taking its value in the preceding year and up-rating it by applying the weighted average of the year-on-year increases in the Irish Harmonised Index of Consumer Prices (HICP) (using a weight of two-thirds) and the UK HICP (using a weight of one third) in the July of the preceding year by comparison with that a year earlier;
- in the case of PCAP and PFLOOR, the effectiveness of these values would be looked at in the second half of 2008 and re-set if necessary.

The calculation of VOLL for 2009 using the formula decided upon last year will be done later in the year, to meet the requirement in the Trading and Settlement Code to publish a value for VOLL for 2009 two months before the start of the TSC year (i.e., by the end of October 2008).

This Consultation Paper undertakes a review of the effectiveness of PCAP and PFLOOR, as required by last year's decision of the Regulatory Authorities, with a view to re-setting the values for 2009.

It concludes with proposals to leave PCAP at €1,000/MWh and PFLOOR at minus €100/MWh.

The SEM Committee welcomes the views of interested parties on these proposals.[2] It is intended to publish all responses received. If any respondent wishes all or part of their

[1] See AIP-SEM-07-484

[2] 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

submission to remain confidential, then this should be clearly stated in their response. Comments on this paper should be sent to James Curtin and Colin Broomfield, preferably electronically, to arrive no later than noon on Friday 11th July 2008.

James Curtin
Commission for Energy Regulation
The Exchange
Belgard Square North
Tallaght
Dublin 24

jcurtin@cer.ie

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

colin.broomfield@niaur.gov.uk

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. PCAP

In last year's response and decision paper the Regulatory Authorities were satisfied that:

- the various measures put in place to mitigate market power in the SEM (directed contracts and the requirement to bid at short run marginal cost) would limit the need for a cap on wholesale prices as a defence against the abuse of market power;
- the requirement on generators to bid at SRMC should avoid prices in the SEM from spiking for reasons other than a spike in short run marginal costs (e.g., reflecting a spike in fuel prices) or from a spike in uplift;
- there was nonetheless a case for setting PCAP at a conservative level, at least until:
    - there was adequate liquidity in the contract market to enable participants to manage risk effectively;
    - there was sufficient certainty that the MSP software does not frequently drive prices to PCAP at times when all load is actually being served.

The Regulatory Authorities therefore decided to set PCAP at a number which was a reasonable multiple of the expected SRMC of the most expensive plant on the system. It was argued that this would:

- allow for variations in SRMC during the year to be reflected in SMP without constraint; and
- ensure that no generator would be expected to generate at a loss if its SRMC was higher than PCAP.

Thus the Regulatory Authorities set PCAP at a margin above the highest SMP that could be expected in the market in the following year, but not so high as to allow prices to go to excessive levels in the event that the MSP fails to determine a price when there is an Insufficient Capacity Event.

### 2.1 Price outcomes so far in the SEM

Market data for the period from 1st November 2007 to end-April 2008 show that:

- SMP was never set at PCAP;
- SMP was never set at PCAP either because of an Insufficient Capacity Event or because of an inability of the MSP software to reach a feasible solution;
- SMP has exceeded €500/MWh on four occasions since 1st November 2007 (0.05% of the time) and was above €200/MWh in 144 trading periods (1.6% of the time), as the table below shows:

**Table 1. Distribution of SMP**

| SMP (€/MWh) | Occurrences (to end-April 2008) | Percentage |
|---|---|---|
| 500 + | 4 | 0.05% |
| 400 - 500 | 40 | 0.46% |
| 300 - 400 | 25 | 0.29% |
| 200 - 300 | 75 | 0.86% |
| 100 - 200 | 854 | 9.76% |
| 70 -100 | 2265 | 25.90% |
| 50 - 70 | 3838 | 43.88% |
| 0 - 50 | 1645 | 18.81% |

- on all the 69 occasions SMP was in excess of €300/MWh, SMP was equal to the SRMC of the most expensive generator on the system (Kilroot);

- uplift has been responsible for spikes in SMP on a number of occasions, but SMP was higher than €250/MWh as a result of uplift in only nine trading periods - once in November 2007 when SMP reached €347/MWh and in eight trading periods in March 2008 when SMP reached €262/MWh.

