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| **MODIFICATION PROPOSAL FORM** |
| **Proposer***(Company)* | **Date of receipt***(assigned by Secretariat)* | **Type of Proposal***(delete as appropriate)* | **Modification Proposal ID***(assigned by Secretariat)* |
| **SEMO** | **1 November 2017** | **Standard** | **Mod\_09\_17** |
| **Contact Details for Modification Proposal Originator** |
| **Name** | **Telephone number** | **Email address** |
| **Christopher Goodman** |  | **Christopher.goodman@sem-o.com** |
| **Modification Proposal Title** |
| **Solar in the Integrated Single Electricity Market (V2)** |
| **Documents affected***(delete as appropriate)* | **Section(s) Affected** | **Version number of T&SC or AP used in Drafting** |
| **Part B T&SC (Body, Appendices and Glossary)****Part B AP04 & AP06** | **Trading and Settlement Code Part B body** **B.7.2.2, B.15.1.2****C.7.3.1****D.6.1.1****Part B Appendices****Table of Contents - Wind Power Unit Forecast****Appendix E - Table 4****Appendix K – Clauses 2, 5 and 22; Tables 1, 28 and 29****Appendix O – Clause 37(e) and Table 1****Part B Glossary Definitions** **Solar Power Unit (new)****Annual Load Forecast****Four Day Load Forecast****Monthly Load Forecast****Generator Unit****Instruction Combination Code****Wind Power Unit Forecast****Part B AP04 Appendix 2 table 9****Primary Fuel Type****Secondary Fuel Type****Part B AP06 Appendix 2****Four Day Rolling Wind Unit Forecast****Four Day Aggregated Rolling Wind Unit Forecast****Aggregated Wind Forecast****Aggregated Contracted Quantities for Wind**  | **Version 20** |
| **Explanation of Proposed Change***(mandatory by originator)* |
| The proposed change is to make specific provision for Solar Power Units in the ISEM market rules. The intention is to treat solar in a similar way to wind given the variable fuel type and Priority Dispatch status. This is in line with System Operator requirements and the Regulatory Authorities letter of intentions dated 24/03/2017 and circulated to the Modifications Committee on 28/04/2017. Mod\_04\_17 Solar in the SEM, which has been recommended for approval, is intended to make the appropriate changes to the market rules to reflect solar generation for the existing SEM. This proposal is the ISEM equivalent. Version 1 of this modification included provisions to remove the obligation on the Market Operator to publish outage adjusted wind and solar reports. This second version removes this provision which will be brought as a separate proposal as requested by the Modifications Committee. |
| **Legal Drafting Change***(Clearly show proposed code change using* ***tracked*** *changes, if proposer fails to identify changes, please indicate best estimate of potential changes)* |
| ***Trading and Settlement Code Part B Body***B.7.2.2 A Party (or Applicant, as applicable) shall, in a Participation Notice in respect of a Generator Unit, specify if the Unit is: * + - * 1. a Wind Power Unit;
				2. an Energy Limited Generator Unit;
				3. a Pumped Storage Unit;
				4. a Battery Storage Unit;
				5. a Demand Side Unit;
				6. an Aggregated Generator Unit;
				7. a Trading Unit;
				8. an Assetless Unit;
				9. a Dual Rated Generator Unit; or
				10. a Solar Power Unit.

B.15.1.2 The Balancing Market Operations Timetable produced by the Market Operator under paragraph shall reflect required actions and publication of data and information, as specified under this Code and the Grid Code, including but not limited to the following:* + - * 1. submission by Participants to the Market Operator or System Operator of Commercial Offer Data and Technical Offer Data including Default Data;
				2. submission by Participants to the Market Operator and System Operator of Physical Notifications;
				3. submission by Participants and/or publication by the Market Operator or System Operator of Availability, Demand, solar and wind forecast data;
				4. publication by the Market Operator or System Operator of scheduling and dispatch outcomes;
				5. publication by the Market Operator of Imbalance Settlement Prices;
				6. timing of initial and final Settlement Statements and Settlement Documents;
				7. timing of Timetabled Settlement Reruns;
				8. timing for payments in accordance with Settlement Documents; and
				9. timing for Market Operator to issue Required Credit Cover Reports, and for Participants to post additional Credit Cover.

