

THE DISTRIBUTION CODE

OF LICENSED DISTRIBUTION NETWORK OPERATORS OF GREAT BRITAIN

Issue ~~45-4x~~ – ~~12 June 2020~~ TBC

DISTRIBUTION GLOSSARY AND DEFINITIONS (DGD)

DGD 1. EXPRESSIONS

In this **Distribution Code** the following words and expressions shall, unless the subject matter or context otherwise requires or is inconsistent therewith, bear the listed meanings:-

Act	The Electricity Act 1989 (as amended by the Utilities Act 2000 and the Energy Act 2004).
Active Power	The product of voltage and the in-phase component of alternating current measured in units of watts, normally measured in kilowatts (kW) or megawatts (MW).
Annex 1 Standard	A electricity industry national standard that implements Distribution Code requirements and which is listed in Annex 1 of the Distribution Code , and forms part of the Distribution Code .
Annex 2 Standard	A electricity industry national standard that has a material effect on Users but does not implement any Distribution Code requirements and does not form part of the Distribution Code technical requirements.
Annual Average Cold Spell (ACS) Conditions	A particular combination of weather elements that give rise to a level of Peak Demand within a financial year which has a 50% chance of being exceeded as a result of weather variation alone.
Apparatus	All Equipment in which electrical conductors are used, supported or of which they may form a part.
Authorised Electricity Operator or AEO	Any person (other than the DNO in its capacity as an operator of a Distribution System) who is authorised to generate, participate in the transmission of, distribute or supply electricity.
Authority	The Gas and Electricity Markets Authority established under Section 1 of the Utilities Act 2000.
Average Conditions	That combination of weather elements within a period of time which is the average of the observed values of these weather elements during equivalent periods over many years (Sometimes referred to as normal weather).
Balancing and Settlement Code (BSC)	The code of that title as from time to time amended.
Balancing Mechanism	Has the meaning set out in NGESO's Transmission Licence .
BM Unit	Has the meaning set out in the BSC , except that for the purposes of the Distribution Code the reference to "Party" in the BSC shall be a reference to a User .

BM Participant	A person who is responsible for and controls one or more BM Units or where a CUSC Bilateral Agreement specifies that a User is required to be treated as a BM Participant for the purpose of the Grid Code . For the avoidance of doubt, it does not imply that they must be active in the Balancing Mechanism .
Black Start	The procedure necessary for a recovery from a Total Shutdown or Partial Shutdown .
Black Start Station	A Power Station which is registered pursuant to a CUSC Bilateral Agreement with NGESO , as having a Black Start Capability.
CENELEC	European Committee for Electrotechnical Standardisation.
Citizens Advice (CA)	National Association of Citizens Advice Bureaux
Citizens Advice Scotland (CAS)	Scottish Association of Citizens Advice Bureaux
Civil Emergency Direction	Directions given by the Secretary of State to AEOs for the purpose of mitigating the effects of any natural disaster or other emergency which, in the opinion of the Secretary of State , is or may be likely to disrupt electricity supplies.
Committed Project Planning Data	Data relating to a User Development once the offer for a Connection Agreement is accepted.
Connection Agreement	An agreement between the DNO and the User or any Customer setting out the terms relating to a connection with the DNO's Distribution System (excluding any CUSC Bilateral Agreement).
Connection Point	An Entry Point or an Exit Point of the Distribution System as the case may be.
Control Centre	A location used for the purpose of control and operation of all, or of part of a Distribution System , National Electricity Transmission System or the System of a User .
Control Person	A person who has been nominated by an appropriate officer of the DNO , Transmission Licensee or a User to be responsible for controlling and co-ordinating safety activities necessary to achieve Safety From The System .
Control Phase	The period 0-24 hours inclusive ahead of real time operation. The Control Phase follows on from the Programming Phase and covers the period down to real time.
CUSC	Has the meaning set out in NGESO's Transmission Licence
CUSC Bilateral Agreement	An agreement pursuant to the CUSC Framework Agreement made between NGESO and a User of the National Electricity Transmission System

CUSC Disputes Resolution Procedure	The procedure described in CUSC relating to disputes resolution.
CUSC Framework Agreement	Has the meaning set out in NGESO's Transmission Licence .
Customer	Any person supplied or entitled to be supplied with electricity at any premises within Great Britain but shall not include any Authorised Electricity Operator in its capacity as such.
Customer With Own Generation or CWO	A Customer with one or more Power Generating Modules connected to the Customer's System , providing all or part of the Customer's electricity requirements, and which may use the DNO's Distribution System for the transport of any surplus of electricity being exported.
DC Converter	Any Apparatus used to convert alternating current electricity to direct current electricity, or vice versa. A DC Converter is a standalone operative configuration at a single site comprising one or more converter bridges, together with one or more converter transformers, converter control equipment, essential protective and switching devices and auxiliaries, if any, used for conversion. In a bipolar arrangement, a DC Converter represents the bipolar configuration.
DNO's Distribution System	The System consisting (wholly or mainly) of electric lines owned or operated by the DNO and used for the distribution of electricity between the Grid Supply Points or Power Generating Modules or other Entry Points to the points of delivery to Customers or Authorised Electricity Operators , or any Transmission Licensee within Great Britain and Offshore in its capacity as operator of the licensee's Transmission System or the National Electricity Transmission System and includes any Remote Transmission Assets (owned by a Transmission Licensee within Great Britain), operated by the DNO and any electrical plant and meters and metering equipment owned or operated by the DNO in connection with the distribution of electricity, but shall not include any part of the National Electricity Transmission System
Decimal Week	The week numbering system where week 1 commences in the first week of January on a date as advised by the DNO .
Demand	The demand of MW or MVA of electricity (ie both Active Power and Reactive Power respectively) unless otherwise stated.

