Options for Administered Settlement

Request for Approval

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SEM-09-100a

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1. INTRODUCTION

In accordance with paragraph 6.247 of the Trading and Settlement Code (T&SC), SEMO are obliged to obtain prior written approval from the Regulatory Authorities (RAs) for the detailed calculations and methodology used for Administered Settlement.

On the 8th of July, the RAs published SEMO's "Options for Administered Settlement" (SEM-09-074) for consultation. Six responses were received from Market Participants. This paper contains a summary of the views outlined in these responses and SEMO's final recommendation and request for approval.

Summarised in section 1.1 are the three options put forward for Administered Settlement in the event of MSP Failure. Section 1.2 contains a summary of the rules for Administered Settlement in the event of Electrical System Collapse (ESC). It should be noted that the rules relating to ESC are already described in the T&SC and are implemented in the Central Market Systems. As such, they do not require further RA approval.

In section 2, the responses to the MSP Failure component of consultation paper are summarised and any questions are responded to. In section 3, the responses to the ESC component of the consultation paper are summarised and any questions responded to.

Finally, in section 4, SEMO requests approval of its recommended option in relation to MSP Failure with the detailed calculations and methodology for this option set out in the appendix.

1.1. MSP FAILURE

MSP Failure occurs when the MSP Software fails to produce a Valid MSP Solution for reasons related to the functioning of the MSP Software. In addition, it is expected that MSP Software will not be able to produce a Valid MSP Solution before 17:00 on that Trading Day.

The MSP Software produces the System Marginal Prices (SMPs) and Market Schedule Quantities (MSQs) that are then used to settle the market. In addition, it is also used to determine the Interconnector Unit Nominations (IUNs) and Dispatch Quantities (DQs). As such, in the event of a MSP Failure, the Market Operator is obligated to produce MSQs and SMPs (and also IUNs and DQs) using an alternative method.

The methods that SEMO proposed in its options paper were:

- Option 1 – Use a 'previous day'
- Option 2 – Use a 'previous day' and set all Modified IUNs (MIUNs) to zero
- Option 3 – Use a pre-developed simplified version of the MSP

All options can be used to produce the Ex-ante Indicative (EA) and Ex-post Initial (EP2) Schedules. It is proposed that Ex-post Indicative (EP1) Schedules are not calculated in the case of MSP Failure. Depending on the time of day when the MSP Failure occurs, it may be necessary to produce both EA and EP2 runs. Until the MSP Software has been restored (following which all affected EP2 schedules would be rerun), the Market Operator proposed in the consultation paper to calculate both EA and EP2 using one of the above methods. Options 1 & 2 could be implemented using existing systems. Option 3 would require significant investment in additional systems. Views were sought from Market Participants on which of the three options would be preferable.

1.2. ESC

In the case of an ESC, all Generation has ceased in part of the Transmission System and there is no electricity supply such that Black Start procedures as set out in the Grid Code are initiated.

In that event the Market Operator, for the Trading Days affected by the ESC, would produce MSQs and SMPs as normal. For the Settlement of Trading Periods outside the ESC, the Market Operator will utilise the SMPs and MSQs produced via the MSP Software. For the Settlement of Trading Periods during the ESC, section 6.256 to 6.259 of the T&SC shall be invoked and Generator/Supplier Units will be settled based on their Metered Generation/Demand and the highest Market Offer Price of a Generator Unit with Metered Generation greater than zero in that Trading Period.

For this method, it is assumed that:

- The Central Market Systems are fully functional and the Market Operator would be able to produce all schedules, via the Central Market Systems.
- The System Operator(s) notify the Market Operator of the start and end of the electrical collapse i.e. Trading Period and Date.
- All Pricing Schedules for Trading Days prior to and post the ESC are produced. In the case where a full dataset has not been received for that day, the Market Operator may defer such schedules onto such time as it has the full dataset.
- Corrected data will be consumed into the system under normal M+4 and M+13 resettlement.
- All SMPs and MSQs on the Trading Day of ESC will be calculated as normal; however, when the Trading Day is being settled the Trading Periods affected by the ESC will be calculated in accordance with Section 6 of the TSC.

