

Grid Code Harmonisation for SEM

Wind in the SEM - Impact on the Grid Code - Version 3

A) Wind in the SEM & the Application of the T&SC Rules

1) Summary of Classification of Wind Farms in the SEM

According to V1.2 of the SEM Trading and Settlement Code (T&SC), Wind Power Units can be classified as Variable Generator Units or Autonomous Generator Units.

Autonomous Generator Units are automatically registered as Price Taker Generator Units. The SO will not be able to/ obliged to send instructions to wind farms. They will not be included in Reserve Constrained Unit Commitment (RCUC). They will not have to provide availability declarations nor will the TSO have to provide an individual Wind Power Unit forecast for it.¹

Wind Farms which are Dispatchable are classified as Variable Generator Units and can register as Price Maker Units or Price Taker Units (*ref: 2.39, 2.40, 2.41*)

Wind Farms which are classified as Variable Generator Units and register as Price Taker Units will have to provide availability declarations and the TSO will have to provide an individual Wind Power Unit forecast for it as it will be included in the RCUC.

Wind Farms which as classified as Variable Generator Units and register as Price Maker Units will have to provide availability declarations and the TSO will have to provide a Wind Power Unit forecast for wind farm as it will be included in the RCUC.

2) Curtailment & Constraining

At present, there is no formal approved policy document that makes a distinction between constraints [for transmission reasons] and curtailment [for wind reasons] and any compensation for either or both. The Regulators are currently considering this issue and a consultation paper is expected to issue shortly.

3) Wind Dispatch/ Wind Control

1) Autonomous Wind Farms

(e.g. pre-Wind Code wind farms or <5MW distribution-connected wind farms in Ireland; pre-April 1st 2005 wind farms and wind farms <5MW in Northern Ireland)

Autonomous Wind Farms will not be subject to dispatch, curtailment or constraint instructions and therefore will not have to reduce their output.

2) Variable Price Taker Units

(e.g. WFPS in Ireland, Partially Dispatchable WFPS² in Northern Ireland)

¹ An individual wind power forecast will be produced for *all* wind farms.

² The Term Partially Despatchable WFPS is to change to Controllable WFPS in SONI

Variable Price Taker Units (VPT) may be subject to a curtailment and/or constraint instruction.

EIRGRID:

The mechanism by which Curtailment Instructions or Constraint Instructions will be issued to VPT is via the EMS system. The process will be as follows:

- a. The Active Power Control Set-point will be entered into the EMS system.
- b. The APC Setpoint ('Curtailment' or 'Constraint' Instruction) is issued to the Wind Power Unit.
- c. The Instruction is captured in the EMS system and exported to the HIS.
- d. The HIS will then export the data to the ODS.
- e. The instruction is then taken from ODS and used to create a single set of dispatch instructions.
- f. These are in turn, translated into XML and sent to SMO via a web service.

An application is being developed to differentiate between different types of instructions. In the long term (but not for Day 1).

3) Variable Price Maker Units

(e.g. Dispatchable WFPS in Ireland & Northern Ireland)

VPM will be subject to dispatch instructions.

EIRGRID/ SONI:

The mechanism by which Dispatch Instructions will be issued to VPM is via the **EDIL interface**. The process will be as follows:

- RCUC will determine the dispatch quantity
- EDIL will issue a Dispatch Instruction to the VPM.
- The Responsible Operator accepts the instruction and implements it.
- The Dispatch Instruction will be exported in the same way as Dispatch Instructions to Generation Units (via the NESS system into the output NGDI file)
- The NGDI file will be saved in ODS and then wrapped into XML and sent via web service to the SMO.

Dispatching VPM from EDIL is the best option because:

- All dispatchable plant is dispatched from a single point (EDIL)
- All price-making units are dispatched from a single point
- All price-making units are treated equally in respect of the data interfaces with the TSO
- The TSO will not directly control any price-making unit on the system – DI are sent via the EDIL system but the operator at the site carries out the instruction.

The proposed SDC1 and SDC2 for the Grid Code post SEM ensure that all price making wind farms require EDIL.

3) **Real-time Wind Availability Declarations**

EIRGRID/ SONI:

Variable Price Maker will have to declare their availability through the EDIL system, like all other price-making Generator units.

