The Single Electricity Market (SEM)

Trading and Settlement Code

Appendices

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APPENDIX A: STANDARD LETTER OF CREDIT

A.1 This ~~appendix~~Appendix A contains a standard template for a Letter of Credit~~.~~.

MARKET OPERATOR EURO/STERLING IRREVOCABLE STANDBY LETTER OF CREDIT TEMPLATE

Applicant: ……..

Issuing Bank: ……..

Advising Bank/SEM Bank: …….

Beneficiary: The Market Operator under the SEM Trading and Settlement Code being a joint venture between EirGrid plc and SONI Limited and trading as AIME (the "Beneficiary")

Dear Sirs,

We, the Issuing Bank, hereby issue our irrevocable Standby Letter of Credit No……. by order of …….. (applicant), for a maximum total amount of EUR/Sterling……. (in words……) which expires at the counters of the Advising Bank on [insert date] subject to extension as described below.

In this Letter of Credit and in the Beneficiary Statement (except where the context otherwise requires or there is an express provision to the contrary) the following expressions shall have the following meanings:

"Beneficiary Statement" means a statement in the form of the Appendix attached hereto;

"Same Day Value" means that the relevant funds shall be available to the Beneficiary on the same day as the funds transfer has been authorised by us without any loss of value arising between such authorisation and the funds being available for use by the Beneficiary;

~~"SWIFT" means [define]~~

"SEM" means the wholesale Single Electricity Market for the island of Ireland;

"SWIFT" means the worldwide financial messaging network of The Society for Worldwide Interbank Financial Telecommunication;

"Trading and Settlement Code" means the ~~document of that name (as amended from time to time) established by the Market Operator pursuant to its Market Operator Licence granted pursuant to~~trading arrangements for the SEM established in Northern Ireland pursuant to section 23 of the Northern Ireland (Miscellaneous Provisions) Act 2006 and the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 and in Ireland pursuant to section 9BA(1) of the Electricity Regulation Act 1999 ~~to which the applicant is a party~~and as designated pursuant to regulations made under section 9BA(2)(a) of the Electricity Regulation Act 1999 (Ireland);

This irrevocable Standby Letter of Credit is available by payment at sight against presentation to the Advising Bank of a Beneficiary Statement.

Conditions:

1. Partial drawings are allowed.

2. The expiry date of this Standby Letter of Credit will automatically be extended for a period of one calendar year from its current or any future expiry date unless we serve notice by SWIFT to the Advising Bank not less than one calendar month before the current or any future expiry date that this Standby Letter of Credit will not automatically be extended and will expire on its then current expiry date. The date of transmission of any such SWIFT notice will be deemed to be the date that notice is served.

3. The Beneficiary Statement must be made on original letterhead paper of the Beneficiary and signed on its behalf.

4. ~~4.~~ Upon receipt of a signed Beneficiary Statement in compliance with the above conditions the Advising Bank is required promptly to notify us by SWIFT of receipt of such Beneficiary Statement and inform us of the relevant details of such Beneficiary Statement. Provided such notification is received by us no later than ~~14.00~~14:00 hrs on any weekday on which banks are open for business in Dublin or Belfast, we shall make payment under this Standby Letter of Credit for Same Day Value on that day or if received after 14.00hrs on the next such weekday in accordance with such notification and shall confirm payment by notifying the Advising Bank by SWIFT.

5. ~~5.~~ Where we, the Issuing Bank are also the Advising Bank, we may revise the above notification requirements as appropriate provided that this shall in no way affect the obligation on us to make payment under this Standby Letter of Credit.

6. ~~6.~~ All opening bank charges are for the account of the ~~applicant~~Applicant.

7. ~~7.~~ All advising/paying bank charges are for the account of the ~~applicant~~Applicant.

Except where otherwise expressly stated, this ~~Standby~~ Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits latest version on the date of the issuance of this ~~Standby~~ Letter of Credit [MOST RECENT VERSION TO BE INSERTED WITH EACH LETTER OF CREDIT].

We the Issuing Bank hereby waive any right to set off or counterclaim whatsoever against any amounts payable under this Standby Letter of Credit in respect of any claims we may have against the Beneficiary and such amounts shall be paid free and clear of all deductions or withholdings whatsoever.

This ~~letter~~Letter of Credit shall be governed by and construed in accordance with the laws of Northern Ireland and the parties submit to the exclusive jurisdiction of the Courts of Ireland and the Courts of Northern Ireland for all disputes arising under, out of, or in relation to this Letter of Credit.

Yours faithfully

[Issuing Bank]

by (Authorised Signatory)

APPENDIX

[Market Operator letterhead]

We, the Market Operator under the Trading and Settlement Code (the "Beneficiary") hereby state that [insert applicant's name] is in default of its obligation to pay pursuant to the Trading and Settlement Code (to which the applicant is a party) under paragraph [insert details]

and as a result we hereby demand ……..[insert amount being claimed] under Standby Letter of Credit number……... issued by ……[insert name of Issuing Bank]. Payment in respect of this Beneficiary Statement shall be effected immediately to [insert relevant account details]. We confirm that the signatory(ies) to this Beneficiary Statement are empowered to sign and make this Beneficiary Statement on behalf of the Beneficiary.

Terms defined in the Standby Letter of Credit referred to above have the same meaning when used in this Beneficiary Statement.

APPENDIX B: DISPUTE RESOLUTION AGREEMENT

FORM OF DISPUTE RESOLUTION AGREEMENT

GENERAL CONDITIONS OF DISPUTE RESOLUTION AGREEMENT FOR A DISPUTE RESOLUTION BOARD

Words in square brackets should be deleted as appropriate depending on whether there is a one member DRB or a three member DRB.

BETWEEN:-

1 THE DISPUTING PARTIES, REFERRED TO IN ANNEX 1

AND

2 EACH MEMBER OF THE DISPUTE RESOLUTION BOARD, REFERRED TO IN ANNEX 2 ("MEMBER" OR "THE MEMBERS" AS APPLICABLE)

RECITALS

A. The Disputing Parties are, directly or via the Accession Deed, adhering parties to the Framework Agreement dated xxx, by which they agree to be bound by the terms of the Trading and Settlement Code ("Code", as further defined below) for trading in electricity in the wholesale market in the Single Electricity Market.

B. The Disputing Parties are parties to a Dispute within the meaning of the Code.

C. The Dispute has, in accordance with paragraph 2.288 of the Code, been referred to a [single member / three member] Dispute Resolution Board ("DRB") for resolution.

D. In order to facilitate the resolution of the Dispute by the DRB, the Disputing Parties wish to enter into this Agreement with each of the Members, setting out the terms and conditions upon which each Member is engaged to hear and determine the Dispute.

1. Definitions and Interpretation

1.1 In this Dispute Resolution Agreement, "Code" means the trading arrangements for the SEM established in Northern Ireland pursuant to section 23 of the Northern Ireland (Miscellaneous Provisions) Act 2006 and the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 and in Ireland pursuant to section 9BA(1) of the Electricity Regulation Act 1999 and as designated pursuant to regulations made under section 9BA(2)(a) of the Electricity Regulation Act 1999 (Ireland).

1.2 Unless the context requires otherwise, words and expressions which are not otherwise defined in this Dispute Resolution Agreement (including the Recitals) shall have the meanings assigned to them in the Code.

1.3 Where the DRB is comprised of a single member, references to "the Members" shall be construed as references to "the Member" and references to "each Member" shall be construed as references to "the Member".

2. General Provisions

2.1 Each Disputing Party engages each Member to constitute a Dispute Resolution Board to hear and determine the Dispute.

2.2 Each Member accepts that engagement.

2.3 Each Member agrees to hear and determine the Dispute:

1. in accordance with the Code, the Framework Agreement and Applicable Laws; and
2. on the terms and conditions set out in this Agreement.

2.4 This Agreement shall take effect when signed by all parties to this Agreement, on the last date of signature by a party.

2.5 The appointment of the Members pursuant to this Agreement is a personal appointment. At any time, the Members may give not less than 14 days' notice of resignation to the Disputing Parties and to the Market Operator, and, where the Market Operator is a Disputing Party, to the Regulatory Authorities, and the Dispute Resolution Agreement shall terminate upon the expiry of this period.

2.6 No assignment or subcontracting of the Dispute Resolution Agreement is permitted without the prior written agreement of all the Disputing Parties to it and of the Members.

2.7 When appointing each Member, the Disputing Parties shall request of the relevant Member and shall be entitled to rely upon the Member's representations that he/she:

1. is experienced in and familiar with alternative dispute resolution procedures; or
2. has appropriate experience of the electricity industry, or the particular matters the subject of the dispute; and
3. is familiar with, or shall, prior to the commencement of the hearing of the Dispute, be familiar with, the provisions of the Code.

3. Warranties

3.1 The Members warrant and agree that they are and shall be impartial and independent of the Market Operator and the Disputing Parties. Each Member shall promptly disclose, to each Disputing Party and to the other

Members, any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

4. Objectives of the Dispute Resolution Procedure

4.1 It is intended that procedures effected under this Dispute Resolution Agreement should to the extent possible:

1. be simple, quick and inexpensive;
2. preserve or enhance the relationship between the Disputing Parties;
3. without prejudice to the obligations of each of the Disputing Parties pursuant to the Code and in particular 2.304 thereof, preserve and allow for the continuing and proper operation of the Code and Single Electricity Market;
4. resolve disputes on an equitable basis in accordance with the provisions of the Code; and
5. encourage resolution of disputes without formal legal representation or reliance on legal procedures.

5. General Obligations of the Members

5.1 Each Member shall:

1. have no interest financial or otherwise in the Disputing Parties, nor any financial interest in the Code except for payment under the Dispute Resolution Agreement;
2. not previously have been employed as a consultant or otherwise by any of the Disputing Parties, except in such circumstances as were disclosed in writing to all of the Disputing Parties before they signed the Dispute Resolution Agreement;
3. have disclosed in writing to the Disputing Parties and the other Members, before entering into the Dispute Resolution Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Disputing Parties, and any previous involvement in the SEM;
4. not, for the duration of the Dispute Resolution Agreement, be employed as a consultant or otherwise by any of the Disputing Parties, except as may be agreed in advance in writing by the Disputing Parties and the other Members;
5. comply with the paragraphs 2.291 to 2.311 inclusive of the Code;
6. not, while a Member, enter into discussions or make any agreement with any of the Disputing Parties regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Resolution Agreement;
7. ensure his/her availability for all site visits and hearings as are necessary;
8. be knowledgeable of the Code and all elements of the Dispute by studying all documents received prior to commencement of the hearing of the Dispute; and
9. treat the details of the DRB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Disputing Parties and the Other Members.

6. General Obligations of the Disputing Parties

6.1 The Disputing Parties and the Disputing Parties' employees, officers, servants or agents shall not request advice from or consult with the Members regarding the Code, otherwise than in accordance with the procedures determined by the DRB under the Code and the Dispute Resolution Agreement, and except to the extent that prior agreement is given by all other Disputing Parties and the other Members. The Disputing Parties shall be responsible for compliance with this provision by the Disputing Parties' employees, officers, servants or agents.

6.2 The Disputing Parties undertake to each other and to the Members that the Members shall not, except as otherwise agreed in writing by the Disputing Parties and the Members, be liable for any claims for anything done or omitted in the discharge or purported discharge of the Members' functions, unless the act or omission is shown to be in bad faith.

6.3 The Disputing Parties hereby jointly and severally indemnify and hold each Member harmless from and against claims from which he/she is relieved from liability under the preceding paragraph 6.2.

7. Breach of this Agreement

7.1 The parties acknowledge that the failure by a Disputing Party to comply with a requirement or determination of the Dispute Resolution Board:

1. does not constitute a breach of this Agreement; but
2. is a breach of the Code that may be referred to the Market Operator as an alleged breach of the Code, to be dealt with in accordance with the terms of the Code.

8. Payment

8.1 The Members' basis for charging shall be [insert basis for charging].

8.2 The Disputing Parties hereby agree to share equally the costs of the Members amongst them, subject to the terms of the Code and, in particular, any decision of the Dispute Resolution Board including as to costs.

9. Termination

9.1 At any time: (i) the Disputing Parties may jointly terminate the Dispute Resolution Agreement by giving 21 days' notice to the Members; or (ii) the Members may resign as provided for in Clause 2.

9.2 If any of the Members fails to comply with the Dispute Resolution Agreement, the Disputing Parties may, without prejudice to their other rights, jointly terminate it by notice to the Members. The notice shall take effect when received by the Members.

9.3 Any such notice, resignation and termination shall be final and binding on the Disputing Parties and the Members. However, a notice for the purposes of paragraph 9.1(i) or 9.2 by a Disputing Party, but not by all, shall be of no effect.

9.4 Termination of this Agreement shall be without prejudice to the rights and obligations of the parties having accrued prior to the date of termination.

10. Default of the Members

10.1 If a Member fails to comply with any obligation under Clause 5, he/she shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Disputing Parties for

any fees and expenses received by the Member and the Other Members, for proceedings or decisions (if any) of the DRB which are rendered void or ineffective.

11. Severability

11.1 If any part of this Agreement becomes invalid, illegal or unenforceable the parties shall in such an event negotiate in good faith in order to agree the terms of a mutually satisfactory provision to be substituted for the invalid, illegal or unenforceable provision which as nearly as possible gives effect to their intentions as expressed in this Agreement. Failure to agree on such a provision within one month of commencement of those negotiations shall result in automatic termination of this Agreement. The obligations of the parties under any invalid, illegal or unenforceable provision of the Agreement shall be suspended during such a negotiation.

12. Waiver

12.1 The failure of a party to exercise or enforce any right under this Agreement shall not be deemed to be a waiver of that right nor operate to bar the exercise or enforcement of it at any time or times thereafter.

13. Entire Agreement

13.1 This Agreement and the Code, constitute the entire, complete and exclusive agreement between the parties in relation to the subject matter hereof, being the terms of engagement of the Members by the Disputing Parties.

14. Governing Law and Jurisdiction

14.1 Any dispute or claim arising out of or in connection with this Dispute Resolution Agreement shall be governed by the laws of Northern Ireland and the parties hereby submit to the exclusive jurisdiction of any of the Courts of Ireland and the Courts of Northern Ireland for all disputes arising out of, under or in relation to this Dispute Resolution Agreement, in accordance with the terms of the Code.

EXECUTED THIS DAY OF

BY

.....

DISPUTING PARTY

.....

DISPUTING PARTY

…

……

DRB MEMBER

……

DRB MEMBER

……

DRB MEMBER

APPENDIX C: FORM OF AUTHORITY

FORM OF AUTHORITY FOR APPOINTMENT OF AN INTERMEDIARY

THIS FORM OF AUTHORITY dated the [] day of [] [20__] is made between:

(I) [Insert name of generator (if a company, please give full corporate name)]:

("Licensed Generator")

having its place of business at [Insert address of Licensed Generator]

being a [registered company/partnership/sole trader etc] registered under the laws of [insert country of registration if a company] and whose company registration number is [insert if a company];

and

(II) [Insert name of proposed intermediary (if a company, please give full corporate name)]

("Intermediary")

having its place of business at [Insert address of Licensed Generator]

being a [registered company/partnership/sole trader etc] registered under the laws of [insert country of registration if a company] and whose company registration number is [insert if a company].

In respect of

[Insert description of generator unit or units to which this Form of Authority applies]

("Units")

Whereas

1. The Licensed Generator legally controls the Units and is the subject of a [licence/authorisation/exemption] issued by the CER to use the Units for the purpose of generation of electricity in Ireland and/or a [licence/authorisation/exemption] issued by the NIAUR to use the Units for the purpose of generation of electricity in Northern Ireland];
2. The Licensed Generator and the Intermediary are parties to a contract ("the Contract") which satisfies all of the criteria for appointment of an Intermediary pursuant to Regulatory Authorities' Decision Paper AIP/SEM/07/029;
3. The Licensed Generator wishes to appoint the Intermediary to act as the Participant in respect of the Units under the Code for the purposes of their participation in the gross mandatory pool ("Pool") for the trade in electricity in the all-island wholesale single electricity market ("SEM") and the Intermediary wishes to accept such appointment, in accordance with the following terms.

1. Interpretation

1.1 In this Form of Authority, "Trading and Settlement Code" or "Code" means the trading arrangements for the SEM established in Northern Ireland pursuant to section 23 of the Northern Ireland (Miscellaneous Provisions) Act 2006 and the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 and in Ireland pursuant to section 9BA(1) of the Electricity Regulation Act 1999 and as designated pursuant to regulations made under section 9BA(2)(a) of the Electricity Regulation Act 1999 (Ireland).

1.2 Capitalised terms which are not defined in this Form of Authority shall have the meanings ascribed thereto in the Trading and Settlement Code.

2. Authorisation

2.1 The Licensed Generator hereby appoints and authorises the Intermediary to register the Units as Generator Units for the purposes of participation in the Pool under the Trading and Settlement Code and the Intermediary accepts such appointment.

2.2 The Licensed Generator authorises the Intermediary, subject to the Intermediary becoming a party to the Code and successfully registering the Units under the Code, to undertake all of the obligations, covenants, undertakings, duties and liabilities of a Participant in respect of the Units under the Code [during the first 12 months from the Market Start Date]/[for the duration of the Contract] and the Intermediary agrees to such.

2.3 The Licensed Generator authorises the Intermediary, subject to the Intermediary becoming a Party to the Code and successfully registering the Units under the Code, to benefit from all of the rights of a Participant under the Code, including the right to receive payments under the Code, in respect of the Units [during the first 12 months from the Market Start Date]/[for the duration of the Contract] and the intermediary agrees to such.

3. Governing Law and Jurisdiction

3.1 The governing law of this Form of Authority shall be the law of Northern Ireland.

3.2 The parties hereby submit to the exclusive jurisdiction of the Courts of Ireland and the Courts of Northern Ireland for all disputes arising out of, under or in relation to this Form of Authority.

[To be executed as a Deed and (where appropriate to the legal form of the Licensed Generator) under seal]

[To be executed as a Deed and (where appropriate to the legal form of the Intermediary) under seal]

APPENDIX D: LIST OF AGREED PROCEDURES

D.1 This Appendix D describes, and sets out the scope of, each Agreed Procedure.

D.2 Agreed Procedure 1 "Participant and Unit Registration and Deregistration" sets out the detailed obligations of the Market Operator, Parties and (where applicable) Applicants in relation to:

1. the operation of the process set out in Appendix H;
2. the operation of the registration process set out in paragraphs 2.13 - 2.19, 2.28, 2.30, 2.33, 2.35, 2.36, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.47, 2.48, 2.58, 2.59, 2.60, 2.61, 2.71, 2.74, 2.76, 2.85, 2.86, 2.89, 2.97, 2.102, 2.103, 2.104, 2.109, 2.110, 2.111, 2.112, 2.113, 2.114, 2.115, 2.116, 3.2, 3.13, 3.77 and 3.82.;
3. the operation of the data validation process set out in paragraphs 2.33, 2.40, 2.43, 2.46, 2.53, 2.54, 2.55, 2.60, 2.61, 2.62, 2.63, 2.64, 2.65, 2.66, 2.67, 2.68, 2.69, 2.70, 2.72, 2.75, 2.88, 2.94, 2.99, 2.104, 2.108, 2.110, 2.115.1 and 2.115.2, and
4. the Data Transaction (timelines and format) under which the Market Operator shall inform a Participant of the Required Credit Cover for a Unit prior to the registration of that Unit.

D.3 Agreed Procedure 2 “Interconnector Unit Capacity Right Calculation and Dispatch Notification” sets out the detailed obligations of the Market Operator and the relevant Parties in relation to those of the Data Transactions listed in Appendix K that relate to the operation of the Interconnector, in order that the procedures for the treatment of Interconnector Units as set out in general terms in Section 5 can be carried out.

D.4 Agreed Procedure 3 "Communication Channel Qualification" sets out the detailed obligations of the Participants in relation to the obtaining and maintenance of a functioning Type 2 Channel or Type 3 Channel, and the security required for these Communication Channels, and also sets out the manner in which Participants and (in the case of suspension of Communication Channel Qualification) the Market Operator shall perform the following functions in order that Participants may "issue", "submit", "send" or "receive" Data Transactions and to maintain a secure IT system:

1. Registering Type 2 Channel and Type 3 Channel communications;
2. Testing Participant qualification in respect of Type 2 Channel and Type 3 Channel communications;
3. Accessing the Market Operator's Isolated Market System;
4. Maintaining Communication Channel Qualification status in respect of both Type 2 Channel and Type 3 Channel; and
5. Suspension of Communication Channel Qualification status in respect of Type 2 Channel and Type 3 Channel.

D.5 Agreed Procedure 4 “Transaction Submission and Validation” sets out the detailed obligations of the Parties in relation to the submission of:

1. Offer Data (other than the elements listed in paragraphs I.23 and I.24 of Appendix I);

2. Settlement Reallocation Requests; and

3. Generator Unit Under Test Notices,

including the data groupings and technical IT interface requirements with which each such Data Transaction must comply in order that the Market Operator is obliged to accept it, and shall be subject to the requirements set out in paragraph I.22 of Appendix I and paragraph F.7 of Appendix F.

D.6 Agreed Procedure 5 "Data Storage and IT Security" sets out the detailed obligations of the Market Operator and Parties in relation to:

1. the technical security, data storage and data access specifications and standards with which the Isolated Market System of the Market Operator and of each Participant must comply;

2. the technical security specifications and standards that must be maintained in order to gain access to the Market Operator's Isolated Market System;

3. the security standards for data communications that must be complied with in respect of Type 2 Channel and Type 3 Channel communications;

4. computational machine precision and methods of rounding; and

5. the matters set out in paragraphs 3.15, 3.16, 3.17, 3.90 and 3.91.

D.7 Agreed Procedure 6 "Data Publication and Data Reporting" sets out the detailed obligations of the Market Operator and Parties in relation to:

1. the method of publication of data, and the updating of published data;

2. the data listed in Appendix E that must be provided by the Market Operator in response to a request made by a Participant, and the method of such response;

3. the data that must be provided by the Market Operator to certain Participants only (or all of them), and the method by which the Market Operator must make such data available

4. the matters set out in paragraphs 1.7.15, 1.7.17, 2.229, 2.343, 2.344, 2.364, 3.17, 3.48, 3.83, 3.84, 3.85, 3.88, 3.89.

D.8 Agreed Procedure 7 "Emergency Communications" sets out the detailed obligations of the Market Operator and Parties that arise in the event of and for the duration of a General Communication Failure, a General System Failure or a Limited Communication Failure in relation to:

1. the processes for communication of data required for market settlement;

2. the process to be followed by the Market Operator in notifying the market that a General Communication Failure or a General System Failure is in effect;

3. general responsibilities of Parties;

4. updates to be issued by the Market Operator;

5. estimation to be carried out by the Market Operator as to how long the emergency situation will remain in effect; and

6. the matters set out in paragraphs 3.33, 3.38, 3.44, 3.50, 3.52, 3.53, 3.54, 3.55, 3.58, 3.59, 3.62, 3.69, 3.70.

D.9 Agreed Procedure 9 “Management of Credit Cover and Credit Default” sets out the detailed obligations of the Market Operator and Participants in relation to:

1. the processes for managing the Credit Cover that is required to be maintained by Participants;
2. the process that is to be invoked in the event of a Default by a Participant in relation to Credit Cover; and
3. the matters set out in paragraphs 6.183, 6.200, 6.212, 6.216, 6.223, 6.227.

D.10 Agreed Procedure 10 “Settlement Reallocation” sets out the detailed obligations of the Market Operator and Participants in relation to the submission, content, Currency and treatment of Settlement Reallocation Requests, the status and cancellation of any resulting Settlement Reallocation Agreement, and the matters set out in paragraphs 6.235, 6.236, 6.237, 6.238, 6.239, 6.240, 6.243, 6.244, 6.245, 6.246.

D.11 Agreed Procedure 11 “Market System Operation, Testing, Upgrading and Support” sets out the detailed obligations of the Market Operator in relation to the:

1. provision of advice to Parties in relation to the operation of the Market Operator’s Isolated Market System and Communication Channels;
2. provision to Parties of a facility for the reporting of incidents;
3. implementation and coordination of the Market Operator’s Isolated Market System and its interfaces to Communication Channels;
4. scheduled testing and down-time of the Market Operator’s Isolated Market System or its interfaces to Communication Channels;
5. commissioning of an externally-audited report in the event of a General Communication Failure, General System Failure or MSP Failure;
6. restoration of the Market Operator’s Isolated Market System in the event of a General System Failure; and
7. the matters set out in paragraphs 3.14, 3.18, 3.20, 3.65 and 3.68.

D.12 Agreed Procedure 12 "Modifications Committee Operation" sets out the detailed obligations of the Market Operator and Parties in relation to the rules and proceedings of the Modifications Committee, and the matters set out in paragraphs 2.147 to 2.149 inclusive, paragraph 2.159 and paragraphs 2.183 to 2.236 inclusive.

D.13 Agreed Procedure 13 "Query Generation" sets out the detailed obligations of the Market Operator and Parties in relation to the raising, consideration and resolution of, and response to, Data Queries and Settlement Queries, and the matters set out in paragraphs 6.76, 6.78, 6.81, 6.82, 6.84, 6.92, 6.94, 6.96, 6.102, 6.115, 6.116.

D.14 Agreed Procedure 14 "Disputes" sets out the detailed obligations of the Market Operator and Parties in relation to the procedures governing Disputes, and the matters set out in paragraphs 2.276 to 2.315 inclusive.

D.15 Agreed Procedure 15 “Invoicing” sets out the detailed obligations of the Market Operator in relation to the issuing of Settlement Statements, Invoices, Self-Billing Invoices and Debit Notes in accordance with Appendix

G, and the matters set out in paragraphs 2.281, 3.2, 6.1, 6.4, 6.6, 6.11, 6.47, 6.48, 6.49, 6.50, 6.52, 6.53, 6.54, 6.55 6.57, 6.61, 6.63, 6.64, 6.65, 6.69, 6.70, 6.71, 6.73, 6.75, 6.135, 6.138, 6.144, 6.147, 6.159.

D.16 Agreed Procedure 16 "Provision of Metered Data" sets out the detailed obligations of the Meter Data Providers in relation to the grouping of Meter Data for provision to the Market Operator, and the timing of such provision.

D.17 Agreed Procedure 17 "Banking and Participant Payments" sets out the detailed obligations of the Participants and the Market Operator in relation to the banking arrangements required under the Code for the financial settlement of the Pool, including the manner in which Participants are required to make payments to the Market Operator, and the manner in which the Market Operator is required to make payments to Participants. Agreed Procedure 17 "Banking and Participant Payments" also sets out the detailed obligations of the Parties in relation to the management of Collateral Reserve Accounts.

APPENDIX E: DATA PUBLICATION

E.1 A list of data items that the Market Operator shall be required to publish, and the timing with which the Market Operator shall be required to publish them, is contained in the tables in this Appendix E. Procedures for the updating of publications and the method of publication are contained in Agreed Procedure 6 "Data Publication".

E.2 All data received by the Market Operator over a Type 2 or Type 3 Communication Channel, or calculated by the Market Operator, shall be published by 17:00 on the first Working Day following their receipt or calculation.

E.3 Agreed Procedure 6 sets out the manner in which the Market Operator shall be required to comply with requests by Participant for reports with any data detailed in paragraph E.2 above to be made available for communication over Type 2 or Type 3 Communication Channels. Subject to data confidentiality, and the timelines set out in this Appendix, all such reports will be published on the Market Operator's website.

E.4 Agreed Procedure 6 will follow the following principles set out in the following paragraphs of the Code: 1.7.15, 1.7.16, 2.229, 2.343, 2.344, 2.364, 3.17, 3.48, 3.83, 3.84, 3.85, 3.88, 3.89.

Table E.1 – Data publication list part 1: updated periodically as required

Time	Item / Data Record	Term	Subscript
Periodically as required			
Within two Working Days of Modification	The Code		
As soon as practical but no later than two Working Days after receipt of Modification Proposal	Proposal Notice		
As soon as practical but no later than two Working Days after publication of the Proposal Notice	Consultation on Proposal Notice		
As soon as practical but no later than two Working Days after receipt of responses to consultation	Responses to consultation on Proposal Notice		
As soon as practical but no later than two Working Days after receipt of further information	Further information on Proposal Notice		
As soon as practical but no later than two Working Days after receipt of Final Recommendation Report	Final Recommendation Report		
As soon as practical but no later than two Working Days after receipt of Regulatory Authority decision on Final Modification Recommendation	Regulatory Authority decision on Final Modification Recommendation		
As updated and at least within two Working Days of a successful application or unsuccessful application	List of Parties, Participants and each of their Generator Units and Supplier Units		
As issued and at least within two Working Days of issue	Making or lifting of a Suspension Order		
As issued and at least within two Working Days of issue	Termination Order		
As received and at least within two Working Days of issue	Generator Unit Under Test Notice		
As updated	Proposed Market Operator Isolated Market		

Time	Item / Data Record	Term	Subscript
	System Testing Schedule		
As updated and at least within two Working Days of update	Details of the Accession Fees and Participation Fees		
As updated and at least two Weeks in advance of the Meeting	Date of the next meeting of the Modifications Committee		
Within one Working Day of receipt from the Regulatory Authorities	Supplier Suspension Delay Period		
As updated and at least within two Working Days of update	Members and chairperson of the Modification Committee		
As soon a possible after calculation	Calculations and methodology used by the Market Operator during Administered Settlement		
Annually	Variable Market Operator Price	VMOP	y
Annually	System per Unit Regulation	UREG	None
Updated as required	Registered Capacity	RC	u
Updated as required	Forecast Demand	FD	h

Table E.2 – Data publication list part 2: updated annually and as required

Time	Item / Data Record	Term	Subscript
Annual			
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Annual Capacity Exchange Rate	ACER	y
At least four Months before start of Year	Annual Load Forecast		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Annual Capacity Payment Sum	ACPS	y
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Market Price Cap	PCAP	y
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Market Price Floor	PFLOOR	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Value of Lost Load	VOLL	Y
At least one Month before start of Year	Fixed Market Operator Charge (Supplier Unit)	MOAVC	vy
At least one Month before start of Year	Fixed Market Operator Charge (Generator Unit)	MOAUC	uy
At least one Month before start of Year	Variable Market Operator Charge	VMOC	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Capacity Period Payment Sum	CPPS	c
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Fixed Capacity Payment Proportion	FCPP	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Ex-Post Capacity Payment Proportion	ECPP	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Engineering Tolerance	ENGTOL	
At least two Months before start of Year, or within five Working Days of its receipt from	MW Tolerance	MWTOL	t

Time	Item / Data Record	Term	Subscript
the Regulatory Authorities, whichever later			
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	System per Unit Regulation parameter	UREG	
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Discount for Over Generation	DOG	uh
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Premium for Under Generation	PUG	uh
At least one Week before start of Year	Fixed Capacity Payments Weighting Factor for each Trading Period in the relevant Year	FCPWF	h
Four Weeks before start of Audit, or within one Working Day of its receipt from the Regulatory Authorities, whichever later	Terms of Reference for Market Operator Audit		
Within five Working Days after delivery of Audit Report in its final form to the Regulatory Authorities, or within one Working Day of its receipt from the Regulatory Authorities, whichever later	Audit Report		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Transmission Loss Adjustment Factors	TLAF	uh
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Imperfections Price	IMP	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Imperfections Charge Factor	IMPF	h
Four Months before start of Year	Testing Tariff		uh
Four Months before start of Year	Settlement Calendar		
Four Months before start of Year, and as updated	Schedule of Testing Tariffs	TTARIFF	uh
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Fixed Credit Requirement	FCRS FCRG	y y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Historical Assessment Period for the Billing Period		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Historical Assessment Period for the Capacity Period		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Analysis Percentile Parameter	AnPP	
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Credit Cover Adjustment Trigger		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Maximum level of the Warning Limit		
In April of each Year	Annual Maintenance Schedule - Transmission Line Outages (Appendix F)		
At least two Months before start of Year	Annual Maintenance Schedule - Generator Outages Schedule (Appendix F)		
At least two Months before start of Year	Flattening Power Factor	FPF	y

Table E.3 – Data publication list part 3: updated Monthly

Time	Item / Data Record	Term	Subscript
Monthly			
Within five Working Days of its creation	Market Operator report (paragraph 2.144)		
By 10:00, at least one Working Day before start of Month	Monthly Maintenance Schedule – Generator Unit outages (Appendix F)	--	--
By 10:00, at least one Working Day before start of Month	Monthly Maintenance Schedule – Transmission System line outages (Appendix F)		
By 10:00, at least one Working Day before start of Month	Monthly Load Forecast (Appendix K)	--	--
By 10:00, at least five Working Days before start of Month	Margin	M	h
By 10:00, at least five Working Days before start of Month	Loss of Load Probability for each Trading Period in the relevant Month	λ	h
By 10:00, at least five Working Days before start of Month	Variable Capacity Payments Weighting Factor for each Trading Period in the relevant Month (paragraph 4.106)	VCPWF	h
At least once every four Months	Reports on progress and status of Modification Proposals (paragraph 2.231)		

Table E.4 – Data publication list part 4: updated daily in advance of Gate Closure

