



Single Electricity Market

FINAL RECOMMENDATION REPORT

MOD_13_19 PAYMENT FOR ENERGY CONSUMPTION IN SEM FOR NON-ENERGY SERVICES DISPATCH

9 MARCH 2021

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Reference Documents

Document Name
Trading and Settlement Code
Modification Proposal
Modification Proposal
Modification Proposal
Presentation
Presentation
Presentation
Industry Call minutes
Working Group Report

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1. MODIFICATIONS COMMITTEE RECOMMENDATION

RECOMMENDED FOR APPROVAL– MAJORITY VOTE

Recommended for Approval by Majority Vote		
Paraic Higgins (Chair)	Generator Member	Approve
Sean McParland	Generator Alternate	Reject
Stacy Feldmann	Generator Member	Reject
Bryan Hennessy	Supplier Member	Reject
Ian Mullins	Supplier Member	Approve
Andrew Burke	Supplier Member	Approve
Alan Mullane	Assetless Member	Approve
Cormac Daly	Generator Member	Approve
Robert McCarthy	DSU Member	Approve
Philip Carson	Supplier Member	Approve

2. BACKGROUND

This Modification Proposal was raised by EirGrid and was received by the Secretariat on 8th August 2019. The proposal was raised at Meeting 93 on 22nd August 2019. It was discussed at Meeting 94 on 24th October 2019, Meeting 95 on 5th December 2019, Meeting 97 on 20th February 2020, Meeting 98 on 23rd April 2020, Meeting 99 on 18th June 2020, Industry call on 21st July 2020, Meeting 100 on 20th August 2020, Meeting 101 on 22nd October 2020, Meeting 102 on 3rd December 2020 and Working Group 1 on 10th December 2020. It was voted on at Meeting 103 on 11th February 2021.

A number of important system services are procured through the DS3 System Services Regulated Arrangements. These include reserves across varying timeframes, inertial response, ramping services

and reactive power. Such services help the TSOs to maintain a secure and reliable power system, particularly as the level of installed renewable generation on the power system increases.

While payment for system services is handled through the DS3 System Services Arrangements, there are occasions when the TSOs will need to dispatch on a generator (or other unit) to provide non-energy services.

For example, a generator with the capability of operating in synchronous compensation mode or a wind farm capable of providing reactive power at 0MW will consume energy when operating in those modes. However such modes of operation are not currently accounted for in SEM.

The TSOs propose that such modes of operation should be modelled in SEM, that non-energy dispatch instructions should be profiled and accounted for in imperfections.

A specific example of the potential application of this in relation to synchronous compensation is given below:

Maintaining voltage on the transmission system is critical to ensuring the stability of power flows. Generators (or other devices) either generate or absorb “reactive power” to maintain system voltage.

Particular requirements for voltage support are often locational. The provision of reactive power as a service is currently remunerated for contracted units through the DS3 System Services Regulated Arrangements.

Voltage support may be provided in various ways. Some units, such as Coolkeeragh GT8 generation unit in Northern Ireland, have the capability to provide voltage support in synchronous compensation mode. When in this mode, the unit effectively runs as a synchronous motor on no load to generate or absorb reactive power, helping to maintain a constant grid voltage at all levels of demand.

When running in synchronous compensation mode, the unit consumes energy and therefore has an associated running cost. This synchronous compensation mode of operation is not modelled in the energy market.

The unit does receive upside through higher payments via its DS3 System Services volumes for Steady State Reactive Power (SSRP) and Synchronous Inertial Response (SIR), but they are not sufficient to cover the increased running cost associated with being in synchronous compensation mode.

SONI currently has an out-of-market Synchronous Compensation Service Contract with Coolkeeragh GT8 as there is currently a specific locational voltage support requirement in the North West. There is no payment rate associated with the service. The unit receives pass through costs only.

The TSOs proposed in version 1 of the modification that synchronous compensation capability (and other non-energy dispatch actions such as the dispatch of wind farms to provide reactive power at 0MW) should be modelled in SEM and that the means of doing so be explored.

For example a unit capable of operating in synchronous compensation mode could be treated as a conventional dispatchable generator unit instructed to go into synch comp mode. The dispatch instructions to the unit could be profiled such that if dispatched to consume in the energy market the unit pays for its consumption, whereas if dispatched for non-energy actions (such as the provision of reactive power in a particular mode), their energy consumption would be allocated to imperfections.

Various solutions to address this issue were explored, with four solutions being examined in detail.

The ideal solution to this issue would be to create a new dispatch instruction whereby a unit could be instructed to a negative generation level, to consume energy while providing a service. This dispatch instruction could then be profiled in the instruction profiler and the energy consumed allocated to imperfections. This solution was assessed to be complex to implement, with a potentially high cost due to the need to make changes to the Instruction Profiler.

Version 2 of the modification proposed legal drafting for a, faster to implement if not perfect, solution whereby a unit could be reassigned to be part of a TSSU rather than an ASU. This was explored at both an industry conference call and at a Working Group meeting. In summary the proposed solution is as follows:

- **Solution 4: Unit as part of a TSSU**
 - Proposed in the context of windfarms – could also be applied to other units
 - Energy being drawn while the unit is providing reactive power at 0MW could be treated as negative generation
 - Unit could be reassigned to be part of a TSSU (rather than an ASU)
 - A flag could be sent to settlement to denote the period where the unit has been instructed to provide reactive power at 0MW, during those periods the energy would be assigned to imperfections, whereas during the trading periods where the unit is not instructed to be in this mode it would pay for its consumed energy as normal.

This version (Version 3) of the modification is an updated version of Version 2 which includes text amendments to address concerns raised at the Working Group.

They include: Changes to Glossary terms to ensure consistency; inclusion of the DS3 System Services Provider Flag as a new variable in the List of Variables and Parameters and an explicit provision (F 2.8.3) to emphasise that the DS3 System Services Provider Flag will not apply to DSUs and autoproducers.

3. PURPOSE OF PROPOSED MODIFICATION

3A.) JUSTIFICATION OF MODIFICATION

Some units in the SEM currently have modes such as synchronous compensation capability or the ability to provide reactive power at 0MW which are not currently modelled in the energy market. Such capability can be very useful to the system operator, for example, maintaining voltage stability and may be used instead of dispatching on more expensive units to provide services. However, a unit in sync comp mode consumes energy, as does a windfarm providing reactive power while at 0MW. The associated energy costs must be remunerated or else it will not be economic for the unit to provide this mode of operation. The current workaround of out-of-market standalone contracts lacks transparency. As this capability contributes to voltage stability, which is an important element of system reliability, the SO is of the opinion that integrating the mode into the energy market would allow it to be used in the most optimum way and deliver the most value to the consumer. The same principle also applies to other units which may have the capability of being dispatched to provide services critical to power system operation and consume energy in order to enact this service provision.

3B.) IMPACT OF NOT IMPLEMENTING A SOLUTION

Failure to implement the proposal will necessitate continued out-of-market contracts and associated energy payments to account for synchronous compensation mode and other non-energy services. Where there is no payment rate associated with dispatching a unit into a particular mode to provide a service, running a tender for it is problematic. It would greatly increase transparency if unit dispatch for non-energy services were accounted for within the SEM.

3C.) IMPACT ON CODE OBJECTIVES

This proposal aims to further Code Objectives

1.3.5 “to provide transparency in the operation of the Single Electricity Market”;

by dealing with synchronous compensation and OMW windfarm mode payments transparently through the balancing market

rather than through out-of-market mechanisms.

and

1.3.7 *“to promote the short-term and long-term interests of consumers of electricity on the island of Ireland with respect to price, quality, reliability, and security of supply of electricity.”*

as provision of adequate voltage support is essential to the reliability of the power system.