EIRGRID:

Variable Price Taker will not be 'declaring' availabilities through the EDIL. The wind farm will be sending a live Available Active Power signal to the EMS which will change when this available active power changes, due to changes in wind conditions.

B) Impact on the EirGrid Grid Code

1. *Use of term Dispatchable in the T&SC v1.2*

The term "**Dispatchable**" in the T&SC:

means, in relation to a Generator Unit, the ability of the Generator Unit to receive and act upon an instruction given by the System Operator to the Participant's approved contact person or location to change the output or manner of operation of the Generator Unit in accordance with the relevant Grid Code

The term "**Generator Unit**" in the T&SC:

means a Generator, or other item of plant capable of being Dispatched, registered by a Participant under the Code. For the purposes of the Code a Generator Unit may be any one of the following types, without limitation: Demand Side Unit, Energy Limited Generator Unit, Interconnector Unit, Interconnector Error Unit, Interconnector Residual Capacity Unit, Netting Generator Unit, Pumped Storage Unit, Run-of-River Hydro Unit or Wind Power Unit

Upon registration with the SMO, each Generator Unit shall be classified as a Predictable Generator Unit, a Variable Generator Unit or an Autonomous Generator Unit (ref: 5.3). The following excerpts for the T&SC v1.2 apply:

Autonomous Generator Unit

5.4 *A Generator Unit shall be classified as an Autonomous Generator Unit if the Unit is not Dispatchable.*

Variable Generator Unit

5.5 *A Generator Unit shall be classified as a Variable Generator Unit if:*

1. *the short-term availability of the Generator Unit is unpredictable as a result of its fuel source; and*
2. *the Generator Unit is a Wind Power Unit or a Run-of-River Hydro Unit; and*
3. *the Generator Unit is Dispatchable.*

In the terms of the Registration of Units, the following applies:

2.39 *Parties may apply for registration of Generator Units which have Priority Dispatch for their entire capacity and which are Variable or Predictable Generator Units as either:*

1. *A Price Maker Generator Unit; or*
2. *A Price Taker Generator Unit.*

2.40 *A Party or Applicant registering an Autonomous Generator Unit shall register such Unit as a Price Taker Generator Unit.*

2.41 *Parties which have registered Units that have Priority Dispatch as Variable Generator Units or Predictable Generator Units may change the status of such Unit(s) as Price Taker Generator Units or Price Maker Generator Units by application to the Market Operator, giving at least 29 days notice pursuant to Agreed Procedure 4 "Data Transaction Submission and Validation".*

Priority Dispatch under the T&SC v1.2:

means priority dispatch as afforded under governing legislation in either Jurisdiction.

2. Definitions in the Grid Code

The term '**Dispatchable**' is not used in the Grid Code v2.0. The most commonly applicable term used in the Grid Code is Centrally Dispatched Generation Units (CDGUs), which is defined as:

CDGU: A **Generation Unit** which is normally subject to the **TSO's Dispatch Instructions**

It is proposed to modify this to:

Centrally Dispatched Generating Unit (CDGU): A **Generating Unit** within a **Generating Plant** subject to **Central Dispatch**, which comprises, unless specified otherwise a **Thermal Plant** including a **CCGT Installation**, a **Dispatchable WFPS**, **Hydro Plant** and **Pumped Storage Plant** in respect of its **Pumped Storage Generation**.

It is now proposed to add a definition for **Controllable Wind Farm Power Station:**

Controllable Wind Farm Power Station:

A **Wind Farm Power Station**, which can have its **Active Power** output controlled directly by the **TSO**.

And a definition for **Dispatchable Wind Farm Power Station:**

Dispatchable Wind Farm Power Station:

A **Controllable WFPS** which has elected to be a **Price Maker** under the **TSC** and has a **Control Facility** and which can be dispatched by the **TSO**.

The term **Dispatchable Wind Farm Power Station** only needs to be used when referring to price taking wind farms in SDC1.

We now need a definition for a Price Maker Generation Unit and Price Taker Generation Unit. This definition is under consideration.

3. Changes to OC7.2 to allow for EDIL:

The text shown in red below is to be added to OC7 in EirGrid's Grid Code.