Demand Control	<p>Any or all of the following methods of achieving a Demand reduction:</p> <ul style="list-style-type: none"> (a) Customer voltage reduction initiated by the DNO (other than following an instruction from NGESO); (b) Customer Demand reduction by disconnection initiated by the DNO (other than following an instruction from NGESO); (c) Demand reduction instructed by NGESO; (d) automatic low frequency Demand disconnection; (e) emergency manual Demand disconnection
Demand Control Notification Level	<p>The level above which the DNO has to notify NGESO of its proposed or achieved use of Demand Control which is 12 MW in England and Wales and 5 MW in Scotland.</p>
Demand Facility	<p>An installation under the control of a Customer where electrical energy is consumed and is connected at one or more Connection Points to the DNO's Distribution System.</p>
Demand Services Provider	<p>A party who contracts with the DNO to provide a demand side service. The party might be a Customer contracting bilaterally with the DNO for the provision of services, or may be a third party providing an aggregated service from many individual Customers. In the latter case there will be a specific contract for the provision of the services to the DNO and will include compliance by that third party with the requirements of DPC9 in relation to each Demand Unit included in the aggregated service.</p>
Demand Unit	<p>An appliance or a device whose Active Power Demand or Reactive Power production or consumption is being actively controlled by the Customer in whose Demand Facility it is installed and which has been commissioned on or after 18 August 2019 in pursuance of a contract to this end with the DNO.</p> <p>Such an appliance or device commissioned before this date, but which has been materially altered will also be included in this definition.</p> <p>Where there is more than one Demand Unit in a Demand Facility, these Demand Units shall together be considered as one Demand Unit if they cannot be operated independently from each other.</p> <p>Demand Units of Customers where the Customer has concluded a final and binding contract for the purchase of a Demand Unit before 07 September 2018 are not included the scope of DPC9. The Customer must have notified the DNO of the conclusion of this final and binding contract by 07 March 2019.</p> <p>Any Demand Unit including storage, with the exception of a pumped storage Power Generating Module, as a component part is also excluded from the requirements of DPC9.</p>

Detailed Planning Data (DPD)	Detailed additional data which the DNO requires under the Distribution Planning and Connection Code in support of Standard Planning Data .
Distribution Business	The authorised business of the DNO or any affiliate or related undertaking of the DNO (whether the business is undertaken by the DNO or another licence holder), comprising: (a) the distribution of electricity through the DNO's Distribution System , including any business in providing connections to such System ; and (b) the provision of Distributor Metering and Data Services as defined in the Distribution Licence .
Distribution Code	A code required to be prepared by a DNO pursuant to condition 9 (Distribution Code) of a Distribution Licence and approved by the Authority as revised from time to time with the approval of, or by the direction of, the Authority .
Distribution Code Review Panel or Panel	The standing body established under the Distribution General Conditions .
Distribution Data Registration Code	That portion of the Distribution Code which is identified as the Distribution Data Registration Code .
Distribution General Conditions or DGC	That portion of the Distribution Code which is identified as the Distribution General Conditions .
Distribution Glossary and Definitions	That portion of the Distribution Code which is identified as the Distribution Glossary and Definitions .
Distribution Introduction (DIN)	That portion of the Distribution Code which is identified as the Distribution Introduction .
Distribution Licence	A distribution licence granted under Section 6(1)(c) of the Act .
Distribution Network Operator (DNO)	The person or legal entity named in Part 1 of the Distribution Licence and any permitted legal assigns or successors in title of the named party.
Distribution Operating Code (DOC)	That portion of the Distribution Code which is identified as the Distribution Operating Code .
Distribution Planning and Connection Code (DPC)	That portion of the Distribution Code which is identified as the Distribution Planning and Connection Code .
Distribution System	The electrical network operated by an Other Authorised Distributor .
Distribution Use of System Agreement	The standard form of agreement of that name, as amended from time to time.
Earthing Device	A means of providing a connection between an Isolated conductor and earth.

Electricity Safety, Quality and Continuity Regulations (ESQCR)	The statutory instrument entitled The Electricity Safety, Quality and Continuity Regulations 2002 as amended from time to time and including any further statutory instruments issued under the Act in relation to the distribution of electricity.
Embedded	Having a direct electrical connection to a Distribution System .
Embedded Generator	<p>A Generator including a Customer With Own Generation whose Power Generating Modules are directly connected to the DNO's Distribution System or to an Other Authorised Distributor connected to the DNO's Distribution System.</p> <p>The definition of Embedded Generator also includes the OTSO in relation to any Embedded Transmission System</p>
Embedded Transmission Licensee	Offshore Transmission Licensee for an Embedded Transmission System
Embedded Transmission System	An Offshore Transmission System directly connected to the DNO's Distribution System or to an Other Authorised Distributor connected to the DNO's Distribution System .
Entry Point	The point at which an Embedded Generator or other Users connect to the DNO's Distribution System where power flows into the DNO's Distribution System under normal circumstances.
Equipment	Plant and/or Apparatus .
Electricity Supply Industry (ESI)	Electricity Supply Industry.
Event	An unscheduled or unplanned (although it may be anticipated) occurrence on or relating to a System including, without limiting that general description, faults, incidents and breakdowns and adverse weather conditions being experienced. It includes an occurrence where the compliance of Customer's Equipment with this Distribution Code or where relevant the Grid Code is or might be compromised.
Existing Offshore Generators	A Generator with a Power Station located in offshore waters that has an agreement for connection to the DNO's Distribution System via lines of 132kV or above that are wholly or partly in offshore waters.
Exit Point	The point of supply from the DNO's Distribution System to a User where power flows out from the DNO's Distribution System under normal circumstances.
External Interconnection	A connection to a party outside the Total System .
Fault Level	Prospective current that would flow into a short circuit at a stated point in the System and which may be expressed in kA or, if referred to a particular voltage, in MVA.