No repricing will result from carrying out Administered Settlement due to an ESC.

2. RESPONSES ON MSP FAILURE PROPOSALS

The following section outlines the views contained in the six responses received in relation to the three options proposed for Administered Settlement in the event of MSP Failure.

2.1. RESPONSES

2.1.1. Option 1: Use a 'previous schedule'

Responses **For** Option 1: One

ESBPG	ESB PG would support Options 1 or 2 i.e. use of previous Trading Day's SMPs and MSQs.

Responses **Against** Option 1: Two

Endesa Ireland	Options 1 and 2 will introduce additional risk in relation to interconnector trades, particularly in relation to volume. Under Option 1, interconnector trades will effectively be imposed on the interconnector users. The prior day (or alternate choice of previous day) may not be a typical trading day for the interconnector users. Therefore, the risk of maintaining the MIUNs for these days is too high.
Airtricity	As the consultation paper noted, **Option 2** ensures that "Interconnector Users are not unduly exposed if changes occurred between the Ex-ante and the repricing of the Trading Day following the restoration of the MSP Software". As active users of the Moyle interconnector connecting SEM to BETTA we concur with this observation. In an event such as MSP failure, with no indication of SEM scheduling and pricing, forgoing the opportunity to trade between the markets is a lesser evil than being exposed to potentially hefty financial charges. (Emphasis added to indicate a preference for Option 2 over Option 1)

2.1.2. Option 2: Use a 'previous schedule' and set all MIUNs to zero

Responses **For** Option 2: Six

NIE Energy Power Procurement Business	However, if following further specification, the costs of Option 3 increase significantly over the initial estimate then the cost/benefit case for Option 3 would be substantially weakened and in such circumstances we would then consider Option 2 to be the best alternative.
Airtricity	In event of an MSP failure, creating the conditions for Administered Settlement, Airtricity recommends use of **Option 2: Use a 'Previous Schedule' and set all MIUNS to zero**. We also note that the Market

	Operator proposes to use this option in the event of an MSP failure, pending the determination of this matter. We believe this is the right measure to adopt. As the consultation paper noted, **Option 2** ensures that "Interconnector Users are not unduly exposed if changes occurred between the Ex-ante and the repricing of the Trading Day following the restoration of the MSP Software". As active users of the Moyle interconnector connecting SEM to BETTA we concur with this observation. In an event such as MSP failure, with no indication of SEM scheduling and pricing, forgoing the opportunity to trade between the markets is a lesser evil than being exposed to potentially hefty financial charges. Added benefits to Option 2, at least in contrast to Option 3, are its simplicity and minimal involved costs.
Viridian Power and Energy	In the event of MSP failure Option 2 suggested by SEMO looks reasonable and can be supported.
Endesa Ireland	Options 1 and 2 will introduce additional risk in relation to interconnector trades, particularly in relation to volume. Option 2 introduces less risk for interconnector users, as they will have the opportunity to close out any open positions in BETTA. Option 3 would minimise risk for all market participants and would provide the best outcome, but the cost and time to develop this solution would likely outweigh the benefits, given that Administered Settlement will be an unlikely event. Therefore, Endesa Ireland supports the implementation of Option 2 in the case of MSP failure.
ESBPG	ESB PG would support Options 1 or 2 i.e. use of previous Trading Day's SMPs and MSQs.
NIE Energy (Supply)	NIE Energy (Supply) have reviewed the three options under MSP Failure as detailed in the consultation paper and view "Option 2: Use a 'Previous Schedule' and set all MIUNs to zero" as the most appropriate. While the details provided do not extend to defining "appropriate" the use of a previous days schedules and outcomes is a reasonable, consistent and cost effective solution, especially given that all the schedules will be reran on restoration.