Time	Item / Data Record	Term	Subscript
Daily, in advance of Gate Closure			
By 10:00 on the day prior to Gate Closure	Available Transfer Capacity (paragraph 5.40)		
Before 09:30	Four Day Load Forecast (Appendix K)	--	--
Before 09:30	Any important updates to Maintenance Schedule Data Transaction (Appendix F)	--	--
As Available, every six hours	Two Day Rolling Wind Power Unit Forecast aggregated by Jurisdiction	--	--
Before 09:30	Forecast of Ex-Post Loss of Load Probability for each Trading Period in the forthcoming 31 Trading Days	Φ	h

Table E 5 – Data publication list part 5: updated daily post Gate Closure

Time	Item / Data Record	Term	Subscript
Daily, post gate closure and before Trading Day			
13:00	Ex-Ante Indicative System Marginal Prices	--	

Table E.6 – Data publication list part 6: updated daily post Trading Day

Time	Item	Term	Subscript
Daily, post Trading Day			
Day after Trading Day, by 14:00	Technical Offer Data (Appendix I)		
Day after Trading Day, by 14:00	Commercial Offer Data (Appendix I)		
Day after Trading Day, by 14:00	Demand Control Data Transaction (Appendix K)		
Day after Trading Day, by 14:00	System Characteristics Data Transaction (Appendix K)		
Day after Trading Day, by 15:00	Interconnector Available Transfer Capacities	ATC	lh
Day after Trading Day, by 15:00	Active Interconnector Unit Export Capacity Holding	CHEA	uh
Day after Trading Day, by 15:00	Active Interconnector Unit Import Capacity Holding	CHIA	uh
Day after Trading Day, by 15:00	Modified Interconnector Unit Nominations		
Day after Trading Day, by 15:00	Ex-Ante Indicative Market Schedule		
Day after Trading Day, by 16:00	Ex-Ante Indicative Operations Schedule		
Day after Trading Day, by 16:00	Generator Unit Technical Characteristics Data Transaction (See Appendix K)		
Day after Trading Day, by 16:00	Energy Limited Generator Unit Technical Characteristics Data Transaction (See Appendix K)		
Day after Trading Day, by 16:00	Dispatch Instruction and SO Interconnector Trades Data Transaction (See Appendix K)		
Day after Trading Day, by 15:00, and as updated	All Price-affecting Metered Data, excluding Trading Site Supplier Units for Trading Sites with non-firm access for all available Trading Periods		
One Working Day after Trading Day, by 15:00, and as updated	Net Inter Jurisdictional Import for all available Trading Periods	NIJI	eh
Two Working Days after Trading Day, by 17:00, and as updated	Tolerance for Over Generation	TOLOGLF	uh
Two Working Days after Trading Day, by 17:00, and as updated	Tolerance for Under Generation	TOLUGLF	uh
Two Working Days after Trading Day, by 17:00, and as updated	Dispatch Offer Price	DOP	uh
Day after Trading Day, by 17:00	Ex-Post Indicative Market Schedule Quantity	MSQ	uh
Four Days after Trading Day, by 17:00	Ex-Post Initial Market Schedule Quantity	MSQ	uh
Two Working Days after Capacity Period, by 16:00	Ex-Post Indicative values of Eligible	EA	uh

Time	Item	Term	Subscript
	Availability		
Five Working Days after Capacity Period, by 16:00	Ex-Post Initial values of Eligible Availability	EA	uh
Day after Trading Day, by 16:00	Ex-Post Indicative SMPs	SMP	h
Four Days after Trading Day, by 17:00	Initial SMPs	SMP	h
One Working Day after Trading Day, by 17:00	Nominal System Frequency	NORFRQ	h
One Working Day after Trading Day, by 17:00	Average System Frequency	AVGFRQ	h
Two Working Days after Trading Day, by 09:00	Indicative Energy Payments to Generator Units	CONP ENP	uh
Five Working Days after end of Billing Period, by 14:00, and as updated at 17:00 the day of recalculation	Ex-Post Initial Energy Payments to Generator Units	CONP ENP	uh
Day after Trading Day, by 17:00	Credit Assessment Price for the Undefined Exposure Period for Billing Periods	CAPB	g
Day after Trading Day, by 17:00	Estimated Capacity Price for the Undefined Exposure Period for Capacity Periods	ECP	θ
One Working Day after Trading Day, by 17:00	Metered Generation	MG	uh

Table E.7– Data publication list part 7: updated on a Capacity Period basis, post end of Capacity Period

Time	Item	Term	Subscript
Each Capacity Period, post end of Capacity Period			
Three Working Days after end of Capacity Period, by 17:00	Ex-Post Indicative Capacity Payments to each Generator Unit	CP	uh
Five Working Days after end of Capacity Period, by 12:00	Initial Capacity Payments to each Generator Unit	CP	uh
Two Working Days after end of Capacity Period, by 16:00	Indicative Ex-Post Capacity Payments Weighting Factor	ECPWF	h
Five Working Days after end of Capacity Period, by 16:00	Initial Ex-Post Capacity Payments Weighting Factor	ECPWF	h
Five Working Days after end of Capacity Period, by 16:00	Initial Variable Capacity Payments Weighting Factor	VCPWF	h
Five Working Days after end of Capacity Period, by 16:00	Initial Ex-Post Margin	EM	h
Five Working Days after end of Capacity Period, by 16:00	Initial Ex-Post Loss of Load Probability	Φ	h

APPENDIX F: OTHER COMMUNICATIONS

Introduction

F.1 This Appendix F outlines the detailed Data Record requirements for miscellaneous Data Transactions under the Code not related to Notices of Dispute, Suspension or Termination, or operation of the Modifications Committee.

F.2 Agreed Procedure 13 "Query Generation" sets out the detail of Notices related to the Dispute process.

F.3 Agreed Procedure 7 "Emergency Communications" and Agreed Procedure 11 "Market System Operation, Testing, Upgrading, and Support" set out the detail of Notices related to Limited Communication Failures, General Communication Failures, General System Failures, and MSP Failures.

F.4 Agreed Procedure 12 "Modifications Committee Operation" sets out the detail of all Notices related to the process of raising Modification Proposals, impact assessing Modification Proposals, seeking consultation on Modification Proposals, publishing the Modifications Committee's Final Modification Recommendation and the decision of the Regulatory Authorities.

F.5 Section 2 of the Code sets out the treatment of Suspension Orders and Termination Orders.

Generator Unit Under Test Notice

F.6 Agreed Procedure 4 "Transaction Submission and Validation" sets out the detail of all Generator Unit Under Test Notices, following the principles in paragraph F.7 below.

F.7 Participants shall submit a Generator Unit Under Test Notice to the Market Operator at least five Working Days in advance of the Unit Under Test Start Date and, when submitting a notice to terminate a test period at least two Working Days in advance of the Unit Under Test End Date. The Generator Unit Under Test Notice will specify in all cases the Test Start Date and the Test End Date, and the Generator Unit Under Test. The following shall also apply:

1. The Market Operator shall verify with the relevant System Operator that the Generator Unit proposed for Under Test status has been granted such a status in accordance with the relevant Grid Code; and
2. The Market Operator will ensure that Generator Unit Under Test Notices can be submitted by Participants through Type 2 or 3 Communications Channels.

Maintenance Schedules Data Transactions

F.8 Each System Operator shall submit an annual Maintenance Schedule Data Transaction to the Market Operator in April each Year, and whenever it is updated. The following shall also apply:

1. The annual Maintenance Schedule Data Transaction shall contain the Outage Schedule for each line in the Transmission System in the relevant Jurisdiction over the year commencing at the submission of the original version of that Data Transaction.

2. The Market Operator shall only provide for Type 1 Communication Channel for the communication of such annual Maintenance Schedule Data Transaction from the System Operator during normal operation of the Market Operator's Isolated Market System and the Type 1 Communication Channel.

F.9 Each System Operator shall submit an annual Maintenance Schedule Data Transaction to the Market Operator at least two months before the start of each Year, and whenever it is updated. The following shall also apply:

1. The annual Maintenance Schedule Data Transaction shall contain the Maintenance Schedule for each Generator connected to the Transmission System in the relevant Jurisdiction over that Year.

2. The Market Operator shall only provide for Type 1 Communication Channel for the communication of such annual Maintenance Schedule Data Transaction from the System Operator during normal operation of the Market Operator's Isolated Market System and the Type 1 Communication Channel.

F.10 Each System Operator shall submit a monthly Maintenance Schedule Data Transaction to the Market Operator at least one Working Day before the start of each Month, and whenever it is updated. The following shall also apply:

1. The monthly Maintenance Schedule Data Transaction shall contain the Maintenance Schedule of each Generator connected to the Transmission System in the relevant Jurisdiction over the next two Months, and the Maintenance Schedule of each line on the Transmission System in the relevant Jurisdiction over the next two Months.

2. The Market Operator shall only provide for Type 1 Communication Channel for the communication of monthly Maintenance Schedule Data Transactions from the System Operator during normal operation of the Market Operator's Isolated Market System and the Type 1 Communication Channel.

APPENDIX G: INVOICES AND SETTLEMENT STATEMENTS

G.1 This Appendix G sets out the detailed Data Record requirements for the Settlement Data Transactions (as defined in paragraph G.2), and the relevant Submission Protocols for the Market Operator to follow in respect of such Data Transactions.

G.2 The Settlement Data Transactions comprise the Data Records that the Market Operator shall be obliged to include in the following Settlement Statements, Invoices, Self Billing Invoices and Notices:

1. Generator Unit Energy Settlement Statements excluding Interconnector Residual Capacity Units
2. Supplier Unit Energy Settlement Statements
3. Generator Unit Capacity Settlement Statements
4. Supplier Unit Capacity Settlement Statements
5. Market Operator Charge Invoices
6. Participant Invoices, Participant Self Billing Invoices and Debit Notes

G.3 The Fixed Market Operator Charge will be part of the weekly Market Operator Charge Invoice, the amounts of the Fixed Market Operator Charge in relation to the periods of time described under paragraph 6.150.

G.4 The Market Operator shall denominate each Data Record in this Appendix which contains Currency amounts in the designated Currency of the relevant Participant.

G.5 The Market Operator shall include the following identifying Data Records in each Settlement Statement and Invoice, along with sufficient information for a Participant to reasonably determine the market rules under which the Settlement Statement or Invoice was created, and to uniquely identify the Settlement Statement or Invoice during correspondence with the Market Operator:

1. Settlement Day (if applicable)
2. Trading Period (if applicable)
3. Billing Period/Capacity Period
4. Participant ID
5. Unit ID(s) (if applicable)
6. Settlement amount for the given product
7. A flag indicating if Meter Data is considered estimated by the Meter Data Provider that submitted the Meter Data

G.6 The Market Operator shall, in relation to each Billing Period and Capacity Period, issue at least four Settlement Statements to Participants for each of their registered Units excluding Interconnector Residual Capacity Units: one Ex-Post Indicative Settlement Statement, one Initial Settlement Statement, one Settlement Statement arising from the first Timetabled Settlement Rerun and one Settlement Statement arising from the second Timetabled Settlement Rerun.

G.7 The Market Operator shall issue Settlement Rerun Statements to Participants for each of their registered Units excluding Interconnector Residual Capacity Units in the event of any ad hoc Settlement Rerun arising from a Settlement Query, Data Query or Settlement Dispute.

G.8 The Market Operator shall, in relation to each Billing Period and Capacity Period, issue to Participants one Invoice and/or Self Billing Invoice based on the Initial Settlement Statements for that Billing Period or Capacity Period.

G.9 The Market Operator shall issue to a Participant a further Invoice or further Self-Billing Invoice based on the Settlement Statements arising from Settlement Reruns, if there is a change to any amount payable or receivable as compared with the corresponding amount on the previous Invoice or previous Self Billing Invoice for that Billing Period or Capacity Period.

G.10 In relation to Settlement Statements arising from Settlement Reruns, the Market Operator shall issue Invoices containing zero amount payable or zero amount receivable in the event that there is no change to the corresponding amounts payable or amounts receivable on the previous Invoice or previous Self Billing Invoice for that Billing Period or Capacity Period.

G.11 Participants may contest the content of the Settlement Statements through Data Queries, Settlement Queries or Settlement Disputes processes.

G.12 The timings under which the Market Operator shall be obliged to issue all Settlement Statements, Invoices, and Self-Billing Invoices are set out in paragraphs 6.48, 6.49, 6.70, 6.71, 6.144, 6.150 or as appropriate depending on the outcomes of a Data Query, Settlement Query, or Settlement Dispute.

G.13 The Market Operator shall issue Settlement Statements for Energy Payments for Generator Units excluding Interconnector Residual Capacity Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for the relevant Generator Unit u in each Trading Period h for the relevant Settlement Day in Billing Period b, values of:

1. Total Payments for the Participant (Settlement Day value)
2. Energy Payments for the Generator Unit
3. Constraint Payments for the Generator Unit
4. Uninstructed Imbalance Payments for the Generator Unit
5. Metered Generation
6. Actual Availability
7. Market Schedule Quantity
8. Dispatch Quantity
9. System Marginal Price
10. Make Whole Payment (where calculable over the Billing Period and included in the last Settlement Day of the Billing Period)
11. Settlement Statement version will be indicated

G.14 The Market Operator shall issue a Settlement Statement for Energy Payments for each Interconnector Residual Capacity Unit, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for each relevant Interconnector Residual Capacity Unit u in each Trading Period h for the relevant Settlement Day in Billing Period b, values of:

1. Total Payments for the Interconnector Residual Capacity Unit
2. Energy Payments for the Interconnector Residual Capacity Unit
3. Constraint Payments for the Interconnector Residual Capacity Unit
4. Uninstructed Imbalance Payments for the Interconnector Residual Capacity Unit
5. SO Interconnector Export Price
6. SO Interconnector Export Quantity
7. SO Interconnector Import Price
8. SO Interconnector Import Quantity
9. Transmission Loss Adjustment Factor
10. Capacity Payment for Capacity Period

G.15 The Market Operator shall issue Settlement Statements for Energy Charges for Supplier Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for the relevant Supplier Unit v in each Trading Period h for the relevant Settlement Day in Billing Period b, values of

1. Total Charges for the Participant (Settlement Day value)
2. Energy Charges for Supplier Unit
3. Imperfections Charge for Supplier Unit
4. Metered Demand
5. Net Demand
6. System Marginal Price
7. Settlement Statement version will be indicated

G.16 The Market Operator shall issue Settlement Statements for Capacity Payments for Generator Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for the relevant Generator Unit u in each Trading Period h in the Capacity Period c, values of:

1. Total Capacity Payment for the Participant (Settlement Day value)
2. Capacity Payment for the Generator Unit
3. Eligible Availability
4. Settlement Statement version will be indicated

G.17 The Market Operator shall issue Settlement Statements for Capacity Charges for Supplier Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for each Supplier Unit v in each Trading Period h in the Capacity Period c, values of:

1. Capacity Charge for the Supplier Unit;
2. Loss-Adjusted Net Demand (NDLFvh).
3. Settlement Statement version will be indicated

G.18 The Market Operator shall issue Market Operator Charge Invoices over the Billing Period for Participants, and shall ensure that each such Invoice shall contain, inter alia, for each Billing Period b, values of:

1. Variable Market Operator Charge
2. Fixed Market Operator Charge
3. Amount from the previous run where the Invoice is in respect of a Settlement Rerun.
4. Invoice version will be indicated
5. Any applicable interest
6. Applicable VAT applied in the Invoice and applicable VAT owing/owed by/to Revenue Authorities

G.19 The Market Operator shall issue Debit Notes in respect of any Unsecured Bad Energy Debt over the Billing Period for Participants identifying that the Debit Note is in respect of a particular Unsecured Bad Energy Debt event, and shall ensure that each such Debit Note shall contain, inter alia, for each Billing Period b, values of:

1. Unsecured Bad Energy Debt Charge
2. Invoice version will be indicated
3. Any applicable interest
4. Applicable VAT applied in the Invoice and applicable VAT owing/owed by/to Revenue Authorities

G.20 The Market Operator shall issue Debit Notes in respect of any Unsecured Bad Capacity Debt over the Capacity Period for Participants identifying that the Debit Note is in respect of a particular Unsecured Bad Capacity Debt event, and shall ensure that each such Debit Note shall contain, inter alia, for each Capacity Period c, values of:

1. Unsecured Bad Capacity Debt Charge
2. Invoice version will be indicated
3. Any applicable interest
4. Applicable VAT applied in the Invoice and applicable VAT owing/owed by/to Revenue Authorities

G.21 The Market Operator shall ensure that Invoices, Self Billing Invoices or Debit Notes issued by it to Participants in respect of their Units excluding Interconnector Residual Capacity Units shall contain, inter alia:

1. Billing Period or Capacity Period
2. Payment amount for the relevant Generator Units for relevant Billing Period or Capacity Period
3. Invoice amount for the relevant Supplier Units for relevant Billing Period or Capacity Period
4. Billing Period Currency Cost or Capacity Period Currency Cost for the relevant Participant
5. Sum of Settlement Reallocation Amounts in respect of that period
6. Any applicable interest
7. Total payment amount
8. Applicable VAT applied in the Invoice and applicable VAT owing/owed by/to Revenue Authorities

G.22 The Market Operator shall ensure that Invoices, Self Billing Invoices or Debit Notes issued by it to Participants in respect of Interconnector Residual Capacity Units shall contain, inter alia:

1. Capacity Period
2. Payment amount for the relevant Interconnector Residual Capacity Unit for relevant Capacity Period
3. Any applicable interest
4. Total payment amount
5. Applicable VAT applied in the Invoice and applicable VAT owing/owed by/to Revenue Authorities

G.23 Agreed Procedure 15 "Invoicing" sets out more detail as to the obligations of the Market Operator set out in this Appendix G in relation to the process of issuing Settlement Statements, Invoices, Self Billing Invoices and Debit Notes, but nothing in that Agreed Procedure shall preclude the issue of any such item over any particular Communication Channel.

APPENDIX H: ~~APPENDIX B:~~

PARTICIPANT AND UNIT REGISTRATION AND DEREGISTRATION

~~Introduction~~

Introduction

H.1 ~~B.1~~ This Appendix ~~B~~H sets out the data requirements for the registration and deregistration of Participants and of Units. It should be noted that a Party becomes a Participant upon the registration of the first Unit to that Party as set out in paragraph ~~2.21.~~2.32.

Participation Notice

H.2 ~~B.2~~ In completing a Participation Notice as set out in paragraph ~~2.22.~~2.33, a Party (or an Applicant as applicable) shall include the additional Registration Data pursuant to paragraph ~~2.22 18.~~2.33.17 as set out in Table ~~4~~H.1 below.

Table ~~4~~H.1: Data, required from Party registering the Unit

Name	Term	Relevant Units
Firm Access Quantity ~~for the Trading~~ (Site) (MW)	FAQSst	All Generator Units except Interconnector Units, Interconnector Error Units and Interconnector Residual Capacity Units
Fixed Unit Load (MW)	FULu	All Generator Units except Interconnector Units, Interconnector Error Units and Interconnector Residual Capacity Units
Unit Load Scalar	ULSu	All Generator Units except Interconnector Units, Interconnector Error Units and Interconnector Residual Capacity Units
Registered Capacity (MW)	RCu	All Generator Units except Interconnector Units, Interconnector Error Units and Interconnector Residual Capacity Units
Meter Point Registration Number (in respect of the Generator demand)		All Generator Units except Interconnector Units, Interconnector Error Units and Interconnector Residual Capacity Units
Generic Settlement Class		All Generator Units
Priority Dispatch		All Generator Units except Interconnector Units, Interconnector Error Units and Interconnector Residual Capacity Units

	Name	Term	Relevant Units
Associated Interconnector			Only Interconnector Units, Interconnector Error Units and Interconnector Residual Capacity Units
	~~Possible Demand Reduction (nominal)~~Dispatchable Quantity		Demand Side Units only

Agreed Procedure

H.3 ~~**B.3**~~ Agreed Procedure 1 "Participant and Unit Registration and Deregistration" sets out the detail of the registration process and must include all requirements set out in this Appendix ~~B~~H.

H.4 ~~B.4~~ Agreed Procedure 1 "Participant and Unit Registration and Deregistration" shall set out the detail of the process of data flow between the Market Operator and the Party (or Applicant as appropriate) to register new Units as described at a high level under the following paragraphs: ~~2.19, 2.20, 2.22, 2.23, 2.23A, 2.24, 2.25, 2.26, 2.27,~~ 2.28, ~~2.29, 2.30, 2.30A, 2.30B, 2.32, 2.32A, 2.41, 2.42, 2.49, 2.51, 2.52A, 2.53, 2.56, 2.57, 2.59, 2.65, 2.68, 2.69, 2.70, 2.74, 2.75, 2.75A, 2.76, 2.77, 2.77A, 2.77B, 2.77C, 3.2, 3.11, 3.77E~~2.30, 2.33, 2.35, 2.36, 2.38, 2.39, 2.40, 2.41, 2.42, 2.43, 2.44, 2.45, 2.47, 2.48, 2.58, 2.59, 2.60, 2.61, 2.71, 2.74, 2.76, 2.85, 2.86, 2.89, 2.97, 2.102, 2.103, 2.104, 2.109, 2.110, 2.111,2.112, 2.113, 2.114, 2.115,2.116, 3.2, 3.13, 3.77 and ~~3.81A.~~3.82.

H.5 ~~B.5~~ Agreed Procedure 1 "Participant and Unit Registration and Deregistration" shall provide for the validation of the data flows set out in paragraph ~~B~~H.4, as described under the following paragraphs: ~~2.22.1, 2.22.2, 2.22.3, 2.22.4, 2.22.5, 2.22.6, 2.22.7, 2.22.8, 2.22.9, 2.22.10, 2.22.11, 2.22.12, 2.22.13, 2.22.14, 2.22.15, 2.22.16, 2.22.17, 2.22.18, 2.27, 2.30.1, 2.30.2, 2.30.3, 2.30.4, 2.31, 2.31.1, 2.31.2, 2.31.3, 2.37, 2.38, 2.38.1, 2.38.2, 2.39, 2.40A, 2.40A.1, 2.40A.2, 2.40A.3, 2.40A.4, 2.40A.5, 2.40A.6, 2.44, 2.45, 2.45A, 2.46, 2.47, 2.48A, 2.48A1, 2.48B, 2.48C, 2.48D, 2.48F, 2.50, 2.52, 2.52.1, 2.52.2, 2.52.3, 2.52.4, 2.52.5, 2.52.6, 2.58, 2.61, 2.66, 2.70.1, 2.70.2, 2.72, 2.75, 2.77B.1 and 2.77B.2.~~ 2.33.1, 2.33.2, 2.33.3, 2.33.4, 2.33.5, 2.33.6, 2.33.7, 2.33.8, 2.33.9, 2.33.10, 2.33.11, 2.33.12, 2.33.13, 2.33.14, 2.33.15, 2.33.16, 2.33.17, 2.40, 2.43.1, 2.43.2, 2.43.3, 2.43.4, 2.46, 2.47.1, 2.47.2, 2.47.3, 2.53, 2.54, 2.54.1, 2.54.2, 2.55, 2.60, 2.61, 2.62, 2.63, 2.64, 2.65, 2.66, 2.67, 2.68, 2.69, 2.70, 2.72, 2.75, 2.75.1, 2.75.2, 2.75.3, 2.75.4, 2.75.5, 2.75.6, 2.88, 2.94, 2.99, 2.104, 2.108, 2.110, 2.115.1 and 2.115.2.

Currency

H.6 ~~**B.6**~~ All data comprising currency amounts submitted as part of registration ~~will~~shall be submitted by the relevant Party to the Market Operator in the ~~currency~~Currency of the designated Currency Zone of the Unit.

Missing Data

H.7 ~~**B.7**~~ The Market Operator ~~will~~shall not apply any default rules in the event that any ~~registration data~~Registration Data is missing or incomplete. ~~Such data will have to be provided by the~~The Party (or Applicant as applicable) shall be obliged to provide such data before the registration of the Unit can become effective.

Communications Channels

H.8 ~~**B.8**~~ For Parties that have completed Communication Channel Qualification, the Market Operator will facilitate receipt of data for the purposes of registration of new Units over Type 2 and Type 3 Communication Channels. The Market Operator will facilitate a Type 1 Communication Channel for other Parties. The Market Operator will similarly facilitate receipt any clarification or additional information required pursuant to paragraph ~~2.28.~~2.41.

Registration Withdrawal

H.9 ~~**B.9**~~ Where a Unit ~~registration~~Registration is deemed withdrawn under paragraphs ~~2.29, 2.30A,~~2.42, 2.44, or ~~2.32A,~~2.48, the Market Operator shall send a Notice to the relevant Party or Applicant as appropriate. The Notice shall include sufficient information to identify the Unit concerned, and shall provide a reason for the Unit ~~registration~~Registration withdrawal.

APPENDIX I: ~~APPENDIX C:~~

~~Introduction~~

INTRODUCTION

I.1 ~~C.1~~ This Appendix ~~C~~I sets out the components of Commercial Offer Data and Technical Offer Data in respect of each relevant category of Generator Unit and refers to the Code obligations relating to such data. In addition, this Appendix ~~C~~I sets out the requirements to be met by Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation".

~~Commercial Offer Data~~

COMMERCIAL OFFER DATA

I.2 ~~C.2~~ Each Participant shall submit Commercial Offer Data to the Market Operator in respect of each of its Generator Units in accordance with the following provisions, subject to paragraphs ~~C~~I.3 to ~~C~~I.~~10~~11 inclusive:

1. Commercial Offer Data shall be submitted before Gate Closure for the Trading Day to which the data relates, as set out in paragraph 4.4, and no more that 28 days before Gate Closure ~~as set out in paragraph 4.3~~;
2. Price Quantity Pairs shall be submitted as set out in paragraph ~~4.7, 4.8~~4.10, 4.11 and ~~4.10~~4.13;
3. No Load Costs shall be submitted as set out in paragraph ~~4.15~~4.17;
4. Start Up Costs shall be submitted as set out in paragraphs ~~4.15A, 4.15B~~4.18, 4.19 and ~~4.15D~~4.21 to ~~4.15G~~4.24;
5. Where more than one value of Start Up Costs is submitted, the Participant concerned must specify to which type of start (Cold Start, Warm Start or Hot Start) it applies;
6. Data shall be submitted net of Unit Load as set out in paragraph ~~4.6~~4.9; and
7. Values of Currency shall be submitted as set out in paragraph ~~4.5A.~~4.8.

Predictable Price Taker Generator Unit Rules

I.3 ~~C.3~~ In respect of each Predictable Price Taker Generator Unit which is not Under Test, the relevant Participant shall submit Commercial Offer Data as set out in paragraph ~~C~~I.2 with the following exceptions:

1. A Nomination Profile shall be submitted in accordance with paragraphs 5.10 and 5.12 to ~~5.13~~5.14; and
2. A Decremental Price shall be submitted in accordance with paragraph ~~5.13A.~~5.11.

Variable Price Taker Generator Unit Rules

I.4 ~~C.4~~ In respect of each Variable Price Taker Generator Unit which is not Under Test, the relevant Participant shall submit Commercial Offer Data as set out in paragraph ~~C~~I.2 with the following exceptions:

1. Only a Nomination Profile in accordance with ~~paragraphs 5.14 and~~paragraph 5.15 and a Decremental Price in accordance with paragraph ~~5.15A~~5.16 shall be submitted.

Autonomous Generator Unit Rules

I.5 ~~C.5~~ In respect of each Autonomous Generator Unit, the relevant Participant shall not submit Commercial Offer Data as set out in paragraph ~~5.16~~5.17.

Interconnector Unit Rules

I.6 ~~C.6~~ In respect of each Interconnector Unit, the relevant Participant shall submit Commercial Offer Data as set out below:

1. ~~Commercial Offer Data shall be submitted before Gate Closure and no more that 28 days before Gate Closure~~For the Trading Day to which the data relates, as set out in paragraph ~~4.3~~4.4;
2. ~~Values of Currency~~Price Quantity Pairs shall be submitted as set out in ~~paragraph 4.5A~~paragraphs 4.11, 4.13, 5.52.1 and 5.56;
3. ~~Data~~Maximum Interconnector Unit Import Capacity shall be submitted as set out in paragraph 5.52.2 and in accordance with ~~paragraphs 5.46, 5.51, 5.53 and~~paragraph 5.54; and
4. ~~Price Quantity Pairs, Maximum Interconnector Unit Import Capacity and~~ Maximum Interconnector Unit Export Capacity shall be submitted as set out in paragraph~~, 4.8, 4.10 and 5.47~~ 5.52.3 and in accordance with paragraph 5.55.

Interconnector Residual Capacity Unit Rules

I.7 ~~C.6A~~ In respect of each Interconnector Residual Capacity Unit, the relevant Participant shall not submit Commercial Offer Data~~.~~ as set out in paragraph 5.33.

Energy Limited Generator Unit Rules

I.8 ~~C.7~~ In respect of each Energy Limited Generator Unit which is not Under Test, the relevant Participant shall submit Commercial Offer Data as set out in paragraph ~~C~~I.2 with no exceptions.

Pumped Storage Unit Rules

I.9 ~~C.8~~ In respect of each Pumped Storage Unit, the relevant Participant shall submit Commercial Offer Data as set out in paragraph ~~C~~I.2 with the following exceptions:

1. Data shall be submitted in accordance with paragraph ~~5.95~~5.112; and
2. Target Reservoir Level and Pumped Storage Cycle Efficiency shall be submitted in accordance with paragraph ~~5.97.~~5.113.

Demand Side Unit Rules

I.10 ~~C.9~~ In respect of each Demand Side Unit~~ which is not Under Test~~, the relevant Participant shall submit Commercial Offer Data as set out in paragraph ~~C~~I.2 with the following exceptions:

1. Neither No Load Costs nor Start Up Costs shall be submitted as set out in paragraph ~~5.126B~~5.159; and

2. A Shut Down Cost shall be submitted in accordance with paragraph ~~5.126C.~~5.160.

Generator Units Under Test Rules

I.11 ~~**C.10**~~ In respect of each Generator Unit Under Test, the relevant Participant shall submit Commercial Offer Data as set out in paragraph ~~C~~I.2 with the following exceptions:

1. A Nomination Profile shall be submitted in accordance with paragraph ~~5.135~~5.172;
2. No Price Quantity Pairs, Start Up Costs, Shut Down Costs or No Load Costs shall be submitted as set out in paragraph ~~5.136~~5.173; and
3. A Decremental Price of zero shall be submitted in accordance with paragraph ~~5.136A.~~5.174.

~~**Technical Offer Data**~~

TECHNICAL OFFER DATA

I.12 ~~**C.11**~~ Each Participant shall submit Technical Offer Data to the Market Operator in respect of each of its Generator Units in accordance with the following provisions, subject to the exceptions outlined in paragraphs ~~C~~I.~~12~~13 to ~~C.19~~I.18 inclusive:

1. Technical Offer Data shall be submitted before Gate Closure for the Trading Day to which the data relates, as set out in paragraph 4.4 and no more that 28 days before Gate Closure ~~as set out in paragraph 4.3 and relevant~~;
2. Data shall be submitted to reflect the real capabilities of the relevant Generator Unit net of Unit Load as set out in paragraph ~~4.17~~4.26;
3. ~~A Hot Cooling Boundary and a Warm Cooling Boundary shall be submitted in accordance with paragraph 4.15C~~Data shall be submitted in respect of a Generator Unit such that it is consistent with data submitted for that Unit under the applicable Grid Code, scaled, where appropriate, by the appropriate Distribution Loss Adjustment Factor as set out in paragraph 4.27;
4. A Forecast Availability Profile shall be submitted in accordance with paragraph ~~4.18~~4.28;
5. A Forecast Minimum Output Profile shall be submitted in accordance with paragraph ~~4.19~~4.29;
6. A Forecast Minimum Stable Generation Profile shall be submitted in accordance with paragraph ~~4.20~~4.30;
7. A Short-Term Maximisation Capability, a Minimum Generation (which shall not be used under the Code) and a Maximum Generation shall be submitted. The Maximum Generation shall be submitted equal to the Registered Capacity of the Generator Unit; and
8. In addition, for Generator Units, the relevant Participant shall submit the following data items :
   a. Minimum On Time,

b. Minimum Off Time,
c. Maximum On Time,
d. Synchronous Start Up Time Hot,
e. Synchronous Start Up Time Warm,
f. Synchronous Start Up ~~time~~Time Cold,
g. Block Load Cold,
h. Block Load Hot,
i. Block Load Warm,
j. Deload Break Point,
k. Deloading Rate 1,
l. Deloading Rate 2,
m. Dwell Time 1,
n. Dwell Time 2,
o. Dwell Time 3,
p. Dwell Time Trigger Point 1,
q. Dwell Time Trigger Point 2,
r. Dwell Time Trigger Point 3,
s. End Point of Start Up Period,
t. Load Up Break Point Cold (1),
u. Load Up Break Point Cold (2),
v. Load Up Break Point Hot (1),
w. Load Up Break Point Hot (2),
x. Load Up Break Point Warm (1),
y. Load Up Break Point Warm (2),
z. Loading Rate Cold (1),
aa. Loading Rate Cold (2),
bb. Loading Rate Cold (3),
cc. Loading Rate Hot (1),
dd. Loading Rate Hot (2),
ee. Loading Rate Hot (3),
ff. Loading Rate Warm (1),
gg. Loading Rate Warm (2),
hh. Loading Rate Warm (3),
ii. Ramp Down Break Point 1,
jj. Ramp Down Break Point 2,
kk. Ramp Down Break Point 3,
ll. Ramp Down Break Point 4,

mm. Ramp Down Rate 1,

nn. Ramp Down Rate 2,

oo. Ramp Down Rate 3,

pp. Ramp Down Rate 4,

qq. Ramp Down Rate 5,

rr. Ramp Up Break Point 1,

ss. Ramp Up Break Point 2,

tt. Ramp Up Break Point 3,

uu. Ramp Up Break Point 4,

vv. Ramp Up Rate 1,

ww. Ramp Up Rate 2,

xx. Ramp Up Rate 3,

yy. Ramp Up Rate 4,

zz. Ramp Up Rate 5,

aaa. Soak Time Cold (1),

bbb. Soak Time Cold (2),

ccc. Soak Time Trigger Point Cold (1),

ddd. Soak Time Trigger Point Cold (2),

eee. Soak Time Hot (1),

fff. Soak Time Hot (2),

ggg. Soak Time Trigger Point Hot (1),

hhh. Soak Time Trigger Point Hot (2),

iii. Soak Time Warm (1),

jjj. Soak Time Warm (2),

kkk. Soak Time Trigger Point Warm (1), ~~and~~

lll. ~~Soak Time Trigger Point Warm (2).~~ Soak Time Trigger Point Warm (2).