4. WORKING GROUP AND/OR CONSULTATION

Industry Call was held on Friday 31st July, 2020.

Working Group was held on Thursday, 10th December 2020.

5. IMPACT ON SYSTEMS AND RESOURCES

Potential system and process impacts include EDIL, MMS, CSB and TSO processes.

6. IMPACT ON OTHER CODES/DOCUMENTS

N/A

7. MODIFICATION COMMITTEE VIEWS

MEETING 93 – 22ND AUGUST 2019

The proposer delivered a [presentation](#) on this modification highlighting that there was no legal drafting as the Modification Proposal is provisional. The proposal arises from the fact that not all operation modes of units are modelled in the market and units may incur energy costs when running in certain modes. For example units such as synchronous compensators or wind farms at zero MW may provide needed voltage support to the grid, but in order to operate in this way will consume energy. In the future there may be other technologies that need to be dispatched for non-energy actions and that will consume energy which also need to be accounted for. Currently the TSO needs to put out-of-market contracts in place to account for these pass-through energy costs, which is not transparent. If units providing non-energy services such as voltage support were not remunerated in this way, the TSO would have to dispatch other units, increasing imperfections costs.

It was noted that the idea of DS3 System Services was to get away from the bilateral contracts structure of the past and to be more transparent. The proposer noted that the proposal had been discussed with SEMO and that there were various implementation options, such as profiling a “synch comp” instruction or equivalent for other non-energy dispatch actions, in such a way as to account for the energy consumed. The proposer welcomed ideas on how best to implement the proposal. It was agreed by the RAs that the proposal is merited and units that consume energy for non-energy dispatch actions should be accounted for in the market. Other members were also supportive of the principle of accounting for energy associated with non-energy dispatch actions in the market. It was noted that there may be other units that need to be considered, such as wind operating at zero MW or new emerging technologies, and more analysis may be needed. A brief discussion took place around the potential system impacts of implementing the proposal and that a solution that limits the impact to settlement system only might be preferable in terms of costs and complexity.

A proposal for a working group was raised but the RAs suggested deferral of this Modification Proposal to allow the proposer to develop its design in more detail, together with SEMO, with a view to returning with detailed legal drafting or at least with a straw man for discussion.

MEETING 94 – 22 OCTOBER 2019

The proposer was not in attendance at the meeting. SEMO provided an update confirming that some progress had been made on version 2 of this proposal. SO Member confirmed that some metering issues were identified and a meeting will be set up with Meter Data Providers and SEMO to discuss this. The committee agreed to defer the proposal pending follow up actions.

MEETING 95 – 5 DECEMBER 2019

The Proposer provided a background to this Modification Proposal which looks to explore options to provide compensation for energy consumed whilst providing voltage support. It was confirmed that a meeting will be held next week with MDP Participants to discuss some ideas on what can be done with metering to begin with. It is expected a more detailed Modification Proposal will be submitted in due course for future meetings.

An Observer commented on the positive aspects of this Modification Proposal and hoped to get involved in the process. SEMO suggested that a Working Group may be beneficial to look into the options in more detail after exploring the most efficient options of how this could be implemented.

MEETING 96 – 19 DECEMBER 2020

This meeting was an Extraordinary Meeting convened to discuss 2 specific Modification Proposals - Mod_13_19 was not discussed at this meeting.

MEETING 97 – 20 FEBRUARY 2020

The TSO Alternate provided a summary on behalf of the Proposer on the background to this Modification Proposal which looks to explore options to provide compensation for energy consumed whilst providing voltage support. The TSO Alternate explained that there have been discussions with the MDP and a solution to getting the data had not been found and the initial high level impact assessment shows that this would take up to 2-3 years to implement. There were various options on how to treat the data once received but an enduring solution had not yet been found and a request was made for more time to seek these solutions. A Generator Member noted that this Modification Proposal had been deferred once again and suggested that this may be the wrong forum for this change and it may be something that needs to be developed in the DS3 space. The TSO Alternate noted that this case had been made when the Modification was initially presented and it was a debatable issue. A SEMO Representative noted that the difficulty was mainly due to the fact that the TSO could not tender for this service as they were not providing a payment but only a cost recovery for the demand consumption and having that within the Balancing Market would make the process more transparent. Also it was noted that due to differences in meter's installations, TSO Meter's channel could be modified to provide adequate data but the difficulties was mostly on the DSO side. Meetings had been arranged with MDPs to discuss some ideas on what can be done to overcome such difficulties. An MDP Member advised that meters need to capture this information and from a system point of view he noted that there could be challenges. Another MDP member agreed with this point stating that meters would need to be reconfigured as well as settlement systems and this would not be a simple task. The MDPs recommended further engagement with the TSO on this issue over the next few weeks and suggested a call to discuss it further including possible manual solutions. A discussion ensued around timelines for progression. The Secretariat gave an overview of the extension process if more time was required for the above investigation and assurance was given that progression on the resolution of the Settlement can run in parallel with the current discussions on metered data.

MEETING 98 – 23 APRIL 2020

The Proposer provided a background to this Modification summarising that there was an issue around dispatching units for non-energy reasons and the recovery of associated costs. The Proposer provided some examples on where energy should be accounted for in the market and advised that this Modification could be applicable to other services in the future like Wind units on zero MW outputs providing reactive power for example. It was confirmed that a lot of discussion had occurred between System Operators and MDPs on this and ways were being investigated of getting into the market including a possible manual workaround. It was noted that although they were looking to have this implemented as soon as possible, the uncertainty on the final solution and the lead times for any system changes required that an interim solution be put in place. Discussions with the RAs would be necessary and a tender may be proposed for these services with an industry consultation for wind farms especially. The recommendation was that the Modification and the interim process could run in parallel. A Generator Member and Supplier Member queried the tender and the timelines. The Proposer noted that because of having to encompass existing units and units that would provide this mode it was likely that the tender, which will be run by EirGrid, would take 12 months approximately. This would include the discussion with the RAs, consultation and running of the tender. How it progresses would also depend on the outcome of discussions with the RAs. A Generator Member pointed out that this Modification needs to be progressed and a 12 month timeline for a Modification to move forward is a long period of time. The Proposer appreciated the comment but noted that there was a lot of work done already and finding a solution was paramount. The proposer is of the opinion that it would be beneficial to maintain the Modification active as a solution could be devised once some of the initial obstacles were addressed, leaving then time for impact assessments and implementation. A TSO Member explained they were conscious of other Modifications being impact assessed but noted that finding an interim solution will help with the thoughts of finding the ultimate solution. It was appreciated that the continuous extending of this Modification was not ideal but it was worth giving it some time for analysis and solutions on the understanding that progress on the design of the change would be shared at subsequent meetings to ensure that the proposal is developed in a timely fashion. The Committee agreed to the Modification Proposal being deferred but under the clear understanding that the Members must see more progress made and the Proposer must provide more clarity and information in advance of and at the next meeting.