### 2.2 Effectiveness

Since PCAP was intended to act as a backstop, the fact that SMP has not been set at PCAP so far is instructive. If SMP had frequently been set at PCAP - for reasons other than Insufficient Capacity Events in the MSP software or an inability of the software to reach a feasible solution - then it could be argued that PCAP was set at too low a level and that it was preventing the proper functioning of the price-setting algorithms in the market software. The fact that PCAP was set at a level sufficiently in excess of the SRMC of the most expensive unit on the system as to allow prices to be set as intended by the MSP software without constraint suggests that PCAP was effective in achieving its objectives.

On the other hand, a PCAP of €750/MWh would have been equally effective in achieving the objectives of a price cap in the SEM. But, for the reasons given last year, i.e., the fact that other measures are in place to prevent prices from spiking for reasons other than SRMC bidding and because Insufficient Capacity Events are rarely - if ever - likely to be declared by the MSP software, the Regulatory Authorities see little need to be over-precise in setting the level of PCAP.

### 2.3 Proposal

The SEM Committee therefore proposes to leave PCAP unchanged at €1,000/MWh for 2009.

## 3. PFLOOR

At the conclusion of last year's consultation, the Regulatory Authorities noted that:

- a majority of respondents were keen to allow generators, including renewable generators, to bid negative prices and that a PFLOOR of minus €100/MWh would allow eligible renewable Variable Price Maker Generating Units in Northern Ireland to bid the opportunity cost of their Renewable Obligation certificates (ROCs) with a margin to spare, given that the 'buyout' price for 2007/08 (set by OFGEM) stands at £34.30/MWh;

- market participants that were primarily exposed to the risk of negative prices are Price Taker Units, including renewable units, since Price Taker Units that are constrained off will not be protected by their contracts with suppliers against the risk of negative prices;

- it was possible that - in an Excessive Generation Event - Variable Price Takers would have to pay for energy they have not generated if PFLOOR was set at a negative value;

- allowing negative prices in the SEM would send efficient price signals and, given that there may be generators that are prepared to pay to stay on the system rather than be constrained off, the appropriate solution is to allow prices to reflect that willingness to pay.

Thus the Regulatory Authorities set PFLOOR in the SEM at a level below zero and sufficiently below zero to allow renewable generators to bid the opportunity cost of their ROCs and CHP plant at the opportunity cost of using their heat boilers.

### 3.1 Price outcomes so far in the SEM

Market data for the period from 1st November 2007 to end-April 2008 show that:

- SMP has never been negative;

- PFLOOR has never been hit;

- the lowest SMP set so far was €29.31/MWh, between 4:30am and 6:30 am on 8th December 2007, when all three coal-fired Moneypoint units set the price:

- no generator has yet bid in a unit with negative PQ bids;

- no Excessive Generation Events have been called.

### 3.2 Effectiveness

As with PCAP, PFLOOR was intended to act as a backstop. The fact that SMP has not been set at PFLOOR since the SEM began does not indicate that it has been ineffective in achieving its purpose. If SMP had frequently been set at PFLOOR - for reasons other than Excessive Generation Events in the MSP software - then it might be argued that PFLOOR

was set at too high a level and that it was preventing the proper functioning of the price-setting algorithms in the market software. The fact that SMP has never been set at PFLOOR has meant that prices have been set by the MSP software without constraint. As with PCAP, this suggests that PFLOOR has been effective in achieving its objectives. Moreover, one of the potential disadvantages of a negative price – that Price Taker Units that are constrained off at times when prices are negative would be unhedged under their off-take contracts – does not appear to have been a problem in practice.

On the other hand, it can be argued that a PFLOOR higher than minus €100/MWh (e.g., minus €50/MWh or zero) would have been equally effective in achieving the objectives of a price floor in the SEM. This argument would be supported by the fact that no generator units have bid negative prices into the market since it began.

But the Regulatory Authorities continue to see merit in giving generators that are prepared to pay to stay on the system rather than be constrained off the opportunity to reflect that willingness to pay in negative price bids. Moreover, given the experience since the SEM began, it looks as if an Excessive Generation Event is rarely - if ever - likely to be declared by the MSP software, with the result that prices are unlikely to go negative for reasons other than generator bidding behaviour. The concerns expressed by renewable generators last year at the prospect of negative prices have - so far at least - proved to be unfounded.

### 3.3 Proposal

The SEM Committee therefore proposes to leave PFLOOR unchanged at minus €100/MWh for 2009.