~~C.12 Intentionally blank.~~

~~C.13 Intentionally blank.~~

mmm. Start of Restricted Range 1,

nnn. End of Restricted Range 1,

ooo. Start of Restricted Range 2, and

ppp. End of Restricted Range 2.

9. Each Participant shall not submit individual Ramp Up Rates that will result in a Single Ramp Up Rate less than or equal to zero in the MSP Software and each Participant shall not submit individual Ramp Down Rates that will result in a Single Ramp Down Rate less than or equal to zero in the MSP Software.

Autonomous Generator Unit Rules

~~***C.14*** In respect of each Autonomous Generator Unit, as set out in paragraph 5.16, the relevant Participant shall not submit Technical Offer Data.~~

I.13 In respect of each Autonomous Generator Unit, as set out in paragraph 5.17, the relevant Participant shall not submit Technical Offer Data.

Interconnector Unit Rules

~~***C.15*** In respect of each Interconnector Unit, as set out in paragraph 5.48, the relevant Participant shall not submit Technical Offer Data.~~

I.14 In respect of each Interconnector Unit, as set out in paragraph 5.53, the relevant Participant shall not submit Technical Offer Data.

Interconnector Residual Capacity Unit Rules

~~C.15A In respect of each Interconnector Residual Capacity Unit, the relevant Participant shall not submit Technical Offer Data.~~

I.15 In respect of each Interconnector Residual Capacity Unit, the relevant Participant shall not submit Technical Offer Data as set out in paragraph 5.33.

Energy Limited Generator Unit Rules

I.16 ~~**C.16**~~ In respect of each Energy Limited Generator Unit, the relevant Participant shall submit Technical Offer Data as set out in paragraph ~~C~~I.~~11~~12 with the following exceptions:

1. An Energy Limit, Energy Limit Start, Energy Limit Stop and Energy Limit Factor shall be submitted in accordance with paragraph ~~5.85~~5.95; and
2. Values for the Energy Limit Start and Energy Limit Stop parameters shall be submitted for the Trading Period starting at 06:00 on the Trading Day and ~~for~~ the end of the Trading Period ~~ending~~starting at ~~06~~05:~~00~~30 on the ~~next~~ Trading Day respectively.

Pumped Storage Unit Rules

I.17 ~~**C.17**~~ In respect of each Pumped Storage Unit, the relevant Participant shall submit Technical Offer Data as set out in paragraph ~~C~~I.~~11~~12 with the following exceptions:

1. A Target Reservoir Level Percentage, Maximum ~~Reserve~~ Storage Capacity and Minimum ~~Reserve~~ Storage Capacity shall be submitted in accordance with paragraph ~~5.97~~5.113;
2. A Forecast Minimum Output Profile~~, Forecast Minimum Stable Generation Profile~~ and a Forecast Availability Profile shall be submitted as set out in paragraphs ~~4, 5.97A~~5.114 and ~~5.97B~~5.115 respectively; and
3. A Pumping Capacity.

Demand Side Unit Rules

I.18 ~~C.18~~ In respect of each Demand Side Unit, the relevant Participant shall submit Technical Offer Data comprising only:

1. Forecast Availability Profile;
2. Forecast Minimum Output Profile;
3. Forecast Minimum Stable Generation Profile;
4. Maximum Ramp Down Rate, which must be a number greater than zero;
5. Maximum Ramp Up Rate, which must be a number greater than zero;
6. Minimum Down Time; and
7. Maximum Down Time.

~~C.19 Intentionally blank.~~

~~**Default Data**~~

DEFAULT DATA

I.19 ~~C.20~~ Each Participant shall where appropriate review and update default values for Commercial Offer Data and Technical Offer Data in respect of each of its Generator Units in accordance with paragraph ~~3.48, excluding Interconnector Units for which Default Data shall not be submitted as set out in paragraph 5.48.~~3.43.

~~**Agreed Procedure 4**~~

AGREED PROCEDURE 4

I.20 ~~C.21~~ Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation" describes the business processes by which Participants shall submit Commercial Offer Data and Technical Offer Data in accordance with the Code, and refers to any relevant technical documentation.~~I~~

I.21 ~~C.22~~ The business process in Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation" details the groupings of the data required in a Data Transaction, and the technical IT interface required for a submitted Commercial Offer Data and Technical Offer Data Transaction to be Accepted by the Market Operator.

I.22 ~~C.23~~ Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation" ~~provide~~provides that Offer Data can be submitted at least 28 days in advance of the Trading Day to which it applies, and can be submitted an unlimited number of times in advance of Gate Closure, and will be facilitated generally by both Type 2 and Type 3 Communication Channels, except where Agreed Procedure 7 "Emergency Communications" applies.

I.23 ~~C.24~~ Obligations in respect of Commercial Offer Data that do not need to be reflected in Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation" are:

1. in respect of all Generator Units as set out in paragraphs ~~4.5A, 4.6,~~ 4.8, ~~4.10, 4.28~~4.9, 4.11, 4.13, 4.40 and ~~5.83A~~5.92;
2. in respect of Predictable Price Taker Generator Units as set out in paragraphs ~~5.12, 5.13,~~5.11 and 5.13~~A~~;

3. in respect of Variable Price Taker Generator Units as set out in paragraphs 5.15 and ~~5.15A~~5.16;

4. in respect of Interconnector Units as set out in paragraphs ~~5.33A, 5.33B, 5.50, 5.51, 5.52, 5.53~~5.35, 5.36, 5.54, 5.55;

5. in respect of Pumped Storage Units as set out in paragraphs ~~5.95~~5.112 and ~~5.97J~~5.124; and

6. in respect of Demand Side Units as set out in paragraph ~~5.124.~~5.155.

I.24 ~~C.25~~ Obligations in respect of Technical Offer Data that do not need to be reflected in Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation" are:

1. in respect of all Generator Units as set out in paragraphs ~~4.17, 4.17A, 4.18, 4.19, 4.20, 4.21A, 4.28 and 5.83A~~4.26, 4.27, 4.28, 4.29, 4.30, 4.33, 4.40 and 5.92;

2. in respect of Variable Price Taker Generator Units as set out in paragraph ~~5.14~~5.15 and 5.16;

3. in respect of Energy Limited Generator Units as set out in paragraphs ~~5.86~~5.95 and ~~5.86A~~5.96;

4. in respect of Pumped Storage Units as set out in paragraphs ~~5.97A, 5.97B, 5.97D1, 5.97E, 5.97H, 5.97I, 5.97J~~5.114, 5.115, 5.118, 5.119, 5.122, 5.123, 5.124; and

5. in respect of Demand Side Units as set out in paragraphs ~~5.124~~5.155 and ~~5.125.~~5.156.

APPENDIX J: ~~APPENDIX D:~~

MARKET OPERATOR AND SYSTEM OPERATOR DATA TRANSACTIONS

J.1 ~~D.1~~ This Appendix ~~D~~J sets outs the data that the Market Operator is required to send to the System Operators, and the rules relating to the sending of such data, as well as certain validation obligations of the System Operators.

J.2 ~~D.2~~ Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation" sets out further detail in relation to the data transfer obligations set out in this Appendix ~~D~~J.

J.3 ~~D.3~~ The Market Operator shall submit to the System Operators within two Working Days of receipt from a Participant, but no later than 13:00 one Working Day before the Trading Day on which it is to become effective, any update to the Registration Data of any of that Participant's Units. Similarly, the Market Operator shall submit to the System Operators within two Working Days of receipt from the Interconnector Owner or the Interconnector Administrator as appropriate, but no later than 13:00 one Working Day before the Trading Day on which it is to become effective, any update to the Interconnector Registration Data of the relevant Interconnector.

J.4 ~~D.3A~~ The full set of registration details are set out in Appendix ~~B~~H.

J.5 ~~D.3B~~ The System Operator for the Currency Zone in which the Participant is registered shall validate the registration details and confirm to the Market Operator whether the registration information is accurate with respect to the data that such System Operator holds under the applicable Grid Code.

J.6 ~~D.4~~ The Market Operator shall submit to the System Operators within two Working Days of receipt from a Participant, but no later than 13:00 one Working Day before the Trading Day on which it is to become effective, all Generator Unit Under Test Notices.~~.~~

J.7 ~~D.4A~~ The form of Generator Unit Under Test Notice is set out in Appendix ~~J~~F.

J.8 ~~D.4B~~ The System Operator for the Currency Zone in which the Participant is registered shall validate the Generator Unit Under Test Notice and confirm to the Market Operator whether the Generator Unit is Under Test~~.~~ in accordance with paragraph 5.171.

J.9 ~~D.5~~ The Market Operator shall submit to the System Operators, no later than 30 minutes after Gate Closure for a Trading Day, the full set of Accepted Technical Offer Data and Accepted Commercial Offer Data for all Generator Units for all Trading Periods for that Trading Day.

J.10 ~~D.5A~~ The Data Transactions associated with Technical Offer Data and Commercial Offer Data, and the rules for the submission of such data by Participants to the Market Operator, are set out in Appendix ~~C~~I.

J.11 ~~D.5B~~ The System Operators shall not be required to validate any Commercial Offer Data or Technical Offer Data.

J.12 ~~D.6~~ The Market Operator shall submit to the System Operators a copy of any Suspension Order, any notice of the lifting of a Suspension Order, or any Termination Order at the same time as such Suspension Order, notice

of the lifting of a Suspension Order or Termination Order is submitted to the relevant Participant as described under paragraphs ~~2.219, 2.224,~~2.247, 2.256, and ~~2.229.~~2.261.

J.13 ~~D.6A~~ The System Operators shall not be required to validate any Termination Order or Suspension Order.

J.14 ~~D.7~~ The Market Operator shall submit to the System Operators the aggregate of all Modified Interconnector User Nominations ("Aggregate Modified Interconnector Unit Nomination") to produce a net import or export on each Interconnector for each Trading Period in the Trading Day, no later than two hours after Gate Closure in accordance with paragraph ~~5.58A,~~5.60, or as available after its recalculation in the Trading Day in accordance with paragraph ~~5.61A.~~5.67.

J.15 ~~D.7A~~ The System Operators shall not be required to validate any Aggregate Modified Interconnector Unit Nomination.

~~D.8 Intentionally blank.~~

J.16 ~~D.9~~ The Market Operator shall submit all currency values to the System Operators in the Participant's designated Currency.

J.17 ~~D.10~~ During normal operation of the Market Operator's Isolated Market System, the Market Operator shall only utilise a Type 3 Communication Channel for the communication of the data in this Appendix to the System Operators, with the exception of Suspension Orders, notice of the lifting of Suspension Orders, and Termination Orders, for which the Market Operator shall utilise a Type 1 Communication Channel. If the Type 3 Communication Channel is unavailable for communication of any data to a System Operator as required by this Appendix, the Market Operator shall utilise a Type 1 Communication Channel for the communication of such data.

APPENDIX K: ~~APPENDIX E:~~

MARKET DATA TRANSACTIONS

K.1 ~~E.1~~ This Appendix ~~E~~K outlines the detailed Data Record requirements for the other Data Transactions sent by the System Operator to Market Operator, ~~from~~by the Interconnector Administrator to the Market Operator and by the Market Operator to the Interconnector Users, which are not defined in other Appendices, and the associated high-level Data Transaction Submission ~~protocols~~Protocols.

K.2 ~~E.2~~ The Data Transactions ~~Category~~ in this Appendix include:

Data Transactions from System Operator to Market Operator

1. System Parameters
2. Generator Unit Technical Characteristics
3. Demand Control
4. ~~3.~~ System Characteristics
5. ~~4.~~ Energy Limited Generator Unit Technical Characteristics
6. Loss of Load Probability for the Capacity Period
7. Ex-Post Loss of Load Probability Table
8. ~~5.~~ Dispatch Instruction and SO Interconnector Trades
9. ~~6.~~ Annual Load Forecast ~~Data~~
10. ~~7.~~ Monthly Load Forecast ~~Data~~
11. ~~8.~~ Four Day Load Forecast ~~Data~~
12. ~~9.~~ Wind Power Unit Forecast ~~Data~~
13. ~~10.~~ Uninstructed Imbalance Parameters
14. ~~11.~~ Testing Tariffs

Data Transactions from Interconnector Administrator to Market Operator

15. ~~12.~~ Interconnector Available Transfer Capacity
16. ~~13.~~ Active Interconnector Unit Capacity Holding

Data Transactions from Market Operator to Interconnector User

17. ~~14.~~ Modified Interconnector Unit Nominations~~–~~

K.3 ~~E.3~~ Each Data Record in this Appendix which contains Currency amounts will be denominated in the Participant's designated Currency.

K.4 ~~E.4~~ There are no default rules for these Market Data Transactions. System Operators and Interconnector Administrators must confirm receipt of these Data Transactions in accordance with paragraphs ~~3.37~~3.33 and ~~3.41A.~~3.38.

K.5 ~~E.5~~ Agreed Procedure 4 "~~Data~~ Transaction Submission and Validation" will describe the detail of the Data Transactions listed within this Appendix ~~E~~K which do not relate to the operation of Interconnectors, noting the requirements for the appropriate scaling of submitted data outlined in paragraphs ~~4.21A, 4.26,~~4.33, 4.38, and ~~4.28.~~4.40.

K.6 ~~E.6~~ Agreed Procedure 2 “Interconnector Unit Capacity Right ~~Calculations~~Calculation and Dispatch Notifications” will describe the detail of the Data Transactions within this Appendix ~~E~~K which ~~do~~ relate to the operation of Interconnectors, noting the requirements for the submitted data in paragraphs ~~5.39A~~5.46 and ~~5.64.~~5.71.

DATA TRANSACTION AND ITS DATA RECORDS

System Parameters Data Transaction

K.7 ~~E.7~~ The Data Records for the System Parameters Data Transaction are described in Table ~~17a,~~K.1, and the Submission Protocol in ~~Tables 17b.~~Table K.2.

Table ~~17a~~K.1 - System Parameters Data Transaction Data Records

Transmission Loss Adjustment Factors, TLAFuh

Table ~~17b~~K.2 - System Parameters Data Transaction Submission Protocol

Sender	System Operators
Recipient	Market Operator
Number of Data Transactions	Unlimited
First Submission time	As available
Last Submission time	At least two months prior to the start of each Year, ~~within 5 working days of approval by the Regulatory Authorities whichever is the later,~~ or prior to the registration of a new Generator Unit
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer)
Process for data validation	None

Generator Unit Technical Characteristics Data Transaction

K.8 ~~E.8~~ The Data Records for the Generator Unit Technical Characteristics Data Transaction are described in Table ~~19a~~K.3 and the Submission Protocol in Table ~~19b.~~K.4.

Table ~~19a~~K.3 - Generator Unit Technical Characteristics Data Transaction Data Records

Trading Day (all variables below are for all Trading Periods in this Trading Day)
Outturn Availability, spot values, by Unit ID
Outturn Minimum Stable Generation, spot values, by Unit ID
Outturn Minimum Output, spot values, by Unit ID

Table ~~19b~~K.4 - Generator Unit Technical Characteristics Data Transaction Submission Protocol

Sender	System Operators
Recipient	Market Operator
Number of Data Transactions	Each Generator Unit, each Trading Day
First Submission time	After end of Trading Day
Last Submission time	~~Before~~By 14:00 on the ~~Day after~~next day following the relevant Trading Day~~ in question~~ As required to resolve a Data Query where the Data Records in the Transaction are discovered to be in error
Permitted frequency of resubmission	~~Unlimited~~In accordance with the Settlement Calendar
Valid Communication Channels	Type 3 (computer to computer)~~ default~~
Process for data validation	None

~~E.9 The Data Records for the Transaction that describes an estimate of any reduction in demand as a consequence of Demand Control are described in Table 19g and the Submission Protocol in Table 19h.~~

Demand Control Data Transaction

K.9 The Data Records for the Demand Control Data Transaction are described in Table K.5 and the Submission Protocol in Table K.6.

Table ~~19g - Transaction that describes an estimate of any reduction in demand as a result of~~K.5 - Demand Control Data Transaction Data Records

Trading Day (all variables below are for all Trading Periods in ~~this~~the Optimisation

	Time Horizon starting on the relevant Trading Day)
	Estimate of any reduction in demand as a consequence of Demand Control, i.e. load shedding

Table ~~19h - Transaction that describes an estimate of any reduction in demand as a result of~~K 6 - Demand Control Data Transaction Submission Protocol

Sender	System Operators
Recipient	Market Operator
Number of Data Transactions	Each Generator Unit, each Trading Day when non-zero
First Submission time	After end of Trading Day
Last Submission time	~~Before~~By 14:00 on the ~~Day after~~next day following the relevant Trading Day~~ in question~~ As required to resolve a Data Query where the Data Records in the Transaction are discovered to be in error
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 1 (manual) ~~default~~
Process for data validation	None

System Characteristics Data Transaction

~~E.10~~

K.10 The Data Records for the System Technical Characteristics Data Transaction are described in Table ~~19c and the Submission Protocol in Table 19d.~~ K.7 and the Submission Protocol in Table K.8.

Table ~~19c~~K.7 - System Characteristics Data Transaction Data Records

Average System Frequency in Trading Period h, AVGFRQh
Nominal System Frequency in Trading Period h, NORFRQh

Table ~~19d~~K.8 - System Characteristics Data Transaction Submission Protocol

Sender	System Operators
Recipient	Market Operator

Number of Data Transactions	~~By Trading Day and~~Each Trading Period, each Trading Day
First Submission time	After end of Trading Day
Last Submission time	By 14:00 on the next Working Day following the relevant Trading Day
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Energy Limited Generator Unit Technical Characteristics Data Transaction

K.11 ~~**E.11**~~ The Data Records for the Energy Limited Generator Unit Technical Characteristics Data Transaction are described in Table ~~19e~~K.9 and the Submission Protocol in Table ~~19f.~~K.10.

~~**Table 19e - Energy Limited Generator Unit Technical Characteristics Data Transaction Data Records**~~

~~Re-declared value of Energy Limit, SELut~~

Table ~~19f~~K.9 - Energy Limited Generator Unit Technical Characteristics Data Transaction ~~Submission Protocol~~Data Records

Re-declared value of Energy Limit, SELut

Table K.**10 - Energy Limited Generator Unit Technical Characteristics Data Transaction Submission Protocol**Sender~~Sender~~	System Operators
Recipient	Market Operator
Number of Data Transactions	Each Energy Limited Generator Unit, each Trading Day
First Submission time	After end of Trading Day
Last Submission time	By 14:00 on the ~~Day~~day following the end of the relevant Trading Day
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Loss of Load Probability for the Capacity Period Data Transaction

~~### Loss of Load Probability for the Capacity Period Transaction~~

~~**E.12** The Data Records for the Loss of Load Probability for the Capacity Period are described in Table 19i and the Submission Protocol in Table 19j.~~

K.12 The Data Records for the Loss of Load Probability for the Capacity Period Data Transaction are described in Table K.11 and the Submission Protocol in Table K.12.

Table ~~19i~~K.11 - Loss of Load Probability for the Capacity Period Data Transaction Data Records

Trading Periods in the Capacity Period
Loss of Load Probability for each Trading Period in the Capacity Period (λh)

Table ~~19j~~K.12 - Loss of Load Probability Table for the ~~Year~~Capacity Period Data Transaction Submission Protocol

Sender	System Operators
Recipient	Market Operator
Number of Data Transactions	One per Year, and as updated under Appendix M
First Submission time	As available
Last Submission time	At least 20 Working Days before the start of the Year
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 1 ~~Channel~~(manual)
Process for data validation	None

Ex-Post Loss of Load Probability Table Data Transaction

~~**E.13**~~

K.13 The Data Records for the Ex-Post Loss of Load Probability Table ~~for the Year are described in Table 19k and the Submission Protocol in Table 19l.~~

~~**Table 19k - Ex-Post Loss of Load Probability Table Transaction Data Records**~~

~~Input Margin (IM) MW values, from 0MW to Total Conventional Capacity (TCCy)~~
~~Output Loss of Load Probability (OLOLP$_{IM}$) for all MW values from 0MW to Total Conventional Capacity (TCCy)~~

Data Transaction are described in Table K.13 and the Submission Protocol in Table K.14.

Table ~~19~~K.13 - Ex-Post Loss of Load Probability Table Transaction ~~Submission Protocol~~Data Records

Input Margin (IM) MW values, from 0MW to Total Conventional Capacity (TCCy)	
Output Loss of Load Probability (OLOLP$_{IM}$) for all MW values from 0MW to Total Conventional Capacity (TCCy)	
Table K.14 - Ex-Post Loss of Load Probability Table Transaction Submission Protocol~~Sender~~	System Operators
Recipient	Market Operator
Number of Data Transactions	One per Year, subject to Appendix M
First Submission time	As available
Last Submission time	20 Working Days before the start of the Year
Permitted frequency of resubmission	Once, subject to Appendix M
Valid Communication Channels	Type 1 ~~Channel~~(manual)
Process for data validation	None

Dispatch Instruction and SO Interconnector Trades Data Transaction

~~**Dispatch Instruction and SO Interconnector Trades Data Transaction**~~

~~**E.14** The Data Records for the Dispatch Instruction and SO Interconnector Trades~~

K.14 The Data Records for the Dispatch Instruction and SO Interconnector Trades Data Transaction are described in Table ~~20a, and the Submission Protocol in Table 20b.~~K.15 and the Submission Protocol in Table K.16.

Table ~~20a~~K.15 - Dispatch Instruction and SO Interconnector Trades Data Transaction Data Records

Participant ID (Not submitted for SO Interconnector Trades)
Unit ID
Trading Day
Trading Period
Dispatch Instruction and Ramp Rate associated with that Dispatch Instruction data per Unit ID
Time and Occurrence of any Maximisation Instructions, by Unit
SO Interconnector Import Price (SIIPlh)
SO Interconnector Export Price (SIEPlh)
SO Interconnector Import Quantity (SIIQlh)
SO Interconnector Export Quantity (SIEQlh)

Table ~~20b~~K.16 - Dispatch Instruction and SO Interconnector Trades Transaction Submission Protocol

Sender	System Operators
Recipient	Market Operator
Number of Data Transactions	By Trading Day and Trading Period
First Submission time	After end of Trading Day
Last Submission time	~~Before~~By 14:00 on the ~~Day following the end of~~day on which the relevant Trading Day ends As required to resolve a Data Query where the Data Records in the Transaction are discovered to be in error
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Annual Load Forecast Data Transaction

~~E.15~~

K.15 The Data Records for the Annual Load Forecast Data Transaction are described in Table ~~21a, and the Submission Protocol in Table 21b.~~K.17 and the Submission Protocol in Table K.18.

Table ~~21a~~K.17 - Annual Load Forecast Data Transaction Data Records

Year
Annual Load Forecast values for each Trading Period in the relevant Year
Jurisdiction

Table ~~21b~~K.18 - Annual Load Forecast Data Transaction Submission Protocol

Sender	System Operators
Recipient	Market Operator
Number of Data Transactions	Annually
First Submission time	As available
Last Submission time	Four Months before start of Year
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Monthly Load Forecast Data Transaction

~~E.16~~

K.16 The Data Records for the Monthly Load Forecast Data Transaction are described in Table ~~22a,~~K.19 and the Submission Protocol in Table ~~22b.~~

~~**Table 22a - Monthly Load Forecast Data Transaction Data Records**~~

~~Monthly Load Forecast values for each Trading Period in the relevant month~~
~~Jurisdiction~~

K.20.

Table ~~22b~~K.19 - Monthly Load Forecast Data Transaction ~~Submission Protocol~~Data Records

Monthly Load Forecast values for each Trading Period in the relevant Month
Jurisdiction

Table K. **20 - Monthly Load Forecast Data Transaction Submission Protocol**Sender~~Sender~~	System Operators
Recipient	Market Operator
Number of Data Transactions	Monthly
First Submission time	Four ~~Days~~days before the start of Month
Last Submission time	One ~~Day~~day before the start of Month
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Four Day Load Forecast Data Transaction

~~E.17~~

K.17 The Data Records for the Four Day Load Forecast Data Transaction are described in Table ~~23a,~~K.21 and the Submission Protocol in Table ~~23b.~~

~~**Table 23a - Four Day Load Forecast Data Transaction Data Records**~~

~~**Four Day Load Forecast Data Records**~~
~~Four Day Load Forecast values for each Trading Period in the relevant four day period~~
~~Jurisdiction~~

K.22.

Table ~~23b~~K.21 - Four Day Load Forecast Data Transaction ~~Submission Protocol~~Data Records

Four Day Load Forecast Data Records
Four Day Load Forecast values for each Trading Period in the relevant four day period
Jurisdiction

Table K.**22 - Four Day Load Forecast Data Transaction Submission Protocol**Sender~~Sender~~	System Operators
Recipient	Market Operator
Number of Data Transactions	Daily
First Submission time	As available
Last Submission time	Before 09:30, D-1
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Wind Power Unit Forecast Data Transaction

~~E.18~~

K.18 The Data Records for the Wind Power Unit Forecast Data Transaction are described in Table ~~24a,~~K.23 and the Submission Protocol in Table ~~24b.~~

~~**Table 24a - Wind Power Unit Forecast Data Transaction Data Records**~~

~~Dates and Trading Periods~~
~~Jurisdiction~~
~~Wind Power Unit~~
~~Output Forecast for each Wind Power Unit that is connected in the relevant Jurisdiction for each Trading Period over the following two Trading Days,~~

K.24.

Table ~~24b~~K.23 - Wind Power Unit Forecast Data Transaction ~~Submission Protocol~~Data Records

Dates and Trading Periods
Jurisdiction
Wind Power Unit
Output Forecast for each Wind Power Unit that is connected in the relevant Jurisdiction for each Trading Period over the following two Trading Days,

Table K.**24 - Wind Power Unit Forecast Data Transaction Submission Protocol**Sender~~Sender~~	System Operators
Recipient	Market Operator
Number of Data Transactions	As available
First Submission time	As updated
Last Submission time	As updated
Permitted frequency of resubmission	Updated every 6 hours
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Uninstructed Imbalance Parameter Data Transaction

~~E.19~~

K.19 The Data Records for the Uninstructed Imbalance Parameter ~~Transaction are described in Table 25a, and the Submission Protocol in Table 26f.~~

~~**Table 25a – Uninstructed Imbalance Parameter Transaction Data Records**~~

~~Engineering Tolerance (ENGTOL)~~
~~MW Tolerance (MWTOLt) for each Trading Day t~~
~~System per Unit Regulation parameter (UREG)~~
~~Discount for Over Generation (DOGuh) for each Generator Unit u in each Trading Period h~~
~~Premium for Under Generation (PUGuh) for each Generator Unit u in each Trading Period h~~

Data Transaction are described in Table K.25 and the Submission Protocol in Table K26.

Table ~~25b –~~ K.25 – Uninstructed Imbalance Parameter Transaction ~~Submission Protocol~~Data Records

Engineering Tolerance (ENGTOL)
MW Tolerance (MWTOLt) for each Trading Day t
System per Unit Regulation parameter (UREG)
Discount for Over Generation (DOGuh) for each Generator Unit u in each Trading Period h
Premium for Under Generation (PUGuh) for each Generator Unit u in each Trading Period h

Table K.**26 - Uninstructed Imbalance Parameter Data Transaction Submission Protocol**Sender~~Sender~~	System Operators
Recipient	Market Operator
Number of Data Transactions	Once per Year, and within Year with the approval of the Regulatory Authorities
First Submission time	As available
Last Submission time	On receipt of the Regulatory Authorities' determination on the values of the Uninstructed Imbalance ~~Parameter Transaction~~Parameters and no later than two months before the start of the Year or within 5 Working Days of receipt whichever is the later
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 1 (manual)
Process for data validation	None

Testing Tariffs Data Transaction

~~E.20~~

K.20 The Data Records for the Testing Tariffs ~~Transaction are described in Table 26a, and the Submission Protocol in Table 26b.~~

~~**Table 26a - Testing Tariffs Transaction Data Records**~~

~~Testing Tariff (TTARIFFuh) applicable to Generator Unit Under Test u in Trading Period h, for all Generator Units within the Currency Zone of the System Operator~~

Data Transaction are described in Table K.27 and the Submission Protocol in Table K.28.

Table ~~26b~~K.27 - Testing Tariffs Transaction ~~Submission Protocol~~Data Records

Testing Tariff (TTARIFFuh) applicable to Generator Unit Under Test u in Trading Period h, for all Generator Units within the Currency Zone of the System Operator	
Table K.**28 - Testing Tariffs Transaction Submission Protocol**Sender~~Sender~~	~~Both~~ System Operators
Recipient	Market Operator
Number of Data Transactions	Once per Year, and within Year with the approval of the Regulatory Authorities
First Submission time	As available
Last Submission time	On receipt of the Regulatory Authorities' determination on the values of the Testing Tariffs ~~Transaction~~ and no later than two months before the start of the Year or within 5 Working Days of receipt whichever is the later
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 1 (manual)
Process for data validation	None

Interconnector Available Transfer Capacity Data Transaction

~~E.21~~

K.21 The Data Records for the Interconnector Available Transfer Capacity Data Transaction are described in Table ~~18a.~~K.29 and the Submission Protocol in Table ~~18b.~~

~~**Table 18a - Interconnector Available Transfer Capacity Data Transaction Data Records**~~

~~Maximum Import Available Transfer Capacity for each Trading Period in Optimisation Time Horizon t~~
~~Maximum Export Available Transfer Capacity for each Trading Period in Optimisation Time Horizon~~

K.30.

Table ~~18b~~K.29 - Interconnector Available Transfer Capacity Data Transaction ~~Submission Protocol~~Data Records

Maximum Import Available Transfer Capacity for each Trading Period in Optimisation Time Horizon z
Maximum Export Available Transfer Capacity for each Trading Period in Optimisation Time Horizon z

Table K.30 - Interconnector Available Transfer Capacity Data Transaction Submission Protocol Sender~~Sender~~	Interconnector Administrator
Recipient	Market Operator
Number of Data Transactions	Unlimited
~~First Submission time~~	~~As available~~
~~Last~~ Submission time	On the day prior to Gate Closure for that Trading Day, before 09:30. In the event of a change in the magnitude of Available Transfer Capacity in either direction, resubmission is possible until 12:00 on the day on which the relevant Trading Day ends, and should be made by Gate Closure for the relevant Trading Day if practically possible
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer)
Process for data validation	None

Active Interconnector Unit Capacity Holding Data Transaction

~~E.22~~

K.22 The Data Records for the Active Interconnector Unit Capacity Holding Data Transaction are described in Table ~~26c, and the Submission Protocol in Table 26d.~~K.31 and the Submission Protocol in Table K.32.

Table ~~25c~~K.31 – Active Interconnector Unit Capacity Holding Data Transaction Data Records

Trading Day and Trading Periods
Interconnector
Interconnector Unit
Held capacity (Active Interconnector Unit Import Capacity Holding and the Active Interconnector Unit Export Capacity Holding) on the Interconnector for each Trading Period for each Interconnector Unit in the Optimisation Time Horizon beginning at the start of the relevant Trading Day

Table ~~25d~~K.32 – Active Interconnector Unit Capacity Holding Data Transaction Submission Protocol

Sender	Interconnector Administrator
Recipient	Market Operator
Number of Data Transactions	One per Interconnector Unit
First Submission time	After completion of all appropriate Active Interconnector Unit Capacity Holding allocations
Last Submission time	Before Gate Closure for ~~that~~the relevant Trading Day
Permitted frequency of resubmission	Unlimited
Valid Communication Channels	Type 3 (computer to computer) ~~default~~
Process for data validation	None

Modified Interconnector Unit Nominations Data Transaction

~~E.23~~

K.23 The Data Records for the Modified Interconnector Unit Nominations ~~Transaction are described in Table 26i, and the Submission Protocol in Table 26j.~~

~~**Table 26i - Modified Interconnector Unit Nominations Transaction Data Records**~~

~~Participant~~ ~~Interconnector~~ ~~Interconnector Unit~~ ~~Trading Period~~ ~~Modified Interconnector User Nomination for all Interconnector Units registered to that Participant for all Trading Periods in the Trading Day~~

Data Transaction are described in Table K.33 and the Submission Protocol in Table K.34.

