SEM TRADING AND SETTLEMENT CODE

Regulatory Authorities' Approval of the System Operators' proposals for Uninstructed Imbalances Parameters

DECISION ON 2007 VALUES AND PROPOSED DECISION ON 2008 VALUES

28 September 2007

AIP/SEM/07/491

1. Introduction

Under the terms of the SEM Trading and Settlement Code (TSC) the Regulatory Authorities (RAs) shall determine certain parameters proposed by the System Operators (SOs) relating to the calculation of Uninstructed Imbalances[1], The specific parameters concerned are:

1. **Engineering Tolerance** ENGTOL (where 0 ≤ ENGTOL ≤ 1);

2. **MW Tolerance** MWTOLt (where 0 ≤ MWTOLt) for each Trading Day t;

3. **System per Unit Regulation parameter** (UREG);

4. **The Discount for Over Generation** (DOGuh) for each Generator Unit u in each Trading Period h, such that 0 ≤DOGuh ≤ 1;

5. **The Premium for Under Generation** (PUGuh) for each Generator Unit u in each Trading Period h, such that 0 ≤PUGuh ≤ 1.

The RAs have received the SOs' report which proposes values for the parameters for the First Trading Year and have undergone a consultation process (AIP/SEM/07/430) with participants on the value. The RAs have received comments on the consultation paper for the parameters and have provided all comments received to the SOs who have, in turn, responded to them.

On the basis of the comments on the consultation paper, the SOs responses and the RAs' own considerations, the RAs have reached their decision on the values to be used for the parameters concerned for the First Trading Year. The RAs are issuing their determination on these values for 2007 for information purposes and shall convey the values to the System Operators at which point the approved values will be provided to the Market Operator (in fulfilment of the "Uninstructed Imbalances Data Transaction" as per Appendix K) and published in accordance with paragraphs 4.144 and 4.145 of the TSC.

As explained in Section 4 of this paper, the RAs have also received a submission from the System Operators for these parameters, for 2008. In all cases the same values are proposed as those for the First Trading Year. The RAs request participants to provide any additional comments on these proposals pertaining to 2008, bearing in mind that the RAs will consider comments received on 2007 values to apply to 2008 unless informed to the contrary. Comments are requested in relation to the 2008 values by 19 October 2007, after

[1] Set out in 4.142 and 8.48 of the TSC

which time, subject to any comments received, the RAs expect to determine that the same values, as approved in this Decision Paper, apply to 2008 and convey this to the System Operators and on to the Market Operator for publication.

2. Comments on the Consultation Paper and the Regulatory Authorities' Response

The RAs received comments from 2 parties on the Consultation Paper. These were:

- Northern Ireland Electricity (NIE)
- Viridian Power and Energy (VPE)

2.1. Engineering Tolerance and MW Tolerance and System per Unit Regulation

2.1.1. System Operators' Proposal and Justification

The SOs (EirGrid and SONI) have reviewed the values for MWTOL and ENGTOL and their application in Ireland and SONI agree that these values are appropriate for Northern Ireland participants in the SEM. The SOs have assessed the need to have a MWTOL value that varies by Trading Day and at present can find no reason to vary the value. The SOs propose values for MWTOL of 1 MW and ENGTOL of 0.01.

The SOs propose that UREG be set at 0.04 based on an assumption that all generating units typically have a 4% speed droop.

2.1.2. Respondents' Comments

NIE were of the opinion that the proposed figures represent a significant tightening of the tolerance bands compared to current allowances in Northern Ireland. NIE add, in their response, that it would have been useful if the report had presented some analysis of historic dispatch and imbalances to show the practical impact on generators of narrowing the tolerance band. NIE suggest that a wider band be put in place in the interim pending the results of more detailed analysis.

NIE signalled agreement with the proposals to adopt 0.04 for System per Unit Regulation parameter (UREG), based on the required governor droop characteristics for generators connected to the system.

VPE expressed concern with what they consider the tight tolerance implicit in the proposed value for ENGTOL and suggest that this is set at a level of 2% to allow for higher wind levels, noting that in the future 'with a significant levels of wind fluctuation, it may be more difficult for thermal generators to stay so close to instructed levels'.

2.1.3. System Operators' Responses

The System Operators see no justification in the consultation comments to revise their proposed values for these parameters. The SOs note that variation in frequency

shouldn't be an issue as the average frequency has been taken into account in the calculation of Uninstructed Imbalances in the TSC. Furthermore, regarding comments that the tolerance bands are excessively tight, the SOs point out that these values have been used for some time now in the current market in Ireland and participants have not had any issues with these. The SOs have taken the comments into account and will monitor the tolerance bands on an ongoing basis.

2.1.4. Regulatory Authorities' Determination

The RAs are prepared to accept the System Operators proposals for these technical parameters until such time as sufficient justification is made to alter these. Therefore, as per the SOs proposals, the RAs determine the ENGTOL value to be 0.01, the MWTOL value to be 1 and the UREG value to be 0.04

2.2. Discount for Over Generation (DOG) and Premium for Under Generation (PUG)

2.2.1. System Operators' Proposal and Justification

The SOs outline a cost based analysis[2] for these values and conclude that the most appropriate values for DOG and PUG are 0.36 and 0.33 respectively, while noting that an analysis based on the current market in Ireland suggests that an even higher value for PUG may be warranted. However, at this time, the SOs believe that an adequate incentive to comply with dispatch instructions for the first year of the SEM will be provided by using the values applied in market trial – 0.20 for each of DOG and PUG. While accepting that the cost based analysis demonstrates that these values are less than the full cost reflective values, the SOs stress that if non compliance with dispatch instructions becomes a common issue they will propose reverting to full cost reflective values in subsequent years.