MEETING 99 – 18 JUNE 2020

The Proposer delivered a presentation on this Modification noting that not all generator modes are modelled in SEM and this should be accounted for rather than having out of market contracts. The Proposer advised that it was known the proposed new solution would not be straightforward. The Proposer went through the slides examining the different solutions which had been considered. The Proposer advised that Solution 1 whereby a new Dispatch Instruction type would be created appeared to be the most ideal solution but there would be complexity around this. It was noted that the general feedback from Market Operations would be that the cost would be expected to be high as there was a change to Instruction Profiling and a number of systems were affected. Therefore other alternatives were looked at. Of the other solutions that were presented, Option 4 was the one with most promise and would likely be faster and easier than Option 1. It was proposed by a Participant in the context of windfarms but could also be applied to other units. The Proposer advised that more time would be needed to go through all of the solutions and made a recommendation that a Working Group be convened to discuss the solutions submitted and any other viable ones. There was support from a number of Members for a Working Group to take place with an agreement that this is a complex area and getting wider industry involved is a good idea. The Secretariat advised the Committee that the earliest this Working Group could be convened would be late September / early October due to other conflicting works. It was suggested that a conference call could be organised before the Working Group is formalised to go through the solutions in more detail and have a stronger base for the

Working Group. There was an agreement amongst Committee Members that this was a sensible option and would make the Working Group more productive. An RA Member made a point regarding solution 4 noting that there was a requirement for Trading Site Supplier Units (TSSUs) to hold a supply licence and this would need to be explored further in any future discussions. A Generator Member stated that they previously made the point that this was a DS3 issue and they still stand by it. A suggestion was made that a tariff should be developed for people to sign up to and this would also be transparent. A discussion ensued with a point raised by the Proposer that energy consumption needs to be accounted for while the TSO noted that part of the rationale for a market treatment is that this approach could lead to saving in Imperfections as it would lead to less thermal units being re-dispatched. A Representative from Aughinish gave support for the Modification noting they were looking at a new technology that would benefit from this. A request was made to progress Option 1 also in parallel. The Proposer advised it would depend on what the interim solution would be. The interim solution I would need to be implemented as quickly as possible while covering as best as it can the aim of the potential enduring solution. No option was off the table but practicalities of implementation and Impact Assessments had to be considered.

INDUSTRY CALL – 31ST JULY 2020

- Niamh Delaney (ND) gave a summary of the mod background and the options discussed to date.
- Mark Alexander (MA) – Questioned whether this mod related to SSRP only or whether there was an impact on the settlement of reserve services in the balancing arrangements. There was a brief discussion of how reserve is settled by DS3 System Services and agreement that further questions should be addressed offline (by sending an email to the DS3 inbox).
- Andrew Burke (AB): Asked whether the intention of the mod was that thermal units are not dispatched on just for voltage support, increasing imperfections. ND confirmed that yes, if units, such as windfarms, can provide reactive power at 0MW and this removes the need for the TSOs to dispatch more expensive units for voltage support, it reduces dispatch balancing costs. AB noted his support for the intent of the proposal and that it will become increasingly important as a means to reduce Imperfections.
- William Carr (WC): Gave more details on Option 4, explaining that it draws on the experience of other units that are set up in the market like this. Highlighted that anything we do now is a partial solution and further discussions on future arrangements and future market design should take a longer term solution for this into account. Rates in DS3 contracts do not cover the operating cost of a unit to provide the service.
- MA: A unit providing reactive power should not be hit with the energy cost associated with providing it and there is the potential to be exposed to volatile Imbalance prices for this energy consumption. Although Balancing Market prices are volatile and could be unfair for plants, it would probably still be better than the retail price.
- AB: asked whether the market charges CIMB could be set to zero during trading periods when a unit was instructed to operate in this way. Others agreed this option would need to be investigated and assessed further.
Action: Assessment needed of exactly what parameters/charges should be set to zero.
- MA: Noted that a solution must suit all technologies including storage. Paper published by CRU on network charges for storage should be considered as part of this discussion. The paper incentivises low MIC, so any increase in value will be detrimental to storage.
- Sinead O'Hare (SO'H): questioned why energy costs should not be handled through DS3 System Services contracts.
- ND: Clarified that DS3 pays for the service not the energy.

- Marc Senouci (MS): The provision of reactive power by a given unit could cause an energy imbalance and as such settlement of the energy needs to be addressed in the balancing arrangements also.
- Discussion of issues that need to be solved with Option 4: The MIC would be exceeded leading to overrun charges and would need to be renegotiated.
Would need a means to distinguish on-site load being serviced. It is not clear at the moment how this will be done.
- WC: With regard to the recent RA decision on PSO levy – baseload: final user, there needs to be a consistent view of the application of energy wholesale to non-final user.
- WC: asked whether the scalar for Wattless Vars in the DS3 System Services arrangements should be made more attractive and whether the tolerance on getting the scalar should be adjusted.
- ND: Noted that the tolerance was an area that was being looked at, although not currently the scalar value.
- ND: Regarding exceeding MIC, asked if anyone had a view regarding by how much MIC would be exceeded to provide required import energy?
- WC: Would need to check % increase in import energy when providing reactive power. Need to check what the actual operating/overrun costs are to ensure any charges on the service providing unit are not overly penal.
- **Action:** Participants to check this.
- Bobby Smith (BS): Does this only apply for reactive power or also inertia, for example synch condensers providing inertia which have an associated cost.
- ND: Under current arrangements such a unit would most likely also be providing reactive power at the same time and have a single energy consumption cost for both, although depending on the future arrangements, this may be designed differently.
- MA: Any solution agreed now must also consider a longer term view with proper remuneration of services.
- Discussion in relation to Option 1.
- Katia Compagnoni (KC): Option 1 would be very difficult to implement or even assess due to the number of systems impacted and the complexity of the changes required.
- WC: Noted that significant changes to the market design and balancing arrangements are currently being discussed as part of the implementation of articles 12 and 13 under the EU regulation on priority dispatch. Changes for this issue could be included in those discussions.
- ND: Option 4 could be pursued as an interim solution and a longer term solution could be pursued in parallel which could include an impact assessment of instruction profiler changes. While the issue being discussed now is reactive power, it could be a basis for other products dispatched for non-energy reasons.
- WC: impact assessment should be started as soon as possible hence there should be a push to get the drafting done.
- ND: Can agree to progress option 4 and gather material for an impact assessment of option 1.
- Ian Mullins (IM): Asked whether a Working Group would still be formed. ND confirmed that that was the intention, but would not be until September due to Modifications secretariat commitments.
- **Action:** Circulate minutes from today.

MEETING 100 – 20 AUGUST 2020

The Proposer provided a brief background on this Modification noting that an Industry Conference Call took place on 21st July 2020 where 4 options were discussed in order to progress this

Modification and minutes for this call were published on the SEMO website. It was advised that there were a number of follow up emails after this meeting and it was agreed that option 4 would be progressed as an interim solution and option 1 as a potential long term solution when assessment and interpretation of Article 13 and 14 of CEP are furthered. The Proposer reminded the Committee that a Working Group would be scheduled shortly and it was confirmed by the Secretariat that this would take place once the legal drafting was complete. A discussion ensued on the development of this Modification and if a Working Group could be convened without legal drafting. The Secretariat reminded the Proposer and Committee of an action taken at Meeting 99 for the Proposer to develop the legal drafting prior to a Working Group taking place in order to prepare the Terms of Reference. The Proposer agreed and assured all that this would be done. The Chair suggested that another industry call could be scheduled to progress the legal drafting and once this was complete a new version of the Modification could be submitted. The Proposer agreed with this and assured the Committee that an invite would be extended to all Participants and the Modifications Committee.