C.7.3.1 The Market Operator shall publish Load Forecasts and Wind and Solar Power Unit Forecasts and the assumptions behind the production of those forecasts using the data most recently submitted by the System Operators to the Market Operator at the time of publication.D.6.1.1 Each System Operator shall submit to the Market Operator the following forecast values pertaining to its Jurisdiction in accordance with Appendix K “Other Market Data Transactions”:* + - * 1. Annual Load Forecast;
				2. Monthly Load Forecast;
				3. Four Day Load Forecast; and
				4. Wind and Solar Power Unit Forecast.

***Trading and Settlement Code Part B Appendices******Contents***Wind and Solar Power Unit Forecast Data Transaction………………… 78***Appendix E*****Table 4 – Data publication list part 4: updated daily in advance of the Trading Day**

|  |  |  |  |
| --- | --- | --- | --- |
| **Time** | **Item / Data Record** | **Term** | **Subscript** |
| **Daily, in advance of the the Trading Day** |  |  |  |
| By 17:00 on the day prior to the Gate Closure 1 in respect of the Trading Day | Trading Day Exchange Rate between euro (€) and pounds sterling (£)  | - | - |
| By 17:00 on the day prior to the Trading Day, plus as updated | Unit Under Test |  |  |
| By 17:00 on the day prior to the Trading Day, plus as updated | Net Transfer Capacity |  |  |
| By 17:00 on the day prior to the Trading Day, plus as updated | Four Day Load Forecast | - | - |
| By17:00 on the day prior to the Trading Day, plus as updated | Four Day Rolling Wind and Solar Power Unit Forecast by Unit |  |  |
| By 17:00 on the day prior to the Trading Day, plus as updated | Four Day Rolling Wind and Solar Power Unit Forecast aggregated by Jurisdiction | - | - |
| By 17:00 on the day prior to the Trading Day, plus as updated | Four Day Rolling Wind and Solar Power Unit Forecast by Market | - | - |
| By 17:00 on the day prior to the Trading Day, plus as updated | OUTAGE ADJUSTED WIND UNIT FORECAST – 36 hours lookout |  |  |
| By 17:00 on the day prior to the Trading Day | Daily Transmission Outage Schedule Report |  |  |
|  |  |  |  |

***Appendix K**** 1. **Data Transactions**
		+ 1. The Data Transactions in this Appendix K include:

**Data Transactions from System Operator to Market Operator** * + - * 1. System Parameters (FCLAF)
				2. Loss Adjustment Factors (FTLAF and FDLAF)
				3. Generator Unit Technical Characteristics
				4. Short Term Reserves (qSTR and qORR)
				5. System Operator Flags (FSO, FNM and FSS)
				6. Demand Control (QDC)
				7. System Characteristics (FRQAVG and FRQNOR)
				8. Dispatch Instructions
				9. SO Interconnector Trades
				10. SO Interconnector Physical Notifications
				11. Annual Load Forecast
				12. Monthly Load Forecast
				13. Four Day Load Forecast
				14. Wind and Solar Power Unit Forecast
				15. Uninstructed Imbalance Parameters (FPUG, FDOG, FUREG, TOLMW, TOLENG)
				16. Testing Tariffs
				17. Strike Price Parameters (PCARBON, PFUELNG and PFUELO)
1. The Market Operator shall use Contingency Data in the event that the following Data Transactions are not received within the timescales required under the Code:

**Data Transactions from System Operator to Market Operator**1. Four Day Load Forecast
2. Wind and Solar Power Unit Forecast

**Table 1 – Contingency Data Rules for Market Data Transactions**

| **Transaction** | **Associated Ex-ante Gate Closure** | **Contingency Data** |
| --- | --- | --- |
| Wind and Solar Power Unit Forecast | DAM | Most recent Wind and Solar Forecast Accepted by DAM Gate Closure |
| Wind and Solar Power Unit Forecast | IDM | Most recent Wind and Solar Forecast Accepted by each IDM Gate Closure |

**Wind and Solar Power Unit Forecast Data Transaction**1. The Data Records for the Wind and Solar Power Unit Forecast Data Transaction are described in and the Submission Protocol in .