Table ~~26j~~K.33 - Modified Interconnector Unit Nominations Transaction ~~Submission Protocol~~Data Records

Participant Interconnector Interconnector Unit Trading Period Modified Interconnector Unit Nominations for all Interconnector Units registered to that Participant for all Trading Periods in the Optimisation Time Horizon starting on the relevant Trading Day

Table K.**34 - Modified Interconnector Unit Nominations Data Transaction Submission Protocol**Sender~~Sender~~	Market Operator
Recipient	~~Participants with registered~~Each Interconnector User in respect of its Interconnector Unit(s)
Number of Data Transactions	One per Trading Day, updated as required under paragraph ~~5.60~~5.65
First Submission time	As available
Last Submission time	Before 12:00 ~~after Gate Closure~~on the day prior to the relevant Trading Day, and as available when updated under paragraph ~~5.60~~5.65
Permitted frequency of resubmission	Unlimited

Valid Communication Channels	Type 3 (computer to computer)
Process for data validation	None

APPENDIX F: INVOICES AND SETTLEMENT STATEMENTS

F.1 This Appendix F sets out the detailed Data Record requirements for the Settlement Data Transactions (as defined in paragraph F.2), and the relevant high-level protocols for the submission by the Market Operator of such Data Transactions.

F.2 The Settlement Data Transactions comprise the Data Records that the Market Operator shall be obliged to include in the following Statements, Invoices, Self-Billing Invoices, and Notices:

1. Generator Unit Energy Settlement Statements
2. Supplier Unit Energy Settlement Statements
3. Generator Unit Capacity Settlement Statements
4. Supplier Unit Capacity Settlement Statements
5. Market Operator Charge Invoices
6. Participant Invoices, Participant Self Billing Invoices and Debit Notes

F.3 The Fixed Market Operator Charge will be part of the weekly Market Operator Charge Invoice, the amounts of the Fixed Market Operator charge in relation to the periods of time described under paragraph 6.102A and 6.102C.

F.4 The Market Operator shall denominate each Data Record in this Appendix which contains Currency amounts in the designated Currency of the relevant Participant.

F.5 The Market Operator shall include the following identifying Data Records in each Settlement Statement and Invoice, along with sufficient information for a Participant to reasonably determine the market rules under which the Settlement Statement or Invoice was created, and to uniquely identify the Settlement Statement or Invoice during correspondence with the Market Operator:

1. Settlement Day (if applicable)
2. Trading Period (if applicable)
3. Billing period/capacity period
4. Participant ID
5. Unit ID(s) (if applicable)
6. Settlement Amount for the given product
7. A flag indicating if Meter Data is considered estimated by the Meter Data Provider that submitted the Meter Data

F.6 The Market Operator shall, in relation to each Billing Period and Capacity Period, issue at least four Settlement Statements to Participants for each of their registered Units: one Indicative Settlement Statement, one Initial Settlement Statement, one Settlement Statement arising from the first Timetabled Settlement Rerun and one Settlement Statement arising from the second Timetabled Settlement Rerun.

F.6A The Market Operator shall issue Settlement Rerun Statements to Participants for each of their registered Units in the event of any ad hoc Settlement Rerun arising from a Settlement Query, Data Query or Settlement Dispute.

F.7 The Market Operator shall, in relation to each Billing Period and Capacity Period, issue to Participants at least one Invoice or Self-Billing Invoice based on the Initial Settlement Statements for that Billing Period or Capacity Period.

F.7A The Market Operator shall issue to a Participant a further Invoice or further Self-Billing Invoice based on the Settlement Statements arising from Settlement Reruns, if there is a change to any amount payable or receivable as compared with the corresponding amount on the previous Invoice or previous Self-Billing Invoice for that Billing Period or Capacity Period.

F.7B The Market Operator shall issue Invoices containing zero amount payable or zero amount receivable in the event that there is no change to the corresponding amounts payable or amounts receivable on the previous Invoice or previous Self-Billing Invoice for that Billing Period or Capacity Period.

F.8 Participants may contest the content of the Settlement Statements through Data Queries, Settlement Queries, or Settlement Disputes processes.

F.9 The timings under which the Market Operator shall be obliged to issue all Settlement Statements, Invoices, and Self-Billing Invoices are set out in paragraphs 6.30, 6.32, 6.35, 6.36, 6.102A, 6.102B, or as appropriate depending on the outcomes of a Data Query, Settlement Query, or Settlement Dispute.

F.10 The Market Operator shall issue Settlement Statements for Energy Payments for Generator Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for the relevant Generator Unit u in each Trading Period h for the relevant Settlement Day in Billing Period b, values of:

1. Total payment for the Generator Unit
2. Energy Payment for the Generator Unit
3. Constraint Payments for the Generator Unit
4. Uninstructed Imbalance Payments for the Generator Unit
5. Charge for Bad Energy Debt
6. Metered Generation
7. Actual Availability
8. Market Schedule Quantity
9. Dispatch Quantity
10. System Marginal Price
11. Make Whole Payment (where calculable over the Billing Period)
12. Settlement Statement number for previous run (if not the first Settlement Statement for Energy for those Units on that Settlement Day)

F.11 The Market Operator shall issue Settlement Statements for Energy Charges for Supplier Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for the relevant Supplier Unit v in each Trading Period h for the relevant Settlement Day in Billing Period b, values of

1. Total Charge for Supplier Unit
2. Energy Charge for Supplier Unit
3. Imperfections Charge for Supplier Unit
4. Metered Demand
5. Net Demand
6. System Marginal Price
7. Settlement Statement version will be clearly indicated.

F.12 The Market Operator shall issue Settlement Statements for Capacity Payments for Generator Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for the relevant Generator Unit u in each Trading Period h in the Capacity Period c, values of:

1. Total payment for the Generator Unit
2. Capacity Payment
3. Charge for Unsecured Bad Capacity Debt
4. Eligible Availability
5. Settlement Statement version will be clearly indicated

F.13 The Market Operator shall issue Settlement Statements for Capacity Charges for Supplier Units, and shall ensure that each such Settlement Statement shall provide to Participants, when considered in conjunction with other supplementary reports made available to the Participant under the same timeframes and over the same Communication Channels, inter alia, for each Supplier Unit v in each Trading Period h in the Capacity Period c, values of

1. Capacity Charge for the Supplier Unit;
2. Net Demand (NDLFvh).
3. Settlement Statement version will be clearly indicated

F.14 The Market Operator shall issue Market Operator Charge Invoices over the Billing Period for Participants, and shall ensure that each such Invoice shall contain, inter alia, for each Billing Period b, values of:

1. Market Operator Variable Charge
2. Fixed Market Operator Charge
3. Amount from the previous run (one for each item over)
4. Invoice version will be clearly indicated

5. Any applicable interest

6. A summary of the rates of applicable VAT applied in the Invoice and applicable VAT owing/owed by to Revenue Authorities

F.15 The Market Operator shall issue Unsecured Bad Energy Debt Invoices over the Billing Period for Participants identifying that the Invoice is in respect of a particular Unsecured Bad Energy Debt event, and shall ensure that each such Invoice shall contain, inter alia, for each Billing Period b, values of:

1. Unsecured Bad Energy Debt Charge

2. Invoice version will be clearly indicated

3. Any applicable interest

4. A summary of the rates of applicable VAT applied in the Invoice and applicable VAT owing/owed by to Revenue Authorities

F.16 The Market Operator shall issue Unsecured Bad Capacity Debt Invoices over the Billing Period for Participants identifying that the Invoice is in respect of a particular Unsecured Bad Capacity Debt event, and shall ensure that each such Invoice shall contain, inter alia, for each Billing Period b, values of:

1. Unsecured Bad Capacity Debt Charge

2. Invoice version will be clearly indicated

3. Any applicable interest

4. A summary of the rates of applicable VAT applied in the Invoice and applicable VAT owing/owed by to Revenue Authorities

F.17 The Market Operator shall ensure that Invoices, Self Billing Invoices or Debit Notes issued by it to Participants in respect of its Units shall contain, inter alia,

1. Billing or Capacity Period

2. Payment amount for the relevant Generator Units for relevant billing/capacity period

3. Invoice amount for the relevant Supplier Units for relevant billing/capacity period

4. Billing Period Currency Cost (or benefit) or Capacity Period Currency Cost (or benefit) for the relevant Participant

5. Settlement Reallocation Amount in respect of that period

6. Any applicable interest

7. Total payment amount

8. A summary of the rates of applicable VAT applied in the Invoice and applicable VAT owing/owed by to Revenue Authorities

F.18 Agreed Procedure 15 "Invoicing" sets out more detail as to the obligations of the Market Operator set out in this Appendix F in relation to the process of issuing Settlement Statements, Invoices, Self Billing Invoices and Debit Notes, but nothing in that Agreed Procedure shall preclude the issue of any such item over any particular Communication Channel.

APPENDIX L: ~~APPENDIX G:~~

METER DATA TRANSACTIONS

L.1 ~~G.1~~ Agreed Procedure 16 "Provision of Metered Data ~~Provision~~" describes how Meter Data ~~is grouped by~~Providers shall be required to group Meter Data ~~Providers~~ into Data Transactions for receipt by the Market Operator, in accordance with the requirements set out in this Appendix ~~G~~L.

L.2 ~~G.2~~ The timing of these Meter Data Transactions is described in Agreed Procedure 16 "Provision of Metered Data ~~Provision~~", in accordance with the requirements set out in this Appendix ~~G~~L.

L.3 ~~G.3~~ The Meter Data required for the Ex-Post Indicative MSP Software Run and the Ex-Post Initial MSP Software ~~Runs~~Run are the Metered Generation of all Predictable Price Maker Generator Units, Variable Price Maker Generator Units, Predictable Price Taker Generator Units, and Variable Price Taker Generator Units, and the Metered Demand of Trading Site Supplier Units in Trading Sites with Non-Firm Access.

L.4 ~~G.4~~ The Meter Data required for the creation of Settlement Statements are the data required for MSP Software Runs described in paragraph ~~G~~L.3, the Metered Generation of Autonomous Generator Units, the Net Inter-Jurisdictional Import, the Interconnector Metered Generation, and all other Supplier Units, including Associated Supplier Units for Trading Sites with Firm Access and Non-Firm Access, and Trading Site Supplier Units for Trading Sites with Firm Access.

L.5 ~~G.5~~ ~~The~~Each System ~~Operators~~Operator in ~~their roles~~its role as a Meter Data Providers shall provide to the Market Operator ~~of~~ all Meter Data required for Ex-Post Indicative MSP Software Runs and Ex-Post Initial MSP Software Runs, Meter Data for Transmission Connected Autonomous Generator Units, and Interconnector Metered Generation for Units or Interconnectors as appropriate in ~~their~~its Jurisdiction. The System Operators shall agree a process with the Market Operator to determine which one System Operator is responsible for the provision of the Net Inter-Jurisdictional Import Meter Data to the Market Operator.

L.6 ~~G.5A~~ The System Operator in Ireland shall have responsibility for the installation, commissioning and maintenance of metering systems to such standards as are applicable under and set out in the Grid Code or Metering Code for all Transmission Connected Generation Sites in the Jurisdiction of Ireland.

L.7 ~~G.5B~~ The Distribution System Operator responsible for the installation, commissioning and maintenance of metering systems at a Unit's site, shall provide reasonable access to that site and to data polled at that site to the relevant System Operator with responsibility for the provision of that Unit's Meter Data to the Market Operator.~~.~~

L.8 ~~G.6~~ Each Distribution System Operator in its role as Meter Data Provider shall provide to the Market Operator all Meter Data required for the creation of Settlement Statements excluding those required for the Ex-Post Initial MSP Software Runs, the Meter Data for Transmission Connected Autonomous Generator Units, the Net Inter-Jurisdictional Import and the Interconnector Metered Generation ~~to the Market Operator~~.

L.9 ~~G.6A~~ Subject to paragraph ~~G.5A,~~L.6, in respect of all Units under the Code, the Distribution System Operators shall be responsible for the installation, commissioning and maintenance of metering systems within

their Jurisdiction to such standards as are applicable in and set out under in the Grid Code or Metering Code.

L.10 ~~G.6B~~ Where a Distribution System Operator is responsible for the provision of a Unit's Meter Data to the Market Operator and a System Operator is responsible for the installation, commissioning and maintenance of metering systems at those Unit's sites, the relevant System Operator shall provide reasonable access to that site or polled data to the relevant Distribution System Operator.

L.11 ~~G.7~~ Meter Data Providers shall provide the Meter Data listed in paragraph ~~G~~L.3 for the Settlement Day to the Market Operator by 14:00 on the day following that Settlement Day, as described in Agreed Procedure 16 "Provision of Metered Data ~~Provision~~".

L.12 ~~G.8~~ Meter Data Providers shall provide the Meter Data listed in paragraph ~~G~~L.3 for the Settlement Day to the Market Operator by 14:00 on the day which is three days after that Settlement Day, as described in Agreed Procedure 16 "Provision of Metered Data ~~Provision~~".

L.13 ~~G.9~~ Meter Data Providers shall provide the Meter Data listed in paragraph ~~G~~L.4 to the Market Operator required for each Settlement Day by 14:00 on the first ~~Week~~Working Day after the Settlement Day as described in Agreed Procedure 16 "Provision of Metered Data ~~Provision~~".

L.14 ~~G.10~~ Meter Data Providers shall provide the Meter Data listed in paragraph ~~G~~L.4 to the Market Operator required for each Settlement Day by 17:00 on the fourth ~~Week~~Working Day after the Settlement Day as described in Agreed Procedure 16 "Provision of Metered Data ~~Provision~~".

L.15 ~~G.11~~ Meter Data Providers shall provide to the Market Operator the Meter Data listed in ~~G~~L.4 excluding Meter Data for Transmission Connected Autonomous Generator Units, Interconnector Metered Generation for each Settlement Day in sufficient time to permit the Timetabled M+4 Settlement Reruns and Timetabled M+13 Settlement Reruns to be performed by the Market Operator in accordance with the Settlement Calendar.

L.16 ~~G.12~~ If a Meter Data Provider has provided data for a Unit as described in paragraph ~~G.7, this fulfils that Meter Data Provider's requirement to send that data again as described in paragraph G.9.~~L.11, this fulfils that Meter Data Provider's requirement to send that data again as described in paragraph L.13.

L.17 ~~G.13 If a Meter Data Provider has provided data for a Unit as described in paragraph G.8, this fulfils that Meter Data Provider's requirement to send that data again as described in paragraph G.10.~~

L.18 If a Meter Data Provider has provided data for a Unit as described in paragraph L.12, this fulfils that Meter Data Provider's requirement to send that data again as described in paragraph L.14.

L.19 ~~G.14~~ If a System Operator in its role as Meter Data Provider has provided data for a Unit as described in paragraph ~~G.10,~~L.14, this fulfils that System Operator's requirement to send that data again as described in paragraph ~~G.11,~~L.15, unless there are known corrections required to the data arising from the resolution of Data Queries, Settlement Queries, Settlement Disputes or discovered errors.

L.20 ~~G.15~~ In the event of a Settlement Query or Data Query in respect of Meter Data and where the Meter Data is discovered to be in material error,

the Meter Data Provider shall resend the updated Meter Data for the Units, Interconnector, or Net Inter-Jurisdictional Import as appropriate for the Settlement Day or Settlement Days to which the Settlement Query or Data Query relates as described in Agreed Procedure 16 "Provision of Meter Data ~~Provision~~".

L.21 ~~G.16~~ In the event of a Dispute in respect of Meter Data and where the Meter Data is discovered to be in material error, the Meter Data Provider shall resend the updated Meter Data for the Units, Interconnector, or Net Inter-Jurisdictional Import as appropriate in a manner and form determined by the Dispute Resolution Board.

APPENDIX M: ~~APPENDIX H:~~

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~~APPENDIX J:~~

OTHER COMMUNICATIONS

Introduction

J.1 This Appendix J outlines the detailed Data Record requirements for miscellaneous Data Transactions under the Code not related to Notices of Dispute, Emergency Notifications, Suspension or Termination, or operation of the Modifications Committee.

J.2 Agreed Procedure 13 "Disputes" sets out the detail of Notices related to the Dispute process.

J.3 Agreed Procedure 7 "Emergency Communications" and Agreed Procedure 11 "Market System Operation, Testing, Upgrading, and Support" set out the detail of Notices related to Limited Communication Failures, General Communication Failures, General System Failures, and MSP Failures.

J.4 Agreed Procedure 12 "Modifications Committee Operation" will set out the detail of all Notices related to the process of raising Modification Proposals, impact assessing Modification Proposals, seeking consultation on Modification Proposals, publishing the Modifications Committee's Final Modification Recommendation and the decision of the Regulatory Authorities.

J.5 Section 2 of the Code sets out the treatment of Suspension and Termination Orders.

Generator Unit Under Test

J.6 Agreed Procedure 4 "Data Transaction Submission and Validation" sets out the detail of all Generator Unit Under Test Notices, following the principles in paragraph J.7 below.

J.7 Participants shall submit a Generator Unit Under Test Notice to the Market Operator at least five Working Days in advance of the Test Start Date and, when submitting a notice to terminate a test period at least one Working Day in advance of the Test End Date. The Generator Unit Under Test Notice will specify in all cases the Test Start Date and the Test End Date, and the Generator Unit Under Test.

1. The Market Operator shall verify with the relevant System Operator that the Generator Unit proposed for Under Test status has been granted such a status in accordance with the relevant Grid Code
2. The Market Operator will ensure that Generator Unit Under Test Notices can be submitted by Participants through Type 2 or 3 Communications Channels.

Maintenance Schedules

J.8 Each System Operator shall submit a Maintenance Schedule Data Transaction to the Market Operator at least two Working Days before the start of each Month, and whenever it is updated.

1. The Maintenance Schedule Data Transaction shall contain the Maintenance Schedule of each Generator Unit in the relevant Currency Zone over the next two Months, and the Maintenance Schedule of each line on the Transmission System in the relevant Jurisdiction over the next two Months.

2. The Market Operator shall only provide for Type 1 Communication Channel for the communication of Maintenance Schedule Data Transactions from the System Operator during normal operation of the Market Operator's Isolated Market Systems and the Type 1 Communication Channel.

APPENDIX K:

DATA PUBLICATION

K.1 A list of data items and their timing of publication is contained in the following Table 47. Procedures for the updating of Publications and the method of Publication are contained in Agreed Procedure 6 "Data Publication".

K.2 All data received by the Market Operator over a Type 2 or Type 3 Communication Channel, or calculated by the Market Operator should be publishable by 17:00 on the following Working Day of its receipt or calculation.

K.3 Agreed Procedure 6 will detail how the Market Operator will comply with Market Participant requests for reports with any data detailed in K.2 above to be made available for communication over Type 2 or Type 3 Communication Channels. Subject to data confidentiality, and the timelines set out in this Appendix, all such reports will be published on the Market Operator Website.

K.4 Agreed Procedure 6 will follow the following principles set out in the following paragraphs of the Code: 1.19.15, 1.19.17, 2.198, 2.311A, 2.312, 2.333, 3.16A, 3.55A, 3.82, 3.83, 3.84, 3.86, 3.90, 3.91.

Table 47 – Data publication list part 1: Updated periodically as required

Time	Item / Data Record	Term	Subscript
Periodically as required			
Within two Working Days of Modification	The Code and Agreed Procedures		
As soon as practical but no later than two Working Days after receipt of Proposal Notice	Modification Proposal Notice		
As soon as practical but no later than two Working Days after the Proposal Notice	Consultation on Proposal Notice		
As soon as practical but no later than two Working Days after receipt of responses to consultation	Responses to Consultation on Proposal Notice		
As soon as practical but no later than two Working Days on receipt of further information	Further Information on Proposal Notice		
As soon as practical but no later than two Working Days of receipt of Final Modification Recommendation	Final Modification Recommendation		
As soon as practical but no later than two Working Days of receipt of Regulatory Authority decision on Final Modification Recommendation	Regulatory Authority decision on Final Modification Recommendation		
As updated and at least within two Working Days of an application, successful application, or non-successful application	List of Parties, Participants, Registered Generator Units and Supplier Units		
As issued and at least within two Working Days of Issue	Suspension Order or lifting of a Suspension Order		
As issued and at least within two Working Days of Issue	Termination Order		
As received and at least within two Working Days of Issue	Generator Unit Under Test Notice		
As updated	Proposed Market Operator Isolated Market System Testing Schedule		
As updated and at least within two Working Days of update	Details of the Accession and Participation Fees		

Time	Item / Data Record	Term	Subscript
As updated and at least two Weeks in advance of the Meeting	Date of the next Modification Committee Meeting		
Within one Working Day of receipt from the Regulatory Authorities	Supplier Suspension Delay Period		
As updated and at least within two Working Days of update	Members and Chairperson of the Modification Committee		
On receipt of the Regulatory Authorities' determination and no later than five Working Days of its receipt	Uplift Alpha, Uplift Beta, Uplift Delta	α, β, δ	
As soon a possible after calculation	Calculations and methodology used by the Market Operator during Administered Settlement		

Table 47 – Data publication list part 2: Updated Annually and as required

Time	Item / Data Record	Term	Subscript
Annual			
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Annual Capacity Exchange Rate	ACER	y
At least four Months before start of Year	Annual Load Forecast (by Jurisdiction)	FD	e h
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Annual Capacity Payment Sum	ACPS	y
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Market Price Cap	PCAP	y
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Market Price Floor	PFLOOR	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Value of Lost Load	VOLL	Y
At least one Month before start of Year	Fixed Market Operator Charge (Supplier Unit)	MOAVC	vy
At least one Month before start of Year	Fixed Market Operator Charge (Generator Unit)	MOAUC	uy
At least one Month before start of Year	Variable Market Operator Charge	VMOC	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Capacity Period Payment Sum	CPPS	c
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Fixed Capacity Payment Proportion	FCPP	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Ex-Post Capacity Payment Proportion	ECPP	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Parameters for determination of Tolerance bands for over generation and under generation	ENGTOL MWTOL UREG	t
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Discount for Over Generation and Premium for Under Generation	DOG PUG	uh
At least one Week before start of Year	Fixed Capacity Payments Weighting Factor for each Trading Period in the relevant Year	FCPWF	h
Four Weeks before start of Audit, or within one Working Day of its receipt from the Regulatory Authorities, whichever later	Terms of Reference for Market Operator Audit		
Within five Working Days after delivery of Audit Report in its final form to the Regulatory Authorities, or within one Working Day of its receipt from the Regulatory Authorities, whichever later	Market Audit Report		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Transmission Loss Adjustment Factors	TLAF	uh
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Imperfections Price	IMP	y
At least two Months before start of Year, or within five Working Days of its receipt from	Imperfections Charge Factor	IMPF	h

Time	Item / Data Record	Term	Subscript
the Regulatory Authorities, whichever later			
Four Months before start of Year	Testing Tariff		uh
Four Months before start of Year	Settlement Calendar		
Four Months before start of Year, and as updated	Schedule of Testing Tariffs	TTARIFF	uh
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Fixed Credit Requirement	FCRS FCRG	y y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Historical Assessment Period for the Billing Period		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Historical Assessment Period for the Capacity Period		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Analysis Percentile Parameter	AnPP	
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Credit Cover Adjustment Trigger		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Maximum level of the Warning Limit		

Table 47 – Data publication list part 3: Updated Monthly

Time	Item	Term	Subscript
Monthly			
Within five Working Days of its creation	Market Operator Report (paragraph 2.102)		
10:00 one working Day before start of Month	Maintenance Schedule Transaction - Generator Outage Schedule	--	--
10:00 one working Day before start of Month	Maintenance Schedule Transaction - Transmission Outage Schedule		
At 10:00, at least one Working Day before start of Month	Monthly Load Forecast	--	--
At 10:00, at least five Working Days before start of Month	Margin	M	h
At 10:00, at least five Working Days before start of Month	Loss of Load Probability for each Trading Period in the relevant Month	λ	h
At 10:00, at least five Working Days before start of Month	Variable Capacity Payments Weighting Factor for each Trading Period in the relevant Month	VCPWF	h
At least once every four Months	Reports on progress and status of Modification Proposals		

Table 47 – Data publication list part 4: Updated Daily in Advance of Gate Closure

Time	Item / Data Record	Term	Subscript
Daily, in advance of Gate Closure			
Before 09:30	Four Day Load Forecast	--	--
Before 09:30	Any important updates to Maintenance	--	--

	Schedule(Generator and Transmission) Data Transaction (Appendix J)		
As Available, every six hours	Two Day Rolling Wind Power Unit Forecast -- aggregated by Jurisdiction	--	--
Before 09:30	Forecast of Ex-Post Loss of Load Probability for each Trading Period in the forthcoming 31 Trading Days	Φ	h

Table 47 – Data publication list part 5: Updated Daily post Gate Closure

Time	Item / Data Record	Term	Subscript
Daily, post gate closure and before Trading Day			
13:00	Ex-Ante Indicative System Marginal Prices	--	

Table 47 – Data publication list part 6: Updated Daily post Trading Day

Time	Item	Term	Subscript
Daily, post Trading Day			
Day after Trading Day at 14:00	Technical Offer Data (Appendix C)		
Day after Trading Day at 14:00	Commercial Offer Data (Appendix C)		
Day after Trading Day at 15:00	Interconnector Available Transfer Capacities	ATC	lh
Day after Trading Day at 15:00	Interconnector Unit Export Capacity Holding	CHE	uh
Day after Trading Day at 15:00	Interconnector Unit Import Capacity Holding	CHI	uh
Day after Trading Day at 15:00	Interconnector Unit Active Export Capacity Holding	CHEA	uh
Day after Trading Day at 15:00	Interconnector Unit Active Import Capacity Holding	CHIA	uh
Day after Trading Day at 15:00	Modified Interconnector Unit Nominations		
Day after Trading Day at 15:00	Ex-Ante Indicative Market Schedule		
Day after Trading Day at 16:00	Ex-Ante Indicative Operations Schedule		
Day after Trading Day at 16:00	Generator Unit Technical Characteristics Data Transaction (See Appendix E)		
Day after Trading Day at 16:00	Energy Limited Generator Unit Technical Characteristics Data Transaction (See Appendix E)		
Day after Trading Day at 16:00	Dispatch Instruction Transaction (See Appendix E)		
Day after Trading Day at 15:00, and as updated	All Price Effecting Metered Data, excluding Trading Site Supplier Units for Trading Sites with Non-firm Access for all available Trading Periods	MG	uh
One Working Day after Trading Day at 15:00, and as updated	Net Inter Jurisdictional Import for all available Trading Periods	NIJI	eh

Time	Item	Term	Subscript
Two Working Days after Trading Day at 17:00, and as updated	Tolerance for Over Generation and Tolerance for Under Generation	TOLOGLF TOLUGLF	uh
Two Working Days after Trading Day at 17:00, and as updated	Dispatch Offer Price	DOP	uh
Day after Trading Day at 17:00	Ex-Post Indicative Market Schedule Quantity	MSQ	uh
Four Days after Trading Day at 17:00	Ex-Post Initial Market Schedule Quantity	MSQ	uh
Two Working Days after Capacity Period at 16:00	Ex-Post Indicative values of Eligible Availability	EA	uh
Five Working Days after Capacity Period at 16:00	Ex-Post Initial values of Eligible Availability	EA	uh
Day after Trading Day at 16:00	Ex-Post Indicative SMPs	SMP	h
Four Days after Trading Day at 17:00	Initial SMPs	SMP	h
One Working Day after Trading Day at 17:00,	Nominal System Frequency	NORFRQ	h
One Working Day after Trading Day at 17:00,	Average System Frequency	AVGFRQ	h
Two Working Days after Trading Day, at 09:00	Indicative Energy Payments to Generator Units	CONP ENP	uh
Five Working Days after end of Billing Period, at 14:00, and as updated at 17:00 the day of recalculation	Ex-Post Initial Energy Payments to Generator Units	CONP ENP	uh
Day after Trading Day at 17:00	Credit Assessment Price	CAP	g

Table 47 – Data publication list part 7: Updated on a Capacity Period basis, post end of Capacity Period

Time	Item	Term	Subscript
Each Capacity Period, post end of Capacity Period			
Two Working Days after end of Capacity Period, at 16:00	Ex-Post Indicative Capacity Payments to each Generator Unit	CP	uh
Five Working Days after end of Capacity Period, at 16:00	Initial Capacity Payments to each Generator Unit	CP	uh
Two Working Days after end of Capacity Period, at 16:00	Indicative Ex-Post Capacity Payments Weighting Factor	ECPWF	h
Five Working Days after end of Capacity Period, at 16:00	Initial Ex-Post Capacity Payments Weighting Factor	ECPWF	h
Five Working Days after end of Capacity Period, at 16:00	Initial Variable Capacity Payments Weighting Factor	VCPWF	h
Five Working Days after end of Capacity Period, at 16:00	Initial Ex-Post Margin	EM	h
Five Working Days after end of Capacity Period, at 16:00	Initial Ex-Post Loss of Load Probability	Φ	h

APPENDIX L:

LIST OF AGREED PROCEDURES

L.1 This Appendix L of the Code describes all Agreed Procedures associated with the Code and sets out the scope of each Agreed Procedure.

L.2 Agreed Procedure 1 "Participant and Unit Registration and Deregistration" sets out the detailed obligations of the Market Operator, Parties and (where applicable) Applicants in relation to:

1. the operation of the process set out in Appendix B;
2. the operation of the registration process set out in paragraphs 2.10-2.14, 2.19, 2.20, 2.22, 2.23, 2.23A, 2.24, 2.25, 2.26, 2.27, 2.28, 2.29, 2.30, 2.30A, 2.30B, 2.32, 2.32A, 2.41, 2.42, 2.49, 2.51, 2.52A, 2.53, 2.56, 2.57, 2.59, 2.65, 2.68, 2.69, 2.70, 2.74, 2.75, 2.75A, 2.76, 2.77, 2.77A, 2.77B, 2.77C, 3.2, 3.11, 3.77E and 3.81A;
3. the operation of the data validation process set out in paragraphs 2.22 2.27, 2.30, 2.31, 2.37, 2.38, 2.39, 2.40A, 2.44, 2.45, 2.45A, 2.46, 2.47, 2.48A, 2.48A1, 2.48B, 2.48C, 2.48D, 2.48F, 2.50, 2.52, 2.58, 2.61, 2.66, 2.70.1, 2.70.2, 2.72, 2.75, 2.77B.1 and 2.77B.2; and
4. the Transaction (timelines and format) under which the Market Operator informs a Participant of the Required Credit Cover for a Unit prior to the registration of that Unit.

L.3 Agreed Procedure 2 "Interconnector Unit Capacity Right Calculations and Dispatch Notification" sets out the detailed obligations of the Market Operator and the relevant Parties in relation to those of the Transactions listed in Appendix E that relate to the operation of the Interconnector, in order that the procedures for the treatment of Interconnector Units as set out in general terms in Section 5 can be carried out.

L.4 Agreed Procedure 3 "Communication Channel Qualification" sets out the detailed obligations of the Parties in relation to the obtaining and maintenance of a functioning Type 2 Channel or Type 3 Channel, and the security required for these Communication Channels, and also sets out the manner in which Participants and (in the case of suspension of Communication Channel Qualification) the Market Operator shall perform the following functions in order that Participants may "issue", "submit", "send" or "receive" Data Transactions and to maintain a secure IT system:

1. Registering Type 2 Channel and Type 3 Channel communications;
2. Testing Participant qualification in respect of Type 2 Channel and Type 3 Channel communications;
3. Accessing the Market Operator's Isolated Market System;
4. Maintaining Communication Channel Qualification status in respect of both Type 2 Channel and Type 3 Channel; and
5. Suspension of Communication Channel Qualification status in respect of Type 2 Channel and Type 3 Channel.

L.5 Agreed Procedure 4 "Data Transaction Submission and Validation" sets out the detailed obligations of the Parties in relation to the submission of:

1. Offer Data (other than the elements listed in paragraphs C24 and C25 of Appendix C);
2. Settlement Reallocation Requests; and

3. Generator Unit Under Test Notices,

including the data groupings and technical IT interface requirements with which each such Data Transaction must comply in order that the Market Operator is obliged to accept it, and shall be subject to the requirements set out in paragraph C.23 of Appendix C and paragraph J.7 of Appendix J.

L.6 Agreed Procedure 5 "Data Storage and IT Security" sets out the detailed obligations of the Market Operator and Parties in relation to:

1. the technical security, data storage and data access specifications and standards with which the Isolated Market System of the Market Operator and of each Participant must comply;

2. the technical security specifications and standards that must be maintained in order to gain access to the Market Operator's Isolated Market System;

3. the security standards for data communications that must be complied with in respect of Type 2 Channel and Type 3 Channel communications;

4. computational machine precision and methods of rounding; and

5. the matters set out in paragraphs 3.14, 3.16, 3.16A, 3.92 and 3.93.

L.7 Agreed Procedure 6 "Data Publication" sets out the detailed obligations of the Market Operator and Parties in relation to:

1. the method of publication of data, and the updating of published data;

2. the data listed in Appendix K that must be provided by the Market Operator in response to a request made by a Participant, and the method of such response;

3. the matters set out in paragraphs 1.19.15, 1.19.17, 2.198, 2.311A, 2.312, 2.333, 3.16A, 3.55A, 3.82, 3.83, 3.84, 3.86, 3.90, 3.91.