MEETING 101 – 22ND OCTOBER 2020

The Proposer delivered a [presentation](#) on this Modification noting that it was raised with the main interest to reduce dispatch balancing costs. This was not just for wind farms but for a wider solution as there will be an increased need for such services in the future. During an industry call which took place on 21st July 2020, four possible solutions were considered and following Modifications Committee Meeting 100 an action was taken against the Proposer to produce legal drafting for this Modification. The Proposer advised that two solutions were marked out as being worth further consideration but noted that one of them, which would be a more preferred and complete approach, would be difficult to design and implement therefore this particular change was not something that could be done in the short term. A Generator Member clarified that the proposed interim approach reflected in the proposal could assign the energy being drawn for the service via a flag sent to settlement to reflect where the service was being provided thus providing for relief from Settlement charges in those periods. It was noted that there were a number of points for discussion around this approach which had been highlighted in the proposer's presentation. The Proposer continued through the slides examining all of the issues that were raised for consideration with the remaining possible solutions. It was advised that all relevant charges would need to be considered so as not to expose any service providers. The Proposer relayed that there was a need to confirm how energy would be accounted for and discussions with Market and System Operators are ongoing to determine if this should be a separate line item in dispatch balancing costs report. Potential Credit cover implications for the configuration proposed in the interim solution were discussed and the Proposer advised that this would be a question put to the Committee. It was also advised that there was a process for Maximum Import Capacity changes that may be necessary to refer to in both jurisdictions. The proposer advised that the TSO would need to check and complete an impact assessment for system implementation to produce and provide the flag indicating when a unit is in this mode and indicated that initial investigation showed that it should be possible by potentially further developing some existing functionality such as raising an alarm. The Proposer confirmed that all of the issues had been given initial consideration and that there were some outstanding questions but the drafting has sought to reflect the current understanding. There was a belief that it would be useful to have a Working Group which would bottom out the final solutions allowing for a pathway to be given and a recommendation report would follow for the Modification. A Generator Member and a Supplier Member both agreed with the suggested steps forward via a Working Group to progress this Modification. It was suggested that the scope of the Working Group should include not just solution 1 and 4 but rather be open to consideration of other potential solutions. Solution 3 was a possible solution also in their view. The Proposer was in agreement with maintaining the scope open and Modifications Committee Meeting 101 Minutes Page 8 of 15 confirmed that any other suggestions would not be excluded including any new suggestions. A Generator Alternate echoed the notion that

Solution 3 should be open to discussion. Although it requires consultation and RA approval the costs are small in comparison to system impact costs of other solutions. It was asked why it was ruled out if the quantum of impact wouldn't have a significant impact. It was noted that it may not be a final solution but it was a good interim one. However the chair commented that there was a risk of replaying the previous Working Group. A lot of work had been going on in the background and going back to solutions that had been excluded would mean taking the focus away from the ones that have been assessed as more achievable. Secretariat noted that a Working Group could be supported and encouraged Members to contact the Proposer with any comments or queries and this will allow for the Terms of Reference to be drafted and scoped adequately. A DSU Member voiced an issue with the legal drafting for this Modification advising that the way it had been drafted meant if the flag were applied to Trading Site Supplier Units for DSUs this would have unintended consequences and further work needed to be done to amend this. It was advised that DSU cannot provide reactive power and would not therefore be affected by this and another solution may have to be discussed for any other services in the longer term. DSU Member stated that there was a process in drafting that the System Operator will create a flag but the actual description of when the flag will have a value of one or zero was not given and although that flag was not applied to DSU Trading Site Supplier Units at the moment, it would make sense to future proof the rule for other services. The Proposer noted that this was an interim suggestion and it will allow capability for reactive power in the first instance. It was advised that it was important to make that distinction between the proposed interim solution and any broader longer term approach which cannot be accounted for at this point in time. The Chair agreed to keeping the Terms of Reference well defined and to not waste time going back over old options whilst staying on the path to the interim and longer term solutions. It was suggested that in order to keep the scope narrow, questions, issues and comments must be highlighted before the Working Group so that these can be considered by the proposer and Members in advance. The SEMO Member suggested that a questionnaire could be circulated to Members before the Working Group which would prompt a response thus ensuring an efficient Working Group process. Secretariat agreed to work with the Proposer to circulate an email where there is a platform for questions and comments to be raised.

MEETING 102 – 3RD DECEMBER 2020

Secretariat provided an update on this Modification noting that all actions have been completed. It was confirmed that a Working Group would be held on Thursday, 10th December 2020 to discuss solutions raised. A final version of this proposal would be submitted for the February meeting.

WORKING GROUP – 10TH DECEMBER 2020

The Proposer provided a background on this Modification noting that its aim was to access capability to provide voltage support from units which can provide it when operating at 0MW, ensuring that the energy associated with providing this should not be paid for by the service providing unit. It was also noted that this proposal was originally raised with consideration of wind farms among other unit types. The Proposer advised that slides were issued and discussed at Meeting 101 on some of the issues previously raised with an Industry call convened in July 2020. A survey was also circulated containing a questionnaire looking for comments. It was noted that only a small number of responses to the survey were received. It was confirmed that the slides contained the solution in more detail and outlined the potential issues which had previously been considered. The Proposer noted that the first issue was in relation to additional market charges such as use of system charges and the PSO levy where it applies. There was an acknowledgement that it may be preferable not to expose service providers to such charges but that this would not be possible under this medium term solution. The Proposer noted that this may be offset by the energy consumption for house load not being charged for during the Trading Periods where a unit is providing the service under the approach put forward. The second issue was in consideration of how the cost of the energy consumption associated with

providing the service would be accounted for. This was examined by the MO and the TSO and it was concluded that it would appear in residual error by default. The Proposer noted that the costs due to this service provision could be reported as a specific line item in Dispatch Balancing Cost reporting for transparency. The Proposer led on to the next point regarding the need for units to renegotiate MICs so that they will not incur overrun charges for exceeding their MIC when in this mode and providing the service. It was advised that System Operators had followed up regarding the need to have a capability to send flags to SEMO to denote when the unit is instructed to be in the service providing mode. While not formally impact assessed from a cost perspective, this is possible in principle and something similar is done with other units. The Proposer noted that in general any known issues have been worked through and this was a viable solution for windfarms and other units. There was an issue raised around how this solution would apply for a battery which was discussed throughout the Working Group. The Chair summarised that a number of issues were identified and had been addressed or mitigated. They noted that in their view it was pragmatic to balance the need to find an approach quickly and the fact that this will not necessarily cover all bases. Solutions An attendee queried if there would be changes to MIC and if changes to connection agreements would be required. The Chair advised that there can be increased import in providing the service which would require changes to connection agreements and that in their experience this can take a number of months. A Participant from NIE Networks noted that this was the same process for Northern Ireland and the application process needs to consider MIC and other processes which are outside of the Modification Proposal. The Proposer advised that one driver for the Modification was to get a level playing field noting that units should not be expected to pay for their own energy costs when these are incurred due to providing a system service. If windfarms are in the same position to provide the service then in the interest of fairness an approach is needed to provide a mechanism to mitigate that cost. A Generator Member asked if all were comfortable with the existing TSSU definition and if the TSSU definition would need to be changed at all given its use under this proposal. The Chair confirmed that Participants could already register as TSSUs and that the definition was general so a change to this was not envisaged. SEMO advised that the only real issue in this case was around multiple units as this Modification appears to only apply to single units. This would potentially result in a number of TSSUs and Trading Sites for a given Generation Site. 8 Another SEMO Member supported the above statement noting that there was no apparent issue with the TSSU definition where Generation Sites being split into multiple Trading Sites will allow separation of units. It was confirmed that this was already provided for in the Code. An Observer queried how a battery registers noting that registration cannot take place with the trading site supplier units. It was pointed out that the solution focuses on windfarms to date and could not be applied to a battery. It was advised that a number of battery projects are coming downstream pretty soon and it was important to have something that worked for them. The Chair advised that there were good reasons why batteries do not have Trading Site Supplier Units. It was noted that energy consumption of windfarms is not the same as to a battery. If reactive power was to be provided you do not want to apply a solution that could allow the possibility to charge a battery for free when providing services. It was asked if a separate flag could be created to tell a participant to not go to charge. A Supplier Member advised that it would take time to find an enduring solution with a question around system changes and timelines for implementation of this Modification. SEMO confirmed that the normal scope timeline for release would be close to ten months to a year ahead of implementation of the release. A DSU Member acknowledged the points made around batteries and windfarms. They noted that it is important that the proposal is clear that the service provision flag does not apply to TSSUs associated with Demand Side Units so that there are no unintended consequences. A DSU Participant advised that this issue was raised in the last Modifications Committee meeting and the legal drafting would need to carve out DSUs to sort this issue. The Chair noted this was a good point. It was asked by a Participant what types of units were being considered in this Modification as it appeared only windfarms were mentioned and what was the scale and scope of units. The Chair confirmed that anyone that can register under Trading Site Supplier Units would be considered. A Participant noted a