Responses **Against** Option 2: None

2.1.3. Option 3: Use a pre-developed simplified version of the MSP

Responses **For** Option 3: One

NIE Energy Power	In the event of a Market Scheduling and Pricing software failure (MSP

Procurement Business	failure) the Market Operator has put forward 3 options for consideration for the calculations and methodology of Administered Settlement. Option 3 will make use of all available data and will minimise the amount of estimated data used, thereby adhering to General Principle 1 as published in the Trading and Settlement Code (TSC) paragraph 6.247. A simplified version of the MSP will give results as close as possible to the normal settlement process in line with General Principle 3 of the TSC paragraph 6.247. PPB acknowledges that while Option 3 best meets the criteria for Administered Settlement it is also the most costly one to implement. On balance, we consider Option 3 to be the most appropriate solution, providing the costs for implementation remain in the region of the initial €100,000 estimate. However, if following further specification, the costs of Option 3 increase significantly over the initial estimate then the cost/benefit case for Option 3 would be substantially weakened and in such circumstances we would then consider Option 2 to be the best alternative.

Options **Against** Option 3: Four

Airtricity	Given that after the event, repricing will be conducted under all 3 options, the greater information content offered under Option 3 does not offer significant benefit. This is more so under the proviso of all data being available to the Market Operator for the Trading Day(s) in question.
Endesa Ireland	Option 3 would minimise risk for all market participants and would provide the best outcome, but the cost and time to develop this solution would likely outweigh the benefits, given that Administered Settlement will be an unlikely event.
ESBPG	We would not be in favour of Option 3 due to the potential additional cost, complexity, risk and additional time involved in arriving at the SMPs and MSQs.
NIE Energy (Supply)	NIE Energy (Supply) view the use of a simplified MSP described under option 3 as costly to implement, open to error and an inherent risk to those participants active in the market at the time of failure.

2.2. SUMMARY

Option 1: 1 For; 2 Against

One respondent favours Option 1 or Option 2. Five respondents favour other options. Two respondents are explicitly against Option 1.

Option 2: 6 For; 0 Against

Six respondents favour Option 2. One of these respondents favours Option 1 or Option 2. One of these respondents favours Option 2 only if Option 3 could not be implemented at a cost in the region of €100,000. No respondents are explicitly against Option 2.

Option 3: 1 For; 4 Against

One respondent favoured Option 3 provided it could be implemented at a cost in the region of €100,000. Five respondents favoured other options. Four respondents were explicitly against Option 3.

SEMO would like to highlight, as was stated in the consultation paper, that Option 3 "is significantly more complex than Options 1 and 2 and would be the most costly of the options to deliver, estimated at over €100,000 and possibly significantly more. It would also have implementation time of at least 6 months".

Further requests

The following requests were made in relation to Option 2:

Airtricity	Airtricity would request further details on an aspect of the 'Previous Day' Method. Given that initial conditions for each Trading Day's schedule *may* depend on the outcomes of the preceding day(s), does the Market Operator propose re-running EP2 schedules for the Trading Day or a number of Trading Days immediately following restoration of the MSP Software, even though they have not being directly affected by the MSP failure?
NIE Energy (Supply)	In defining this requirement further we urge SEMO to publish data consistent with the format described in the latest MPUD document. Data should be made available, dependent on the scope of the IT failure, via Type 3 and Type 2 communications before the use of contact email addresses etc.

In relation to re-running EP2 schedules for the Trading Days not directly affected by the MSP failure. SEMO refer the respondent to section N.15 of the T&SC where it states:

N.15 The Market Operator will not be obliged to rerun the MSP Software for any particular Trading Day solely as a consequence of a rerun of the MSP Software for the preceding Trading Day.

In relation to the format of the data and how it will be published, in the case of MSP Failure, SEMO will endeavour to use all functioning systems to minimise the disruption to the market.

3. RESPONSES ON ESC PROPOSALS

The following section outlines the views contained in the six responses received in relation to the existing method for Administered Settlement in the event of ESC.

3.1. RESPONSES

Responses **For** existing rules: Three

NIE Energy Power Procurement Business	In the event of an Electrical System Collapse PPB supports the process for Administered Settlement as published in the TSC paragraphs 6.256 to 6.259.
Endesa Ireland	In the event of an Electrical System Collapse, Endesa Ireland agrees with the proposal in the consultation paper that the Market Schedule and Market Quantities will be produced as normal.
NIE Energy (Supply)	... the course of action in response to an ESC is already detailed in the code