Feasibility Project Planning Data	Data relating to a proposed User Development until such time that the User applies for a Connection Agreement .
Frequency	The number of alternating current cycles per second (expressed in Hertz) at which a System is running.
Fuel Security Code	The document of that title designated as such by the Secretary of State , as from time to time amended.
Generator	<p>A person who generates electricity under licence or exemption under the Act.</p> <p>A person who has connected a Power Generating Module(s) in accordance with Item 8 Engineering Recommendation G83/2 (“Recommendations For The Connection of Type Tested Small-Scale Embedded Generators (Up To 16 A Per Phase) in Parallel With Public Low-Voltage Distribution Networks”) or with Item 9 Engineering Recommendation G98 (Requirements for the connection of type-tested micro generators (up to and including 16 A per phase) in parallel with public low voltage distribution networks on or after 27 April 2019) and where this is (are) their only Power Generating Module(s), is not classed as a Generator for the purpose of this Distribution Code.</p>
Great Britain or GB	“The landmass of England & Wales and Scotland, including internal waters”.
Grid Code	The code which NGESO is required to prepare under its Transmission Licence and have approved by the Authority as from time to time revised with the approval of, or by the direction of, the Authority .
Grid Supply Point	Any point at which electricity is delivered from the National Electricity Transmission System to the DNO’s Distribution System .
High Voltage (HV)	A voltage exceeding 1000 Volts.
High Voltage Customer	A Customer connected to a part of the Distribution System which is operating at HV .
Implementing Control Person	Pursuant to DOC8, the person implementing Safety Precautions at an Operational Boundary.
Individual DNO Standard	A standard adopted by an individual DNO and which is published as such by an individual DNO and that has a material effect on Users .
IEC	International Electrotechnical Commission.
Independent Distribution Network Operator	A DNO that does not have a Distribution Services Obligation Area in its Distribution Licence and is not an ex Public Electricity Supplier

Industry Codes Technical Group (ITCG)	A standing body comprised of representatives of all the DNOs to carry out the functions referred to in its own Constitution and Rules
Isolated	Disconnected from associated Plant and Apparatus by an Isolating Device(s) in the isolating position or by adequate physical separation or sufficient gap.
Isolating Device	A device for rendering Plant and Apparatus Isolated .
Joint System Incident	Is an Event occurring on the System or installation, which, in the opinion of the DNO , has or may have a serious and/or widespread effect on the System or installation of another.
Large Power Station	As defined in the Grid Code .
Load Managed Area	Has the meaning given to that term in the Distribution Use of System Agreement .
Low Voltage or LV	In relation to alternating current, a voltage exceeding 50 volts but not exceeding 1 000 volts.
Manufacturers' Information	Information in suitable form provided by a manufacturer in order to demonstrate compliance with one or more of the requirements of the Distribution Code . Where equipment certificate(s) as defined in EU 2016/631, or 2016/1388 cover all or part of the relevant compliance points, the equipment certificate(s) demonstrate compliance without need for further evidence for those aspects within the scope of the equipment certificate
Maximum Generation	The additional output obtainable from a Power Generating Module in excess of Registered Capacity .
Medium Power Station	<p>A Power Station which is connected to a System notionally connected to a Grid Supply Point in NGET's Transmission Area with a Registered Capacity of 50 MW or more but less than 100 MW.</p> <p>For the avoidance of doubt an installation comprising one or more DC Converters with an aggregate capacity of between 50 and 100MW will be classed as a Medium Power Station for the purposes of this Distribution Code.</p>
Meter Operation Code of Practice Agreement	The agreement of that name, as amended from time to time.
Meter Operator	A person, registered with the Registration Authority , appointed by either a Supplier or Customer to provide electricity meter operation services. (This Distribution Code does not place any direct obligation on Meter Operators other than through the appointment by either a Supplier or a Customer .)
Minimum Generation	The minimum output which a Power Generating Module can reasonably generate as registered under the Distribution Data Registration Code,

<u>Minimum Regulating Level</u>	<u>The minimum Active Power output down to which a Power Generating Module can control Active Power.</u>
<u>Minimum Stable Operating Level</u>	<u>The minimum Active Power output at which the Power Generating Module can be operated stably for an unlimited time.</u>
National Electricity Transmission System	The Onshore Transmission System and Offshore Transmission System .
National Electricity Transmission System Demand	As defined in the Grid Code .
NGESO	National Grid Electricity System Operator Limited.
NGET	National Grid Electricity Transmission plc.
Normal Operating Frequency	The number of Alternating Current cycles per second, expressed in Hertz at which the System normally operates, ie 50 Hertz.
Offshore	Means in Offshore Waters, as defined in Section 90(9) of the Energy Act 2004.
Offshore Transmission Implementation Plan	As defined in the Transmission Licence
Offshore Transmission System Operator (OTSO)	The NGESO acting as operator of an Offshore Transmission System .
Offshore Transmission Licensee	The holder of a licence granted under Section 6 (1)(b) of the Act excluding NGET , NGESO , SPT and SHETL .
Offshore Transmission System	Has the meaning set out in the Grid Code .
Onshore Transmission Licensees	NGET , SHETL and SPT
Onshore Transmission System	Has the meaning set out in the Grid Code .
Operation	A scheduled or planned action relating to the operation of the System .
Operation Diagrams	Diagrams which are a schematic representation of the HV Apparatus and the connections to all external circuits at a Connection Point , incorporating its numbering, nomenclature and labelling.
Operational Boundary	The boundary between the Apparatus operated by the DNO or a User and the Apparatus operated by Other Authorised Distributor(s) or other User(s) , as specified in the relevant Site Responsibility Schedule .

Operational Data (OD)	Information to be supplied pursuant to the Distribution Operating Codes and as set out in the Schedules to the DDRC .
Operational Day	The period from 0500 hours on one day to 0500 on the following day.
Operational Effect	Any effect on the Operation of the relevant other System which causes the National Electricity Transmission System or DNO's Distribution System or the System of the other User or Users , as the case may be, to operate (or be at a materially increased risk of operating) differently from the way in which they would or may have operated in the absence of such an effect.
Operational Planning	The procedure set out in Distribution Operating Code DOC2 comprising, through various timescales, the co-ordination of planned outages of Users' Plant and Apparatus .
Operational Planning Phase	The period from 8 weeks to 3 years inclusive ahead of real time operation.
Other Authorised Distributor	A User authorised by Licence or exemption to distribute electricity and having a User Distribution System connected to the DNO's Distribution System .
Output Usable or OU	That portion of Registered Capacity which is not unavailable due to a Planned Outage or breakdown.
Ownership Boundary	The electrical boundary between the Equipment owned by one DNO or User and the Equipment owned by another User .
Partial Shutdown	The same as a Total Shutdown except that all generation has ceased in a separated part of the Total System and there is no electricity supply from External Interconnections or other parts of Total System to that part of the Total System and, therefore, that part of the Total System is shutdown with the result that it is not possible for that part of the Total System to begin to function again without NGESO's directions relating to a Black Start .
Peak Demand	The highest level of Demand recorded/forecast for a 12-month period, as specified in the relevant sections of the Distribution Code .
Phase (Voltage) Unbalance	The ratio (in percent) between the rms values of the negative sequence component and the positive sequence component of the voltage.
Planned Outage	An outage of a Power Generating Module , its constituent units (eg generating transformer) or parts, or a relevant part of a User's System or of part of the National Electricity Transmission System or of part of a Distribution System .
Plant	Fixed and movable items used in the generation and/or supply and/or transmission of electricity other than Apparatus .