2.2.2. Respondents' Comments

NIE expressed the view that the analysis conducted in the proposals is not soundly based. NIE question the integrity of the Loop 2 modelling upon which the analysis is based and take issue with the fact that the analysis is also based on unconstrained costs 'whereas the actual despatch against which the imbalances will occur will be the actual constrained dispatch'. NIE stress that the justification does not provide any evidence that the 20% figures proposed are cost reflective. NIE note that they could accept 20% as interim figures pending the adoption of a methodology that provides figures that are truly cost reflective.

VPE also question the cost reflectivity of these values, and suggest that a 15% value for POG and DOG would be more prudent until more accurate figures emerge, or 'major difficulty materialises with Generators not following instructions'.

2.2.3. RAs' Considerations

The RAs took the view that these parameters should be cost reflective and in conjunction with providing the System Operators with the opportunity to respond to respondents' comments, requested that the SOs provide further justification as to how their proposed values for DOG and PUG are cost reflective.

[2] See Consultation Paper (AIP/SEM/07430) for full analysis and justification

Specifically the RAs concerns were that both are supposed to be cost-reflective. The RAs noted that if, based on their analysis, the SOs believe that 0.36 and 0.33 are the appropriate values, then these values should be adopted and not dampened down to 0.2 as has actually been proposed. The dampening of these values undermines the methodology that has been used for deriving DOG and PUG and the values that it produces.

Furthermore, DOG is calculated based on the ratio of volume weighted average price of in-merit generation to SMP. So the calculation bases DOG on the average cost of de-loading an in-merit station. It is more likely that the SO would look to de-load a plant priced close to the margin, as this would be more cost-effective.

PUG is calculated based on the ratio of volume weighted average price of out-of-merit generation to SMP. So the calculation bases PUG on the average cost of running an out of merit station. It is more likely that the SO would call upon a plant priced close to the margin, as this would be more cost-effective.

2.2.4. The System Operators' Responses

The System Operators responded to the above comments and RAs' concerns as follows:

It is difficult to provide an accurate calculation of the most appropriate values for the DOG and the PUG in the absence of real live market data. Through study data we have identified some useful bounds and indicators of what these costs might be and proposed values on this basis. While we agree that the values should be cost reflective, we firmly believe that the cost of non-compliance with dispatch instructions includes a provision for increased risks to system security. This is not included in a cursory study to determine out of merit generation costs incurred.

There are many times of the day with rapid demand changes, the morning load rise in winter for example, where many generators are operating at or close to technical limits. In these cases on an island utility non-compliance with instructions adds significant risk to system security. It is not always possible to simply schedule the next MW in a price stack to respond. We have outlined this situation in more detail below for the specific cases of over and under generation and outlined our logic for the values proposed.

Discount for Over Generation

Assume that the market rules are efficient and achieve their stated objectives and consider the situation from a production cost viewpoint. If a generator over produces then – assuming the original schedule was efficient it is either generating at a cost above SMP or exacerbating a constraint. This over generation will cause the system frequency to rise. As units are required to respond to this all units on-load that are performing correctly will experience a slight drop in output. This is why the volume-weighted average of on load generation is considered to be the relevant offset generation. It is true that for large and sustained over generation amounts the TSO may redispatch the next unit in merit to rectify the situation. However, this is difficult to do effectively as it is difficult to predict the behaviour of a unit that is not complying with dispatch instructions. The ability to moderate the impact of large sustained violations through redispatch is reflected in the reduction of the DOG to 20% from 36%.

Premium for Under Generation

In the event of unexpected under generation by a plant the TSO must act quickly to restore appropriate system balance and reserve targets. To achieve this it may be necessary to dispatch a plant that has quick response characteristics rather than the next plant in merit. The case for using the constrained rather than unconstrained value is correct. Again it is difficult to accurately quantify the exact costs that might be incurred but it is clear that they will be at somewhat greater than the costs of the next marginal plant in the constrained schedule. However, using the average cost of out of merit plant was considered to be a useful indication but probably too conservative. On this basis a scaled down value of 20% is proposed.

2.2.5. Regulatory Authorities' Determination

The RAs have considered the SOs responses on the values of DOG and PUG, and the methodology used to determine these values, and on the basis of these responses are prepared to accept the proposed values. Therefore, the RAs determine the value for Discount for Over Generation to be 0.20 and for Premium for Under Generation to be 0.20.

3. Conclusions

The Regulatory Authorities approve the following Uninstructed Imbalances parameters for 2007 and propose that the same values be used for 2008. The table below summarises the RAs' determinations for 2007 Uninstructed Imbalances:

Parameter		Approved Value
1.	Engineering Tolerance ENGTOL (where 0 ≤ ENGTOL ≤ 1);	0.01
2.	MW Tolerance MWTOLt (where 0 ≤ MWTOLt) for each Trading Day t;	1
3.	System per Unit Regulation parameter (UREG);	0.04
4.	the Discount for Over Generation (DOGuh) for each Generator Unit u in each Trading Period h, such that 0≤DOGuh ≤ 1; and	0.20
5.	the Premium for Under Generation (PUGuh) for each Generator Unit u in each Trading Period h, such that 0≤PUGuh ≤ 1.	0.20

4. RAs' Determination of 2008 Uninstructed Imbalances Values

The RAs invite interested parties to respond with comments, if any, on the values for the parameters in this paper as proposed values for 2008. The RAs presume that the comments received on the 2007 values apply for 2008. If no comments are received by 19 October 2007, and should the RAs not have any cause in the interim to revise these values, the RAs will notify the System Operators and the Market Operator that the values in this paper, where relevant, apply to 2008. Comments on the proposed 2008 values should be sent, preferably in electronic form, by 19th October 2007 to:

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