similar situation with Autoproducers to that with Demand Side Units and requested assurance that any existing arrangements for Autoproducers were not inadvertently changed. Support was given for this Modification whilst also noting that the process is long for introducing approaches for new technology types. A DSU Participant agreed that an exclusion should be included in the clause for Autoproducers also as they would potentially not be charged for imports which are not for service provision if a service provision flag was applied. The Proposer provided assurance that the Modification would be updated to provide clarity for DSUs and Autoproducers. A Participant questioned if consideration was given to multiple units behind a single point of connection and if a flag was issued at the point of connection would it get divided between the multiple units. The Proposer agreed that this was a point that needed to be checked and requested an example. It was advised that the legal drafting could be updated to clarify what the process would be if necessary. An item was raised around the clarity of the new glossary definitions introduced in the proposal from the point of view of whether they were clear what the default value of the service provision flag was, whether it would be provided for all TSSUs or only a subset associated with sites which are service providers and also in terms of clarifying the approach of applying the flag to a Trading Site Supplier Unit based on an associated Generator Unit being in a state of providing a service. These points were acknowledged and it was noted that they could be considered during the drafting of the updated version of the Proposal. A Participant gave support to this Modification noting that it brings down imperfections charges. It was asked what volumes of this service were forecasted under this Modification and what the cost savings on imperfection charges were. The Proposer advised that these figures had previously been examined and were substantial enough to raise this Modification. A TSO attendee noted that dispatch of particular units was costing up to 10 million and a solution was needed to address this while noting that some of this dispatch was not due to this issue though the majority was. It was acknowledged that this Modification was not a perfect solution and every effort was made to not exclude anyone from this. It was discussed that further work could be done in relation to technologies not addressed by this solution, such as batteries. A DSU Participant requested the TSO to take an action on whether it would be feasible to identify which imports for batteries are for charging and which are for service provision. This would potentially allow for an equivalent treatment to be designed for batteries. It was advised that a line needed to be drawn under storage units and check how viable it is to use charge for service reasons and be charging for a battery unit. 9 The Chair advised there were challenges around charging for battery related and unrelated to system services with battery developers querying how this will be done but that this would need to be an action that ran alongside this Modification but separate to it. A DSU Participant agreed there were challenges but that this Modification was not required to solve the battery problem and an action should be noted from this Working Group that this needs to be looked at.

MEETING 103 – 11TH FEBRUARY 2021

The Proposer introduced this Modification Proposal noting that following a Working Group on the 10th December, this a version 3 which had been drafted and submitted to include all comments received and bringing it for a vote at Meeting 103.

A brief background was given on the proposal and the Proposer went through the presentation discussing the solutions proposed. An Industry Call took place during the summer and this was followed by a Working Group to discuss solution 4 in more detail. The Proposer reminded the Committee that a survey was also issued to all Members to get any additional feedback or comments.

A number of slides contained the issues which arose from this solution and what the outcome of each was. The Proposer advised that all relevant outcomes needed to be reviewed. The Proposer noted that some questions were raised on how the energy would be accounted for, how multiple units registered under the same Trading Site can benefit from this Mod and re-negotiation of MICs.

A question about batteries availing of this functionality was raised before the Working Group and the Proposer concluded that batteries would not be covered yet. The Proposer explained that more operational experience of batteries would be needed and this would need to be looked at as a longer term action.

The Proposer continued noting that since the version 3 was circulated a request was made for minor clarifications and updates to the legal drafting which have been presented in the slide pack and could be added as an FRR amendment should the Mod be voted on.

A Supplier Member raised the point regarding batteries and asked about the plan for the allowance of them and also how the Mod would work for compensators. The Proposer advised that there would need to be operational experience with batteries before introducing a solution for them. It was confirmed that access to the capability was the priority at present. Another question was raised around timelines for implementing a solution that included batteries. The Proposer could not confirm a date in this instance. SEMO provided assurance that there are a number of active work streams which are looking at Batteries as well as hybrid sites, demand site units etc. The provision of MVAR will be included there in a more holistic solution which is being sought to implement these units. SEMO noted that a change of resources has occurred this work stream would get underway again soon and communications would be issued to this regard.

A Supplier Member noted that batteries formed a large part of the discussion that took place at the Working Group and requested that priority was to be given to clarify when this would be looked at. The Proposer agreed to take an action to confirm who is leading the work stream and when would this be progressed again.

A Generator Member advised that it would be prudent to concentrate on a more enduring solution and asked if this could include batteries. The Proposer confirmed that batteries were being looked at as a new technology and not yet ready to be incorporated into the proposal. It was advised that this Modification starts by putting into principle the correct way in which units should be operated with a longer term solution addressing all outstanding issues overtime.

TSO made a reference to the need of more operational experience of new technologies and welcomed proposals for an alternative enduring solution from industry also.

A Generator Alternate spoke of concerns that the interim solution is not perfect as there was a narrow focus on wind units. The preference would be that the focus now shifts to the enduring solution. A question was raised around the TSSU element and what issues that might present for units that would need to change Supplier type in registration. Questions were raised on the exclusion of different technologies, the TSSU element and MIC renegotiation, all things that could prove risky for Participants. Generator Alternate express a preference for a new solution that would apply to a wider range of technologies. The Proposer confirmed that re-negotiating MIC would happen regardless of which solution was chosen and putting in an interim solution would not affect this. The Proposer gave assurance that the interim solution would allow the TSO to access an important capability for the stable and secure operation of the system. It was advised that going through different possibilities would require further extensive work and it would be more useful to adopt a solution that allowed the quickest possible way to access that capability. The Proposer questioned what the concern was regarding re-registering as this was not raised in the Working Group or previous meetings. Generator Alternate responded that this was raised following a review by their Finance Department.

SEMO gave assurance that this change would only be required if a unit applies to provide the service and when they decide to stop providing the service they can decide whether to remain with a TSSU or change to an ASU. SEMO confirmed that any such change would need to be assessed by Participants in light of how likely they are to be providing such service.

A Supplier Member enquired about an impact assessment and if it was in progress. The Proposer advised that the CR had been drafted but had yet to be sent to the vendor. It was noted that a vote would be subject to an impact assessment.