Power Factor	The ratio of Active Power to apparent power (apparent power being the product of voltage and alternating current measured in volt-amperes and standard multiples thereof, ie VA, kVA, MVA).
Power Generating Module	Any Apparatus which produces electricity
Power Island	Power Generating Modules at an isolated Power Station , together with complementary local Demand . In Scotland a Power Island may include more than one Power Station .
Power Station	A Power Generating Facility
Power Generating Facility	An installation comprising one or more Power Generating Modules (even where sited separately) and/or controlled by the same Generator and which may reasonably be considered as being managed as one Power Generating Facility
Preliminary Project Planning Data	Data relating to a proposed User Development at the time the User applies for a Connection Agreement but before an offer is made.
Programming Phase	The period between the Operational Planning Phase and the Control Phase . It starts at the 8 weeks ahead stage and finishes at 17:00 on the day ahead of real time
Protection	The provisions for detecting abnormal conditions in a System and initiating fault clearance or actuating signals or indications.
Qualifying Standard	Electrical standards in use by DNOs and included in the Distribution Code Review Panel's governance procedures, and falling into one of the categories below: <ul style="list-style-type: none"> i. Annex 1 Standard ii. Annex 2 Standard iii. Individual DNO Standard
Reactive Power	The product of voltage and current and the sine of the phase angle between them which is normally measured in kilovar (kVAr) or megavar (MVar).
Registered Capacity	The normal full load capacity of a Power Generating Module as declared by the Generator less the MW consumed when producing the same; ie for all Generators , including Customer With Own Generation , this will relate to the maximum level of Active Power deliverable to the DNO's Distribution System . For Power Generating Modules connected to the DNO's Distribution System via an inverter, the inverter rating is deemed to be the Power Generating Module's rating.
Registered Data	Data referred to in the schedules to the Distribution Data Registration Code .

Remote Transmission Assets.	Any Plant and Apparatus or meters owned by NGET which: <ol style="list-style-type: none"> are Embedded in the DNO's Distribution System and which are not directly connected by Plant and/or Apparatus owned by NGET to a sub-station owned by NGET; and are by agreement between NGET and the DNO operated under the direction and control of the DNO.
Requesting Control Person	Pursuant to DOC8, the person requesting Safety Precautions at an Operational Boundary .
Safety From The System	That condition which safeguards persons working on or testing Apparatus from the dangers which are inherent in working on items of Apparatus which are used separately or in combination in any process associated with the generation, transmission or distribution of electricity.
Safety Management System	The procedure adopted by the DNO or a User to ensure the safe Operation of the System and the safety of personnel required to work on that System .
Safety Precautions	The procedures specified within a Safety Management System .
Safety Rules	The rules or procedure of the DNO or a User to ensure Safety From The System .
Scheduling	The procedure for determining intended usage of Power Generating Modules .
Secretary of State	Has the same meaning as in the Act .
SHETL	Scottish Hydro-Electric Transmission Limited
Significant Incident	An Event on the Transmission System or DNO's Distribution System or in a User's System which has or may have a significant effect on the System of others.
Site Responsibility Schedule	A schedule defining the ownership, operation and maintenance responsibility of Plant and Apparatus at a Connection Point of the DNO .
Small Power Station	As defined in the Grid Code .
SPT	Scottish Power Transmission Limited
Standard Planning Data (SPD)	General information required by the DNO under the Distribution Planning Code .

Standby	The supply of electricity by a Supplier to a Customer on a periodic or intermittent basis to make good any shortfall between the Customer's total supply requirements and that met by his own generation.
Superimposed Signals	Those electrical signals present on a Distribution System for the purposes of information transfer.
Supplier	(a) A person supplying electricity under an Electricity Supply Licence; or (b) A person supplying electricity under exemption under the Act ; in each case acting in its capacity as a supplier of electricity to Customers in Great Britain .
Supply Agreement	An agreement for the supply of electricity made between a Supplier and a consumer of electricity.
System	An electrical network running at various voltages.
System Control	The administrative and other arrangements established to maintain as far as possible the proper safety and security of the System .
System Incident Centre	A centre set up by the DNO pursuant to the declaration of a Joint System Incident , under DOC 9, to assume control of the incident.
System Stability	The ability of the System for a given initial operating condition to regain a state of operating equilibrium after being subjected to a given disturbance, with most System variables being within acceptable limits so that practically the whole System remains intact.
System Test	That test or tests which involve simulating conditions or the controlled application of irregular, unusual or extreme conditions on the Total System or any part of it, but not including routine testing, commissioning or recommissioning tests.
Test Coordinator	A suitably qualified person appointed to coordinate System Test pursuant to DOC12.
Test Panel	A panel, the composition of which is detailed in DOC12, and which will be responsible for formulating System Test proposals and submitting a test programme.
Top - Up	The supply of electricity by any Supplier to the Customer on a continuing or regular basis to make good any shortfall between the Customer's total supply requirements and that met from other sources.
Total Shutdown	The situation existing when all generation has ceased and there is no electricity supply from External Interconnections and therefore the Total System has shutdown with the result that it is not possible for the Total System to begin to function again without NGESO's directions relating to a Black Start .