**Table 28 – Wind and Solar Power Unit Forecast Data Transaction Data Records**

|  |
| --- |
| Period Type (A for Annual, M for Monthly or D for Daily) |
| Unit ID |
| Trading Day  |
| Imbalance Settlement Period |
| Jurisdiction |
| Output Forecast for each Wind Power Unit and Solar Power Unit, in MW |
| Assumptions |

**Table 29 – Wind and Solar Power Unit Forecast Data Transaction Submission Protocol**

|  |  |
| --- | --- |
| Sender | System Operator(s) |
| Recipient | Market Operator |
| Number of Data Transactions | At least once for each Jurisdiction in each of the following timescales in respect of the relevant Trading Day:By the DAM Gate Closure and as updated;Data Transactions should contain data for each Wind Power Unit and Solar Power Unit in a given Jurisdiction for each Imbalance Settlement Period in the following two complete Trading Days |
| Frequency of Data Transactions | At least once prior to the DAM Gate Closure, plus as updated |
| First Submission time | As updated |
| Last Submission time | Unlimited, at least one Data Transaction shall be submitted by the DAM Gate Closure, plus as updated  |
| Permitted frequency of resubmission prior to last submission time | Unlimited |
| Required resubmission subsequent to last submission time | None |
| Valid Communication Channels | Type 3 (computer to computer)  |
| Process for data validation  | None |

***Appendix O*****Table 1 – Instruction Codes and Instruction Combination Codes for Dispatch Instructions issued by the System Operator**

| **Instruction Code** | **Instruction Combination Code** | **Description** |
| --- | --- | --- |
| SYNC | n/a | Synchronise the Generator Unit at the specified Instruction Effective Time. |
| MWOF | n/a | Adjust the Generator Unit Output to the specified Target Instruction Level at the specified Instruction Effective Time. |
| DESY | n/a | Desynchronise the Generator Unit at the specified Instruction Effective Time. |
| GOOP | PGEN | Instruct positive Output from a Pumped Storage Unit or a Battery Storage Unit at the specified Instruction Effective Time. |
| GOOP | PUMP | Instruct negative Output from a Pumped Storage Unit or a Battery Storage Unit at the specified Instruction Effective Time. |
| GOOP | SCT | Instruct Synchronisation in generating mode and 0MW Output for a Pumped Storage Unit or a Battery Storage Unit at the specified Instruction Effective Time. |
| GOOP | SCP | Instruct Synchronisation in Pumping Mode and 0MW Output from a Pumped Storage Unit or a Battery Storage Unit at the specified Instruction Effective Time. |
| TRIP | n/a | Retrospectively issued Dispatch Instruction to indicate that a Generator Unit Desynchronised unexpectedly. |
| WIND | LOCL | Instruction for a Wind Power Unit or Solar Power Unit to reduce Output due to a Local Network Constraint at the specified Instruction Effective Time. |
| WIND | LCLO | Instruction for a Wind Power Unit or Solar Power Unit to cease the reduction of Output due to a Local Network Constraint at the specified Instruction Effective Time. |
| WIND | CURL | Instruction for a Wind Power Unit or Solar Power Unit to reduce Output due to an All-Island Curtailment at the specified Instruction Effective Time. |
| WIND | CRLO | Instruction for a Wind Power Unit or Solar Power Unit to cease the reduction of Output due to an All-Island Curtailment at the specified Instruction Effective Time. |
| MXON | n/a | Instruction to a Generator Unit to adjust its Output to the registered Short Term Maximisation Capability at the specified Instruction Effective Time. |
| MXOF | n/a | Instruction to de-activate a Maximisation Instruction at the specified Instruction Effective Time. |
| FAIL | n/a | Retrospectively-issued Dispatch Instruction to indicate that a Generator Unit failed to Synchronise as instructed. |

***Appendix O Clause 37(e)**** + - * 1. The default Instructed Quantity for a Wind Power Unit or a Solar Power Unit shall be set to its Output based on its Meter Data. The Instructed Quantity for a Wind Power Unit or a Solar Power Unit having a WIND Instruction Code and a LOCL or CURL Instruction Combination Code shall be set to the minimum of the Outturn Availability of the Wind Power Unit or Solar Power Unit and the Target Instruction Level of the Wind Power Unit or Solar Power Unit.

