Appendix H

Chapter Specific Terminology – Generation

This appendix is designed to be an overview of the terminology used within Chapter 3 (Electricity Generation) of the 2011 NETS SYS. It is strongly recommended that users of the NETS SYS who may be unfamiliar with industry terminology relating to Electricity Generation read this appendix before studying the chapter itself.

Declared Net Capability (DNC) | **Registered Capacity (RC)** | **Transmission Entry Capacity (TEC)** | **Connection Entry Capacity (CEC)** | **Large, Medium and Small Power Stations** | **Bilateral Agreements** | **Transmission System Access**

Declared Net Capability (DNC)

The term DNC is essentially a pre-vesting term. It is no longer used by NGET but, until 2004, was still used by the two Scottish Transmission Licensees (i.e. SPT and SHETL) in their Seven Year Statements. It may be noted that the definition given below, which mirrors the definition given in the 2004 SPT SYS, does not define "Generator", although this can be taken to mean either a generating unit or a power station. Nor does that definition define "Auxiliary load" or "site demand", although these may be taken to carry the same meaning,

The maximum output of a generator that can be sustained indefinitely without causing damage to the plant, less the auxiliary load associated with the plant. For plants with an energy source of water, wind or solar power, the maximum output, less site demand, is reduced by an appropriate factor to reflect the availability of the source energy.

The term DNC is often used to describe the level of electricity sourced from renewable fuels, since the term takes the intermittent nature of the power output from some renewable sources into account. For wind this is 43% of its gross capacity.

Finally, whilst reference may be made to DNC in parts of this Statement, the term is not otherwise used.

Registered Capacity (RC)

The term RC was introduced at vesting and has been in use in England and Wales since then. Its definition has developed over the years and is given in various documents, the most notable of which are the Grid Code (GC) and the Licence Standard. The value of the term has been used in the setting of regulatory, licence and Grid Code requirements. For example, the size of Power Station in terms of RC classifies the station as Small, Medium or Large. That classification, in turn, determines whether the particular plant requires a licence and/or which parts of the Grid Code must be complied with. The current definition is,

(a) In the case of a Generating Unit other than that forming part of a CCGT Module, the normal full load capacity of a Generating Unit as declared by the Generator, less the MW consumed by the Generating Unit through the Generating Unit's Unit Transformer when producing the same (the resultant figure being expressed in whole MW).

(b) In the case of a CCGT Module, the normal full load capacity of a CCGT Module as declared by the Generator, being the Active Power declared by the Generator as being deliverable by the CCGT Module at the Grid Entry Point (or in the case of an Embedded CCGT Module, at the User System Entry Point), expressed in whole MW).

(c) In the case of a Power Station, the maximum amount of Active Power deliverable by the Power Station at the Grid Entry Point (or in the case of an Embedded Power Station at the User System Entry Point), as declared by the Generator, expressed in whole MW. The maximum active power deliverable is the maximum amount deliverable simultaneously by the Generating Units and/or CCGT Modules less the MW consumed by the Generating Units and/or CCGT Modules in producing that active power.

Whilst the definition of RC has been developed over the years since vesting, it is nevertheless very similar in effect to the less rigorous pre-vesting term and definition of DNC used by the Scottish Transmission Licensees. The terms and values of DNC and RC have all been used by the various parties over the years in:

- the application of the Licence Standard, transmission infrastructure planning and transmission connection planning;
- defining the size of a Power Station for regulatory, GC compliance and other purposes (e.g. Large, Medium and Small Power Stations);
- evaluating Plant Margins; and
- charging purposes (e.g. setting Transmission Network Use of System charges).

The following provides a quick reference summary of the key properties of RC and its usage within this Statement:

- RC and CEC are both on a unit basis and are broadly synonymous
- The License Standard is currently written in terms of Registered Capacity
- In cases where a unit value of generation capacity is required, and given that there is no unit value for TEC, RC may be judiciously used. An example would be when compiling a Ranking Order. However, even in this case, the maximum output of each Power Station should not exceed the TEC. That methodology, which is described Chapter 7 under "Modelling of the Planned Transfer", requires inputs relating to both RC and TEC. The Ranking Order is a basis for system analyses.