Total System	The National Electricity Transmission System and all Systems of Users of this National Electricity Transmission System in Great Britain and Offshore .
Transmission Licence	The licence granted under Section 6(1)(b) of the Act .
Transmission Licensee	Any Onshore Transmission Licensee , Offshore Transmission Licensee or NGESO .
Transmission System	Has the same meaning as the term "licensee's transmission system" in the Transmission Licence of a Transmission Licensee .
Unmetered Supply	A supply of electricity to premises which is not, for the purposes of calculating charges for electricity supplied to the Customer at such premises, measured by metering equipment.
User	A term used in various sections of the Distribution Code to refer to the persons using the DNO's Distribution System , more particularly identified in each section of the Distribution Code , including for the avoidance of doubt the OTSO for Embedded Transmission System .
User Development	Either a User's Plant and/or Apparatus and/or System to be connected to the DNO's Distribution System , or a modification relating to a User's Plant and/or Apparatus and/or System already connected to the DNO's Distribution System , or a proposed new connection or modification to the connection within the User's System .
Voltage Reduction	The method to temporarily control Demand by reduction of System voltage.
Weekly Average Cold Spell (ACS) Condition	That particular combination of weather elements that gives rise to a level of Peak Demand within a week, taken to commence on a Monday and end on a Sunday, which has a particular chance of being exceeded as a result of weather variation alone. This particular chance is determined such that the combined probabilities of Demand in all weeks of the year exceeding the annual Peak Demand under Annual ACS Conditions is 50%, and in the week of maximum risk the weekly Peak Demand under Weekly ACS Conditions is equal to the annual Peak Demand under Annual ACS Conditions .

DGD 2. CONSTRUCTION OF REFERENCES

In this **Distribution Code**:-

- (i) The Table of contents, the Guide and headings are inserted for convenience only and shall be ignored in construing the **Distribution Code**.
- (ii) Unless the context otherwise requires, all references to a particular paragraph, sub-paragraph, Annex, Appendix or Schedule shall be a reference to that paragraph, sub-paragraph, Annex, Appendix or Schedule in or to that part of the **Distribution Code** in which the reference is made.

- (iii) Unless the context otherwise requires the singular shall include the plural and vice versa, references to any gender shall include any individual, body corporate, unincorporated association, firm or partnership and any other legal entity.
- (iv) References to the words “include” or “including” are to be construed without limitation to the generality of the preceding words.
- (v) Unless there is something in the subject matter or the context which is inconsistent therewith, any reference to an Act of Parliament or any Section of or Schedule to, or other provision of an Act of Parliament shall be construed at the particular time, as including a reference to any modification, extension or re-enactment thereof then in force and to all instruments, orders and regulations then in force and made or deriving validity from the relevant Act of Parliament.
- (vi) References to “in writing” or “written” include typewriting, printing, lithography and other modes of reproducing words in a legible and non-transitory form and, except where otherwise stated, includes suitable means of electronic transfer, such as electronic mail. In all cases the form of notification and the nominated persons or departments and addresses of the sender and recipient of the data or information shall be agreed by the **DNO** and **User** and the sender shall be able to confirm receipt of the information by the recipient. In the case of electronic transfer the sender and recipient shall be able to reproduce the information in non-transitory form.
- (vii) Where the **Distribution Glossary and Definitions** refers to any word or term which is more particularly defined in a part of the **Distribution Code**, the definition in that part of the **Distribution Code** will prevail over the definition in the **Distribution Glossary and Definitions** in the event of any inconsistency.
- (viii) A cross reference to another document or part of the **Distribution Code** shall not of itself impose any additional or further or co-existent right in the part of the text where such cross-reference is contained.
- (ix) Nothing in the **Distribution Code** is intended to or shall derogate from the **DNO’s** statutory or licence obligations.

ANNEX 1 - QUALIFYING STANDARDS

This Annex forms part of the **Distribution Code** technical requirements.

Distribution Code Requirements Implemented via Electricity Supply Standards

Copies of the following Engineering Recommendations and Technical Specifications are freely available from the **Distribution Code** website at <http://www.dcode.org.uk/> or from Energy Networks Association, 4 More London Riverside, London SE1 2AU, <http://www.energynetworks.org/>. A copy of Engineering Memorandum PO-PS-037 is available from Scottish Hydro Electric Power Distribution Ltd on request.

- 1 **Engineering Recommendation G5 Issue 5**
Harmonic voltage distortion and the connection of harmonic sources and/or resonant plant to transmission systems and distribution networks in the United Kingdom.
- 2 **Engineering Recommendation G59 Issue 3 Amendment 7**
Recommendation for the connection of generating plant to the distribution systems of licensed distribution network operators
- 3 (a) **Engineering Recommendation P2 Issue 7**
Security of Supply.
 (b) **PO-PS-037**
Distribution planning standards of voltage and of security of supply. (Parts of Scottish Hydro Electric Power Distribution Ltd Area).
- 4 **Engineering Report 130 Issue 3**
Guidance on the application of Engineering Recommendation P2, Security of Supply
- 5 **Engineering Recommendation P24**
AC traction supplies to British Rail.
- 6 **Engineering Recommendation P28 Issue 2**
Voltage fluctuations and the connection of disturbing equipment to transmission systems and distribution networks in the United Kingdom.
- 7 **Engineering Recommendation P29**
Planning limits for voltage unbalance in the United Kingdom for 132kV and below.
- 8 **Engineering Recommendation G83 Issue 2 Amendment 3**
Recommendations for the connection of type tested Small-Scale Embedded Generators (up to 16 A Per Phase) in parallel with low-voltage distribution systems.
- 9 **Engineering Recommendation G98 Issue 1 Amendment 54**
Requirements for the connection of type-tested micro generators (up to and including 16 A per phase) in parallel with public low voltage distribution networks on or after 27 April 2019.
- 10 **Engineering Recommendation G99 Issue 1 Amendment 76**
Requirements for the connection of generating equipment in parallel with public distribution networks on or after 27 April 2019.