OC7.2.3 SCOPE

OC7.2.3.1 OC7.2 applies to the **TSO** and to **Users**, which term in OC7.2 means:

- (a) **Generators;**
- (b) Dispatchable Wind Farm Power Stations;**
- (c) **Distribution System Operator;** and
- (d) **Demand Customers.**

OC7.2.4 CONTACT LOCATIONS

OC7.2.4.5 Dispatchable Wind Farm Power Stations

- OC7.2.4.5.1 The **Dispatchable Wind Farm Power Station's** contact locations and personnel referred to in this Section OC7.2.4.2 shall be notified by the **Dispatchable Wind Farm Power Station** to the **TSO** prior to connection and thereafter updated as appropriate.
- OC7.2.4.5.2 The **Dispatchable Wind Farm Power Station** is required to provide a **Control Facility**. The **Dispatchable Wind Farm Power Station** shall ensure acting in accordance with **Good Industry Practice** that the **Control Facility** is staffed at appropriate staffing levels at all times.
- OC7.2.4.5.3 The **Control Facility** shall be staffed by a **Responsible Operator(s)** who shall respond to communications from the **TSO** without undue delay (except where otherwise provided for by agreement between the **Dispatchable Wind Farm Power Station** and the **TSO**, such agreement not to be unreasonably withheld) and are of suitable experience and training and are authorised to perform the following functions on behalf of the **Dispatchable Wind Farm Power Station**:
- (a) to accept and execute **Dispatch Instructions as per SDC2**;
 - (b) to receive and acknowledge receipt of requests, for amongst other matters, operation outside the **Declared** values of **Availability**, **Ancillary Service** capability, or operation of the **Dispatchable Wind Farm Power Station** during **System Emergency Conditions**.
- OC7.2.4.5.4 At any point in time, a single person shall be designated by the **Dispatchable Wind Farm Power Station** and notified to the **TSO** as the **Responsible Manager**. The **Responsible Manager** shall be responsible for dealing with the **TSO** on matters relating to the **Grid Code** other than as provided for in OC7.2.4.2.2 and OC7.2.4.2.3. In the event that the **Responsible Manager** is not a person on duty at the **Control Facility**, then the **Responsible Manager** must be capable of being contacted from the **Control Facility** at all times, and in the event that the **TSO** issues a request to the **Control Facility** requiring the **Responsible Manager** to contact the **NCC**, the **Responsible Manager** shall comply with the request without undue delay and in any case within 15 minutes of the request.

OC7.2.4.5.5 The **Responsible Manager** shall be authorised by the **Dispatchable Wind Farm Power Station** to perform the following functions on behalf of the **Dispatchable Wind Farm Power Station**:

- (a) to make **Declarations** for the **Dispatchable Wind Farm Power Station**;
- (c) to communicate with respect to issues regarding **Outages** of the **Dispatchable Wind Farm Power Station**.

The **Dispatchable Wind Farm Power Station** may, from time to time, notify a replacement contact location and personnel which meets the foregoing requirements.

4. *Modifications to WFPS1*

In order to align WFPS1.7.6 with both the new rules in the Trading and Settlement Code and the proposed SDC1, it is proposed to remove the words “with a MEC in excess of 30 MW” from WFPS1.7.6 as shown below:

WFPS1.7.6 WIND FARM POWER STATION MW AVAILABILITY DECLARATIONS

Wind Farm Power Stations ~~with a MEC in excess of 30 MW~~ shall submit **Wind Farm Power Station MW Availability Declarations** whenever changes in **Wind Farm Power Station Availability** occur or are predicted to occur. These declarations shall be submitted by means of an electronic interface in accordance with the reasonable requirements of the **TSO's** data system.

5. *Changes to SDC1 & SDC2 are outlined in separate documentation.*

The proposed modifications to the SDCs ensure that any Grid Code User, including wind farms, that register under the Trading and Settlement Code as a Price-Maker, are required to submit the relevant data to enable the TSOs to produce the Indicative Operations Schedule and that under SDC2 the User can receive a dispatch instruction from the TSO via an electronic interface, which is currently EDIL.

Controllable wind farms (i.e. both Price Maker and Price taker wind farms) will be also bound by SDC1.

Please refer to the proposed modifications to the text of SDC1 and SDC2 for more detail.