Transmission Entry Capacity (TEC)

The relatively new terms of TEC and CEC were first introduced under the 'New Electricity Trading arrangements' (NETA), which were applied in England and Wales. The terms continue to be used under the 'British Electricity Trading and Transmission Arrangements' (BETTA), which were introduced in 2005 to replace NETA and are applied to the whole of the National Electricity transmission system. In essence, TEC reflects the maximum power the user can export across the National Electricity transmission system away from the connection site. TEC is defined on a station basis only and cannot exceed station CEC. In the Grid Code, TEC is defined by reference to the meaning set out in the

Connection and Use of System Agreement. This avoids the need to amend the GC when the value of TEC is changed for whatever reason. The definition of TEC shown below is informal and has been written for the purpose of this Statement. This description is not intended as a formal definition and equivalent descriptions and definitions in other documentation may differ slightly,

The Transmission Entry Capacity of a power station is the maximum amount of active power deliverable by the Power Station at the Grid Entry Point (or in the case of an Embedded Power Station at the User System Entry Point), as declared by the Generator, expressed in whole MW. The maximum active power deliverable is the maximum amount deliverable simultaneously by the Generating Units and/or CCGT Modules less the MW consumed by the Generating Units and/or CCGT Modules in producing that active power and less any auxiliary demand supplied through the station transformers.

Inspection of this description of TEC reveals that it differs from the Grid Code definition of RC in two respects. First, TEC is solely on a Power Station basis and does not exist on a Generating Unit or CCGT Module basis. Second, the value of TEC represents the net "spill" onto the National Electricity transmission system from the Power Station. Accordingly, any auxiliary demand supplied through the station transformers is netted off the gross station output to give the net "spill".

TEC cannot be greater than Power Station CEC but can be lower since: first, TEC is net of any auxiliary demand supplied through the station transformers; and second, the actual value of TEC can be set for commercial reasons at any lower level. TEC is a commercial term and its value is given in the relevant bilateral agreement.

The following provides a quick reference summary of the key properties of TEC and its usage within this Statement:

- TEC reflects the maximum power the Generator can export across the system from the Grid Entry Point or User System Entry Point.
- The level of use of system rights for a power station is expressed in terms of the amount of TEC that has been purchased by the Generator for that power station.
- Transmission infrastructure is designed on the basis of TEC.
- It may be noted that RC rather than TEC is currently used in the National Electricity Transmission System Security and Quality of Supply Standard (License Standard). However, given the similarity between the definitions as discussed above, there is no difference in effect, providing that caution is exercised in relation to the appropriate system demand used. That is, if TEC is used in place of RC then the auxiliary demand supplied through the station transformers should be netted off the "National Electricity Transmission System Demand".
- TEC is the main generation capacity term/value used in the NETS SYS.
- The value of TEC is used for power system analyses and plant margin calculation etc.

Connection Entry Capacity (CEC)

As previously mentioned, the term CEC was first introduced, along with the term TEC, under NETA. In essence, CEC is used on both a Generating Unit and Power Station basis. CEC may be regarded as the maximum power that a user may export onto the National Electricity transmission system at the connection site. As with TEC, the GC defines CEC by reference to the meaning set out in the Connection and Use of System Agreement. As previously explained, this avoids the need to amend the GC when the value of CEC is changed for whatever reason. The below description of CEC is intended as an informal description, which has been written for the purpose of this Statement. As with the informal description of TEC, this description is not intended as a formal definition and equivalent descriptions and definitions in other documentation may differ slightly,

(a) In the case of a Generating Unit other than that forming part of a CCGT Module, the maximum sent out active power of a Generating Unit as declared by the Generator. This maximum active power is net of the MW consumed by the Generating Unit through the Generating Unit's Unit Transformer when producing the same.

(b) In the case of a CCGT Module, the maximum sent out active power of a CCGT Module as declared by the Generator, being the active power declared by the Generator as being deliverable by the CCGT Module at the Grid Entry Point (or in the case of an Embedded CCGT Module, at the User System Entry Point), expressed in whole MW).