DISTRIBUTION DATA REGISTRATION CODE (DDRC)

DDRC1 INTRODUCTION

- DDRC1.1 The various sections of the **Distribution Code** require the **DNO** and **Users** to exchange and update data from time to time. The data which is specified in each section of the **Distribution Code** is summarised in the **Distribution Data Registration Code (DDRC)**.
- DDRC1.2 The **Distribution Data Registration Code (“DDRC”)** provides a series of schedules summarising all requirements for information of a particular type. Each class of **User** is then referred to the appropriate schedule or group of schedules for a statement of the total data requirements in his case.
- DDRC1.3 The **DDRC** specifies procedures and timings for the supply of data and subsequent updating, where the timings are covered by detailed timetables laid down in other sections of the **Distribution Code** they are not necessarily repeated in full in the **DDRC**.
- DDRC1.4 In the case of an **Embedded Generator** seeking a connection to the **DNO’s Distribution System** then irrespective of its potential involvement in the **Balancing Mechanism**, discussions on connection will be with the **DNO** concerned with the connection arrangements, in addition to any discussions required with **NGESO** under the **Grid Code**. References to “**Embedded Generator**” in the **DDRC** shall include existing and prospective **Embedded Generators**.

DDRC2 OBJECTIVE

The objective of the **DDRC** is to collate and list in a readily identifiable form all the data to be provided by:

- (a) Each category of **User** to the **DNO** under the **Distribution Code**.
- (b) The **DNO** to each category of **User** under the **Distribution Code**.

DDRC3 SCOPE

The **DDRC** will apply to the **DNO** and to all **Users** which for the purpose of the **DDRC** are listed below:

- (a) **Customers** It is not intended that the **Distribution Code** shall generally apply to small **Customers** individually; their obligations will be dealt with on their behalf by their **Supplier**.
- (b) **Embedded Generators**.
- (c) **Other Authorised Distributors** connected to the **DNO’s Distribution System**.
- (d) **Suppliers**
- (e) Any other person who is making application for use of or connection to the **DNO’s Distribution System**.

DDRC4 DATA CATEGORIES**DDRC4.1 Categories of Data**

Within the **DDRC** the data required by the **DNO** is allocated to one of the following three categories:

- (a) **Standard Planning Data (SPD)**
- (b) **Detailed Planning Data (DPD)**
- (c) **Operational Data (OD)**

DDRC4.2 Standard Planning Data (SPD)

DDRC4.2.1 Standard Planning Data is that data listed in the **Distribution Planning and Connection Code** which is required to be supplied by all **Users** when making application for connection to and/or use of the **DNO's Distribution System** in order that the **DNO** may assess the implications for making the connection.

DDRC4.2.2 Standard Planning Data will be provided to the **DNO** in accordance with Section DPC6 and DPC7 of the **Distribution Planning and Connection Code** for **Power Generating Modules** compliant with EREC G59, and in accordance with EREC G99 for **Power Generating Modules** compliant with EREC G99.

DDRC4.2.3 Following an agreement for connection/use of **System**, it is a requirement of the **Distribution Planning and Connection Code** that estimated data supplied by **Users** should be replaced by actual values prior to connection which will be referred to as **Registered Data**.

DDRC4.3 Detailed Planning Data (DPD)

DDRC4.3.1 Detailed Planning Data is that data listed in the **Distribution Planning and Connection Code** which is required to be supplied by the **Users** specified for connection to and/or use of the **DNO's Distribution System**.

DDRC4.3.2 Detailed Planning Data will be provided to the **DNO** in accordance with Section DPC6 and DPC7 of the **Distribution Planning and Connection Code** for **Power Generating Modules** compliant with EREC G59, and in accordance with EREC G99 for **Power Generating Modules** compliant with EREC G99.

DDRC4.3.3 Following an agreement for connection/use of **System**, it is a requirement of the **Distribution Planning and Connection Code** that estimated data supplied by **Users** should be replaced by measured values prior to connection.

DDRC4.4 Operational Data (OD)

DDRC4.4.1 Operational Data is data, which is required by the **Distribution Operating Codes**.

DDRC4.4.2 Operational Data is required to be supplied in accordance with timetables set down in the relevant **Distribution Operating Codes** and is repeated in tabular form in the schedules attached to this **DDRC**.

DDRC5 PROCEDURES AND RESPONSIBILITIES**DDRC5.1 Responsibility for Submission and Updating of Data**

In accordance with the provisions of the various sections of the **Distribution Code** and unless otherwise agreed or specified by the **DNO**, each **User** is required to submit data as defined in DDRC6 following and the attached schedules.

DDRC5.2 Methods of Submitting Data

DDRC5.2.1 Data must be submitted to the **DNO** in writing and where possible in the format specified by the **DNO** and must indicate the name of the person who is submitting those schedules.

DDRC5.2.2 If a **User** wishes to change any data item then this must first be discussed with the **DNO** concerned in order for the implications to be considered and the change if agreed (such agreement not to be unreasonably withheld), should be confirmed by the submission of a revised data scheduler by verbal means with confirmation in writing if short timescales are involved.

DDRC5.2.3 The **DNO** will supply data as requested by **Users** and as agreed by the **DNO** where no obligation of confidentiality exists.

DDRC5.3 Changes to User's Data

Whenever a **User** becomes aware of a change to an item of data, which is registered with the **DNO** the **User**, must notify the **DNO** in accordance with the appropriate section of the **Distribution Code**. The method and timing of the notification to the **DNO** is set out in the appropriate section of the **Distribution Code**.

DDRC5.4 Data Accuracy and Data not Supplied

DDRC5.4.1 The **User** is solely responsible for the accuracy of data (or of changes to data) supplied to the **DNO**.

DDRC5.4.2 Any data which the **User** fails to supply when required by any section of the **Distribution Code** may be estimated by the **DNO** if and when, in the **DNO's** view, it is necessary to do so. Such estimates will be based upon data supplied previously for the same **Plant** or **Apparatus** or upon corresponding data for similar **Plant** or **Apparatus** or upon such other information as the **DNO** deems appropriate.

DDRC5.4.3 The **DNO** will advise a **User** in writing of any estimated data it intends to use pursuant to DDRC5.4.2 relating directly to that **User's Plant** or **Apparatus** in the event of data not being supplied. The **DNO** will not be liable as a result of using that estimated data; the responsibility for the accuracy of that data will rest with the **User** as if the data has been supplied by that **User**.