L.8 Agreed Procedure 7 "Emergency Communications" sets out the detailed obligations of the Market Operator and Parties that arise in the event of and for the duration of a General Communication Failure, a General System failure or a Limited Communication Failure in relation to:

1. the processes for communication of data required for market settlement;

2. the process to be followed by the Market Operator in notifying the market that a General Communication Failure or a General System Failure is in effect;

3. general responsibilities of Parties;

4. updates to be issued by the Market Operator;

5. estimation to be carried out by the Market Operator as to how long the emergency situation will remain in effect; and

6. the matters set out in paragraphs 3.37, 3.41A, 3.49, 3.56, 3.58, 3.58A, 3.59, 3.60, 3.63, 3.64, 3.70, 3.74, 3.75.

L.9 Agreed Procedure 9 "Management of Credit Cover and Credit Default" sets out the detailed obligations of the Market Operator and Participants in relation to:

1. the processes for managing the Credit Cover that is or is required to be maintained by Participants;

2. the process that is to be invoked in the event of a Default by a Participant in relation to Credit Cover; and

3. the matters set out in paragraphs 6.164A, 6.169G, 6.170I, 6.170N, 6.170U, and 6.170Z.

L.10 Agreed Procedure 10 "Settlement Reallocation" sets out the detailed obligations of the Market Operator and Participants in relation to the submission, content, Currency and treatment of Settlement Reallocation Requests, the status and cancellation of any resulting Settlement Reallocation Agreement, and the matters set out in paragraphs 6.176, 6.179, 6.179A, 6.182, 6.189, 6.190 and 6.191.

L.11 Agreed Procedure 11 "Market System Operation, Testing, Upgrading and Support" sets out the detailed obligations of the Market Operator in relation to the:

1. provision of advice to Parties in relation to the operation of the Market Operator's Isolated Market System and Communication Channels;

2. provision to Parties of a facility for the reporting of incidents;

3. implementation and coordination of the Market Operator's Isolated Market Systems and its interfaces to Communication Channels;

4. scheduled testing and down-time of the Market Operator's Isolated Market Systems or its interfaces to Communication Channels;

5. commissioning of an externally-audited report in the event of a General Communication Failure, General System Failure or MSP Failure;

6. restoration of the Market Operator's Isolated Market Systems in the event of a General System Failure; and

7. the matters set out in paragraphs 3.12, 3.17, 3.19, 3.72 and 3.73.

L.12 Agreed Procedure 12 "Modifications Committee Operation" sets out the detailed obligations of the Market Operator and Parties in relation to the rules and proceedings of the Modifications Committee, and the matters set out in paragraphs 2.108 to 2.113 inclusive, and 2.149 to 2.206 inclusive.

L.13 Agreed Procedure 13 "Query Generation" sets out the detailed obligations of the Market Operator and Parties in relation to the raising, consideration and resolution of, and response to, Data Queries and Settlement Queries, and the matters set out in paragraphs 6.42, 6.45, 6.46, 6.48, 6.49, 6.50, 6.51, 6.52, 6.53, 6.53A, 6.54, 6.56, 6.57, 6.58, 6.59, 6.59A, 6.60, 6.61, 6.62, 6.74, 6.75.

L.14 Agreed Procedure 14 "Disputes" sets out the detailed obligations of the Market Operator and Parties in relation to the procedures governing Disputes, and the matters set out in paragraphs 2.239 to 2.282 inclusive.

L.15 Agreed Procedure 15 "Invoicing" sets out the detailed obligations of the Market Operator in relation to the issuing of Settlement Statements, Invoices, Self Billing Invoices and Debit Notes in accordance with Appendix F, and the matters set out in paragraphs 2.247, 3.2, 6.1, 6.3, 6.6, 6.7, 6.29A, 6.29A.2.a, 6.29A.2.b, 6.29A.2.c, 6.29A.2.d, 6.29A.2.e, 6.29A.2.f, 6.29A.2.g, 6.29A.2.h, 6.30, 6.32, 6.33, 6.33.1, 6.33.2, 6.33.3, 6.33.4, 6.33B, 6.33C, 6.33D, 6.33E.2, 6.33E.3, 6.33F.2, 6.33G, 6.33M, 6.33N, 6.33O, 6.34, 6.35, 6.36, 6.37, 6.41, 6.93, 6.97, 6.102B, 6.102E, and 6.131.

L.16 Agreed Procedure 16 "Metered Data Provision" sets out the detailed obligations of the Meter Data Providers in relation to the grouping of Meter Data for provision to the Market Operator, and the timing of such provision.

~~APPENDIX M:~~

DESCRIPTION OF THE FUNCTION FOR THE DETERMINATION OF CAPACITY PAYMENTS

a. ~~Intentionally blank~~This Appendix M of the Code contains a description of the Function for the Determination of Capacity Payments. Appendix M addresses the methodology for forecasting Demand, the determination of the Margin (Mh), the determination of the Interim Ex-Post Margin (IEMh), the determination of the Ex-Post Margin (EMh) and the methodology for the determination of the Loss of Load Probability (λh) and the Ex-Post Loss of Load Probability (Φh).

DETERMINATION OF LOAD FORECAST DATA

The System Operators shall produce an Annual Peak Demand Forecast for the coming year based on a linear regression analysis of the peaks from previous Years. A number of historic years will be examined and the choice of which historic years to use will be flexible in order to reduce errors and maximise forecast accuracy.

The System Operators will net forecast Output from non-Participants from the Demand forecasts in a consistent manner.

The System Operators shall break the Annual Peak Demand Forecast down into Weekly Peak Demand Forecasts by examining the ratio of each Outturn Weekly Peak Demand to that of the Outturn Annual Peak Demand from previous Years.

Each Settlement Day of the Year shall be classified by the System Operators as one of several standard day types. These standard day types will consist of a normalized Trading Period level profile along with a scalar multiplier which facilitates the determination of the peak of that Settlement Day as the product of the scalar multiplier and the corresponding weekly peak.

The System Operators shall determine these standard daily profiles along with their associated multiplier by analysing historical Demand data. Standard daily profiles shall be representative of Demand patterns for a particular time of year, day of the week, weekends and for special holidays.

The System Operators shall perform a yearly review of the performance of the previous Year's Annual Peak Demand Forecast in order to determine possible improvements to the methodology for the production of the Annual Peak Demand Forecast for the subsequent year. This review will involve analysis of the accuracy of the previous Year's Annual Peak Demand Forecast and the Weekly Peak Demand Forecasts against the Outturn data. The System Operators shall examine as part of these reviews whether temperature correction of Annual Peak Demand Forecast and Weekly Peak Demand Forecast yields any benefit in terms of accuracy.

No additional processing in addition to that described in paragraphs M.1 to M.7 inclusive shall be carried out by the System Operators to derive the Annual Peak Demand Forecast and Weekly Peak Demand Forecast. If the System Operators determine that a change to the forecast methodology is warranted as a result of a process review carried out in accordance with paragraph M.7 which would result in a demonstrable material and significant improvement in the forecasts' overall accuracy, the System Operators shall raise a Modification to change the forecast process.

DETERMINATION OF CAPACITY MARGINS

Determination of Forced Outage Rates

In respect of each Year, the Unit Total Unavailability (UTUuy) of each Generator Unit u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units shall be determined by the System Operator for the Jurisdiction in which the Units are Connected as follows:

$$UTUuy = \sum_{hiny} Max\{((RCu \times TCFuh) - APuh), 0\} \times TPD$$

Where

RCu is the Registered Capacity of Generator Unit u;

TCFuh is the Temperature Correction Factor for Generator Unit u in Trading Period h;

APuh is the Availability Profile of Generator Unit u in Trading Period h; and

TPD is the Trading Period Duration.

The Unit Forced Unavailability (UFUuy) for each Generator Unit u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units shall be determined by the System Operators as follows:

$$UFUuy = UTUuy - \left(\sum_{hiny} Max\{((RCu \times TCFuh) - APuh), 0\} \times TPD \times Max\{USOIuh, UTIuh\} \right)$$

Where

UTUuy is the Unit Total Unavailability of Generator Unit u in Year y;

RCu is the Registered Capacity of Generator Unit u;

TCFuh is the Temperature Correction Factor for Generator Unit u in Trading Period h;

APuh is the Availability Profile of Generator Unit u in Trading Period h;

USOIuh is the Unit Scheduled Outage Indicator for Generator Unit u in Trading Period h;

UTIuh is the Unit Test Indicator for Generating Unit u in Trading Period h; and

TPD is the Trading Period Duration.

The Unit Forced Outage Rate (UFORuy) of each Generator Unit u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units shall be determined by the System Operators as follows:

$$if \sum_{hiny} \left(RCu \times TCFuh \times \left(1 - USOIuh\right) \times \left(1 - UTIuh\right) \times TPD\right) \neq 0 \quad then$$

$$UFORuy = \frac{UFUuy}{\sum_{hiny} \left(RCu \times TCFuh \times \left(1 - USOIuh\right) \times \left(1 - UTIuh\right) \times TPD\right)}$$

else

$$UFORuy = 0$$

Where

UFUuy is the Unit Forced Unavailability of Generator Unit u in Year y;

RCu is the Registered Capacity of Generator Unit u;

TCFuh is the Temperature Correction Factor for Generator Unit u in Trading Period h. The values of TCFuh for this equation will be determined by the System Operators by reference to the historic relationship between Generator Unit availability and temperature;

USOIuh is the Unit Scheduled Outage Indicator for Generator Unit u in Trading Period h. The values of USOIuh for this equation will be determined by the System Operators by reference to the historic outage plan;

UTIuh is the Unit Test Indicator for Generator Unit u in Trading Period h; and

TPD is the Trading Period Duration.

The Unit Historic Forced Outage Factor (UHFOFuy) for each Generator Unit u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units for each Year shall be determined 5 Working Days prior to the start of each Year by the System Operators as follows:

$$UHFOFuy = {}^{y=-5}_{y=-1}\left(\overline{UFORuy}\right)$$

Where

${}^{y=-5}_{y=-1}\left(\overline{\ }\right)$ is the mean value over the 5 years immediately preceding Year y or, where such data is not available, the System Operators shall utilise mean values for the associated Generator Unit technology, and

UFORuy is the Unit Forced Outage Rate for Generator Unit u in Year y, save that in relation to the year immediately preceding Year y, the value of Forced Outage Rate shall be determined by reference to the available data for such immediately preceding Year y at the time the determination is made.

For the purposes of establishing values of the Unit Historic Forced Outage Factor (UHFOFuy) to apply to each Generator Unit u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units from the Market Start Date, the System Operators shall use best available data in relation to each such Generator Unit to establish values of UFORuy for the year containing the Market Start Date and the preceding 4 Years or, where such data is not available, shall utilise mean values for the associated Generator Unit technology.

In respect of each Trading Period, h, the Interconnector Forced Unavailability (IFUlh) shall be determined for each Interconnector I by the relevant System Operator as follows:

$$if\ MIATClh < AAIClh\ and\ ISOIlh \neq 1\ then$$

$$IFUlh = AIClh - MIATClh$$

$$else$$

$$IFUlh = 0$$

Where

MIATClh is the Maximum Import Available Transfer Capacity of Interconnector *I* in Trading Period h;

ISOIlh is the Interconnector Scheduled Outage Indicator for Interconnector *I* in Trading Period h;

AIClh is the Aggregate Import Capacity of Interconnector *I* in Trading Period h; and

AAIClh is the Adjusted Aggregate Import Capacity of Interconnector *I* in Trading Period h.

In respect of each Year y, the Interconnector Annual Forced Unavailability (IAFUly) shall be determined for each Interconnector I as follows:

$$IAFUiy = \sum_{hiny} \left(IFUlh \times TPD \right)$$

Where

IFUlh is the Interconnector Forced Unavailability of Interconnector *I* in Trading Period h, and

TPD is the Trading Period Duration.

The Interconnector Forced Outage Rate (IFORly) of each Interconnector I shall be determined by the relevant System Operator as follows:

$$if \sum_{hiny} \left(AIClh \times \left(1 - ISOIlh \right) \times TPD \right) \neq 0\ \ then$$

$$IFORly = \frac{IAFUly}{\sum_{hiny} \left(AIClh \times \left(1 - ISOIlh \right) \times TPD \right)}$$

$$else$$

$$IFORly = 0$$

Where:

IAFU*l*y is the Interconnector Annual Forced Unavailability of Interconnector *I* in Year y;

AIC*l*h is the Aggregate Import Capacity of Interconnector *I* in Trading Period h;

ISOI*l*h is the Interconnector Scheduled Outage Indicator for Interconnector *I* in Trading Period h. The values of ISOIuh for this equation will be determined by the System Operators by reference to the historic outage plan; and

TPD is the Trading Period Duration.

The Interconnector Historic Forced Outage Factor (IHFOFly) for each Interconnector l shall be determined by the relevant System Operator 5 Working Days prior to the start of each Year y as follows:

$$IHFOFly = \sum_{y=-1}^{y=-5} \left(\overline{IFORly} \right)$$

Where

$\sum_{y=-1}^{y=-5} \left(\overline{\ } \right)$ is the mean value over the 5 years immediately preceding Year y or, where such data is not available, the System Operator shall utilise mean values for the associated technology; and

IFOR*l*y is the Interconnector Forced Outage Rate for Interconnector *l* in Year y, save that in relation to the year immediately preceding Year y, the value of Interconnector Forced Outage Rate shall be determined by reference to the available data for such immediately preceding Year y at the time the determination is made.

For the purposes of establishing values of IHFOFly to apply to each Interconnector from the Market Start Date, the relevant System Operator shall, subject to M.20 below use best available data in relation to each Interconnector to establish values of IFORly for the Year containing the Market Start Date and the preceding 4 Years or, where such data is not available, the System Operator shall utilise mean values for the associated technology.

Determination of the Wind Capacity Credit

For the purposes of establishing values of the Wind Capacity Credit (WCCh) for each Wind Power Unit for each Trading Period in Year y, the System Operators shall, prior to the start of each such Year, derive a plot of capacity credit versus wind capacity on an all-island basis for the relevant Year, employing the methodology utilised in the most recent production of the Generation Adequacy Report.

Determination of the Margin

The System Operators shall determine the Margin (Mh) in each Trading Period h in each Capacity Period 5 Working Days prior to each Capacity Period. The values of Registered Capacity (RCu) and Aggregate Import Capacity (AICIh) determined by the System Operators shall be based upon the values applicable at the time of the calculation of the values of the Margin (Mh). The values of the Unit Scheduled Outage Indicator (USOIuh) and Interconnector Scheduled Outage Indicator (ISOIlh) determined by the System Operators shall be based upon the outage plan, developed under the relevant Grid Code, applicable at the time to the relevant Capacity Period. The values of the Temperature Correction Factor (TCFuh) will be determined by the System Operators by reference to the historic relationship between Generator Unit availability and temperature. The determination of whether a Generator Unit has been granted status of Under Test under the terms of the relevant Grid Code in any Trading Period in the relevant Capacity Period shall, for the purposes of determining the Margin, also take the values as determined by the System Operators at the time of the calculation of the values of Margin (Mh) for the relevant Capacity Period. For the purposes of determining the Margin (Mh) the System Operators shall determine the values of the Monthly Load Forecast (MFDh) for each Trading Period in the relevant Capacity Period. These values shall be the sum of the

Monthly Load Forecast for each Jurisdiction and shall be determined at the time of the calculation of the values of the Margin (Mh) of the relevant Capacity Period.

For each Trading Period within the relevant Capacity Period, the Forecast Unit Availability (FUAuh) for each Generator Unit u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units shall be determined by the System Operators as follows:

$$FUAuh = RCu \times TCFuh \times (1 - UTIuh) \times (1 - USOIuh) \times (1 - UHFOFuy)$$

Where:

RCu is the forecast of Registered Capacity for Generator Unit u;

TCFuh is the forecast of Temperature Correction Factor for Generator Unit u in Trading Period h;

UTIuh is the forecast of Unit Test Indicator for Generator Unit u in Trading Period h;

USOIuh is the forecast of Unit Scheduled Outage Indicator for Generator Unit u in Trading Period h; and

UHFOFuy is the Unit Historic Forced Outage Factor for Generator Unit u for Year y.

For each Trading Period h within the relevant Capacity Period, the Forecast Interconnector Availability (FIAlh) for each Interconnector l shall be determined by the relevant System Operator as follows:

$$FIAlh = AIClh \times (1 - ISOIlh) \times (1 - IHFOFly)$$

Where:

AIC*l*h is the forecast of Aggregate Import Capacity for Interconnector *l* in Trading Period h;

ISOI*l*h is the forecast of Interconnector Scheduled Outage Indicator for Interconnector *l* in Trading Period h; and

IHFOF*l*y is the Interconnector Historic Forced Outage Factor for Interconnector *l* for Year y.

For each Trading Period h within the relevant Capacity Period, the Forecast Wind Contribution (FWCh) shall be determined by the System Operators as follows:

$$FCWh = WCCh$$

Where:

WCCh is the Wind Capacity Credit determined for all Wind Power Units in Trading Period h by the System Operators.

For each Trading Period h within the relevant Capacity Period, the Interim Margin (IMNh) shall be determined as follows:

$$IMNh = \left(\sum_{u} (FUAuh) + \sum_{l} (FIAlh) + FCWh \right) - MFDh$$

Where

FUAuh is the Forecast Unit Availability of Generator Unit u in Trading Period h;

FIA*l*h is the Forecast Interconnector Availability of Interconnector *l* in Trading Period h;

FCWh is the Forecast Wind Contribution in Trading Period h;

MFDh is the Monthly Forecast Demand value in Trading Period h;

$\sum_{u}$ is the summation over all Generator Units u other than Autonomous Generator Units, Energy Limited Generator Units, Pumped Storage Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units; and

$\sum_{l}$ is the summation over all Interconnectors *l*.

For each Trading Period within the relevant Capacity Period, the System Operators shall determine the Margin (Mh) by adjusting the Interim Margin (IMNh) to account for the forecast availability of Energy Limited Generator Units and Pumped Storage Units by first estimating the energy available from each Generation Site, G, for each day.

For each Trading Period within the relevant Capacity Period, the Forecast Generation Site Availability (FGSAGh) for each Generation Site G containing Energy Limited Generator Units or Pumped Storage Units shall be determined by the System Operators as follows:

$$FGSA_{Gh} = \sum_{u} FUAuh$$

Where:

FUAuh is the Forecast Unit Availability of Generator Unit u in Trading Period h; and

$\sum_{u}$ is the summation over all Energy Limited Generator Units or Pumped Storage Units at Generation Site G.

The System Operators shall then determine the Margin (Mh) as follows:

Loop for each Day

Continue while there is remaining energy in any Generation Site containing Energy Limited Generator Units or Pumped Storage Units.

Find the Trading Period(s) of Minimum Interim Margin and the number of Trading Periods of Minimum Interim Margin

Loop for each Generation Site containing Energy Limited Generator Units or Pumped Storage Units

Increase the Optimised Output from current Generation Site for each Trading Period of Minimum Interim Margin by 1MW divided by the number of Trading Periods of Minimum Interim Margin, except if there is not sufficient remaining energy for this Generation Site to do this, in which case, increase the Optimised Output from that Generation Site by the remaining energy divided by the number of Trading Periods of Minimum Interim Margin.

If increasing the Output for a Generation Site for any Trading Period in the step above would result in a violation of the Unit's Technical Capability, only increase the Output in those Trading Periods by an amount that would not exceed the Forecast Generation Site Availability (FGSAGu) for that Generation Site. If the Output for the Generation Site is already equal to FGSAGu in previous step, do not update Output.

Update remaining energy for Generation Site bearing in mind that for each MW of Output allocated to a Generation Site in a Trading Period, 0.5MWh is deducted from the energy remaining for that Unit.

Update Interim Margin in all Trading Periods.

Find the Trading Period(s) of Minimum Interim Margin and the number of Trading Periods of Minimum Interim Margin.

Loop to next Generation Site

Loop to next Day

Determination of the Ex-Post Margin

For each Trading Period within the relevant Capacity Period, the Interim Ex-Post Margin (IEMh) used in determining the Interim Ex-Post Loss of Load Probability (IΦh) shall be determined by the System Operators as follows:

$$IEMh = \left(\sum_{\alpha} (EAuh) + \sum_{\beta} (MSQuh) \right) - \sum_{u} \left(\frac{MGuh}{TPD} \right)$$

Where:

IEMh is the Interim Ex-Post Margin for Trading Period h;

EAuh is the Eligible Availability for Generator Unit u in Trading Period h;

MSQuh is the Market Schedule Quantity for Generator Unit u in Trading Period h;

MGuh is the Metered Generation for Generator Unit u in Trading Period h;

TPD is the Trading Period Duration;

$\sum_{\alpha}$ is the summation over all Generator Units eligible to receive Capacity Payments, other than Pumped Storage Units and Energy Limited Generator Units;

$\sum_{\beta}$ is the summation over all Pumped Storage Units and Energy Limited Generator Units eligible to receive Capacity Payments; and

$\sum_{u}$ is the summation over all Generator Units u eligible to receive Capacity Payments.

For each Trading Period h within the relevant Capacity Period, the Ex-Post Margin used in determining the Ex-Post Loss of Load Probability (Φh) shall be determined by the System Operators as follows:

$$EMh = \left(\sum_{\alpha} (EAuh) + \sum_{\beta} (IEAuh) \right) - \sum_{u} \left(\frac{MGuh}{TPD} \right)$$

Where:

EMh is the Ex-Post Margin for Trading Period h;

EAuh is the Eligible Availability for Generator Unit u in Trading Period h;

IEAuh is the Interim Eligible Availability for Generator Unit u in Trading Period h;

MGuh is the Metered Generation for Generator Unit u in Trading Period h;

TPD is the Trading Period Duration;

$\sum_{\alpha}$ is the summation over all Generator Units eligible to receive Capacity Payments, other than Pumped Storage Units and Energy Limited Generator Units;

$\sum_{\beta}$ is the summation over all Pumped Storage Units and Energy Limited Generator Units eligible to receive Capacity Payments; and

$\sum_{u}$ is the summation over all Generator Units u eligible to receive Capacity Payments.

DETERMINATION OF THE LOSS OF LOAD PROBABILITY TABLE

With respect to the Loss of Load Probability Table, the System Operators shall make a report to the Regulatory Authorities at least four months before the start of the Year proposing a value for the Flattening Power Factor (FPFy) for Year y which shall be in the range $0 < FPFy \leq 1$. The Market Operator shall publish the approved value of this parameter within 5 Working Days of receipt of the Regulatory Authorities' determination or two months prior to the first Capacity Period of the Year, whichever is the later. The System Operators may propose revisions to the value of the Flattening Power Factor (FPFy) during the Year and, subject to the approval of the Regulatory Authorities, the Market Operator shall publish such revised value not less than thirty 30 days prior to the first Capacity Period for which such revised value is to be applied.

The Loss of Load Probability Table for Year y shall be determined by the System Operators and published by the Market Operator at least 5 Working Days prior to the first Capacity Period in each Year and shall relate Input Margin (IM) to Output Loss Of Load Probability (OLOLP).

Subject to M.33, if during the course of a Year y any of the following conditions arise:

a Generator Unit with Registered Capacity (RCu) greater than 50MW is newly registered; or

a Generator Unit with Registered Capacity (RCu) greater than 50MW is deregistered,

the System Operators shall recalculate the Loss of Load Probability Table and the Market Operator shall publish such revised table at least 5 Working Days prior to the Capacity Period in which either such registration or deregistration becomes effective, and such table shall apply until the earlier of the end of the Year or another occurrence of one of the above conditions.

If the conditions in M.32 arise as a result of the same Generator Unit being deregistered and then registered with the same effective day, the Loss of Load Probability Table shall not be recalculated.

To determine the Loss of Load Probability Table, the System Operators shall first determine the Total Conventional Capacity (TCCy) for the Year y as follows:

$$TCC_y = \sum_u round(RC_u) + \sum_l round(AIC_l)$$

Where:

RCu is the Registered Capacity of Generator Unit u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units;

AICl is the Aggregate Import Capacity of Interconnector l; and

$round(x)$ is a function which rounds x to the nearest integer.

The values of Input Margin (IM) in the Loss of Load Probability Table shall take all values in the domain IM $\in$ Integers for all $0 \leq IM \leq TCCy$

Where:

TCCy is the Total Conventional Capacity for Year y

In relation to each value of Input Margin (IM) in the Loss of Load Probability Table, the corresponding value of First Temporary Output Loss of Load Probability for the first Generator Unit ($FTMPOLOLP_{1,IM}$), other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units, shall be calculated by the System Operators as follows:

$$FTMPOLOLP_{1,TCC-\Omega} = UHFOF_{1y} \quad \forall \ 0 \leq \Omega < round(RC_1)$$
$$FTMPOLOLP_{1,TCC-\Omega} = 1 \quad \forall \ round(RC_1) \leq \Omega \leq TCC_y$$

Where

TCCy is the Total Conventional Capacity for Year y;

UHFOF1y is the Unit Historic Forced Outage Factor for the first Generator Unit in Year y;

RC1 is the Registered Capacity of the first Generator Unit; and

$round(x)$ is a function that rounds x to the nearest integer.

In relation to each value of Input Margin in the Loss of Load Probability Table, the corresponding values of First Temporary Output Loss of Load Probability ($FTMPOLOLP_{u,IM}$) determined in M.36 shall be amended by reference to the remaining Generator Units u other than Autonomous Generator Units, Demand Side Units, Wind Power Units, Interconnector Units and Interconnector Residual Capacity Units, using the following recursive function:

$$FTMPOLOLP_{u,(TCC_y-\Omega)} = \{FTMPOLOLP_{(u-1),(TCC_y-\Omega)} \times UHFOF_{uy} + FTMPOLOLP_{(u-1),[TCC_y-\Omega+round(RC_u)]} \times (1-UHFOF_{uy})\}$$

$$\forall \begin{cases} 2 \le u \le NU_y, u \in \mathrm{I} \\ 0 \le \Omega \le TCC_y, \Omega \in \mathrm{I} \\ round(RC_u) \le \Omega \\ TCC_y - \Omega + round(RC_u) \ge 0 \end{cases}$$

Where:

NUy is the total number of Generator Units u other than Wind Power Units, Interconnector Units, Interconnector Residual Capacity Units and Interconnector Error Units in Year y;

TCCy is the Total Conventional Capacity for Year y;

$FTMPOLOLP_{z,x}$ is the First Temporary Output Loss of Load Probability associated with the value of IM corresponding to x and the collection of units corresponding to z;

UHFOFuy is the Unit Historic Forced Outage Factor for Generator Unit u in Year y;

RCu is the Registered Capacity of Generator Unit u; and

round(x) is a function which rounds x to the nearest integer.

The Second Temporary Output Loss of Load Probability ($STMPOLOLP_{0,IM}$) shall be initialised by being set to the final recursive value of the First Temporary Output Loss of Load Probability ($FTMPOLOLP_{NU,IM}$) as calculated in M.37:

$$STMPOLOLP_{0,IM} = FTMPOLOLP_{NU_y,IM} \quad \forall \ 0 \le IM \le TCC_y$$

In relation to each value of Input Margin in the Loss of Load Probability Table, the corresponding values of Second Temporary Output Loss of Load Probability ($STMPOLOLP_{I,IM}$) determined in M.38 shall be appended by reference to the Interconnectors I as follows:

$$STMPOLOLP_{I,(TCC_y-\Omega)} = \{STMPOLOLP_{(I-1),(TCC_y-\Omega)} \times IHFOF_{Iy} + STMPOLOLP_{(I-1),[TCC_y-\Omega+round(AAIC_I)]} \times (1 - IHFOF_{Iy})\}$$

$$\forall \begin{cases} 1 \le I \le NI_y, I \in \mathrm{I} \\ 0 \le \Omega \le TCC_y, \Omega \in \mathrm{I} \\ round(AAIC_I) \le \Omega \\ TCC_y - \Omega + round(AAIC_I) \ge 0 \end{cases}$$

Where

NIy is the total number of Interconnectors in Year y;

TCCy is the Total Conventional Capacity for Year y;

$STMPOLOLP_{v,x}$ is the Second Temporary Output Loss of Load Probability associated with the value of IM corresponding to x and the collection of Interconnectors and Generating Units corresponding to v;

IHFOF*Iy* is the Unit Historic Forced Outage Factor for Interconnector *I* in Year y;

AAIC*I* is the Adjusted Aggregate Import Capacity of Interconnector *I*;

IM is the Input Margin in the Loss of Load Probability Table; and

round(x) is a function which rounds x to the nearest integer.

The Third Temporary Output Loss of Load Probability ($TTMPOLOLP_{IM}$) shall be set to the final recursive value of the Secondary Temporary Output Loss of Load Probability ($STMPOLOLP_{NI,IM}$) as calculated in M.39:

$$TTMPOLOLP_{IM} = STMPOLOLP_{NI_y,IM} \quad \forall \ 0 \le IM \le TCC_y$$

In relation to each value of Input Margin in the Loss of Load Probability Table, the corresponding values of Output Loss of Load Probability ($OLOLP_{IM}$) shall be calculated by the System Operators by reference to the Third Temporary Output Loss of Load Probability ($TTMPOLOLP_{IM}$) and Flattening Power Factor (FPFy) as follows:

$$OLOLP_{IM} = (TTMPOLOLP_{IM})^{FPF_y} \quad \forall\ 0 \le IM \le TCC_y$$

Where:

$TTMPOLOLP_{IM}$ is the Third Temporary Output Loss of Load Probability corresponding to the Input Margin IM in the Loss of Load Probability Table;

$OLOLP_{IM}$ is the Output Loss of Load Probability corresponding to the Input Margin IM in the Loss of Load Probability Table;

FPFy is the Flattening Power Factor for Year y;

TCCy is the Total Conventional Capacity in Year y; and

$(x)^{FPF_y}$ is a function which raises the value of x to the power of the Flattening Power Factor.

The Loss of Load Probability (λh) in each Trading Period h shall be determined by the System Operators as follows:

$$
\begin{aligned}
&if\ M_h < 0\ then \\
&\qquad \lambda_h = 1 \\
&else if\ M_h > TCC_y\ then \\
&\qquad \lambda_h = 0 \\
&else \\
&\qquad \lambda_h = OLOLP_{round(M_h)}
\end{aligned}
$$

Where:

Mh is the Margin for Trading Period h;

TCCy is the Total Conventional Capacity in Year y;

$OLOLP_x$ is the Output Loss of Load Probability in the Loss of Load Probability Table associated with the value of Input Margin corresponding to x; and

round(x) is a function that rounds x to the nearest integer.

The Ex-Post Loss of Load Probability (Φh) in each Trading Period h shall be determined by the Market Operator as follows:

$$
\begin{aligned}
&if\ EM_h < 0\ then \\
&\qquad \phi_h = 1 \\
&else if\ EM_h > TCC_y\ then \\
&\qquad \phi_h = 0 \\
&else \\
&\qquad \phi_h = OLOLP_{round(EM_h)}
\end{aligned}
$$

Where:

EMh is the Ex-Post Margin for Trading Period h;

TCCy is the Total Conventional Capacity in Year y;

$OLOLP_x$ is the Output Loss of Load Probability in the Loss of Load Probability Table associated with the value of Input Margin corresponding to x; and

round(x) is a function that rounds x to the nearest integer.

18. OPERATION OF THE MSP SOFTWARE

OVERVIEW OF APPENDIX N

a. ~~Intentionally blank~~This Appendix N of the Code sets out detailed provisions in relation to:

the high-level objectives and algorithms used within the MSP Software;

the high-level processes associated with the operation of the MSP Software;

the pre-processing of data inputs for each run of the MSP Software;

the source of data values used as inputs either to the MSP Software, the Ex-Ante Indicative Market Schedule, the Ex-Post Indicative Market Schedule or in Settlement, where these are not defined elsewhere within the Code; and

the methodology for calculation of Uplift.

HIGH-LEVEL OBJECTIVES AND ALGORITHMS USED WITHIN THE MSP SOFTWARE

Outputs from the MSP Software

b. ~~Intentionally blank~~The Market Operator shall use the MSP Software to calculate the following values:

the System Marginal Price (SMPh) for each Trading Period h;

the Market Schedule Quantity (MSQuh) for each Price Maker Generator Unit u that is not Under Test, in each Trading Period h;

c. ~~Intentionally blank~~For each Interconnector Unit in each Trading Period, the value of the Interconnector Unit Nomination is set to equal the Market Schedule Quantity for that Interconnector Unit as calculated in the Ex-Ante Indicative MSP Software Run for that Trading Day.

d. ~~Intentionally blank~~Market Schedule Quantities for Generator Units that are Under Test or that are Predictable Price Taker Generator Units, Variable Price Taker Generator Units or Autonomous Generator Units are determined in accordance with Section 5.