(c) In the case of a Power Station, the maximum amount of active power deliverable by the Power Station at the Grid Entry Point (or in the case of an Embedded Power Station at the User System Entry Point), as declared by the Generator, expressed in whole MW. The maximum active power deliverable is the maximum amount deliverable simultaneously by the Generating Units and/or CCGT Modules less the MW consumed by the Generating Units and/or CCGT Modules in producing that active power.

The above description is in three parts. For each part, i.e. (a) in relation to a Generating Unit, (b) in relation to a CCGT Module and (c) in relation to a Power Station, the relevant value of CEC is written into the bilateral connection agreement.

In the case of (a), the Generating Unit CEC is used as a basis for the design of a new or modified connection. In the case of (c), the Power Station CEC is normally the sum of the individual Generating Unit CECs. A Generator may choose to declare a Power Station CEC, which is lower (but not higher) than the summation of individual Generating Unit CECs, in which case this lower value is written into the bilateral connection agreement.

Inspection of this description of CEC reveals that it is almost identical to the GC definition of RC and the two may be regarded as being broadly synonymous. The only difference lies in the fact that, on the one hand CEC may include "Maxgen" capability or alternatively it may include a restricted output due to a technical difficulty. RC, on the other hand, is written in terms of "normal full load Capacity". CEC may be regarded as setting the ceiling value on RC.

As mentioned previously, TEC cannot be greater than power station CEC but can be lower.

The following provides a quick reference summary of the key properties of CEC and its usage within this Statement:

- CEC reflects the maximum power for which the Grid Entry Point or User System entry Point should be designed.
- CEC values have been used in the allocation of connection assets in the charge setting process but with the introduction of "PLUGS" this practise ceases. "PLUGS" is the charging methodology, which was introduced in England & Wales on 1 April 2004 and in Scotland on 30 November 2004.
- The Grid Entry Point is designed on the basis of CEC
- It may be stressed that RC rather than CEC is currently used in the License Standard. However, given the similarity between definitions, there is no difference in effect.
- CEC is referred to and displayed in the various tables of this Statement where appropriate. However, CEC is not be used in the power system analyses.

Finally, as a related point of interest, PC.4.3.1 of the Grid Code states that, "…NGET will also use the Transmission Entry Capacity and Connection Entry Capacity in the preparation of the Seven Year Statement and to that extent the data will not be treated as confidential".

Large, Medium and Small Power Stations

The Grid Code places different requirements on different classes of generating plant. The three main power station classifications are Large Power Station, Medium Power Station and Small Power Station and the Grid Code defines these on the basis of Registered Capacity. The relevant definitions are shown below,

Large Power Stations are defined as: a Power Station in NGET's Transmission Area with a Registered Capacity of 100MW or more or a Power Station in SPT's Transmission Area with a Registered Capacity of 30MW or more or a Power Station in SHETL's Transmission Area with a Registered Capacity of 10MW or more.

Medium Power Stations are defined as: a Power Station in NGET's Transmission Area with a Registered Capacity of 50MW or more, but less than 100MW. The Medium Power Station category does not exist in the Transmission Areas of SPT or SHETL.

Small Power Stations are defined as: a Power Station in NGET's Transmission Area with a Registered Capacity of less than 50MW or a Power Station in SPT's Transmission Area with a Registered Capacity less than 30MW or a Power Station in SHETL's Transmission Area with a Registered Capacity less than 10MW.

Inspection of these descriptions reveal that the definitions vary according to whether the power station is located on the NGET system, on the SPT system or on the SHETL system. Table 3.1 summarises the differences.

Table 3.1 - Power Station Classification by Registered Capacity (MW)			
Class	**NGET**	**SPT**	**SHETL**
Large	100 or more	30 or more	10 or more
Medium	50 or more but less than 100	Unclassified	Unclassified
Small	Less than 50	Less than 30	Less than 10

Notwithstanding the fact that the Grid Code classifies power stations in terms of their Registered Capacity, for the intents and purposes of this Statement, Power Stations may be taken to be classified and defined in terms of power station Transmission Entry Capacity (TEC).