***Trading and Settlement Code Part B Glossary***

|  |  |
| --- | --- |
| **Annual Load Forecast** | means the forecast of Demand to be met by Generator Units (other than not Dispatchable, not Controllable Generator Units that are not Wind or Solar Power Units) at the point where the Units are Connected (i.e. prior to the application of Combined Loss Adjustment Factors), but net of Unit Load for Generator Units, for each Imbalance Settlement Period in a Year for a given Jurisdiction. |

|  |  |
| --- | --- |
| **Four Day Load Forecast** | means the forecast of Demand to be met by Generator Units (other than not Dispatchable, not Controllable Units that are not Wind or Solar Power Units) at the point where the Units are Connected (i.e. prior to the application of Combined Loss Adjustment Factors), but net of Unit Load for Generator Units, for each Imbalance Settlement Period in the next four Trading Days. |

|  |  |
| --- | --- |
| **Generator Unit** | means one or more Generators, other item of Dispatchable plant or a notional unit registered as a Generator Unit under this Code.For the purposes of the Code a Generator Unit may be any one of the following types:1. physical: Aggregated Generator Unit, Demand Side Unit, Energy Limited Generator Unit, Hydro-electric Generator Unit, Pumped Storage Unit, Battery Storage Unit, Trading Unit, Wind Power Unit, Solar Power Unit or Dual Rated Generator Unit;
2. notional: Assetless Unit, which includes a unit registered by a SEM NEMO or a Shipping Agent under section B.8, an Interconnector Error Unit or Interconnector Residual Capacity Unit.
 |

|  |  |
| --- | --- |
| **Instruction Combination Code** | means a code issued with a Dispatch Instruction for Pumped Storage Units, Solar Power Units and Wind Power Units only indicating the mode of operation of the relevant Generator Unit, for the purpose of Appendix O: “Instruction Profiling Calculations” only. |

|  |  |
| --- | --- |
| **Monthly Load Forecast** | means the forecast of Demand to be met by Generator Units (other than not Dispatchable, not Controllable Generator Units that are not Wind or Solar Power Units) at the point where the Units are Connected (i.e. prior to the application of Combined Loss Adjustment Factors), but net of Unit Load for Generator Units, for each Imbalance Settlement Period in the next Month. |

|  |  |
| --- | --- |
| **Solar Power Unit** | means a Generator Unit generating electricity from solar energy. |

|  |  |
| --- | --- |
| **Wind and Solar Power Unit Forecast**  | means a forecast of the Output that will be produced by Wind Power Units and Solar Power Units, excluding not Dispatchable, not Controllable Generator Units, for each Imbalance Settlement Period in the following two Trading Days, as carried out in relation to each such Wind Power Unit and Solar Power Unit by the relevant System Operator. |

***Trading and Settlement Code Part B Agreed Procedures******Agreed Procedure 04 (Appendix 2) Table 9***

|  |  |  |
| --- | --- | --- |
| Fuel Type | Valid values: BATTERY\_STORAGE (BATTERY), BIOMASS, COAL, COMBINED\_HEAT\_AND\_POWER (CHP), COMPRESSED\_AIR\_STORAGE (CAS), DISTILLATE, FLY\_WHEEL, GAS, HYDRO, MULTI\_FUEL, NUCLEAR, OIL, PEAT, PUMP\_STORAGE (PUMP), Solar Power Units will be set equal to WIND, WIND, OTHER | RD |
| Secondary Fuel Type |

|  |  |
| --- | --- |
| Valid values: BATTERY\_STORAGE (BATTERY), BIOMASS, COAL, COMBINED\_HEAT\_AND\_POWER (CHP), COMPRESSED\_AIR\_STORAGE (CAS), DISTILLATE, FLY\_WHEEL, GAS, HYDRO, MULTI\_FUEL, NUCLEAR, OIL, PEAT, PUMP\_STORAGE (PUMP), , OTHER | RD |

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**Agreed Procedure 06 (Appendix 2) Data Reports**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Four Day Rolling Wind and Solar Unit Forecast | D | Four times per day, following receipt of each Wind and Solar Unit Forecast | - | Y | Member Public |  |
| Four Day Aggregated Rolling Wind and Solar Unit Forecast | D | Four times per day | - | Y | Member Public |  |
| Outage Adjusted Wind Unit Forecast Report | D | Four times per day, following receipt of each Wind Unit Forecast | - | Y | Member Public |  |
| Outage Adjusted Solar Unit Forecast Report | D | Four times per day, following receipt of each Solar Unit Forecast | - | Y | Member Public |  |
| Aggregated Wind and Solar Forecast | D | Four times per day, following receipt of each Wind and Solar Unit Forecast | - | Y | Member Public |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Aggregated Contracted Quantities For Wind and Solar | F | Updated every hour for All Imbalance Settlement Periods for which the Balancing Market Gate Window is still open in the Trading Day  | - | Y | Member Public |  |