Responses **Against** existing rules: One

Viridian Power and Energy	In the event of an electrical system collapse (ESC), which seems synonymous with a Blue Alert situation, generators should be incentivised to come back online as quickly as possible and it is not clear that section 6 of the Trading & Settlement Code achieves this. For example it could be that an ESC coincides with very high penetrations of wind and hence the highest offer price submitted prior to the collapse (for a generator whose metered output is greater than zero) is extremely low. SMPs based on this for periods in the ESC would provide a weak signal for generators to respond when needed most and could therefore delay restoration of electrical integrity. To correct this anomaly we suggest that SMPs be calculated based on the highest offer price of generators called to run after an ESC event. An alternative approach might be to use the MSP software with reasonable demand and availability estimates (this for example could be based on a comparable trading period the previous day or week). The MSP software would then produce SMP and MSQs as normal – generators would be settled based on MSQ and suppliers would pay SMP at a quasi normal level.

3.2. SUMMARY

<u>Existing Rules:</u> 3 For; 1 Against

Three respondents favour the existing rules for Administered Settlement in the event of ESC as detailed in paragraphs 6.256 - 6.259.

One respondent proposed a number of changes to the current rules. The respondent proposed that the current rules around Administered Settlement do not incentivise Generator Units to come back online as quickly as possible in the event of an ESC. Two alternatives are proposed.

SEMO notes the suggestions; however, these suggestions would require changes to the T&SC. In light of the support for the existing rules by three of the respondents, SEMO believes that if the respondent wishes to pursue these suggestions further, they should be submitted to the Modifications Committee for consideration.

Further Requests

The following requests were made in relation to the current ESC rules:

Viridian Power and Energy	In addition to the above comments VP&E would encourage further testing of the central market systems if necessary to ensure that trading periods outside the ESC are correct. VP&E also notes from the consultation paper (p. 7) that 'no repricing will result from carrying out Administered Settlement due to an ESC'. We would be grateful to know why and how this can be ruled out. Finally it is important to understand what exactly triggers an ESC event, beginning and ending. This should be specified clearly and without scope for ambiguity. The current definition of an ESC in the TSC is unclear and rather circular referring to Black Start procedures being initiated in the event of Total Shutdown or Partial Shutdown. This would seem to mean that an ESC event is synonymous with a Blue Alert but this is not entirely clear. At the same time, it is not clear when an ESC event is over. Is it when all generation has been restored in part of the power system or the whole system? What defines part of the power system? Is it possible to have an ESC event in Northern Ireland only or in the Republic of Ireland only?

The respondent encouraged further testing on the ESC functionality in the Central Market Systems, if necessary, as was alluded to in the consultation paper. SEMO would like to highlight at this point that all production systems in SEM have been fully tested prior to going live, including the aspects of the Central Market Systems that would be required in the event of ESC. However, following an approval from the RAs, SEMO agrees that it would be prudent to ensure that all associated systems and processes in relation to Administered Settlement reflect the approved calculations and methodology.

On the respondent's question regarding the statement, "no repricing will result from carrying out Administered Settlement due to an ESC": it is the case that no repricing would result directly from an ESC event. There may be other reasons why the day needs to be repriced but Administered Settlement due to ESC does not in itself trigger a repricing.

Finally, the respondent asked that further clarity be provided on the triggers for Administered Settlement due to an ESC event. As is defined in the T&SC:

Electrical System Collapse	means the situation existing when all Generation has ceased in part of the Transmission System and there is no electricity supply such that Black Start procedures as set out in the Grid Code are initiated.

Administered Settlement for an ESC would apply to Trading Periods beginning with and including the Trading Period in which a System Operator in either jurisdiction initiates Black Start procedures and ending with and including the Trading Period in which the same System Operator concludes the Black Start procedures.

4. CONCLUSIONS

Based on the views contained in the six responses, SEMO requests that Option 2 be approved by the RAs for Administered Settlement in the event of MSP Failure. The detailed calculations and methodology for Option 2, as set out in the consultation paper, are included in the appendix.

As was noted in the introduction, the rules for Administered Settlement in the event of Electrical System Collapse are specified in T&SC paragraphs 6.256-6.259 and have already been approved and implemented in the Central Market Systems. As such, no further approval is required.