Bilateral Agreements

The definitions below identify three types of Bilateral Connection Agreement, namely a Bilateral Connection Agreement (BCA); a Bilateral Embedded Generation Agreement (BEGA); and a Bilateral Embedded Licence Exemptable Large Power Station Agreement (BELLA). Power station projects where these agreements are in place are defined as “Transmission Contracted”.

Please note, however, that whether “Transmission Contracted” or not, the Distribution Network Operators net off what they deem to be an appropriate allowance for the output from embedded Medium and Small power stations from their week 24 Grid Code demand submissions. Accordingly, such power stations are not detailed within the Generation chapter of the statement.

Bilateral Connection Agreement (BCA)

A BCA is for directly connected power stations (regardless of whether they are classified as Large, Medium or Small), directly connected Distribution Systems, Non-Embedded Customers and directly connected Interconnectors. A User with a BCA pays for connection to the National Electricity transmission system as well as for use of the national electricity transmission system. A power station covered by a BCA will have both TEC and CEC values.

Bilateral Embedded Generation Agreement (BEGA)

A BEGA, amongst other things, relates to use of the national electricity transmission system by embedded power stations (which are not License exempt), small power station trading parties and distribution interconnector owners. An embedded power station covered by a BELLA (see below) is not included, as a BELLA relates to Licence exempt embedded Large power stations.

A User with a BEGA does not have a connection to the national electricity transmission system and, in consequence, does not pay connection charges relating to the national electricity transmission system. The User does however use the national electricity transmission system and therefore pays appropriate use of system charges.

A power station covered by a BEGA does not have a CEC since the term CEC relates to the connection assets to the national electricity transmission system of which there are none. However, a BEGA power station does have a TEC for the purpose of use of the national electricity transmission system.

Bilateral Embedded Licence Exemptable Large Power Station Agreement (BELLA)

A BELLA is for embedded Large power stations, which are Licence exempt and which are registered either in the SMRS (Supply Metering Registration System) or in the CMRS (Central Metering Registration System) by a User (e.g. host User) who is responsible for the transmission use of system charges relating to the National Electricity transmission system associated with the Balancing Mechanism (BM) Unit registered in CMRS.

A power station covered by a BELLA does not have a connection to the National Electricity transmission system and in consequence does not pay connection charges relating to the National Electricity transmission system. Nor does the power station 'directly' use the National Electricity transmission system since this is via the User referred to above who is responsible for transmission use of system charges associated with the CMRS registered BM Unit. Accordingly a BELLA power station does not pay GB transmission use of system charges. However, payments may change hands between the power station and the User in relation to reduced demand, use of the distribution system etc.

A power station covered by a BELLA has neither a TEC nor a CEC. The output of the power station is described in Appendix A of the BELLA by the term 'Size of Power Station'.

Transmission System Access

Access to the national electricity transmission system is provided through arrangements with National Grid, acting as NETSO, under the Connection and Use of System Code (CUSC). The CUSC sets out the contractual framework for connection to, and use of, the national electricity transmission system. The CUSC has applied across the whole of Great Britain since BETTA "go-live" (1 April 2005).

All applications for connection to, or use of, the national electricity transmission system are routed through National Grid as NETSO. On receipt of an application for connection to, or use of, the NGET system in England and Wales, NGET prepare a Transmission Owner Reinforcement Instruction (TORI) and elements of this are used by NGET in making an appropriate Offer to the customer. On receipt of an application to connect to, or use, one of the networks owned by a Scottish Transmission Owner (i.e. SHETL or SPT), NGET copy the application to the relevant TO who prepares a Transmission Owner Construction Agreement (TOCA). NGET then make an appropriate Offer to the customer on the basis of both the TORI and TOCA. Amongst other things, the TOCA would include, transmission works, User works, dates and construction programme. A TOCA is only relevant for connections to the Scottish networks. When the Offer is agreed and signed, the project becomes 'Transmission Contracted' and the relevant Scottish TO proceeds with construction in accordance with the TOCA.

The process for obtaining access to the national electricity transmission system is detailed in chapter 9 of the statement.