 |
| **Modification Proposal Justification***(Clearly state the reason for the Modification)* |
| The justification for this Modification proposal is to ensure that Solar Power Units can participate in the ISEM and have accurate rules detailing their operation in the ISEM in line with TSO and Regulatory requirements. |
| **Code Objectives Furthered***(State the Code Objectives the Proposal furthers, see Section 1.3 of T&SC for Code Objectives)* |
| Section 1.3 1. to facilitate the participation of electricity undertakings engaged in the generation, supply or sale of electricity in the trading arrangements under the Single Electricity Market;
2. to promote competition in the single electricity wholesale market on the island of Ireland;
3. to ensure no undue discrimination between persons who are parties to the Code;

  |
| **Implication of not implementing the Modification Proposal***(State the possible outcomes should the Modification Proposal not be implemented)* |
| Not implementing this proposal would mean that solar power continues not to be explicitly represented in the ISEM market rules resulting in a lack of clarity and no provision for this fuel type. |
| **Working Group***(State if Working Group considered necessary to develop proposal)* | **Impacts***(Indicate the impacts on systems, resources, processes and/or procedures)* |
| No | System changes are not required since the intention is to use the Wind fuel type within the Central Market Systems given that the scheduling, dispatch and settlement treatments are identical.There will be a small change to procedures to capture the setting of fuel type for Solar to Wind which is captured in the updated Agreed Procedure drafting above. |
| ***Please return this form to Secretariat by email to*** ***modifications@sem-o.com*** |

**Notes on completing Modification Proposal Form:**

1. **If a person submits a Modification Proposal on behalf of another person, that person who proposes the material of the change should be identified on the Modification Proposal Form as the Modification Proposal Originator.**
2. **Any person raising a Modification Proposal shall ensure that their proposal is clear and substantiated with the appropriate detail including the way in which it furthers the Code Objectives to enable it to be fully considered by the Modifications Committee.**
3. **Each Modification Proposal will include a draft text of the proposed Modification to the Code unless, if raising a Provisional Modification Proposal whereby legal drafting text is not imperative.**
4. **For the purposes of this Modification Proposal Form, the following terms shall have the following meanings:**

**Agreed Procedure(s): means the detailed procedures to be followed by Parties in performing their obligations and functions under the Code as listed in Appendix D “List of Agreed Procedures”.**

**T&SC / Code: means the Trading and Settlement Code for the Single Electricity Market**

**Modification Proposal: means the proposal to modify the Code as set out in the attached form**

**Derivative Work: means any text or work which incorporates or contains all or part of the Modification Proposal or any adaptation, abridgement, expansion or other modification of the Modification Proposal**

**The terms “Market Operator”, “Modifications Committee” and “Regulatory Authorities” shall have the meanings assigned to those terms in the Code.**

**In consideration for the right to submit, and have the Modification Proposal assessed in accordance with the terms of Section 2 of the Code (and Agreed Procedure 12), which I have read and understand, I agree as follows:**

**1. I hereby grant a worldwide, perpetual, royalty-free, non-exclusive licence:**

* 1. **to the Market Operator and the Regulatory Authorities to publish and/or distribute the Modification Proposal for free and unrestricted access;**
	2. **to the Regulatory Authorities, the Modifications Committee and each member of the Modifications Committee to amend, adapt, combine, abridge, expand or otherwise modify the Modification Proposal at their sole discretion for the purpose of developing the Modification Proposal in accordance with the Code;**
	3. **to the Market Operator and the Regulatory Authorities to incorporate the Modification Proposal into the Code;**

**1.4 to all Parties to the Code and the Regulatory Authorities to use, reproduce and distribute the Modification Proposal, whether as part of the Code or otherwise, for any purpose arising out of or in connection with the Code.**

**2. The licences set out in clause 1 shall equally apply to any Derivative Works.**

**3. I hereby waive in favour of the Parties to the Code and the Regulatory Authorities any and all moral rights I may have arising out of or in connection with the Modification Proposal or any Derivative Works.**

**4. I hereby warrant that, except where expressly indicated otherwise, I am the owner of the copyright and any other intellectual property and proprietary rights in the Modification Proposal and, where not the owner, I have the requisite permissions to grant the rights set out in this form.**

**5. I hereby acknowledge that the Modification Proposal may be rejected by the Modifications Committee and/or the Regulatory Authorities and that there is no guarantee that my Modification Proposal will be incorporated into the Code.**