APPENDIX A: MSP FAILURE OPTION 2 - 'PREVIOUS DAY' METHOD

The following methodology applies when none of the instances of the MSP Software are available.

HIGH-LEVEL ASSUMPTIONS USED WITHIN 'PREVIOUS DAY' METHOD

Outputs from 'PREVIOUS DAY' Method

A.1 The MO shall use 'PREVIOUS DAY' Method to calculate the following values:

1. the Administered SMPh for each Trading Period h;

2. the Administered MSQuh for each Generator Unit u in each Trading Period h;

A.2 The 'PREVIOUS DAY' Method is based on the premise that the outcome of MSP Schedule for TD will resemble that of a similar previous day.

A.3 The MO shall exercise their judgement in selecting the most appropriate 'Previous Day' and all details will be made available to Market Participants following the event.

HIGH-LEVEL PROCESSES ASSOCIATED WITH OPERATION OF 'PREVIOUS DAY' METHOD

'PREVIOUS DAY' Method Run Types

A.4 There shall be two 'PREVIOUS DAY' Method Run Types:

1. EA 'PREVIOUS DAY' Method Runs; and

2. EP2 'PREVIOUS DAY' Method Runs (including subsequent Settlement Reruns).

A.5 EA 'PREVIOUS DAY' Method Runs shall be performed in relation to each Trading Day by the MO, after GC and before the start of the relevant Trading Day as set out in paragraph 4.62 of the TSC, in order to determine, on the basis of the requirements set out elsewhere in this Appendix A in relation to EA 'PREVIOUS DAY' Method Runs:

1. indicative values of Administered SMP;

2. indicative values of Administered MSQ for each Generator Unit; and

3. values of Modified Interconnector Unit Nominations for each Interconnector Unit.

A.6 EP2 'PREVIOUS DAY' Method Runs shall be performed in relation to each Trading Day by the MO, in accordance with the Settlement Calendar and paragraphs 4.64 and 4.65 of the TSC, in order to determine, on the basis of the requirements set out elsewhere in this Appendix A in relation to EP2 'PREVIOUS DAY' Method Runs, the following values used in Initial Settlement and in subsequent Settlement Reruns;

1. values of Administered SMPs;

2. values of Administered MSQs for each Generator Unit; and

3. values of Administered DQs.

A.7 For both EA 'PREVIOUS DAY' Method Runs and EP2 'PREVIOUS DAY' Method Runs, the MO shall chose a previous day that most reasonably matches the day that the schedule applies to.

A.8 The MO will not be obliged to rerun the 'PREVIOUS DAY' Method for any particular Trading Day solely as a consequence of a rerun of the 'PREVIOUS DAY' Method for the preceding Trading Day.

EA 'PREVIOUS DAY' METHOD

A.9 For all Generator Units u except Interconnector Units for all Trading Periods h in Trading Day TD:

$$MSQ_{uh,TD} = MSQ_{uh,prevTD} \text{ and } SMP_{h,TD} = SMP_{h,prevTD}$$

where prevTD refers to a previous Trading Day.

A.10 For all Interconnector Units u for all Trading Periods h in Trading Day TD:

$$MSQ_{uh,TD} = 0$$

A.11 For all Interconnector Units u for all Trading Periods h in Trading Day TD:

$$MIUN_{uh,TD} = MSQ_{uh,TD}$$

EP2 'PREVIOUS DAY' METHOD

A.12 For all Generator Units u except Interconnector Units for all Trading Periods h in Trading Day TD:

$$MSQ_{uh,TD} = MSQ_{uh,prevTD} \text{ and } SMP_{h,TD} = SMP_{h,prevTD}$$

where prevTD refers to a previous Trading Day.

A.13 For all Interconnector Units u for all Trading Periods h in Trading Day TD:

$$MSQ_{uh,TD} = 0$$

A.14 For all Generator Units u except Interconnector Units for all Trading Periods h in Trading Day TD:

$$QQ_{uh,TD} = MG_{uh,TD}$$

A.15 For all Interconnector Units u for all Trading Periods h in Trading Day TD:

$$QQ_{uh,TD} = MSQ_{uh,TD}$$

$$QQ_{u'h,TD} = SIEQ_{uh} + SIIQ_{uh,TD}$$