8. PROPOSED LEGAL DRAFTING

As per Appendix 1 below plus minor comments presented at meeting 103:

F.2.8.1 Subject to F.2.8.3, each System Operator shall submit to the Market Operator, in accordance with the Settlement Calendar, in respect of each Trading Site Supplier Unit which is registered in a Trading Site with a DS3 System Service Providing Unit contracted with the respective System Operator under the DS3 System Services Arrangements to provide DS3 System Services at zero MW exported energy, a flag with a value of 1 for each imbalance settlement periods where the DS3 System Services Providing Unit is dispatched to provide DS3 System Services to the System Operator.

F.2.8.5 The Market Operator shall set the DS3 System Services Provider Flag (SSPF_{vγ}) to zero unless a value of one has been submitted by the System Operator for a Trading Site Supplier Unit, v, which is on Trading Site, s, in Imbalance Settlement Period, γ, in accordance with F.2.8.1

9. LEGAL REVIEW

N/A

10. IMPLEMENTATION TIMESCALE

It is recommended that this Modification, subject to Impact Assessment, should be made effective from the first Settlement Date following System implementation.

1 APPENDIX1: MOD_13_19 PAYMENT FOR ENERGY CONSUMPTION IN SEM FOR NON-ENERGY SERVICES DISPATCH V3

MODIFICATION PROPOSAL FORM

Proposer <i>(Company)</i>	Date of receipt <i>(assigned by Secretariat)</i>	Type of Proposal <i>(delete as appropriate)</i>	Modification Proposal ID <i>(assigned by Secretariat)</i>
EirGrid	08/08/19	Standard	Mod_13_19 v3
Contact Details for Modification Proposal Originator			
Name	Telephone number	Email address	
Niamh Delaney		niamh.delaney@eirgrid.com	
Modification Proposal Title			
Payment for Energy Consumption in SEM for non-energy Services Dispatch			
Documents affected <i>(delete as appropriate)</i>	Section(s) Affected	Version number of T&SC or AP used in Drafting	
T&SC Part B, Appendices Part B, Glossary Part B	Part B F2.8 (New Section); F5.3.2;F12.2.3; F.19.2.2; F19.4.2; F20.3.2; Part B Glossary; Part B List of Variables and Parameters; Part B Appendix K;	Version 22	
Explanation of Proposed Change <i>(mandatory by originator)</i>			
<p>A number of important system services are procured through the DS3 System Services Regulated Arrangements. These include reserves across varying timeframes, inertial response, ramping services and reactive power. Such services help the TSOs to maintain a secure and reliable power system, particularly as the level of installed renewable generation on the power system increases.</p> <p>While payment for system services is handled through the DS3 System Services Arrangements, there are occasions when the TSOs will need to dispatch on a generator (or other unit) to provide non-energy services.</p> <p>For example, a generator with the capability of operating in synchronous compensation mode or a wind farm capable of providing reactive power at 0MW will consume energy when operating in those modes. However such modes of operation are not currently accounted for in SEM.</p>			

The TSOs propose that such modes of operation should be modelled in SEM, that non-energy dispatch instructions should be profiled and accounted for in imperfections.

A specific example of the potential application of this in relation to synchronous compensation is given below:

Maintaining voltage on the transmission system is critical to ensuring the stability of power flows. Generators (or other devices) either generate or absorb “reactive power” to maintain system voltage.

Particular requirements for voltage support are often locational. The provision of reactive power as a service is currently remunerated for contracted units through the DS3 System Services Regulated Arrangements.

Voltage support may be provided in various ways. Some units, such as Coolkeeragh GT8 generation unit in Northern Ireland, have the capability to provide voltage support in synchronous compensation mode. When in this mode, the unit effectively runs as a synchronous motor on no load to generate or absorb reactive power, helping to maintain a constant grid voltage at all levels of demand.

When running in synchronous compensation mode, the unit consumes energy and therefore has an associated running cost. This synchronous compensation mode of operation is not modelled in the energy market.

The unit does receive upside through higher payments via its DS3 System Services volumes for Steady State Reactive Power (SSRP) and Synchronous Inertial Response (SIR), but they are not sufficient to cover the increased running cost associated with being in synchronous compensation mode.

SONI currently has an out-of-market Synchronous Compensation Service Contract with Coolkeeragh GT8 as there is currently a specific locational voltage support requirement in the north west. There is no payment rate associated with the service. The unit receives pass through costs only.

The TSOs proposed in version 1 of the modification that synchronous compensation capability (and other non-energy dispatch actions such as the dispatch of wind farms to provide reactive power at 0MW) should be modelled in SEM and that the means of doing so be explored.

For example a unit capable of operating in synchronous compensation mode could be treated as a conventional dispatchable generator unit instructed to go into synch comp mode. The dispatch instructions to the unit could be profiled such that if dispatched to consume in the energy market the unit pays for its consumption, whereas if dispatched for non-energy actions (such as the provision of reactive power in a particular mode), their energy consumption would be allocated to imperfections.

Various solutions to address this issue were explored, with four solutions being examined in detail.

The ideal solution to this issue would be to create a new dispatch instruction whereby a unit could be instructed to a negative generation level, to consume energy while providing a service. This dispatch instruction could then be profiled in the instruction profiler and the energy consumed allocated to imperfections. This solution was assessed to be complex to implement, with a potentially high cost due to the need to make changes to the Instruction Profiler.

Version 2 of the modification proposed legal drafting for a, faster to implement if not perfect, solution whereby a unit could be reassigned to be part of a TSSU rather than an ASU. This was explored at both an industry conference call and at a Working Group meeting. In summary the proposed solution is as follows:

- **Solution 4: Unit as part of a TSSU**

- Proposed in the context of windfarms – could also be applied to other units
- Energy being drawn while the unit is providing reactive power at 0MW could be treated as negative generation
- Unit could be reassigned to be part of a TSSU (rather than an ASU)
- A flag could be sent to settlement to denote the period where the unit has been instructed to provide reactive power at 0MW, during those periods the energy would be assigned to imperfections, whereas during the trading periods where the unit is not instructed to be in this mode it would pay for its consumed energy as normal.

This version (Version 3) of the modification is an updated version of Version 2 which includes text amendments to address concerns raised at the Working Group.

They include: Changes to Glossary terms to ensure consistency; inclusion of the DS3 System Services Provider Flag as a new variable in the List of Variables and Parameters and an explicit provision (F 2.8.3) to emphasise that the DS3 System Services Provider Flag will not apply to DSUs and autoproducers.

Legal Drafting Change

*(Clearly show proposed code change using **tracked** changes, if proposer fails to identify changes, please indicate best estimate of potential changes)*

1.1 UNDER SECTION F OF TSC PART B

F2 Data Sources, Conventions and Definitions

F.2.8 DS3 System Services Provider

F.2.8.1 Each System Operator shall submit to the Market Operator, in accordance with the Settlement Calendar, in respect of each Trading Site Supplier Unit which is registered in a Trading Site with a DS3 System Service Providing Unit contracted with the respective System Operator under the DS3 System Services Arrangements to provide DS3 System Services at zero MW exported energy, a flag representing the imbalance settlement periods where the DS3 System Services Providing Unit is dispatched so as to provide DS3 System Services to the System Operator.

F.2.8.2 Each System Operator shall submit the flag referred to in F.2.8.1 in accordance with the

Appendix K “Other Market Data Transaction” based on the settlement of the respective DS3 System Services Providing Unit under the DS3 System Services Arrangements.

F.2.8.3 The System Operators shall not submit the flag referred to in F.2.8.1 for any Trading Site Supplier Unit, v , which is on a Trading Site, s , where a Demand Side Unit or an Autoproducer Unit is also registered to that Trading Site.