DDRC5.4.4 It is a requirement of the **Distribution Planning and Connection Code** that Registered Project Planning Data is updated by the **User** annually.

DDRC6 DATA TO BE REGISTERED

- DDRC6.1 Schedules 1-4 are not used within the **Distribution Code**.
- DDRC6.2 Schedules 5a, 5b and 5c - **Embedded Power Generating Module** Technical Information.
- DDRC6.3 Schedule 5e - **Embedded Transmission System**
- DDRC6.4 Schedule 6 - **Demand** forecasts - as described in DOC1, time varying output/generation forecasts for the **Users** defined in the scope.
- DDRC6.5 Schedule 7 - **Operational Planning** - as described in **DOC2**, outage planning information.
- DDRC6.6 Schedule 8 - **System** Design Information - comprising **System** technical data.
- DDRC6.7 Schedule 9 - Load Characteristics - comprising the forecast data for load points indicating for example, the maximum load, the equipment that comprises the load, and the harmonic content of the load.
- DDRC6.8 The schedules applicable to each class of **User** are as follows:-

Schedule Number:-	Title	Applicable to:-
Schedule 5a	Power Station Data	Every Power Station
Schedule 5b	Power Generating Module Data	All Embedded Power Generating Modules
Schedule 5c	Power Generating Module Data	For specified types of Power Generating Module and ancillary Plant and Apparatus (i) Synchronous Power Generating Module (ii) Fixed speed induction Power Generating Module (iii) Doubly fed induction Power Generating Module (iv) Series Converter Connected Power Generating Module (v) Transformers
Schedule 5d	DNO Network Data	DNO's Distribution System
Schedule 5e	All Embedded Transmission System	All Embedded Transmission System

Schedule Number:-	Title	Applicable to:-
Schedule 6	Demand Forecasts	All Embedded Generators greater than 1MW; Any Other Authorised Distributor connected to the host DNO System ; All Suppliers ; All Customers connected at HV _whose Demand is greater than 5MW
Schedule 7a	Operational Planning	All Embedded Generators greater than 1MW; Any Other Authorised Distributor connected to the host DNO System ; All Suppliers ; All Customers connected at HV _whose Demand is greater than 5MW
Schedule 8 Schedule 9	System Design Information and Load Characteristics	Embedded Generators ; Any Other Authorised Distributor connected to the host DNO's Distribution System ; All Suppliers ; All Customers

Schedule 5a

DATA REGISTRATION CODE

Power Generating Facility DATA FOR EVERY EMBEDDED Power Generating Facility EXCLUDING THE OTSO

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>DATA CATEGORY</u>
5a Power Station Data		
APPLICANT'S DETAILS		
Customer's Details		
Company name	Text	SPD
Company registered number	Text	SPD
Postal address	Text	SPD
Contact name	Text	SPD
Email address	Text	SPD
Telephone number	Text	SPD
Facsimile number	Text	SPD
Consultant's Details (if applicable)		
Consultant's name	Text	SPD
Postal address	Text	SPD
Contact name	Text	SPD
Email address	Text	SPD
Telephone number	Text	SPD
Facsimile number	Text	SPD
Power Generating Facility LOCATION AND OPERATION		
Power Station name	Text	SPD
Details of any existing Connection Agreements for this Power Station	Text	SPD
Target date for the provision of the connection / commissioning of the Power Station	Text	SPD
Postal address or site boundary plan (1/500)	Text / Plan	SPD
Connection Point (OS six (or seven) digit grid reference or description)	Text	SPD
Connection Point voltage	V	SPD
Single line diagram of any on-site existing or proposed electrical plant or, where available, Operation Diagrams	Diagram	SPD
What security is required for the connection? (see note 1)	Text	SPD
Number of Power Generating Modules in Power Station	Number	SPD

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>DATA CATEGORY</u>
5a Power Station Data		
Are all Power Generating Modules of the same design/rating? (If not complete the relevant information specified in Schedules 5b and 5c shall be provided for each each Power Generating Module type)	Y/N	SPD
Will the Power Station operate in islanded mode?	Y/N	SPD
Will Power Generating Module supply electricity to on-site premises?	Y/N	SPD
Power Generating Facility STANDBY IMPORT REQUIREMENTS (see note 2)		
Maximum Active Power import	MW	SPD
Maximum Reactive Power import (lagging)	MVAr	SPD
Maximum Reactive Power export (leading)	MVAr	SPD
Power Generating Facility TOP-UP IMPORT REQUIREMENTS (see note 3)		
Maximum Active Power import	MW	SPD
Maximum Reactive Power import (lagging)	MVAr	SPD
Maximum Reactive Power export (leading)	MVAr	SPD
Power Generating Facility EXPORT REQUIREMENTS (see note 4)		
Total Power Station output at Registered Capacity (net of auxiliary loads)		
Registered Capacity (maximum Active Power export)	MW	SPD
Maximum Reactive Power export (lagging)	MVAr	SPD
Maximum Reactive Power import (leading)	MVAr	SPD
Total Power Station output at Minimum Stable Operating Level Minimum Generation (net of auxiliary loads)		
Minimum Stable Operating Level Minimum Generation (minimum Active Power export)	MW	DPD
Minimum Regulating Level	MW	DPD
Maximum Reactive Power export (lagging)	MVAr	DPD
Maximum Reactive Power import (leading)	MVAr	DPD
Power Station performance chart (net, at Connection Point , as per DPC7 Figure 1)	Figure	DPD
Power Generating Facilit MAXIMUM FAULT CURRENT CONTRIBUTION (see note 5)		

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>DATA CATEGORY</u>
5a Power Station Data		
Peak asymmetrical short circuit current at 10ms (i_p) for a 3 ϕ short circuit fault at the Connection Point	kA	SPD
RMS value of the initial symmetrical short circuit current (I_k'') for a 3 ϕ short circuit fault at the Connection Point	kA	SPD
RMS value of the symmetrical short circuit current at 100ms ($I_{k(100)}$) for a 3 ϕ short circuit fault at the Connection Point	kA	SPD
Short circuit time constant T'' , corresponding to the change from I_k'' to $I_{k(100)}$	s	DPD
Positive sequence X/R ratio at the instant of fault	-	DPD
Power Generating Facility INTERFACE ARRANGEMENTS (see note 6)		
Means of connection, disconnection and synchronising between DNO and User	Method statement	SPD
Site protection / co-ordination arrangements with DNO	Report	DPD
Precautions should neutral become disconnected from earth (LV only see ER G59/3-4 or ER G99)	Report	DPD
Site communications, control and monitoring (HV / LV)	Report	DPD