Principles underlying the operation of the MSP Software

e. ~~Intentionally blank~~Paragraph 1.7.19 defines the relationships between each run of the MSP Software, Optimisation Time Horizon and Trading Day.

f. ~~Intentionally blank~~No Autonomous Generator Unit or Interconnector Residual Capacity Unit shall be individually represented within the MSP Software, and no values of Availability, Commercial Offer Data, Technical Offer Data, Registration Data or Generator Unit Technical Characteristics shall be used or required by the MSP Software in relation to these Units.

g. ~~Intentionally blank~~No Predictable Price Taker Generator Units, Predictable Price Maker Generator Units that are Under Test, Variable Price Taker Generator Units, or Variable Price Maker Generator Units that are Under Test, shall be individually represented within the MSP Software.

h. ~~Intentionally blank~~No Supplier Units shall be represented individually within the MSP Software.

i. ~~Intentionally blank~~The System Marginal Price shall be calculated in each Trading Period so as to be the marginal cost of meeting the last unit of Schedule Demand (as defined within this Appendix N), plus Uplift, taking account of all constraints and limitations used within the relevant run of the MSP Software and bounded by the Market Price Cap (PCAP) and the Market Price Floor (PFLOOR), as further set out in paragraph N.16.

j. ~~Intentionally blank~~All values of System Marginal Price and Market Schedule Quantity that are calculated for the Trading Periods in the Ending Overlap Optimisation Period shall be subsequently replaced by the relevant MSP Software Run for the following Trading Day.

HIGH-LEVEL PROCESSES ASSOCIATED WITH OPERATION OF THE MSP SOFTWARE

MSP Software Run Types

k. ~~Intentionally blank~~There shall be three MSP Software Run Types:

Ex-Ante Indicative MSP Software Runs;

Ex-Post Indicative MSP Software Runs; and

Ex-Post Initial MSP Software Runs (including subsequent Settlement Reruns).

l. ~~Intentionally blank~~Ex-Ante Indicative MSP Software Runs shall be performed in relation to each Trading Day by the Market Operator, after Gate Closure and before the start of the relevant Trading Day as set out in paragraph 4.62, in order to determine, on the basis of the requirements set out elsewhere in this Appendix N in relation to Ex-Ante Indicative MSP Software Runs:

indicative values of System Marginal Price;

indicative values of Market Schedule Quantity for each Price Maker Generator Unit that is not Under Test, in order to determine the Ex-Ante Indicative Market Schedule; and

Interconnector Unit Nominations for each Interconnector Unit.

m. ~~Intentionally blank~~Ex-Post Indicative MSP Software Runs shall be performed in relation to each Trading Day by the Market Operator, after the end of the relevant Trading Day as set out in paragraph 4.63, in order to determine, on the basis of the requirements set out elsewhere in this Appendix N in relation to Ex-Post Indicative MSP Software Runs, the following values used in Ex-Post Indicative Settlement:

indicative values of System Marginal Price; and

indicative values of Market Schedule Quantity for each Price Maker Generator Unit that is not Under Test.

n. ~~Intentionally blank~~Ex-Post Initial MSP Software Runs shall be performed in relation to each Trading Day by the Market Operator, in accordance with the Settlement Calendar and paragraphs 4.64 and 4.65, in order to determine, on the basis of the requirements set out elsewhere in this Appendix N in

relation to Ex-Post Initial MSP Software Runs, the following values used in Initial Settlement and in subsequent Settlement Reruns:

System Marginal Price; and

values of Market Schedule Quantity for each Price Maker Generator Unit that is not Under Test.

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

Operation of the MSP Software

p. ~~Intentionally blank~~For each Trading Period h of the Trading Day, the MSP Software shall be used to calculate System Marginal Price (SMPh), and the Market Schedule Quantity (MSQuh) for each Price Maker Generator Unit u that is not Under Test, as follows:

Step 1

Determine the Unit Commitment Schedule for each Price Maker Generator Unit that is not Under Test, including for each Pumped Storage Unit whether or not it is scheduled to pump or generate, in each Trading Period in the Optimisation Time Horizon;

Step 2

Taking the Unit Commitment Schedule as an input and therefore treating Start Up Costs, Shut Down Costs and No Load Costs as invariant, determine the Shadow Price (SPh) values and the Market Schedule Quantity (MSQuh) values for each Price Maker Generator Unit u that is not Under Test, for each Trading Period h in the Optimisation Time Horizon;

Step 3

Calculate the Uplift (UPLIFTh) element of System Marginal Price for each Trading Period h in the Trading Day of the Optimisation Time Horizon, as set out in paragraphs N.64 to N.77 below; and

Step 4

Calculate System Marginal Price (SMPh) for each Trading Period h in the Trading Day of the Optimisation Time Horizon as follows:

$$SMPh = Max\{PFLOOR, Min\{PCAP, SPh + UPLIFTh\}\}$$

Where

SPh is the Shadow Price for Trading Period h

UPLIFTh is the Uplift for Trading Period h

PFLOOR is the Market Price Floor

PCAP is the Market Price Cap

Max{a,b} means the greater of the values of a and b

Min{a,b} means the lesser of the values of a and b

q. ~~Intentionally blank~~The Unit Commitment Schedule shall have the following features:

It shall be formulated, along with an energy schedule for each Price Maker Generator Unit that is not Under Test, so as to minimise the mathematical function comprising the sum of:

the sum of the MSP Production Costs incurred in each Trading Period in the Optimisation Time Horizon by each Price Maker Generator Unit that is not Under Test; and

the cost of violating any constraint where no feasible solution would otherwise exist, as described in paragraph N.17.4.

Constraints shall be imposed upon the Unit Commitment Schedule based on applicable Technical Capabilities, so that, in relation to each Generator Unit and subject to paragraphs N.17.4 and N.17.5:

the duration of each Contiguous Operation Period shall be less than or equal to the Maximum On Time for that Generator Unit (for Interconnector Units this limit is set to a value which will impose no restrictions on the Market Schedule Quantity of the Generator Unit);

the duration of each Contiguous Operation Period shall be greater than or equal to the Minimum On Time for that Generator Unit (for Interconnector Units this limit is set to a value which will impose no restrictions on the Market Schedule Quantity of the Generator Unit);

whenever that Generator is scheduled to stop producing Active Power, any applicable Minimum Off Time is observed relative to the Trading Period in which it was last scheduled to stop producing Active Power (which Trading Period can be in a prior Trading Day as determined by the Preceding MSP Run or Preceding MSP Runs) (for Interconnector Units this limit is set to a value which will impose no restrictions on the Market Schedule Quantity of the Generator Unit);

in the case of Pumped Storage Units, the Generator Unit shall be scheduled to be committed in either pumping mode or generating mode and all committed Pumped Storage Units linked to the same reservoir shall, while committed, be committed in the same mode – a Pumped Storage Unit must have a scheduled level of Output of not more than 0 MW when in pumping mode and a scheduled level of Output of not less than 0 MW when in generating mode, and for the avoidance of doubt, a Pumped Storage Unit can simultaneously be committed, have a scheduled level of Output of 0 MW, and be in either, but not both, of pumping mode or generating mode;

when a Generator Unit other than a Pumped Storage Unit is operating its average scheduled Output over each Trading Period is at a level not less than its Minimum Stable Generation and not greater than its Availability;

in any Trading Period where a Generator Unit is scheduled to perform a Market Schedule Start, its Output level shall be not

more than the greater of its Minimum Stable Generation and the sum of the Block Load corresponding to its Market Schedule Warmth State and half the Single Ramp Up Rate (a Block Load value of zero is to be used for Generator Units that are Pumped Storage Units or Interconnector Units);

when a Generator Unit is scheduled to stop operating, having been operating, its Output level in the last Trading Period prior to it stopping shall be not more than its Minimum Stable Generation plus half the Single Ramp Down Rate; and

in implementing the above conditions the relevant data for the Market Schedule Warmth State of the Generator Unit shall be used.

Constraints shall be imposed on the scheduling of energy so that, subject to paragraphs N.17.4 and N.17.5:

in each Trading Period, the total Output of all Price Maker Generator Units that are not Under Test shall be scheduled so as to equal Schedule Demand in that Trading Period;

limits, determined by the Single Ramp Up Rate and the Single Ramp Down Rate, on the maximum amount by which each Generator Unit's Output can change between Trading Periods shall be observed (including relative to the Generator Unit's Output from the last Trading Period of the previous Trading Day as determined by the Preceding MSP Run);

limits determined by the Aggregate Interconnector Ramp Rate, on the maximum amount by which total flow on an Interconnector can increase or decrease between Trading Periods shall be observed (including relative to the total flow scheduled on that Interconnector from the last Trading Period of the previous Trading Day as determined by the Preceding MSP Run);

the energy scheduled from any Energy Limited Generator Unit on both the Trading Day and (separately) in the Ending Overlap Optimisation Period shall not exceed the relevant Energy Limit over the relevant period;

the energy (in MWh) maintained within each Pumped Storage Unit reservoir shall be not less than its Minimum Storage Capacity (PSMINLut) and not more than its Maximum Storage Capacity (PSMAXLut);

the energy (in MWh) maintained within each Pumped Storage Unit reservoir shall meet the Target Reservoir Level in the final Trading Period of the Trading Day, and the level calculated in accordance with paragraph 5.117 in the final Trading Period of the Optimisation Time Horizon; and

a relationship is observed whereby the generation of each 1 MWh from a Pumped Storage Unit in generating mode lowers its associated reservoir by 1 MWh while the pumping of each 1 MWh by a Pumped Storage Unit in pumping mode raises the associated reservoir by a number of MWh equal to the Pumped Storage Cycle Efficiency for that Pumped Storage Unit.

The MSP Software shall include the following variables, which allow such constraint limits to be violated at a high cost if no feasible solution would otherwise exist:

the Over-Generation MSP Constraint Cost, which shall apply in any Trading Period in which total scheduled Output as calculated by the MSP Software, for Price Maker Generator Units which are not Under Test, exceeds Schedule Demand, and these circumstances comprise an Excessive Generation Event for the relevant Trading Period;

the Under-Generation MSP Constraint Cost, which applies in any Trading Period in which total scheduled Output as calculated by the MSP Software, for Price Maker Generator Units which are not Under Test, is less than Schedule Demand, and these circumstances comprise an Insufficient Capacity Event for the relevant Trading Period;

the Aggregate Interconnector Ramp Rate MSP Constraint Cost, which applies to an Interconnector in any Trading Period in which the Aggregate Interconnector Ramp Rate for that Interconnector is breached; and

the Energy Limit MSP Constraint Cost, which applies to each relevant Generator Unit in any Trading Period in which the Energy Limit for an Energy Limited Generator Unit or any of the reservoir target levels or reservoir capacities for a Pumped Storage Unit is breached.

The MSP Software shall modify conflicting input data to resolve the conflict in accordance with paragraph N.29.

No Transmission Loss Adjustment Factors (TLAFs) shall be considered or applied in determining the Unit Commitment Schedule.

r. ~~Intentionally blank~~The Economic Dispatch shall have the following features:

It shall be formulated to determine the Shadow Price (SPh) value, and the Market Schedule Quantity (MSQuh expressed in MW) for each Price Maker Generator Unit that is not Under Test, for each Trading Period, so as to minimise the mathematical function comprising the sum of:

the total MSP Production Cost incurred by all Price Maker Generator Units that are not Under Test in all Trading Periods in the Optimisation Time Horizon; and

the cost of violating any constraint where no feasible solution would otherwise exist, as described in paragraph N.18.4.

Constraints shall be imposed on Market Schedule Quantities determined as part of Economic Dispatch and based on the Unit Commitment Schedule so that, subject to paragraphs N.18.4 and N.18.5 :

a Generator Unit shall have a Market Schedule Quantity of 0 MW in any Trading Period in which the Generator Unit is not scheduled to operate;

a Pumped Storage Unit that is scheduled to operate shall have an Output not less than 0 MW if the Pumped Storage Unit is committed and in generating mode;

a Pumped Storage Unit that is scheduled to operate shall have an Output not more than 0 MW if the Pumped Storage Unit is committed and in pumping mode;

when a Generator Unit is scheduled to operate, its Output is at a level not less than its Minimum Stable Generation and not greater than its Availability;

in a Trading Period where a Generator Unit is scheduled to start operating, its Output shall not be greater than the maximum Output level allowed for that Trading Period in the Unit Commitment Schedule; and

in a Trading Period where a Generator Unit is scheduled to stop operating, its Output shall not be greater than the maximum Output level allowed for that Trading Period in the Unit Commitment Schedule.

Constraints shall be imposed on the Market Schedule Quantities determined as part of Economic Dispatch so that subject to paragraphs N.18.4 and N.18.5:

in each Trading Period, the total Output of Price Maker Generator Units that are not Under Test (calculated as the sum of their Market Schedule Quantities) shall equal Schedule Demand in that Trading Period;

limits, determined by the Single Ramp Up Rate and the Single Ramp Down Rate, on the maximum amount by which each Generator Unit's Output can change between Trading Periods shall be observed (including relative to the Generator Unit's scheduled Output from the last Trading Period of the previous Trading Day as determined by the Preceding MSP Run);

limits, determined by the Aggregate Interconnector Ramp Rate, on the maximum amount by which total flow on an Interconnector can increase or decrease between Trading Periods shall be observed (including relative to the total flow on that Interconnector from the last Trading Period of the previous Trading Day as determined by the Preceding MSP Run);

the energy scheduled from any Energy Limited Generator Unit on both the Trading Day and (separately) in the Ending Overlap Optimisation Period shall not exceed the Energy Limit over the relevant period;

the energy (in MWh) maintained within each Pumped Storage Unit reservoir shall be not less than its Minimum Storage Capacity (PSMINLut) and not more than its Maximum Storage Capacity (PSMAXLut);

the energy (in MWh) maintained within each Pumped Storage Unit reservoir shall meet the Target Reservoir Level in the final Trading Period of the Trading Day, and the level calculated in accordance with paragraph 5.117 in the final Trading Period of the Optimisation Time Horizon;

a relationship is observed whereby the generation of each 1 MWh from a Pumped Storage Unit in generating mode lowers its associated reservoir by 1 MWh while the pumping of each 1

MWh by a Pumped Storage Unit in pumping mode raises the associated reservoir by a number of MWh equal to the Pumped Storage Cycle Efficiency for that Pumped Storage Unit.

The MSP Software shall include a set of variables as set out in paragraph N.17.4, which allow such constraint limits to be violated at a high cost if no feasible solution would otherwise exist.

The MSP Software shall modify conflicting input data to resolve the conflict in accordance with paragraph N.29.

The MSP Software shall determine a Shadow Price (SPh) for each Trading Period in the Optimisation Time Horizon that:

does not exceed the lesser of the Market Price Cap (PCAP) and the €/MWh rate of increase in the minimum value of the mathematical function defined in paragraph N.18.1 that would occur were Schedule Demand in that Trading Period increased by an infinitesimally small amount and the constraints set out in paragraphs N.18.2 and N.18.3 continued to apply to the Market Schedule Quantities;

is not less than the greater of the Market Price Floor (PFLOOR) and the €/MWh rate of decrease in the minimum value of the mathematical function defined in paragraph N.18.1 that would occur were Schedule Demand in that Trading Period decreased by an infinitesimally small amount and the constraints set out in paragraphs N.18.2 and N.18.3 continued to apply to the Market Schedule Quantities;

No Transmission Loss Adjustment Factors (TLAFs) shall be considered or applied in determining the Economic Dispatch.

Calculation of MSP Production Cost for use within the MSP Software

s. ~~Intentionally blank~~Within the MSP Software, for each Price Maker Generator Unit u that is not Under Test (other than Pumped Storage Units) the MSP Production Cost in Trading Period h that is associated with a level of Output equal to any Market Schedule Quantity (denoted MSPC(MSQ)uh) shall be calculated as follows (noting that within the MSP Software, Transmission Losses are not taken into consideration):

$$MSPC(MSQ)uh = \left(\left(MSQuh \times MOPuh\right) + MNLCuh + MSQCCuh\right) \times TPD + MSUCuh$$

Where

MSQuh is the Market Schedule Quantity for Generator Unit u in Trading Period h

MOPuh is the Market Offer Price of Generator Unit u in Trading Period h

MNLCuh is the Market No Load Cost for Generator Unit u in Trading Period h

MSQCCuh is the Market Schedule Quantity Cost Correction for Generator Unit u in Trading Period h

TPD is the Trading Period Duration

MSUCuh is the Market Start Up Cost for Generator Unit u in Trading Period h

t. ~~Intentionally blank~~For the purposes of the MSP Software, the MSP Production Cost for each Pumped Storage Unit in each Trading Period h is zero.

Core data inputs to MSP Software

u. ~~Intentionally blank~~The core data inputs for each run of the MSP Software include a number of derived values and these data inputs may differ in source or derivation method for each of the MSP Software Run Types, as set out below.

v. ~~Intentionally blank~~Derived data inputs comprise the following:

Schedule Demand for each Trading Period in the Optimisation Time Horizon;

the following elements of Technical Capabilities for each Price Maker Generator Unit that is not Under Test, covering each Trading Period in the Optimisation Time Horizon:

Single Ramp Up Rate;

Single Ramp Down Rate;

Availability;

Minimum Stable Generation;

(for Energy Limited Generator Units only) Energy Limit; and

Price Quantity Pairs;

the following initial conditions at the start of the Optimisation Time Horizon for each Price Maker Generator Unit that is not Under Test:

initial Market Schedule Quantity;

Unit Commitment Schedule for the preceding Trading Periods; and

(for Pumped Storage Units only) the initial reservoir level (expressed in MWh of generation capability)

w. ~~Intentionally blank~~Additional data inputs that are used within the MSP Software, either directly or in the calculation of the derived data inputs set out in paragraph N.22, include the following:

the Market Price Cap (PCAP) and the Market Price Floor (PFLOOR);

the following elements of Technical Capabilities for each Price Maker Generator Unit that is not Under Test, covering each Trading Period in the Optimisation Time Horizon:

Ramp Up Rate and Ramp Up Break Points;

Ramp Down Rate and Ramp Down Break Points;

Dwell Times and Dwell Time Trigger Points;

Block Load for each Warmth State;

Maximum On Time;

Minimum On Time;

Minimum Off Time;

Commercial Offer Data for each Price Maker Generator Unit that is not Under Test, covering each Trading Period in the Optimisation Time Horizon:

Start Up Cost for each Warmth State;

No Load Cost;

Additional data values for certain Special Units as specified within Section 5 and Appendix I:

Aggregate Interconnector Ramp Rate, except that if a value for Aggregate Interconnector Ramp Rate that is greater than zero is not Accepted then the value that is used within the MSP Software will be set by the Market Operator to a value which will impose no restrictions on the Market Schedule Quantity of the relevant Interconnector Units;

Active Interconnector Unit Import Capacity Holding;

Active Interconnector Unit Export Capacity Holding;

Maximum Interconnector Unit Import Capacity;

Maximum Interconnector Unit Export Capacity;

Energy Limit Period;

Energy Limit Factor;

Pumped Storage Cycle Efficiency;

Maximum Storage Capacity;

Minimum Storage Capacity;

Target Reservoir Level; and

Target Reservoir Level Percentage.

x. ~~Intentionally blank~~The method of derivation and the source of inputs for each of the MSP Software Run Types and Settlement runs differs, and the derivation and sources of inputs to each are set out below where not otherwise stated within the Code.

The Market Operator shall make a report to the Regulatory Authorities at least four months before the start of each Year, proposing values for each of the following parameters to be used in the MSP Software for that Year:

the Over-Generation MSP Constraint Cost;

the Under-Generation MSP Constraint Cost;

the Aggregate Interconnector Ramp Rate MSP Constraint Cost;

the Energy Limit MSP Constraint Cost; and

the Tie-Breaking Adder.

The Market Operator's report shall set out any relevant research or analysis carried out by the Market Operator and any justification for the specific values proposed.

The Market Operator shall publish the approved value for the parameters identified in N.25 within 5 Working Days of the receipt of the Regulatory Authorities' determination as to the approved value of each such parameter, or two months before the start of the Year to which they shall apply whichever is the later.

The Market Operator may revise these values within the Year of their use subject to the prior approval of the Regulatory Authorities. The Market Operator shall publish such revised values with 5 Working Days of receipt of the Regulatory Authorities' approval.

PRE-PROCESSING OF DATA INPUTS FOR THE MSP SOFTWARE

Inconsistent Technical Capabilities

If Technical Capabilities applying to a Generator Unit within a run of the MSP Software are internally inconsistent so as to allow no solution for that Generator Unit within its Technical Capabilities, then the MSP Software shall disregard one or more Technical Capability limits as required to allow a solution to be found for that Generator Unit, subject to the limits that:

the Generator Unit shall not be scheduled to operate at a level in excess of the greatest Availability implied by any of the inconsistent Technical Capability limits, or zero where no such limit can be inferred;

the Generator Unit shall not be scheduled to operate at a level less than the lowest level implied by the lowest allowable level implied by any of the inconsistent Technical Capability limits, or zero where no such limit can be inferred;

the Generator Unit shall not be scheduled to operate for a period of time beyond the greatest operating time limit implied by any of the inconsistent Technical Capability limits; and

if Availability of a Generator Unit is greater than zero and less than the relevant Minimum Stable Generation then its Availability shall be reset to equal Minimum Stable Generation.

Derivation of Schedule Demand

For each Ex-Ante Indicative MSP Software Run, Schedule Demand in each Trading Period shall be calculated by the Market Operator as follows:

Forecast Demand (based on the latest Four Day Load Forecast Data that includes forecasts for the entire Optimisation Time Horizon) in respect of the demand at the boundary of the Transmission System for each Trading Period in the Optimisation Time Horizon, which will be net of expected Generation for each Autonomous Generator Unit that is not a Wind Power Unit;

less the minimum of Nominated Quantity (NQuh) and Forecast Availability in respect of each Predictable Price Taker Generator Unit u that is not a Wind Power Unit and each Variable Price Taker Generator Unit u that is not a Wind Power Unit and each Predictable Price Maker Generator Unit u that is Under Test and that is not a Wind Power Unit and each Variable Price Maker Generator Unit u that is Under Test and that is not a Wind Power Unit, in accordance with their Accepted Nomination Profiles and Accepted Forecast Availability;

less the minimum of forecast Output (based on the Wind Power Unit Forecast) and Accepted Forecast Availability in respect of each Variable Price Taker Generator Unit u that is a Wind Power Unit and each Variable Price Maker Generator Unit u that is a Wind Power Unit and that is Under Test;

less forecast Output (based on the Wind Power Unit Forecast) for each Autonomous Generator Unit u that is a Wind Power Unit.

For each Ex-Post Indicative MSP Software Run, Schedule Demand in each Trading Period shall be calculated by the Market Operator as follows:

For the first 18 hours of the Optimisation Time Horizon for the relevant Trading Day, Schedule Demand to be met by Price Maker Generator Units that are not Under Test is calculated in accordance with paragraph N.32.1-5 below.

For the remaining hours of the Optimisation Time Horizon, Schedule Demand to be met by Price Maker Generator Units that are not Under Test is calculated in accordance with paragraph N.30 above.

For each Ex-Post Initial MSP Software Run, Schedule Demand in each Trading Period h shall be calculated by the Market Operator as follows:

the Actual Output (AOuh) for all Price Maker Generator Units u that are not Under Test;

less the summation of all reductions in Output of any Predictable Price Taker Generator Unit, and any Predictable Price Maker Generator Unit that is Under Test, calculated as the difference between:

the minimum of Nominated Quantity (NQuh) and the Availability Profile (APuh) of the relevant Generator Unit for Trading Period h; and

the Actual Output (AOuh) of the relevant Generator Unit u for Trading Period h,

with increases in Output having the opposite sign;

less the summation of all reductions in Output of any Variable Price Taker Generator Unit and any Variable Price Maker Generator Unit that is Under Test, calculated as the difference between:

the Availability Profile (APuh) of the relevant Generator Unit u for Trading Period h; and

the Actual Output (AOuh) of the relevant Generator Unit u for Trading Period h,

with increases in Output having the opposite sign;

plus an estimate of any reduction in demand in Trading Period h as a consequence of Demand Control as set out in the relevant Grid Code;

plus the Dispatch Quantity (DQu'h) of each Interconnector Residual Capacity Unit u' in Trading Period h.

Derivation of Single Ramp Up Rate

Each Price Maker Generator Unit that is not Under Test shall be represented in the MSP Software as having a Single Ramp Up Rate for the Optimisation

Time Horizon that limits the rate at which its average MW Output can be scheduled to increase from one Trading Period to the next, to a value determined by the Market Operator as follows:

For each Price Maker Generator Unit that is not Under Test and is not a Demand Side Unit, Pumped Storage Unit or Interconnector Unit, the Single Ramp Up Rate, expressed in MW per Trading Period shall be calculated as follows:

if $RampUpTime + DwellTime \neq 0$

$$SingleRampUpRate = \left(\frac{OutputRange}{RampUpTime + DwellTime} \right) \times 60 \times TPD$$

else

$SingleRampUpRate$ will be set to a non - limiting value

Where

Output Range, expressed in MW, is the maximum value of Availability (derived in accordance with paragraphs N.37 to N.39 below) that occurs in any Trading Period in the Optimisation Time Horizon less the minimum value of Minimum Stable Generation (derived in accordance with paragraphs N.40 to N.42) that occurs in any Trading Period in the Optimisation Time Horizon;

Ramp Up Time, expressed in minutes, is the minimum time it would take that Generator Unit to increase its instantaneous Output from its Minimum Stable Generation to its Availability calculated using Ramp Up Rate 1 to Ramp Up Rate 5 (to the extent that such values have been provided) and Ramp Up Break Point 1 to Ramp Up Break Point 4 (to the extent that such values have been provided). In determining Ramp Up Time, Ramp Up Rate i applies between a MW Output of Ramp Up Break Point i-1 and a MW Output of Ramp Up Break Point i, where if there is no defined Ramp Up Break Point i-1 then Ramp Up Rate i applies for all MW Output levels below Ramp Up Break Point i while if there is no defined Ramp Up Break Point i then Ramp Up Rate i applies for all MW Output levels above Ramp Up Break Point i-1, with the exception that if that the largest Ramp Up Break Point j value is less than the Maximum Availability of the unit over the day then Ramp Up Rate j applies between Ramp Up Break Point j-1 and the Maximum Availability of the Unit. If there are no Ramp Up Break Point values provided then Ramp Up Rate 1 applies for all levels of MW Output. For the avoidance of doubt, if Ramp Up Break Point j is the last valid Ramp Up Break Point provided (for j increasing from j=1), then no Ramp Up Rate n>j+1 or Ramp Up Break Point n>j is to be considered in the calculation of Ramp Up Time.

Dwell Time, expressed in minutes, is the sum of all Dwell Times corresponding to Dwell Time Triggers, between and including the Unit's Minimum Stable Generation and its Availability for that Optimisation Time Horizon; and

TPD is the Trading Period Duration.

For Generator Units that are Pumped Storage Units, the value of Single Ramp Up Rate, expressed in MW per Trading Period, shall be calculated as follows

if $RampUpTime + DwellTime \neq 0$ *then*

$$SingleRampUpRate = \left(\frac{Availability}{RampUpTime + DwellTime} \right) \times 60 \times TPD$$

else

$SingleRampUpRate$ will be set to a non - limiting value

Where

Availability of the Generator Unit is derived in accordance with paragraphs N.37 to N.39 below;

Ramp Up Time, expressed in minutes, is the minimum time it would take that Generator Unit to increase its instantaneous Output from 0 MW to its Availability calculated using Ramp Up Rate 1 to Ramp Up Rate 5 (to the extent that such values have been provided) and Ramp Up Break Point 1 to Ramp Up Break Point 4 (to the extent that such values have been provided) and in accordance with the methodology in paragraph N.33.1.b.

Dwell Time, expressed in minutes, is the sum of all Dwell Times corresponding to Dwell Time Triggers, between and including an Output of 0 MW and the Generator Unit's Availability; and

TPD is the Trading Period Duration.

For Demand Side Units the Single Ramp Up Rate, expressed in MW per Trading Period, shall be the Accepted value of Maximum Ramp Up Rate multiplied by 60 x TPD, except that if a value for Maximum Ramp Up Rate that is greater than zero is not Accepted then the value for the Single Ramp Up Rate that is used within the MSP Software will be set by the Market Operator to a value which will impose no restrictions on the Market Schedule Quantity of the Demand Side Unit.

For Interconnector Units the Single Ramp Up Rate shall be set by the Market Operator to a value which will impose no restrictions on the Market Schedule Quantity of the Interconnector Unit.

Where the values of Availability for the relevant MSP Software Run Type are derived in accordance with paragraphs N.37 to N.39, and the values of Minimum Stable Generation for the relevant MSP Software Run Type are as defined in paragraphs N.40 to N.42.

For any Generator Unit, if the calculations of Single Ramp Up Rate set out above result in a value of zero then the Single Ramp Up Rate shall be set to a value which will impose no restrictions on the Market Schedule Quantity of the Generator Unit.

Derivation of Single Ramp Down Rate

Each Price Maker Generator Unit that is not Under Test shall be represented in the MSP Software as having a Single Ramp Down Rate for the Optimisation Time Horizon that limits the rate at which Generator Unit

average MW Output can decrease from one Trading Period to the next with a value determined by the Market Operator as follows:

For each Price Maker Generator Unit that is not Under Test and is not a Demand Side Unit, Pumped Storage Unit, or Interconnector Unit, the Single Ramp Down Rate value for each Trading Period h in the Optimisation Time Horizon, expressed in MW per Trading Period, equals

if $RampDownTime + DwellTime \neq 0$ *then*

$$SingleRampDownRate = \left(\frac{OutputRange}{RampDownTime + DwellTime} \right) \times 60 \times TPD$$

else

$SingleRampDownRate$ will be set to a non - limiting value

Where

Output Range, expressed in MW, is the maximum value of Availability (derived in accordance with paragraphs N.37 to N.39 below) that occurs in any Trading Period over the Optimisation Time Horizon less the minimum value of Minimum Stable Generation (derived in accordance with paragraphs N.40 to N.42 below) that occurs in any Trading Period over the Optimisation Time Horizon;

Ramp Down Time, expressed in minutes, is the minimum time it would take that Generator Unit to decrease its instantaneous Output from its Availability to its Minimum Stable Generation calculated using Ramp Down Rate 1 to Ramp Down Rate 5 (to the extent that such values have been provided) and Ramp Down Breakpoint 1 to Ramp Down Break Point 4 (to the extent that such values have been provided). In determining Ramp Down Time, Ramp Down Rate i applies between a MW Output of Ramp Down Break Point i-1 and a MW Output of Ramp Down Break Point i, where if there is no defined Ramp Down Break Point i-1 then Ramp Down Rate i applies for all MW Output levels below Ramp Down Break Point i while if there is no defined Ramp Down Break Point i then Ramp Down Rate i applies for all MW Output levels above Ramp Down Break Point i-1, with the exception that if that the largest Ramp Down Break Point j value is less than the Maximum Availability of the unit over the day then Ramp Up Rate j applies between Ramp Up Break Point j and the Maximum Availability of the Unit. If there are no Ramp Down Break Point values provided then Ramp Down Rate 1 applies for all levels of MW Output. For the avoidance of doubt, if Ramp Down Break Point j is the last valid Ramp Down Break Point provided (for j increasing from j=1), then no Ramp Down Rate n>j+1 or Ramp Down Break Point n>j is to be considered in the calculation of Ramp Down Time.

Dwell Time, expressed in minutes, is the sum of all Dwell Times corresponding to Dwell Time Triggers, between and including the Unit's Minimum Stable Generation and its Availability; and

TPD is the Trading Period Duration.

For Generator Units that are Pumped Storage Units, the Single Ramp Down Rate, expressed in MW per Trading Period, shall be calculated as follows

$$if\ RampDownTime + DwellTime \neq 0\ then$$

$$SingleRampDownRate = \left(\frac{Availability}{RampDownTime + DwellTime} \right) \times 60 \times TPD$$

else

$SingleRampDownRate$ will be set to a non - limiting value

Where

Availability of the Generator Unit is derived in accordance with paragraphs N.37 to N.39 below;

Ramp Down Time, expressed in minutes, is the minimum time it would take that Generator Unit to decrease its instantaneous Output from its Availability to 0 MW calculated using Ramp Down Rate 1 to Ramp Down Rate 5 (to the extent that such values have been provided) and Ramp Down Break Point 1 to Ramp Down Break Point 4 (to the extent that such values have been provided) and in accordance with the methodology in paragraph N.35.1.b.

Dwell Time, expressed in minutes, is the sum of all Dwell Times corresponding to Dwell Time Triggers, between and including an Output of 0 MW and the Generator Unit's Availability; and

TPD is the Trading Period Duration.

For Demand Side Units, the Single Ramp Down Rate, expressed in MW per Trading Period, shall be the Accepted value of Maximum Ramp Down Rate multiplied by 60 x TPD, except that if a value for Maximum Ramp Down Rate that is greater than zero is not Accepted then the value for the Single Ramp Down Rate that is used within the MSP Software will be set by the Market Operator to a value which will impose no restrictions on the Market Schedule Quantity of the Demand Side Unit.

For Interconnector Units the Single Ramp Down Rate shall be set to a value which will impose no restrictions on the Market Schedule Quantity of the Interconnector Unit.

For any Generator Unit, if the calculations of Single Ramp Down Rate set out above result in a value of zero, then the Single Ramp Down Rate shall be set by the Market Operator to a value which will impose no restrictions on the Market Schedule Quantity of the Generator Unit.