F.2.8.4 The Market Operator shall derive the binary value of the DS3 System Services Provider Flag (SSPF $_{vy}$) for each Trading Site Supplier Unit, v , which is on Trading Site, s , in each Imbalance Settlement Period, y , in accordance with F.2.8.5.

F.2.8.5 The Market Operator shall set the DS3 System Services Provider Flag (SSPF $_{vy}$) to zero unless a value of one has been submitted by the System Operator for a Trading Site Supplier Unit, v , which is on Trading Site, s , in Imbalance Settlement Period, y .

Imbalance Component Charges

F.5.3.2

The Market Operator shall calculate the Imbalance Component Payment or Charge (CIMB $_{vy}$) for each Supplier Unit, v , in Imbalance Settlement Period, y , as follows:

$$\begin{aligned} & \text{if } (SSPF_{vy} = 0, \text{ then} \\ & \text{CIMB}_{vy} = PIMB_y \times (QMLF_{vy} - QEX_{vy}) \\ & \text{else} \\ & \text{CIMB}_{vy} = 0) \end{aligned}$$

where:

- (a) SSPF $_{vy}$ is the DS3 System Service Provider Flag for Supplier Unit, v , in Imbalance Settlement Period, y .
- ~~(a)~~(b) $PIMB_y$ is the Imbalance Settlement Price in Imbalance Settlement Period, y , calculated in accordance with Chapter E (Imbalance Pricing);
- ~~(b)~~(c) $QMLF_{vy}$ is the Loss-Adjusted Metered Quantity for Supplier Unit, v , in Imbalance Settlement Period, y ; and
- ~~(c)~~(d) QEX_{vy} is the Ex-Ante Quantity for Supplier Unit, v , in Imbalance Settlement Period, y .

Imperfection Charges

F.12.2.3

The Market Operator shall calculate the Imperfections Charge ($CIMP_{vy}$) for each Trading Site Supplier Unit, v , in each Imbalance Settlement Period, γ , as follows:

if($SSPF_{vy} = 0$ *then*

$$CIMP_{vy} = \text{Min} \left(\sum_{u \in S} QMLF_{uy} + \sum_{v \in S} QMLF_{vy}, 0 \right) \times PIMP_y \times FCIMP_y$$

else

$$CIMP_{vy} = 0$$

where:

(e) $SSPF_{vy}$ is the DS3 System Services Provider Flag for Supplier Unit, v , in Imbalance Settlement Period, γ .

(d)(f) $PIMP_y$ is the Imperfections Price for Year, y ;

(e)(g) $QMLF_{vy}$ is the Loss-Adjusted Metered Quantity for Supplier Unit, v , in Imbalance Settlement Period, γ ;

(f)(h) $QMLF_{uy}$ is the Loss-Adjusted Metered Quantity for Generator Unit, u , in Imbalance Settlement Period, γ ;

(g)(i) $\sum_{u \in S}$ is a summation over all Generator Units, u , in Trading Site, s , relevant to the Trading Site Supplier Unit;

(h)(j) $\sum_{v \in S}$ is the value for the single Trading Site Supplier Unit, v , in Trading Site, s , in accordance with paragraph B.9.1.2; and

(i)(k) $FCIMP_y$ is the Imperfections Charge Factor for Imbalance Settlement Period, γ .

Capacity Charges

F.19.2.2

The Market Operator shall calculate the Capacity Charge (CCC_{vy}) for each Supplier Unit, v , which is a Trading Site Supplier Unit, in each Imbalance Settlement Period, γ , as follows:

if($SSPF_{vy} = 0$ *then*

$$CCC_{vy} = \text{Min} \left(\sum_{u \in S} QMLF_{uy} + \sum_{v \in S} QMLF_{vy}, 0 \right) \times FQMCC_y \times PCCSUP_y$$

else

$$CCC_{vy} = 0$$

where:

(l) SSPF_{vy} is the DS3 System Services Provider Flag for Supplier Unit, v, in Imbalance Settlement Period, y.

(j)(m) QMLF_{vy} is the Loss-Adjusted Metered Quantity for Supplier Unit, v, in Imbalance Settlement Period, y;

(k)(n) QMLF_{uy} is the Loss-Adjusted Metered Quantity for Generator Unit, u, in Imbalance Settlement Period, y;

(h)(o) PCCSUP_y is the Supplier Capacity Charge Price in Capacity Year, y;

(m)(p) FQMCC_y is the Capacity Charge Metered Quantity Factor in Imbalance Settlement Period, y;

(n)(q) $\sum_{u \in s}$ means the value for all Generator Units, u, in Trading Site, s, relevant to the Trading Site Supplier Unit; and

(e)(r) $\sum_{v \in s}$ means the value for the single Trading Site Supplier Unit, v, in Trading Site, s, in accordance with paragraph B.9.1.2.

Difference Payment Socialisation Charge

F19.4.2

The Market Operator shall calculate the Difference Payment Socialisation Charge (CSOCDIFFP_{vy}) for each Supplier Unit, v, which is a Trading Site Supplier Unit, in each Imbalance Settlement Period, y, as follows:

if (SSPF_{vy} = 0 *then*

CSOCDIFFP_{vy}

$$= \text{Min} \left(\sum_{u \in s} QMLF_{uy} + \sum_{v \in s} QMLF_{vy}, 0 \right) \times FQMCC_y \times PCCSUP_y \\ \times FSOCDIFFP_y$$

else

CSOCDIFFP_{vy} = 0

where:

(a) SSPF_{vy} is the DS3 System Services Provider Flag for Supplier Unit, v, in Imbalance Settlement Period, y.

(p)(b) QMLF_{vy} is the Loss-Adjusted Metered Quantity for Supplier Unit, v, in Imbalance Settlement Period, y;

(q)(c) QMLF_{uy} is the Loss-Adjusted Metered Quantity for Generator Unit, u, in Imbalance Settlement Period, y;

(r)(d) PCCSUP_y is the Supplier Capacity Charge Price in Capacity Year, y;

(s)(e) FQMCC_y is the Capacity Charge Metered Quantity Factor in Imbalance Settlement Period, y;

(t)(f) $\sum_{u \in s}$ is a summation over all Generator Units, u, in Trading Site, s, relevant to

the Trading Site Supplier Unit;

(u)(g) $\sum_{v \in S}$ is the value for the single Trading Site Supplier Unit, v, in Trading Site, s, in accordance with paragraph B.9.1.2; and

(v)(h) $FSOCDIFFP_y$ is the Difference Payment Socialisation Multiplier in Capacity Year, y.

Imbalance Difference Quantity

F20.3.2

The Market Operator shall calculate the Imbalance Difference Quantity ($QDIFFPIMB_{vy}$) for each Trading Site Supplier Unit, v, in each Imbalance Settlement Period, y, as follows:

if ($SSPF_{vy} = 0$ then

$$QDIFFPIMB_{vy} = \text{Min} \left(\sum_{u \in S} QMLF_{uy} + \sum_{v \in S} QMLF_{vy}, 0 \right)$$

else

$$QDIFFPIMB_{vy} = 0$$

where:

(a) SSPF_{vy} is the DS3 System Services Provider Flag for Supplier Unit, v, in Imbalance Settlement Period, y.

(w)(b) $\sum_{u \in S}$ is a summation over all Generator Units, u, in Trading Site, s, relevant to the Trading Site Supplier Unit;

(x)(c) $\sum_{v \in S}$ is the value for the single Trading Site Supplier Unit, v, in Trading Site, s, in accordance with paragraph B.9.1.2;

(y)(d) $QMLF_{uy}$ is the Loss-Adjusted Metered Quantity for Generator Unit u in Imbalance Settlement Period y; and

(z)(e) $QMLF_{vy}$ is the Loss-Adjusted Metered Quantity for Supplier Unit, v, in Imbalance Settlement Period, y.