Derivation of Availability

For the purposes of each Ex-Ante Indicative MSP Software Run, the values of Availability for each Trading Period h in the Optimisation Time Horizon for all Price Maker Generator Units u that are not Under Test shall be set by the

Market Operator to equal the Accepted Forecast Availability Profile values which are submitted as part of Technical Offer Data, except that:

for Interconnector Units, the Availability in Trading Period h shall be set to be equal to the lesser of the Maximum Interconnector Unit Import Capacity and the Active Interconnector Unit Import Capacity Holding. If no Active Interconnector Unit Import Capacity Holding is available then a value of zero shall be used in its place;

for Wind Power Units, the Availability in Trading Period h shall be set to equal the lesser of the accepted Forecast Availability Profile value and the forecast Output (based on the Wind Power Unit Forecast).

For the purposes of each Ex-Post Indicative MSP Software Run, the values of Availability for each Trading Period in the Optimisation Time Horizon for each Price Maker Generator Unit u that is not Under Test shall be set by the Market Operator as follows:

for each Trading Period h within the first 18 hours of the Optimisation Time Horizon, these values shall be set to be equal to the Actual Availability (AAuh) values as calculated by the Market Operator in accordance with paragraphs 4.52 to 4.53 or within Section 5 as appropriate;

for each of the remaining Trading Periods h in the Optimisation Time Horizon, these values shall be set to be equal to the value of Availability as determined in paragraph N.38.1 for the last Trading Period h' that is within the first 18 hours of that Optimisation Time Horizon.

For the purposes of each Ex-Post Initial MSP Software Run, the value for Availability in each trading Period h for each Price Maker Generator Unit u that is not Under Test shall be set by the Market Operator to equal the value of Actual Availability (AAuh) as calculated under paragraphs 4.52 to 4.53 or within Section 5 as appropriate.

Derivation of Minimum Stable Generation

For the purposes of each Ex-Ante Indicative MSP Software Run, the values of Minimum Stable Generation for each Trading Period h in the Optimisation Time Horizon for all Price Maker Generator Units u that are not Under Test shall be set by the Market Operator to equal the Accepted Forecast Minimum Stable Generation Profile values which are submitted as part of Technical Offer Data, except that:

for Pumped Storage Units the Minimum Stable Generation in Trading Period h shall be set to be equal to the Accepted Forecast Minimum Output Profile value submitted as part of Technical Offer Data;

for Interconnector Units the Minimum Stable Generation in Trading Period h shall be set to be equal to whichever is the smaller in absolute magnitude of the Maximum Interconnector Unit Export Capacity and the Active Interconnector Unit Export Capacity Holding. If no Active Interconnector Unit Export Capacity Holding is available then a value of zero shall be used in its place.

For the purposes of each Ex-Post Indicative MSP Software Run, the values of Minimum Stable Generation for each Trading Period in the Optimisation Time Horizon for each Price Maker Generator Unit u that is not Under Test shall be set by the Market Operator as follows:

for each Trading Period h within the first 18 hours of the Optimisation Time Horizon, these values shall be set to be equal to the Minimum Stable Generation (MINGENuh) values as calculated by the Market Operator in accordance with paragraph 4.49 or Section 5 as appropriate except that:

for each Pumped Storage Unit the Minimum Stable Generation in Trading Period h shall be set to be equal to the Minimum Output (MINOUTuh) as calculated by the Market Operator in accordance with paragraph 4.49;

For each Interconnector Unit the Minimum Stable Generation in Trading Period h shall be set to be equal to the lesser of zero and the Interconnector Unit's Modified Interconnector Unit Nomination.

for each of the remaining Trading Periods h in the Optimisation Time Horizon, these values shall be set to be equal to the value of Minimum Stable Generation as determined in paragraph N.41.1 for the last Trading Period h' that is within the first 18 hours of that Optimisation Time Horizon.

For the purposes of each Ex-Post Initial MSP Software Run the values of Minimum Stable Generation for each Trading Period in the Optimisation Time Horizon for each Price Maker Generator Unit u that is not Under Test shall be set by the Market Operator to be equal to the Minimum Stable Generation (MINGENuh) values as calculated by the Market Operator in accordance with paragraph 4.49 except that:

for Pumped Storage Units the Minimum Stable Generation in Trading Period h shall be set to be equal to the Minimum Output (MINOUTuh) as calculated by the Market Operator in accordance with paragraph 4.49; and

for each Interconnector Unit the Minimum Stable Generation in Trading Period h shall be set to be equal to the lesser of zero and the Interconnector Unit's Modified Interconnector Unit Nomination.

Derivation of Energy Limit

For each Ex-Ante Indicative MSP Software Run the value of the Energy Limit of an Energy Limited Generator Unit which applies for the Energy Limit Period will be the Accepted value of the Energy Limit, submitted as part of its Technical Offer Data.

For each Ex-Post Indicative MSP Software Run, the value of the Energy Limit of an Energy Limited Generator Unit u which applies for each Trading Period h in the Energy Limit Period, expressed in units of MWh, shall be calculated by the Market Operator in accordance with paragraph 5.101. For the purposes of that calculation, the relevant value for Actual Output (AOuh) which is derived from Metered Generation (MGuh) which is determined in accordance with paragraph N.57.

For each Ex-Post Initial MSP Software Run, the value of the Energy Limit of an Energy Limited Generator Unit which applies for the Energy Limit Period, expressed in units of MWh, shall be as set out in paragraph 5.101.

The value of the Energy Limit of an Energy Limited Generator Unit for the Ending Overlap Optimisation Period in all MSP Software Run Types shall be calculated in accordance with paragraph 5.98.

Derivation of Price Quantity Pairs

Subject to paragraph N.48, the Price Quantity Pairs to be used in each MSP Software Run shall be as follows:

For an Interconnector Unit the relevant Price Quantity Pairs for each Trading Period in the Optimisation Time Horizon shall apply only over the range from the Minimum Stable Generation to the Availability in Trading Period h, where for each Trading Period h in the Optimisation Time Horizon:

the Price of the first Price Quantity Pair to have a Quantity exceeding the Minimum Stable Generation shall apply between the Minimum Stable Generation and that Quantity;

the Price of the last Price Quantity Pair to have a Quantity less than the Availability shall apply between that Quantity and the Availability,

where the relevant Price Quantity Pairs for Trading Period h within the first Trading Day of the Optimisation Time Horizon are the Accepted Price Quantity Pairs submitted in Commercial Offer Data for that Interconnector Unit and Trading Period, as modified in accordance with paragraph N.48, while the Price Quantity Pairs used for each Trading Period h in the Ending Overlap Optimisation Period are the Price Quantity Pairs for that same Interconnector Unit and the corresponding Trading Period h in the Trading Day associated with the Optimisation Time Horizon.

For Price Maker Generator Units that are not Under Test, other than Interconnector Units and Pumped Storage Units, the relevant Price Quantity Pairs for each Trading Period in the Optimisation Time Horizon shall apply only over the range from the Minimum Output to the Availability in Trading Period h, where for each Trading Period h in the Optimisation Time Horizon:

the Price of the first Price Quantity Pair to have a Quantity exceeding zero is to apply between zero and that Quantity;

the Price of the last Price Quantity Pair to have a Quantity less than the Availability is to apply between that Quantity and the Availability,

where the relevant Price Quantity Pairs for each Trading Period h in the Optimisation Time Horizon are to be the Price Quantity Pairs in Commercial Offer Data for that Generator Unit for the Trading Day, as modified in accordance with paragraph N.48.

Where for the avoidance of doubt, the values of Availability and Minimum Stable Generation for each MSP Software Run Type shall be as defined in paragraphs N.37 to N.39 and N.40 to N.42 as applicable.

For the purpose of determining Market Schedule Quantities, Shadow Prices and System Marginal Price, if two or more Price Quantity Pairs in Commercial Offer Data for the Trading Day (for Generator Units other than Interconnector Units) or for a Trading Period (for Generator Units that are Interconnector Units) have the same Price, then the Price for each of those Price Quantity Pairs shall be modified as follows:

the Price submitted by a Generator Unit with Priority Dispatch shall be reduced by a random value between zero and one multiplied by the Tie-Breaking Adder;

the Price submitted by a Generator Unit without Priority Dispatch (including Interconnector Units) shall be increased by a random value between zero and one multiplied by the Tie-Breaking Adder.

For Pumped Storage Units, there are no submitted Prices and consequently the scheduling of Pumped Storage Units shall be performed by the MSP Software to minimise the total MSP Production Cost over all scheduled Generator Units across a given Optimisation Time Horizon. In cases where the same total Schedule Production Cost occurs for alternate schedules for a group of Generator Units which includes at least one Pumped Storage Unit, the MSP Software will schedule the Pumped Storage Unit or Units randomly, without affecting any Tie-Break between Generator Units that are not Pumped Storage Units.

Derivation of initial conditions

Each MSP Software Run in respect of a Trading Day shall take initial conditions from the results of the Preceding MSP Run, as set out in paragraphs N.51 to N.52.

The value of Market Schedule Quantity for the Trading Period immediately preceding the first Trading Period in the Optimisation Time Horizon shall be set by the Market Operator to equal the value for that Trading Period produced by the Preceding MSP Run.

The Unit Commitment Schedule for each Generator Unit for Trading Periods prior to the first Trading Period in the Optimisation Time Horizon (used within the MSP Software to calculate Market Schedule Warmth State and to ensure that Minimum On Time, Maximum On Time and Minimum Off Time are not breached) shall be set by the Market Operator to equal the values for those Trading Periods produced by the Preceding MSP Run or Preceding MSP Runs.

In accordance with paragraph 5.125, the reservoir level for each Pumped Storage Unit at the start of the Optimisation Time Horizon shall be taken from the results produced by the Preceding MSP Run relating to the same point in time.

SOURCE OF OTHER DATA VALUES

For the purposes of Settlement, the value of Minimum Output in each Trading Period for each Price Maker Generator Unit that is not Under Test and that is not a Pumped Storage Unit and or an Interconnector Unit shall be calculated by the Market Operator to equal zero.

Data values used in Ex-Ante Indicative Market Schedule

For the purposes of each Ex-Ante Indicative Market Schedule relating to a Trading Day, for each Trading Period h:

for each Generator Unit u that is a Wind Power Unit and that is either a Variable Price Maker Generator Unit Under Test or a Variable Price Taker Generator Unit, the indicative Ex-Ante Market Schedule Quantity (MSQuh) shall be set by the Market Operator to equal the

minimum of the Accepted Forecast Availability and the forecast Output (based on the Wind Power Unit Forecast); and

for each Generator Unit u that not a Wind Power Unit and that is either a Predictable Price Maker Generator Unit Under Test, a Predictable Price Taker Generator Unit, or a Variable Price Taker Generator Unit, the indicative Ex-Ante Market Schedule Quantity (MSQuh) shall be set by the Market Operator to equal the minimum of the Nominated Quantity and the Forecast Availability.

Data values used in Ex-Post Indicative Market Schedule

For the purposes of each Ex Post Indicative Market Schedule relating to a Trading Day, for each Trading Period h commencing at or after 00:00:

for each Generator Unit u that is a Wind Power Unit and that is either a Variable Price Maker Generator Unit Under Test or a Variable Price Taker Generator Unit, the indicative Ex-Post Market Schedule Quantity (MSQuh) shall be set by the Market Operator to equal the minimum of the Accepted Forecast Availability and the forecast Output (based on the Wind Power Unit Forecast); and

for each Generator Unit u that is not a Wind Power Unit and that is either a Predictable Price Maker Generator Unit Under Test, a Predictable Price Taker Generator Unit or a Variable Price Taker Generator Unit , the indicative Ex-Post Market Schedule Quantity (MSQuh) shall be set by the Market Operator to equal the minimum of the Nominated Quantity and the Forecast Availability,

and for each other Trading Period the Market Schedule Quantity for each relevant Generator Unit shall be set in accordance with this Appendix N and Sections 4 and 5.

Data values used in Ex-Post Indicative MSP Software Runs and Ex-Post Indicative Settlement

The Settlement Day to which each Ex-Post Indicative Settlement run applies is formed from two partial Trading Days. Each such Trading Day is associated with a separate Optimisation Time Horizon and a separate Ex-Post Indicative MSP Software Run. Where required for the purposes of Ex-Post Indicative Settlement, for each of the Trading Periods which relates to the earlier of these Trading Days, values for the following variables, are based on interim calculations as set out elsewhere within this Appendix N:

System Marginal Price (SMPh);

Market Schedule Quantity (MSQuh);

Minimum Output (MINOUTuh);

Dispatch Quantity (DQuh); and

Availability Profile (APuh).

Where required for the purposes of each Ex-Post Indicative MSP Software Run and Ex-Post Indicative Settlement, the values of Metered Generation shall be determined as follows:

for each Trading Period within the first 18 hours of the Optimisation Time Horizon, these values shall be the Metered Generation values (MGuh); and

for each of the remaining Trading Periods in the Optimisation Time Horizon, these values shall be set to be equal to the relevant Metered Generation (MGuh') for the last Trading Period h' that is within the first 18 hours of that Optimisation Time Horizon.

As part of the pre-processing prior to each Ex-Post Indicative MSP Software Run, for use within Ex-Post Indicative Settlement, the values of Dispatch Quantity are set by the Market Operator as follows:

for each Price Maker Generator Unit u that is not Under Test and is not an Interconnector Unit,

for each Trading Period h within the first 18 hours of the Optimisation Time Horizon, the Dispatch Quantity (DQuh) is calculated by the Market Operator in accordance with paragraph 4.49;

for each of the remaining Trading Periods h in the Optimisation Time Horizon, the value of Dispatch Quantity (DQuh) is set to be equal to the value of Dispatch Quantity as determined in point 1 of this paragraph for the last Trading Period h' that is within the first 18 hours of that Optimisation Time Horizon;

for each Interconnector Unit, for each Trading Period h within the Optimisation Time Horizon, the value of Dispatch Quantity (DQuh) is set in accordance with paragraph 5.72;

for each Interconnector Residual Capacity Unit, for each Trading Period h within the Optimisation Time Horizon, the value of Dispatch Quantity (DQuh) is set in accordance with paragraph 5.73;

and for all other Generator Units, any value of Dispatch Quantity that is calculated as part of the pre-processing prior to the Ex-Post Indicative MSP Software Run is not used within the MSP Software or within Ex-Post Indicative Settlement.

As part of the pre-processing prior to each Ex-Post Indicative MSP Software Run, for use within Ex-Post Indicative Settlement, the values of Availability Profile (APuh) for each Trading Period h in the Optimisation Time Horizon for each Price Maker Generator Unit u that is not Under Test are set by the Market Operator to be equal to the value of Availability as determined in paragraph N.38, and for all other Generator Units, any value of Availability Profile that is calculated as part of the pre-processing prior to the Ex-Post Indicative MSP Software Run is not used within the MSP Software or within Ex-Post Indicative Settlement.

As part of the pre-processing prior to each Ex-Post Indicative MSP Software Run, the values of Minimum Output for each Trading Period for each Pumped Storage Unit or Interconnector Unit are set by the Market Operator as follows:

for each Pumped Storage Unit:

for each Trading Period h within the first 18 hours of the Optimisation Time Horizon, the Minimum Output is set to be equal to the Minimum Output (MINOUTuh) as calculated by the Market Operator in accordance with paragraph 4.49;

for each of the remaining Trading Periods h in the Optimisation Time Horizon, the value of Minimum Output is set to be equal to the value of Minimum Output as determined in point 1 of this

paragraph for the last Trading Period h' that is within the first 18 hours of that Optimisation Time Horizon; and

for each Interconnector Unit the Minimum Output in each Trading Period h in the Optimisation Time Horizon is set in accordance with paragraph 5.78.

Use of Commercial Offer Data and Technical Offer Data in MSP Software

The following items of Commercial Offer Data and Technical Offer Data apply to the entirety of an Optimisation Time Horizon and to any part thereof, for each MSP Software Run Type, and the value Accepted at Gate Closure for a Trading Day shall be used for the relevant Optimisation Time Horizon within each run of the MSP Software:

Target Reservoir Level for Pumped Storage Units;

Target Reservoir Level Percentage for Pumped Storage Units;

Energy Limit Start and Energy Limit Stop for Energy Limited Generator Units; and

Energy Limit Factor for Energy Limited Generator Units.

The following Commercial Offer Data and Technical Offer Data values shall be used within the MSP Software such that the value Accepted at Gate Closure for a Trading Day shall be applied equally to all Trading Periods in the Optimisation Time Horizon, for each MSP Software Run Type:

Block Load Cold;

Block Load Warm;

Block Load Hot;

Dwell Time 1-3;

Dwell Time Trigger Point 1-3;

Ramp Up Rate 1-5;

Ramp Up Break Point 1-4;

Ramp Down Rate 1-5;

Ramp Down Break Point 1-4;

Minimum On Time;

Minimum Off Time;

Maximum On Time;

Maximum Storage Capacity for Pumped Storage Units;

Minimum Storage Capacity for Pumped Storage Units;

Pumped Storage Cycle Efficiency for Pumped Storage Units;

Start Up Cost for each Warmth State;

Synchronous Start Up Time Hot;

Synchronous Start Up Time Warm;

Synchronous Start Up Time Cold;

Shut Down Cost for Demand Side Units; and

No Load Cost.

CALCULATION OF UPLIFT

~~N.24A~~ The calculation of Uplift in this Appendix in paragraphs N.~~25~~65 to N.~~38 is~~77 shall be based only on data associated with relevant Generator Units, which ~~is defined to~~shall for this purpose include ~~exclusively~~only Price Maker Generator Units (excluding Pumped Storage Units, ~~excluding~~ Interconnector Units and ~~excluding~~ Generator Units Under Test). Throughout ~~the~~ paragraphs N.~~25~~65 to N.~~38~~77, wherever there is a summation over Generator Units u* it ~~applies~~shall apply only to this subset of Generator Units.

~~N.25~~ Within this Appendix N and not elsewhere, the following terms and subscripts shall apply:

subscript k denotes a Contiguous Operation Period;

TPCOUNTt is the number of Trading Periods that are within the ~~first~~ Trading Day t of the Optimisation Time Horizon;

UKSTARTuk is the sequential number of the Trading Period (where 1 is the first Trading Period in the Optimisation Time Horizon) in which ~~the~~ Contiguous Operation Period k for Generator Unit u commences, provided that ~~the~~such Contiguous Operation Period starts within the ~~first~~ Trading Day of the Optimisation Time Horizon, such that 1 ≤ UKSTARTuk ≤ TPCOUNTt; if ~~the~~such Contiguous Operation Period does not commence within the ~~first~~ Trading Day t of the Optimisation Time Horizon under consideration then UKSTARTuk is neither defined nor required;

UKSTOPuk is the sequential number of the Trading Period (where 1 is the first Trading Period in the Optimisation Time Horizon) in which ~~the~~ Contiguous Operation Period k for Generator Unit u ends, or the sequential number of the last Trading Period within the Optimisation Time Horizon if ~~the~~such Contiguous Operation Period starts in the ~~first~~ Trading Day in the Optimisation Time Horizon and continues to the end of the Optimisation Time Horizon, such that UKSTOPuk ≥ UKSTARTuk; if the Contiguous Operation Period does not commence within the ~~first~~ Trading Day t of the Optimisation Time Horizon under consideration then UKSTOPuk is neither defined nor required;

STCukt is the Start Cost for Contiguous Operation Period k for Generator Unit u which is attributed to that part of Contiguous Operation Period k that falls within the ~~first~~ Trading Day t of the relevant Optimisation Time Horizon;

CFCRukt is the Carried Forward Cost Recovery for Generator Unit u in Contiguous Operation Period k, being that cost recovery element that is carried forward from the ~~first~~ Trading Day t of the Optimisation Time Horizon to the next Trading Day pursuant to paragraphs N.69 - N.70;

CRukt is the Cost of Running for each relevant Generator Unit u in that part of Contiguous Operation Period k which falls in the ~~first~~ Trading Day t of the relevant Optimisation Time Horizon as calculated in paragraph N.75;

OINUPLh is the Optimised Initial Uplift value for Trading Period h as calculated in ~~Step 1 of~~ paragraph N.~~37 below~~76;

REVMINt is the minimum value of energy payments to relevant Generator Units in Trading Day t that satisfies the relevant constraints, as calculated in ~~Step 2 of~~ paragraph N.~~37 below~~76;

MSCuk is the Market Start Up Cost for Generator Unit u applicable to Contiguous Operation Period k, and is equal to the Market Start Up Cost (MSUCuh) for Generator Unit u in the first Trading Period h of Contiguous Operation Period k

Procedure to calculate Cost Recovery values

~~N.26~~ The procedure to calculate the Cost of Running to be used as the basis for cost recovery is set out below. Each of these calculations ~~is~~shall be made independently for each Optimisation Time Horizon.

~~N.27~~ Paragraphs N.~~29~~69 to N.~~35~~75 apply exclusively to ~~Price Maker~~relevant Generator Units ~~excluding Pumped Storage Units, excluding Interconnector Units and excluding Generator Units Under Test~~ as defined in paragraph N.65

~~N.28~~ For each Generator Unit u which is a Pumped Storage Unit or an Interconnector Unit or a Generator Unit Under Test or which ~~are~~is not a Price Maker Generator ~~Units~~Unit, values of the Cost of Running (CRukt), Carried Forward Cost Recovery (CFCRukt) and Start Cost (STCukt) for these other Generator Units are neither calculated nor required.

Calculating start costs to be carried forward

Unit starts and stops within the first Trading Day or started in the previous Trading Day

~~*N.29* For an Optimisation Time Horizon, all~~All values of Carried Forward Cost Recovery (CFCRukt) for Generator Units u in Contiguous Operation Period k other than those which start within the ~~first~~ Trading Day of an Optimisation Time Horizon and then continue beyond to the ~~second~~next Trading Day ~~of the relevant Optimisation Time Horizon are~~shall be set to equal ~~to~~ zero.

Unit starts in the first Trading Day and continues into the Second Trading Day

~~*N.30* For an Optimisation Time Horizon, when~~When a Contiguous Operation Period for a ~~Price Maker~~relevant Generator Unit u ~~that is not a Pumped Storage Unit or an Interconnector Unit or a Generator Unit Under Test~~ starts within the ~~first~~ Trading Day of an Optimisation Time Horizon and continues ~~beyond~~to the ~~end of that~~next Trading Day, a portion of the Start Up Costs ~~will~~shall be allocated to the Trading Day in which the Contiguous Operation Period began and the remainder will be allocated to the next Trading Day, as follows. For each such Generator Unit u, for each Contiguous Operation Period k that starts within the first such Trading Day ~~of the relevant Optimisation Time Horizon~~ and continues to the second such Trading Day ~~within that Optimisation Time Horizon,~~. the values of Carried Forward Cost Recovery (CFCRukt) from the first Trading Day t to the following Trading Day shall be as follows:

$$CFCRukt = MSCuk \times \left(\frac{UKSTOPuk - TPCOUNTt}{1 + UKSTOPuk - UKSTARTuk} \right)$$

Where:

~~11.~~ MSCuk is the Market Start Cost for Generator Unit u in Contiguous Operation Period k as defined in paragraph N.~~25~~65 above

~~12.~~ TPCOUNTt, UKSTARTuk and UKSTOPuk are as defined in paragraph N.~~25~~65 above

Calculating start costs to be recovered within each Trading Day

Unit starts and stops in the first Trading Day

~~N.31~~ For each Price Maker Generator Unit u ~~that is not a Pumped Storage Unit or an Interconnector Unit or a Generator Unit Under Test,~~ for each Contiguous Operation Period k that both starts and ends within the ~~first~~ Trading Day t of the relevant Optimisation Time Horizon, values of Start Cost (STCukt) ~~are~~shall be calculated as follows:

$$STCukt = MSCuk$$

Where:

MSCuk is the Market Start Cost for Generator Unit u in Contiguous Operation Period k

Unit starts in the first Trading Day and continues to the second Trading Day

~~N.32~~ For each Price Maker Generator Unit u ~~that is not a Pumped Storage Unit or an Interconnector Unit or a Generator Unit Under Test~~, for each Contiguous Operation Period k that starts within the ~~first~~ Trading Day t of the relevant Optimisation Time Horizon and continues to the ~~second~~next Trading Day ~~of that Optimisation Time Horizon~~, values of Start Cost (STCukt) to be recovered within that part of Contiguous Operation Period k in Trading Day t ~~are~~shall be calculated as follows:

$$STCukt = MSCuk - CFCRukt$$

Where:

MSCuk is the Market Start Cost for Generator Unit u in Contiguous Operation Period k, as set out in paragraph N.~~24~~65

CFCRukt is the Carried Forward Cost Recovery for Generator Unit u from the first Trading Day t of Contiguous Operation Period k

Unit started in the previous Trading Day

~~N.33~~ For each Price Maker Generator Unit u ~~that is not a Pumped Storage Unit or an Interconnector Unit or a Generator Unit Under Test~~, for each Contiguous Operation Period k that starts in the Trading Day (t-1) immediately ~~before~~preceding the ~~first~~ Trading Day t of the present Optimisation Time Horizon and continues to the ~~first~~ Trading Day t ~~in~~of that Optimisation Time Horizon, values of Start Cost (STCukt) to be recovered within that part of Contiguous Operation Period k which falls within Trading Day t ~~are~~shall be calculated as follows:

$$STCukt = CFCRuk(t-1)$$

Where:

CFCRuk(t-1) is ~~as defined in paragraph N.30,~~ the Carried Forward Cost Recovery for Generator Unit u from the preceding Trading Day (t-1) to the ~~first~~ Trading Day t of the present Optimisation Time Horizon~~.~~ as calculated in accordance with paragraph N.70.

Unit started before the previous Trading Day

~~***N.34***~~ For an Optimisation Time Horizon, all values of Start Cost (STCukt) for Generator ~~Units~~Unit u in Contiguous Operation Periods k that start earlier than one Trading Day before the start of the relevant Optimisation Time Horizon ~~are~~shall be set equal to zero.

Cost of running

~~**N.35**~~ The Cost of Running (CRukt) for each Price Maker Generator Unit u ~~that is not a Pumped Storage Unit or an Interconnector Unit or a Generator Unit Under Test~~ in that part of Contiguous Operation Period k which falls in the first Trading Day t of the relevant Optimisation Time Horizon ~~is~~shall be calculated as follows:

$$CRukt = \left[\sum_{hink \cap hint} \left((MSQuh \times MOPuh) + MNLCuh + MSQCCuh \right) \times TPD \right] + STCukt$$

Where:

MOPuh is the Market Offer Price of Generator Unit u in Trading Period h

MSQuh is the Market Schedule Quantity for Generator Unit u in Trading Period h

MNLCuh is the Market No Load Cost for Generator Unit u in Trading Period h

MSQCCuh is the Market Schedule Quantity Cost Correction for Generator Unit u in Trading Period h

TPD is the Trading Period Duration

STCukt is the Start Cost to be recovered within that part of Contiguous Operation Period k which falls within Trading Day t

$\sum_{hink \cap hint}$ is a summation over all Trading Periods h which are both within Contiguous Operation Period k and within the ~~first~~ Trading Day t in the relevant Optimisation Time Horizon

~~N.36 Intentionally blank.~~

Procedure to calculate Minimum Revenue value

~~N.37~~ The Minimum Revenue (REVMINt) for the Trading Day ~~is~~shall be used to define a constraint on the derivation of Uplift values (UPLIFTh), and ~~is~~shall be calculated as follows. For each Optimisation Time Horizon, the procedure to calculate the Minimum Revenue (REVMINt) for the ~~first~~ Trading Day t in that Optimisation Time Horizon is set out below~~,~~ where, within this procedure, the following meanings apply:

REVMINt is the Minimum Revenue in Trading Day t that satisfies the relevant constraints, calculated in accordance with ~~Step 2 of~~ this paragraph

OINUPLh is the Optimised Initial Uplift value for each Trading Period h, calculated in accordance with ~~Step 1 of~~ this paragraph

SPh is the Shadow Price for Trading Period h

MSQuh is the Market Schedule Quantity for Generator Unit u in Trading Period h

TPD is the Trading Period Duration

CRukt is the Cost of Running for Generator Unit u in that part of Contiguous Operation Period k which falls in the ~~first~~ Trading Day t of the relevant Optimisation Time Horizon, calculated as set out in paragraph N.~~35~~75

$\sum_{u^*}$ is a summation over all Price Maker Generator Units u, (excluding Pumped Storage Units, ~~excluding~~ Interconnector Units and ~~excluding~~ Generator Units Under Test)

$\sum_{hint}$ is a summation over each Trading Period h in Trading Day t

$\sum_{hink \cap hint}$ is a summation over each Trading Period h that is both within Contiguous Operation Period k and within Trading Day t

The procedure is as follows:

Step 1

Select a set of values of Optimised Initial Uplift (OINUPLh) for each Trading Period h in Trading Day t which give the minimum value of

$$\sum_{u^*}\sum_{hint}\left((OINUPLh + SPh) \times MSQuh \times TPD\right)$$

~~Subject~~subject to that set of values of OINUPLh satisfying the following constraints:

$\sum_{hink \cap hint}\left((OINUPLh + SPh) \times MSQuh \times TPD\right) - CRukt \geq 0$ for each Price Maker Generator Unit u (excluding Pumped Storage Units, ~~excluding~~ Interconnector Units and ~~excluding~~ Generator Units Under Test~~, for those Trading Periods h in that part of Contiguous Operation Period k that falls, partly or wholly, within the relevant Trading Day t~~); and

$OINUPLh \geq 0$ for all Trading Periods h in Trading Day t.

Step 2

Using the set of Optimised Initial Uplift values (OINUPLh) from Step 1 above, the minimum value of energy payments (REVMINt) to relevant Generator Units u in Trading Day t is calculated as follows:

$$REVMINt = \sum_{u^*} \sum_{hint} \left((OINUPLh + SPh) \times MSQuh \times TPD \right)$$

Procedure to calculate final Uplift values

~~N.38~~ For each Optimisation Time Horizon, the final part of the procedure to calculate the Uplift values (UPLIFTh) for the ~~first~~ Trading Day t in that Optimisation Time Horizon is set out below~~,~~ where, within this procedure, the following meanings apply:

UPLIFTh is the value of Uplift for Trading Period h

REVMINt is the Minimum Revenue in Trading Day t, calculated in accordance with Step 2 of paragraph N.~~37~~76

SPh is the Shadow Price for Trading Period h

MSQuh is the Market Schedule Quantity for Generator Unit u in Trading Period h

TPD is the Trading Period Duration

CRukt is the Cost of Running for Generator Unit u in that part of Contiguous Operation Period k which falls in the ~~first~~ Trading Day t of the relevant Optimisation Time Horizon, calculated as set out in paragraph N.~~35~~75

~~α~~α is the Uplift Alpha value used in the determination of Uplift to determine the importance of the Uplift Cost Objective referenced in paragraph ~~4.49A~~4.68;

~~ßß~~β is the Uplift Beta value used in the determination of Uplift to determine the importance the Uplift Profile Objective referenced in paragraph ~~4.49A~~4.68;

δ is the Uplift Delta value used in the determination of Uplift to restrict the overall increase in market revenue due to Uplift over the Trading Day t

$\sum_{u^*}$ is a summation over all relevant Price Maker Generator Units u,

(excluding Pumped Storage Units~~. excluding~~, Interconnector Units and ~~excluding~~ Generator Units Under Test)

$\sum_{hint}$ is a summation over each Trading Period h in Trading Day t

$\sum_{hink \cap hint}$ is a summation over each Trading Period h that is both within Contiguous Operation Period k and within Trading Period t

The procedure is as follows:

Select a set of values of Uplift (UPLIFTh) for each Trading Period h in Trading Day t which give the minimum value of

$$\alpha \times \left[\sum_{hint} \left((UPLIFTh + SPh) \times \sum_{u^*} (MSQuh \times TPD) \right) \right] + \beta \times \left[\sum_{hint} (UPLIFTh)^2 \right]$$

~~**Subject**~~

subject to that set of values of UPLIFTh satisfying the following constraints:

19. $\sum_{hink \cap hint} [(UPLIFTh + SPh) \times MSQuh \times TPD] \geq CRukt$ for each Price Maker Generator Unit u (excluding Pumped Storage Units, ~~excluding~~ Interconnector Units and ~~excluding Generator Units Under Test, for that part of Contiguous Operation Period k that falls, partly or wholly, within the relevant Trading Day t ;~~Generator Units Under Test)

~~**2.**~~

$UPLIFTh \geq 0$ for all Trading Periods h in Trading Day t; and

~~**3.**~~

$$\sum_{u^*} \sum_{hint} ((UPLIFTh + SPh) \times MSQuh \times TPD) \leq (1 + \delta) \times REVMINt$$

~~APPENDIX O:~~

DISPUTE RESOLUTION AGREEMENT

FORM OF DISPUTE RESOLUTION AGREEMENT

GENERAL CONDITIONS OF DISPUTE RESOLUTION AGREEMENT FOR A DISPUTE RESOLUTION BOARD

Words in square brackets should be deleted as appropriate depending on whether there is a one member DRB or a three member DRB.

BETWEEN:

1. THE DISPUTING PARTIES, REFERRED TO IN ANNEX 1

AND

2. EACH MEMBER OF THE DISPUTE RESOLUTION BOARD, REFERRED TO IN ANNEX 2 ("MEMBER", TOGETHER REFERRED TO AS "THE MEMBERS")

RECITALS

A. The Disputing Parties are adhering parties to the Framework Agreement dated xxx by which they agree to be bound by the terms of the Trading and Settlement Code ("Code") for trading in electricity in the wholesale market in the Single Electricity Market.

B. The Disputing Parties are parties to a Dispute within the meaning of the Code.

C. The Dispute has, in accordance with paragraph 2.254 of the Code, been referred to a [single member / three member] Dispute Resolution Board ("DRB") for resolution.

D. In order to facilitate the resolution of the Dispute by the DRB, the Disputing Parties wish to enter into this Agreement with each of the Members, setting out the terms and conditions upon which each Member is engaged to hear and determine the Dispute.

1. Definitions and Interpretation

1.1 Unless the context requires otherwise, words and expressions which are not otherwise defined in this Dispute Resolution Agreement (including the Recitals) shall have the meanings assigned to them in the Code.

1.2 Where the DRB is comprised of a single member, references to "the Members" shall be construed as references to "the Member" and references to "each Member" shall be construed as references to "the Member".

2. General Provisions

2.1 Each Disputing Party engages each Member to constitute a Dispute Resolution Board to hear and determine the Dispute.

2.2 Each Member accepts that engagement.

2.3 Each Member agrees to hear and determine the Dispute:

1. in accordance with the Code, the Framework Agreement and Applicable Laws; and

2. on the terms and conditions set out in this Agreement.

2.4 This Agreement shall take effect when signed by all parties to this Agreement, on the last date of signature by a party.

2.5 The appointment of the Members pursuant to this Agreement is a personal appointment. At any time, the Members may give not less than 70 days' notice of resignation to the the Disputing Parties and to the Market Operator, and, where the Market Operator is a Disputing Party, to the Regulatory Authorities, and the Dispute Resolution Agreement shall terminate upon the expiry of this period.

2.6 No assignment or subcontracting of the Dispute Resolution Agreement is permitted without the prior written agreement of all the Disputing Parties to it and of the Members.

2.7 When appointing each Member, the Disputing Parties shall request of the relevant Member and shall be entitled to rely upon the Member's representations that he/she:

1. is experienced in and familiar with alternative dispute resolution procedures; or

2. has appropriate experience of the electricity industry, or the particular matters the subject of the dispute; and

3. is familiar with, or shall, prior to the commencement of the hearing of the Dispute, be familiar with, the provisions of the Code.

3. Warranties

3.1 The Members warrant and agree that they are and shall be impartial and independent of the Market Operator and the Disputing Parties. Each Member shall promptly disclose, to each Disputing Party and to the Other Members, any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

4. Objectives of the Dispute Resolution Procedure

4.1 It is intended that procedures effected under this Dispute Resolution Agreement should to the extent possible:

1. be simple, quick and inexpensive;
2. preserve or enhance the relationship between the Disputing Parties;
3. without prejudice to the obligations of each of the Disputing Parties pursuant to the Code and in particular 2.271 thereof, preserve and allow for the continuing and proper operation of the Code and Single Electricity Market;
4. resolve disputes on an equitable basis in accordance with the provisions of the Code; and
5. encourage resolution of disputes without formal legal representation or reliance on legal procedures.

5. General Obligations of the Members

5.1 Each Member shall:

1. have no interest financial or otherwise in the Disputing Parties, nor any financial interest in the Code except for payment under the Dispute Resolution Agreement;
2. not previously have been employed as a consultant or otherwise by any of the Disputing Parties, except in such circumstances as were disclosed in writing to all of the Disputing Parties before they signed the Dispute Resolution Agreement;
3. have disclosed in writing to the Disputing Parties and the other Members, before entering into the Dispute Resolution Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Disputing Parties, and any previous involvement in the SEM;
4. not, for the duration of the Dispute Resolution Agreement, be employed as a consultant or otherwise by any of the Disputing Parties, except as may be agreed in advance in writing by the Disputing Parties and the other Members;
5. comply with the paragraphs 2.257 to 2.278 inclusive of the Code;
6. not while a Member enter into discussions or make any agreement with any of the Disputing Parties regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Resolution Agreement;
7. ensure his/her availability for all site visits and hearings as are necessary;
8. be knowledgeable of the Code and all elements of the Dispute by studying all documents received prior to commencement of the hearing of the Dispute; and
9. treat the details of the DRB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Disputing Parties and the Other Members.

6. General Obligations of the Disputing Parties

6.1 The Disputing Parties and the Disputing Parties' employees, officers, servants or agents shall not request advice from or consultation with the Members regarding the Code, otherwise than in accordance with the procedures determined by the DRB under the Code and the Dispute Resolution Agreement, and except to the extent that prior agreement is given by all other Disputing Parties and the other Members. The Disputing Parties shall be responsible for compliance with this provision by the Disputing Parties' employees, officers, servants or agents.

6.2 The Disputing Parties undertake to each other and to the Members that the Members shall not, except as otherwise agreed in writing by the Disputing Parties and the Members, be liable for any claims for anything done or omitted in the discharge or purported discharge of the Members' functions, unless the act or omission is shown to be in bad faith.

6.3 The Disputing Parties hereby jointly and severally indemnify and hold each Member harmless against and from claims from which he/she is relieved from liability under the preceding paragraph 6.2.

7. Breach of this Agreement

7.1 The parties acknowledge that the failure by a Disputing Party to comply with a requirement or determination of the Dispute Resolution Board:

1. does not constitute a breach of this Agreement; but
2. is a breach of the Code that may be referred to the Market Operator as an alleged breach of the Code, to be dealt with in accordance with the terms of the Code.

8. Payment

8.1 The Members' basis for charging shall be [insert basis for charging].

8.2 The Disputing Parties hereby agree to share equally the costs of the Members amongst them.

9. Termination

9.1 At any time: (i) the Disputing Parties may jointly terminate the Dispute Resolution Agreement by giving 21 days' notice to the Members; or (ii) the Members may resign as provided for in Clause 2.

9.2 If any of the Members fails to comply with the Dispute Resolution Agreement, the Disputing Parties may, without prejudice to their other rights, jointly terminate it by notice to the Members. The notice shall take effect when received by the Members.

9.3 Any such notice, resignation and termination shall be final and binding on the Disputing Parties and the Members. However, a notice for the purposes of paragraph 9.1(i) or 9.2 by a Disputing Party, but not by all, shall be of no effect.

9.4 Termination of this Agreement shall be without prejudice to the rights and obligations of the parties having accrued prior to the date of termination.

10. Default of the Members

10.1 If a Member fails to comply with any obligation under Clause 5, he/she shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Disputing Parties for any fees and expenses received by the Member and the Other Members, for proceedings or decisions (if any) of the DRB which are rendered void or ineffective.

11. Severability

11.1 If any part of this Agreement becomes invalid, illegal or unenforceable the parties shall in such an event negotiate in good faith in order to agree the terms of a mutually satisfactory provision to be substituted for the invalid, illegal or unenforceable provision which as nearly as possible gives effect to their intentions as expressed in this Agreement. Failure to agree on such a provision within one month of commencement of those negotiations shall result in automatic termination of this Agreement. The obligations of the parties under any invalid, illegal or unenforceable provision of the Agreement shall be suspended during such a negotiation.

12. Waiver

12.1 The failure of a party to exercise or enforce any right under this Agreement shall not be deemed to be a waiver of that right nor operate to bar the exercise or enforcement of it at any time or times thereafter.

13. Entire Agreement

13.1 This Agreement and, to the extent applicable, the Code, constitute the entire, complete and exclusive agreement between the parties in relation to the subject matter hereof, being the terms of engagement of the Members by the Disputing Parties.

14. Governing Law and Jurisdiction

14.1 Any dispute or claim arising out of or in connection with this Dispute Resolution Agreement shall be governed by the laws of Northern Ireland and the parties submit to the exclusive jurisdiction of any of the Courts of Ireland or Northern Ireland for all disputes arising out of or under this Dispute Resolution Agreement, in accordance with the terms of the Code.

EXECUTED THIS DAY OF

BY

.....

~~DISPUTING PARTY~~

~~……~~

~~DISPUTING PARTY~~

~~…~~

~~……~~

~~DRB MEMBER~~

~~……~~

~~DRB MEMBER~~

~~……~~

~~DRB MEMBER~~

~~APPENDIX P:~~

~~P.1 Intentionally blank.~~

~~APPENDIX Q:~~

~~INTENTIONALLY BLANK~~

~~**Q.1** Intentionally blank.~~

~~APPENDIX R:~~

FORM OF AUTHORITY

FORM OF AUTHORISATION AND CONSENT FOR APPOINTMENT OF AN INTERMEDIARY

THIS FORM OF AUTHORISATION AND CONSENT dated the [] day of [] [200_] is made between:

(I) [Insert name of generator (if a company, please give full corporate name)]:

("Licensed Generator")

having its place of business at [Insert address of Licensed Generator]

being a [registered company/partnership/sole trader etc] registered under the laws of [insert country of registration if a company] and whose company registration number is [insert if a company];

and

(II) [Insert name of proposed intermediary (if a company, please give full corporate name)]

("Intermediary")

having its place of business at [Insert address of Licensed Generator]

being a [registered company/partnership/sole trader etc] registered under the laws of [insert country of registration if a company] and whose company registration number is [insert if a company].

~~In respect of~~

~~[Insert description of generator unit or units to which this form of Authorisation applies]~~

~~("Units")~~

~~Whereas~~

This Appendix O of the Code sets out detailed provisions in relation to the Instruction Profiling that shall be used by the Market Operator to determine the values for each Trading Period of the Dispatch Quantity for each Generator Unit, subject to paragraph O.5, that shall be included within Ex-Post Indicative MSP Software Runs and Ex-Post Initial MSP Software Runs.

Instruction Profiling shall, for each Ex-Post Indicative MSP Software Run, be performed after 14:00 on the day after the start of the relevant Trading Day.

Instruction Profiling shall, for each Ex-Post Initial MSP Software Run that is used in the Initial Settlement, be performed after 14:00 four days after the start of the relevant Trading Day

Instruction Profiling shall be performed prior to any additional Ex-Post Initial MSP Software Runs performed by the Market Operator as required for Settlement purposes in accordance with the Code.

Instruction Profiling shall not be performed for Autonomous Generator Units, Interconnector Units or Interconnector Residual Capacity Units, and the values of Dispatch Quantity for these Generator Units shall be calculated as set out within Section 5 of the Code.

CAPTURE INPUT DATA

The following Registration Data and Technical Offer Data, provided in accordance with Appendix H: "Participant and Unit Registration and Deregistration" and Appendix I: "Offer Data" respectively, shall be used by the Market Operator to create Instruction Profiles for each Generator Unit for each Trading Day:

Registered Capacity / Maximum Generation;

Hot Cooling Boundary;

Warm Cooling Boundary;

Block Load Flag;

Block Load Cold, Block Load Warm and Block Load Hot;

Loading Rate Hot 1, 2 & 3;

Loading Rate Warm 1, 2 & 3;

Loading Rate Cold 1, 2 & 3;

Load Up Break Point Hot 1 & 2;

Load Up Break Point Warm 1 & 2;

Load Up Break Point Cold 1 & 2;

Soak Time Hot 1 & 2;

Soak Time Warm 1 & 2;

Soak Time Cold 1 & 2;

Soak Time Trigger Point Hot 1 & 2;

Soak Time Trigger Point Warm 1 & 2;

Soak Time Trigger Point Cold 1 & 2;

Ramp Up Rate 1, 2, 3, 4 & 5;

Ramp Up Break Point 1, 2, 3 & 4;

Dwell Time 1, 2 & 3;

Dwell Time Trigger Point 1, 2 & 3;

Ramp Down Rate 1, 2, 3, 4 & 5;

Ramp Down Break Point 1, 2, 3 & 4;

Deloading Rate 1 & 2;

Deload Break Point;

Maximum Ramp Up Rate (applicable to Demand Side Units);

Maximum Ramp Down Rate (applicable to Demand Side Units);

Dispatchable Quantity (Maximum Generation applicable to Demand Side Units);

Start of Restricted Range 1;

End of Restricted Range 1;

Start of Restricted Range 2; and

End of Restricted Range 2.

The following Outturn Data for each Generator Unit for the Trading Day, as provided by the relevant System Operator to the Market Operator in accordance with Appendix K: “Market Data Transactions”, shall be used by the Market Operator to create Instruction Profiles for each Generator Unit for each Trading Day:

Outturn Minimum Stable Generation;

Outturn Minimum Output;

Outturn Availability; and

Last Status Change Time.

The following Dispatch Instructions provided by the relevant System Operator to the Market Operator in accordance with Appendix K: “Market Data Transactions” shall be used by the Market Operator to create Instruction Profiles for each Generator Unit for the Trading Day :

Instruction Issue Time;

Instruction Effective Time;

Target Instruction Level;

Instruction Code;

Instruction Combination Code;

Dispatch Ramp Up Rate; and

Dispatch Ramp Down Rate.

The Instruction Codes and Instruction Combination Codes that are used by the System Operators are listed in Table O.1.

Table O.1 – Instruction Codes and Instruction Combination Codes

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.
DESY	n/a	Desynchronise the Generator Unit at the specified Instruction Effective Time.
GOOP	PGEN	Instruct positive Output from a Pumped Storage Unit at the specified Instruction Effective Time.
GOOP	PUMP	Instruct negative Output from a Pumped Storage Unit at the specified Instruction Effective Time.
GOOP	SCT	Instruct Synchronisation in generating mode and 0MW Output for a Pumped Storage Unit at the specified Instruction Effective Time.
GOOP	SCP	Instruct Synchronisation in pumping mode and 0MW Output from a Pumped 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 to reduce Output due to a Local Network Constraint at the specified Instruction Effective Time.
WIND	LCLO	Instruction for a Wind 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 to reduce Output due to an All-Island Curtailment at the specified Instruction Effective Time.
WIND	CRLO	Instruction for a Wind 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.

DISPACTH INSTRUCTION VALIDATION

Dispatch Instructions for a Trading Day shall be sorted by Generator Unit, Instruction Effective Time and Instruction Issue Time.

If multiple Dispatch Instructions with the same Instruction Effective Time but different Instruction Issue Times are issued for a Generator Unit, then the Dispatch Instruction with the latest Instruction Issue Time shall be used. For Dispatch Instructions having the same Instruction Issue Time and Instruction Effective Time, the Dispatch Instruction shall be ordered based on the following sequence of Instruction Codes:

TRIP;

MWOF;

MXON;

SYNC;

GOOP;

WIND;

MXOF; and

DESY.

For Dispatch Instructions having a MWOF Instruction Code and equal Instruction Effective Times, the Dispatch Instruction with the largest Target Instruction Level shall be used.

For two Dispatch Instructions having the same Instruction Effective Time, where the first Dispatch Instruction is defined as Dispatch Instruction A and the second Dispatch Instruction is defined as Dispatch Instruction B, the Instruction Code and Instruction Combination Code that shall be used for the resultant Dispatch Instruction are shown in Table O.2. For the avoidance of doubt, MWOF(x) is defined as Dispatch Instruction having an Instruction Code of MWOF and a Target Instruction Level of x MW. SYNC(x) is defined as Dispatch Instruction having an Instruction Code of SYNC and a Target Instruction Level of x MW. DESY(x) is defined as Dispatch Instruction having an Instruction Code of DESY and a Target Instruction Level of x MW. PGEN(x) is defined as a Dispatch Instruction having an Instruction Code of GOOP, an Instruction Combination Code of PGEN and a Target Instruction Level of x MW.

Table O.2 – Validation Rules for two Dispatch Instructions having the same Effective Time

Instruction Code A	Instruction Combination Code A	Instruction Code B	Instruction Combination Code B	Resultant Instruction Code	Resultant Instruction Combination Code
MWOF(x)	n/a	SYNC	n/a	SYNC (x)	n/a
SYNC	n/a	MWOF(x)	n/a	SYNC (x)	n/a
MWOF(x)	n/a	DESY	n/a	DESY (x)	n/a
DESY	n/a	MWOF(x)	n/a	DESY (x)	n/a
MWOF(x)	n/a	GOOP	PGEN	GOOP	PGEN (x)
GOOP	PGEN	MWOF(x)	n/a	GOOP	PGEN (x)

The sorted Dispatch Instructions for each Generator Unit shall be validated by the Market Operator using the rules in Table O.3, Table O.4 and Table O.5.

Table O.3 – Validation Rules for Dispatch Instructions

Preceding Instruction Code	Current Instruction Code	Action
SYNC	SYNC	Ignore Dispatch Instruction linked to current Instruction Code.
DESY	DESY	Ignore Dispatch Instruction linked to current Instruction Code.
TRIP	TRIP	Ignore Dispatch Instruction linked to current Instruction Code.
SYNC	FAIL	If Instruction Effective Time for Dispatch Instruction having FAIL Instruction Code is up to and including 1 hour after the Instruction Effective Time for a Dispatch Instruction having SYNC Instruction Code, the Dispatch Instruction having the preceding SYNC Instruction Code shall be ignored. Dispatch Instructions having Instruction Effective Times between the Instruction Effective Times for the Dispatch Instructions having the FAIL and the preceding SYNC Instruction Codes shall be ignored.
SYNC	FAIL	If Instruction Effective Time for Dispatch Instruction having FAIL Instruction Code is over 1 hour after the Instruction Effective Time for the Dispatch Instruction having SYNC Instruction Code, profile the Dispatch Instruction having SYNC Instruction Code as normal and discard the Dispatch Instruction having FAIL Instruction Code.
FAIL	SYNC	Ignore Dispatch Instructions having FAIL Instruction Code, if this Dispatch Instruction is not matched with previous Dispatch Instruction having a SYNC Instruction Code. Profile Dispatch Instruction having SYNC Instruction Code as per normal.

Table O.4 – Validation Rules for Dispatch Instructions for all Generator Units

Instruction Code	MWOF(x)	Action
MWOF	x > Registered Capacity	Set x to > Registered Capacity
MWOF	x in Restricted Range	Profile MWOF(x)
SYNC[1]	x > Registered Capacity	Set x to Registered Capacity
SYNC	x in Restricted Range	Profile MWOF(x)
MWOF	0 < x < Outturn Minimum Stable Generation	Profile MWOF(x)
SYNC	x = NULL	Set x = Outturn Minimum Stable Generation
DESY[2]	x = NULL	Set x = 0

[1] A Dispatch Instruction with a SYNC Instruction Code is accompanied by a Dispatch Instruction having a MWOF Instruction Code and an Instructed Quantity greater than or equal to Outturn Minimum Stable Generation.

[2] A Dispatch Instruction with a DESY Instruction Code is accompanied by a Dispatch Instruction having a MWOF Instruction Code and an Instructed Quantity of 0MW

Table O.5 – Validation Rules for Maximisation Instructions

Instructed Quantity	Instruction Code	MWOF(x)	Action
Any	MXON	x = NULL	Set Maximisation Flag for the equivalent Trading Period in Settlement. Profile to Short Term Maximisation Capability.
NULL	MWOF (after MXON)	x = ANY	Maximisation ends. Profile to Target Instruction Level associated with new MWOF Instruction Code.
NULL	MXOF	x = NULL	Set Maximisation Flag for all Trading Periods covered. Profile back to Target Instruction Level associated with last MWOF Instruction Code at the latest Ramp Down Rate.

A Dispatch Instruction having a MWOF or DESY Instruction Code which follows a Dispatch Instruction having an Instruction Code MXOF shall be taken to de-activate the Maximisation Instruction.

A Dispatch Instruction having a GOOP Instruction Code and having a SCP Instruction Combination Code must precede a Dispatch Instruction having a GOOP Instruction Code and a PUMP Instruction Combination Code.

PROFILE OPERATING MODES

The normal operating modes for a Synchronised Generator Unit are load up mode, ramp up mode, ramp down mode and deload mode. Each operating mode of a Generator Unit is described by a piecewise linear Operating Trajectory that describes the theoretical Output of a Generator Unit over time.

The load up trajectory of a Generator Unit is a piecewise linear curve that describes the theoretical Output of a Generator Unit over time from Start Up to the End Point of Start Up Period.

The load up trajectory is determined by:

Block Load Cold, Block Load Warm and Block Load Hot;

Loading Rate Hot 1, 2 & 3;

Loading Rate Warm 1, 2 & 3;

Loading Rate Cold 1, 2 & 3;

Load Up Break Point Hot 1 & 2;

Load Up Break Point Warm 1 & 2;

Load Up Break Point Cold 1 & 2;

Soak Time Hot 1 & 2;

Soak Time Warm 1 & 2;

Soak Time Cold 1 & 2;

Soak Time Trigger Point Hot 1 & 2;

Soak Time Trigger Point Warm 1 & 2; and

Soak Time Trigger Point Cold 1 & 2.

Each segment of the piecewise linear load up trajectory for the Generator Unit is identified by start MW, end MW, rate in MW/min and the time from start MW to end MW.

The ramp up trajectory of a Generator Unit is a piecewise linear curve that describes the theoretical Output of a Generator Unit over time from Outturn Minimum Stable Generation to the Registered Capacity of the Generator Unit.

The ramp up trajectory is determined by:

- Registered Capacity
- Outturn Minimum Stable Generation
- Ramp Up Rates 1, 2, 3, 4 & 5
- Ramp Up Break Point 1, 2, 3 & 4
- Dwell Time 1, 2 & 3
- Dwell Time Trigger Point 1, 2 & 3

Each segment of the piecewise linear ramp up trajectory for the Generator Unit is identified by start MW, end MW, rate in MW/min and the time from start MW to end MW.

The ramp down trajectory of a Generator Unit is a piecewise linear curve that describes the theoretical Output of a Generator Unit over time from the Registered Capacity of the Generator Unit to Outturn Minimum Stable Generation.

The ramp down trajectory is determined by:

- Registered Capacity
- Outturn Minimum Stable Generation
- Ramp Down Rate 1, 2, 3, 4 & 5
- Ramp Down Break Point 1, 2, 3 & 4
- Dwell Time 1, 2 & 3
- Dwell Time Trigger Point 1, 2 & 3

Each segment of the piecewise linear ramp down trajectory for the Generator Unit is identified by start MW, end MW, rate in MW/min and the time from start MW to end MW.

The deloading trajectory of a Generator Unit is a piecewise linear curve that describes the theoretical Output of a Generator Unit over time from Outturn Minimum Stable Generation to 0MW.

The deloading trajectory is determined by:

- Outturn Minimum Stable Generation
- 0MW
- Deloading Rate 1 & 2
- Deload Break Point

Each segment of the piecewise linear deloading trajectory for the Generator Unit is identified by start MW, end MW, rate in MW/min and the time from start MW to end MW.

CREATE INSTRUCTION PROFILE

Each section of the piecewise linear Instruction Profile for a Generator Unit shall be produced in sequence by stepping through the Dispatch Instructions for the Generator Unit as follows.

The MW/Time Co-ordinates from the previous segment of the Instruction Profile shall be retrieved. For the initial segment of the Instruction Profile the MW/Time Co-ordinate is the end MW/Time Co-ordinate from the end segment of the Instruction Profile calculated for the previous Trading Day.

Where an initial MW/Time Co-ordinate is not available for the Generator Unit from the previous Instruction Profiling run, the Target Instruction Level for the latest Dispatch Instruction for the Generator Unit prior to 06:00 on the Trading Day shall be used as the initial Instructed Quantity for the Generator Unit.

The active Dispatch Instruction shall be identified using the MW/Time Co-ordinates from the previous segment of the Instruction Profile and the Instruction Effective Time that corresponds to that Dispatch Instruction.

The active Dispatch Instruction shall be validated by the Market Operator using the MW/Time Co-ordinates from the previous segment of the Instruction Profile, the Target Instruction Level, the Instruction Code and Instruction Combination Code using the rules specified in Tables O.6 and O.7.

Table O.6 – Instruction Profiling Validation Rules for Generator Units that are not Pumped Storage Units

Instructed Quantity from previous segment of Instruction Profile	Instruction Code for active Dispatch Instruction	Target Instruction Level	Action
ANY	SYNC	Null	Set Target Instruction Level of accompanying Dispatch Instruction having Instruction Code MWOF to Outturn Minimum Stable Generation.
0	SYNC	< Outturn Minimum Stable Generation	Set Target Instruction Level of accompanying Dispatch Instruction having Instruction Code MWOF to Outturn Minimum Stable Generation.
0	MWOF	0	Ignore Dispatch Instruction.
0	MWOF	> 0	Use Cold Start Up Operating Characteristics.
0	DESY		Ignore Dispatch Instruction.
>0	SYNC		Ignore Dispatch Instruction.
>0	MWOF	0	Profile to zero.
>0	DESY	>0	Profile to MWOF(0).
0	TRIP		Ignore Dispatch Instruction.

Table O.7 – Instruction Profiling Validation Rules for Pumped Storage Units

Instructed Quantity from previous segment of Instruction Profile	Instruction Code for active Dispatch Instruction	Instruction Combination Code	Action.
0	SYNC	n/a	Ignore Dispatch Instruction.
0	MWOF(0)	n/a	Ignore Dispatch Instruction.
0	DESY	n/a	Ignore Dispatch Instruction.
0	GOOP	SCP	Ignore Dispatch Instruction.
0	GOOP	SCT	Ignore Dispatch Instruction.
0	GOOP	PUMP	Profile to MWOF(Pumping Capacity).
> 0	SYNC	n/a	Ignore Dispatch Instruction.
> 0	MWOF(0)	n/a	Profile to zero.
> 0	GOOP	PGEN	Ignore Dispatch Instruction.
> 0	GOOP	PUMP	Profile to MWOF(Pumping Capacity).
< 0	SYNC	n/a	Ignore Dispatch Instruction.
< 0	MWOF(0)	n/a	Profile to zero.
< 0	GOOP	PUMP	Ignore Dispatch Instruction.
< 0	MWOF(> 0)	n/a	Profile to zero, then profile to Target Instruction Level associated with MWOF Instruction Code.
0	MWOF(> 0)	n/a	Profile to Target Instruction Level associated with MWOF Instruction Code.
< 0	GOOP MWOF (0)	PGEN	Set Target Instruction Level associated with MWOF Instruction Code to Outturn Minimum Stable Generation.
< 0	GOOP MWOF(NULL)	PGEN	Set Target Instruction Level associated with MWOF Instruction Code to Outturn Minimum Stable Generation.
< 0	GOOP MWOF(NOT=(0 OR NULL))	PGEN	Profile to zero, then profile to Target Instruction Level associated with MWOF Instruction Code.
0	TRIP	n/a	Ignore Dispatch Instruction.

The Warm Cooling Boundary, Hot Cooling Boundary, the Instructed Quantity from the previous segment of the piecewise linear Instruction Profile and the Target Instruction Level for the current Dispatch Instruction shall be used to determine the appropriate operating mode of the Generator Unit. (The normal operating modes for a synchronised Generator Unit are load up mode, ramp up mode, ramp down mode and deload mode).

The appropriate segment from the piecewise linear Operating Trajectory shall be selected.

Where a Dispatch Ramp Up Rate accompanies a Dispatch Instruction, the Dispatch Ramp Up Rate shall be used in place of the Ramp Up Rates

submitted as part of Technical Offer Data in the Ramp Up Operating Trajectory for the Generator Unit.

Where a Dispatch Ramp Down Rate accompanies a Dispatch Instruction the Dispatch Ramp Down Rate shall be used in place of the Ramp Down Rates submitted as part of Technical Offer Data in the Ramp Down Operating Trajectory for the Generator Unit.

The MW/Time Co-ordinates for the current segment of the piecewise linear Instruction Profile shall be calculated based on the MW/Time Co-ordinates from the previous segment of the Instruction Profile, the Instruction Code, the Instruction Combination Code, the Target Instruction Level, and the appropriate segment from the piecewise linear Operating Trajectory and the Trading Period Boundaries subject to the following rules:

~~The Licensed Generator legally controls the Units and is the subject of a [licence/authorisation/exemption] issued by the CER to use the Units for the purpose of generation of electricity in Ireland and/or a [licence/authorisation/exemption] issued by the NIAER to use the Units for the purpose of generation of electricity in Northern Ireland];~~In the case of a Dispatch Instruction having a GOOP Instruction Code and PUMP Instruction Combination Code, the Instructed Quantity for a Pumped Storage Unit will remain at the specified Target Instruction Level until a DESY Instruction Code is issued at which time the Instructed Quantity will go instantaneously to 0MW.

~~The Licensed Generator and the Intermediary are parties to a contract ("the Contract") which satisfies all of the criteria for appointment of an Intermediary pursuant to Regulatory Authorities' Decision Paper AIP/SEM/07/029;~~ The MW/Time Co-ordinates for a Dispatch Instruction having a GOOP Instruction Code and SCT Instruction Combination Code will be determined in the same manner as if a Dispatch Instruction having a MWOF Instruction Code and a very low positive Target Instruction Level were issued.

~~The Licensed Generator wishes to appoint the Intermediary to act as the Participant in respect of the Units under the Code for the purposes of their participation in the gross mandatory pool ("Pool") for the trade in electricity in the all-island wholesale single electricity market ("SEM") and the Intermediary wishes to accept such appointment, in accordance with the following terms.~~A Dispatch Instruction having a GOOP Instruction Code and a SCP Instruction Combination Code shall have no actual effect on the Instruction Profile of the Generator Unit except that a PUMP Instruction Code may follow.

~~**1. Interpretation**~~

~~1.1 Capitalised terms which are not defined in this form of Authorisation and Consent shall have the meanings ascribed thereto in the Trading and Settlement Code.~~

~~**2. Authorisation and Consent**~~

~~2.1 The Licensed Generator hereby appoints and authorises the Intermediary to register the Units as Generator Units for the purposes of participation in the~~

Pool under the Trading and Settlement Code and the Intermediary accepts such appointment.

2.2 The Licensed Generator authorises the Intermediary, subject to the Intermediary becoming a party to the Code and successfully registering the Units under the Code, to undertake all of the obligations, covenants, undertakings, duties and liabilities of a Participant in respect of the Units under the Code [during the first 12 months from the Market Start Date]/[for the duration of the Contract] and the Intermediary agrees to such.

2.3 The Licensed Generator authorises the Intermediary, subject to the Intermediary becoming a Party to the Code and successfully registering the Units under the Code, to benefit from all of the rights of a Participant under the Code, including the right to receive payments under the Code, in respect of the Units [during the first 12 months from the Market Start Date]/[for the duration of the Contract] and the intermediary agrees to such.

3. Governing Law and Jurisdiction

3.1 The governing law of this Form of Authorisation and Consent shall be the law of Northern Ireland.

3.2 The parties hereby submit to the exclusive jurisdiction of the Courts of [Ireland and/or Northern Ireland] in respect of any and all disputes arising out of this Form of Authorisation and Consent.

[If the Licensed Generator is a company:]

Present when

Common Seal of

The Licensed Generator

Was affixed hereto: -

DIRECTOR

DIRECTOR/SECRETARY

[If the Licensed Generator is not a company:]

SIGNED sealed and delivered

By the Licensed Generator

~~In the presence of: -~~

~~[If the Intermediary is a company:]~~

~~Present when~~

~~Common Seal of~~

~~The Intermediary~~

~~Was affixed hereto: -~~

~~DIRECTOR~~

~~DIRECTOR/SECRETARY~~

~~[if the Licensed Generator is not a company:]~~

~~SIGNED sealed and delivered~~

The Instructed Quantity at the Instruction Effective Time specified with the Dispatch Instruction having a TRIP Instruction Code will be zero. Ramp Rates, Deloading Rates and Dwell Times will be ignored in the calculation of the Instruction Profile.

The default Instructed Quantity for a Wind Power Unit shall be set to its Output based on its Meter Data. The Instructed Quantity for a Wind 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 and the Target Instruction Level of the Wind Power Unit.

The Target Instruction Level for a Generator Unit with a Dispatch Instruction having a MXON Instruction Code shall be the registered Short Term Maximisation Capability. The Instruction Profile shall be calculated from the last Ramp Up Rate specified for the Generator Unit.

The Target Instruction Level for a Generator Unit with a Dispatch Instruction having a MXOF Instruction Code shall be the Target Instruction Level associated with the last Dispatch Instruction having a MWOF Instruction Code. The Instruction Profile shall be calculated from Ramp Down Rate 1 for the Generator Unit.

A Lag Time shall be applied when defining the MW/Time Co-ordinates for all Dispatch Instructions except Dispatch Instructions having SYNC, TRIP or FAIL Instruction Codes. The Lag Time shall be included in the Instruction Profile to account for the time required for a Generator Unit to make the control adjustments necessary to implement a Dispatch Instruction. The Lag Time shall be two minutes.

CALCULATE INSTRUCTED QUANTITY

A time weighted MW value for the Generator Unit for each Trading Period shall be set to be equal to double the calculated area per Trading Period between the piecewise linear Instruction Profile for the Generator Unit and 0 MW. Areas calculated between the piecewise linear Instruction Profile with negative MW values are negative.

Document comparison done by DeltaView on 12 June 2007 12:52:55

Input:	
Document 1	interwovenSite://MHC-IMANAGE2/MHCDMS/769876/1
Document 2	interwovenSite://MHC-IMANAGE2/MHCDMS/769760/1
Rendering set	Standard

Legend:	
Insertion	
~~Deletion~~	
~~Moved from~~	
Moved to	
Style change	
Format change	
~~Moved deletion~~	
Inserted cell	
Deleted cell	
Moved cell	
Split/Merged cell	
Padding cell	

Statistics:	
	Count
Insertions	2919
Deletions	1284
Moved from	325
Moved to	325
Style change	0
Format changed	0
Total changes	4853