1.2 UNDER TSC PART B GLOSSARY

DS3 System Services Arrangements

means, the contractual framework in place between each System Operator and DS3 System Services Providing Unit governing the provision of and remuneration for DS3 System Services required by each System Operator to maintain the secure and reliable operation of the system.

DS3 System Services	means the services essential to the proper functioning of the power system as defined in the DS3 System Services Arrangements.
DS3 System Services Provider Flag	means, a binary value derived by the Market Operator for a Trading Site Supplier Unit indicating whether a DS3 System Services Providing Unit registered to that site was operating to provide DS3 System Services while at zero MW exported energy in a given imbalance settlement period.
DS3 System Services Providing Unit	means, an apparatus or group of apparatus connected to the Transmission System or Distribution System that are contracted to provide DS3 System Services to their respective System Operator.

LIST OF VARIABLES AND PARAMETERS

<u>Topic:</u>	<u>Element:</u>	<u>Long Name:</u>	<u>Definition/Description:</u>	<u>Units:</u>
Variable	SRAS _{apbc}	Settlement Reallocation Agreement Amount for Trading Payments, Trading Charges, Capacity Payments and Capacity Charges in respective of Secondary Participant	The Settlement Reallocation Agreement Amount in respect of a Secondary Participant, p, for a Settlement Reallocation Agreement, a, in a Billing Period, b, for Trading Payments and Trading Charges and a Capacity Period, c for Capacity Payments and Capacity Charges.	€
<u>Variable</u>	<u>SSPF_v</u>	<u>DS3 System Services Provider Flag</u>	<u>DS3 System Services Provider Flag for Supplier Unit, v, in Imbalance Settlement Period, y</u>	<u>Number</u>
Variable	TINIV _{ukφ}	Initial Net Imbalance Volume Tag	The Initial Net Imbalance Volume Tag for an Accepted Offer Quantity or Accepted Bid Quantity at rank, k, for a Generator Unit, u, in an Imbalance Pricing Period, φ, used as an interim tag that represents whether an Accepted Offer or Bid has been tagged prior to the Net	Factor

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			Imbalance Volume tagging process.	
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1.3 UNDER TSC PART B APPENDIX K: OTHER MARKET DATA TRANSACTIONS

DATA TRANSACTIONS

2. The Data Transactions in this Appendix K include:

Data Transactions from System Operator to Market Operator

(a) System Parameters (FCLAF)

...

(r) DS3 System Services Provider Flag

Data Transactions from Interconnector Administrator to Market Operator

a- (s) Interconnector Capacity Market Availability

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26. DS3 System Services Provider Flag Data Transaction

The Data Records for the DS3 System Services Provider Flag Data Transaction are described in Table 3 and the Submission Protocol in Table 4.

Table 16 –System Services Provider Flag Data Records

<u>Jurisdiction</u>
<u>Trading Site Unit</u>
<u>Trading Day</u>
<u>Imbalance Settlement Period</u>
<u>DS3 System Services Provider Flag Value</u>

Table 27 –System Services Provider Flag Data Submission Protocol

<u>Sender</u>	<u>System Operator(s)</u>
<u>Recipient</u>	<u>Market Operator</u>
<u>Frequency of Data Transactions</u>	<u>As Available</u>

First Submission time As available

Last Submission time As available

Permitted frequency of resubmission prior to last submission time Unlimited

Required resubmission subsequent to last submission time None

Valid Communication Channels Type 1 (manual)

Process for data validation None

276. Interconnector Capacity Market Availability Data Transaction

The Data Records for the Interconnector Capacity Market Availability Data Transaction are described in Table 3 and the Submission Protocol in Table 49.

Table 38 – Interconnector Capacity Market Availability Data Transaction Data Records: Average values per Imbalance Settlement Period

Interconnector

Trading Day

Imbalance Settlement Period

Maximum Import Capacity Market Availability (qCMAMAXI_{iv})

Maximum Export Capacity Market Availability

Table 49 – Interconnector Capacity Market Availability Data Transaction Submission Protocol

Sender	Interconnector Administrator
Recipient	Market Operator
Number of Data Transactions	One containing: Maximum Import Capacity Market Availability and Maximum Export Capacity Market Availability for each Imbalance Settlement Period in the relevant Trading Day for the relevant Interconnector.
Frequency of Data Transactions	Daily and as updated

First Submission time	As available
Last Submission time	Unlimited, prior to Imbalance Settlement Calculation
Permitted frequency of resubmission prior to last submission time	Unlimited
Required resubmission subsequent to last submission time	In the event of a change in the magnitude of Capacity Market Availability in either direction, resubmission is possible prior to Imbalance Settlement Calculation or as required to resolve a Settlement Query or a Dispute where the Data Records in the Transaction are discovered to be in error.
Valid Communication Channels	Type 3 (computer to computer)
Process for data validation	None
Modification Proposal Justification <i>(Clearly state the reason for the Modification)</i>	
<p>Some units in the SEM currently have modes such as synchronous compensation capability or the ability to provide reactive power at 0MW which are not currently modelled in the energy market. Such capability can be very useful to the system operator , for example, maintaining voltage stability and may be used instead of dispatching on more expensive units to provide services. However, a unit in sync comp mode consumes energy, as does a windfarm providing reactive power while at 0MW.The associated energy costs must be remunerated or else it will not be economic for the unit to provide this mode of operation. The current workaround of out-of-market standalone contracts lacks transparency. As this capability contributes to voltage stability, which is an important element of system reliability, the SO is of the opinion that integrating the mode into the energy market would allow it to be used in the most optimum way and deliver the most value to the consumer. The same principle also applies to other units which may have the capability of being dispatched to provide services critical to power system operation and consume energy in order to enact this service provision.</p>	
Code Objectives Furthered <i>(State the Code Objectives the Proposal furthers, see Section 1.3 of Part A and/or Section A.2.1.4 of Part B of the T&SC for Code Objectives)</i>	
This proposal aims to further Code Objectives	

1.3.5 *“to provide transparency in the operation of the Single Electricity Market”;*

by dealing with synchronous compensation and OMW windfarm mode payments transparently through the balancing market rather than through out-of-market mechanisms.

and

1.3.7 *“to promote the short-term and long-term interests of consumers of electricity on the island of Ireland with respect to price, quality, reliability, and security of supply of electricity.”*

as provision of adequate voltage support is essential to the reliability of the power system.

Implication of not implementing the Modification Proposal

(State the possible outcomes should the Modification Proposal not be implemented)

Failure to implement the proposal will necessitate continued out-of-market contracts and associated energy payments to account for synchronous compensation mode and other non-energy services. Where there is no payment rate associated with dispatching a unit into a particular mode to provide a service, running a tender for it is problematic. It would greatly increase transparency if unit dispatch for non-energy services were accounted for within the SEM.

<p>Working Group <i>(State if Working Group considered necessary to develop proposal)</i></p>	<p>Impacts <i>(Indicate the impacts on systems, resources, processes and/or procedures; also indicate impacts on any other Market Code such as Capacity Marker Code, Grid Code, Exchange Rules etc.)</i></p>
	<p>Potential system and process impacts include EDIL, MMS, CSB and TSO processes.</p>

Please return this form to Secretariat by email to balancingmodifications@sem-o.com