<u>DATA DESCRIPTION</u>	<u>Units</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
5a continued			
Power Generating Facility G59 OR G99 PROTECTION – see note 7			
U/V Stage 1	V and s	SPD	SPD
U/V Stage 2 (if fitted)	V and s	SPD	SPD
O/V Stage 1	V and s	SPD	SPD
O/V Stage 2	V and s	SPD	SPD
U/F Stage 1	Hz and s	SPD	SPD
U/F Stage 2 (if fitted)	Hz and s	SPD	SPD
O/F Stage 1	Hz and s	SPD	SPD

DATA DESCRIPTION 5a continued	<u>Units</u>	<u>Data Category</u> <u>for Generators</u> <u>connected at</u> <u>LV</u>	<u>Data Category</u> <u>for Generators</u> <u>Connected at</u> <u>HV</u>
O/F Stage 2	Hz	SPD	SPD
LoM (RoCoF)	Hzs ⁻¹ and s	SPD	SPD
LoM (Vector Shift)	degrees	SPD	SPD
LoM – other		SPD	SPD

Notes:

- The **DNO** will assume a single circuit connection to the **Power Station** is required unless stated otherwise. Options include:-
 - Single circuit connection
 - Manually switched alternative connection
 - Automatic switched alternative connection
 - Firm connection (secure for first circuit outage)
- This section relates to operating conditions when the **Power Station** is importing **Active Power**, typically when it is not generating. The maximum **Active Power** import requirement and the associated maximum **Reactive Power** import and/or export requirements should be stated.
- This section relates to operating conditions when the **Power Station** is importing **Active Power**, typically when it is generating, but is not generating sufficient power to cater for all the on-site demand. The maximum **Active Power** import requirement and the associated maximum **Reactive Power** import and/or export requirements should be stated.
- This section relates to operating conditions when the **Power Station** is exporting **Active Power**. The **Active Power** export and associated maximum **Reactive Power** range should be stated for operation at **Registered Capacity** and for operation at **Minimum Stable Operating Level**~~Minimum Generation~~.
- See ER G74, ETR 120 and IEC 60909 for guidance on fault current data. Additionally, fault current contribution data may be provided in the form of detailed graphs, waveforms and/or tables. This information need not be provided where detailed fault level contribution / impedance data is provided for each **Power Generating Module** in Schedules 5b or 5c.
- The interface arrangements need to be agreed and implemented between the **User** and the **DNO** before energisation and consideration should be given to addressing the Distribution Code requirements including DGC5, DGC8, DPC6.7, , DOC5, DOC7.4, DOC8.6.3, DOC8.6.4, DOC9 and DOC10. For example DOC7 requires that up to date contact details are provided and procedures are agreed to establish an effective means of communication between the **Generator** and the **DNO**.
- This information need not be provided where the interface protection is provided on each individual **Power Generating Module**. In such cases the information should be provided in Schedule 5b.

Schedule 5b

DATA REGISTRATION CODE

Power Generating Module DATA FOR ALL EMBEDDED Power Generating Modules

DATA DESCRIPTION 5b Power Generating Module Data	UNITS	Data Category for Generators connected at LV	Data Category for Generators Connected at HV
Power Generating Module GENERAL DATA			
Number of Power Generating Modules to which this data applies	Value	SPD	SPD
Type of Power Generating Module : Synchronous Generator, -Fixed Speed Induction Generator, Double Fed Induction Generator, Series Converter Connected Generator, Other (provide details)	Text	SPD	SPD
Energy Source (see note 1)	Text	SPD	SPD
Energy Conversion Technology/ Production type (see note 1)	Text	SPD	SPD
Operating regime – intermittent or non-intermittent (see note 2)	Text	SPD	SPD
Is the Power Generating Module part of a combined heat and power installation?	Y/N	SPD	SPD
Power Generating Module OUTPUT DATA			
Rated terminal voltage (generator)	V	SPD	SPD
Rated terminal current (generator)	A	SPD	SPD
Power Generating Module Registered Capacity	MW	SPD	SPD
Power Generating Module apparent power rating (to be used as base for generator parameters)	MVA	SPD	SPD
Power Generating Module rated Active Power	MW	SPD	SPD
Maximum measured Active Power P_{60} (see note 3)	MW	DPD	DPD
Maximum measured Active Power $P_{0.2}$ (see note 3)	MW	DPD	DPD
Minimum Stable Operating Level Minimum Generation (set connected; net of auxiliary loads)	MW	DPD	DPD
Minimum Regulating Level	MW	DPD	DPD
Power Generating Module Reactive Power capability at rated Active Power (gross, at generator terminals)			
Maximum Reactive Power export (lagging)	MVar	DPD	SPD

DATA DESCRIPTION 5b Power Generating Module Data	UNITS	Data Category for Generators connected at LV	Data Category for Generators Connected at HV
Maximum Reactive Power import (leading)	MVA _r	DPD	SPD
Power Generating Module performance chart (gross, at either the Power Generating Module terminals or Connection Point as agreed between the DNO and Generator , as per DPC7 Figure 1)	Figure	DPD	DPD
Power Generating Module MAXIMUM FAULT CURRENT CONTRIBUTION (see note 4)			
Peak asymmetrical short circuit current at 10ms (i_p) for a 3 ϕ short circuit fault at the Power Generating Module terminals	kA	None	SPD
RMS value of the initial symmetrical short circuit current (I_k'') for a 3 ϕ short circuit fault at the Power Generating Module terminals	kA	None	SPD
RMS value of the symmetrical short circuit current at 100ms ($I_{k(100)}$) for a 3 ϕ short circuit fault at the Power Generating Module terminals	kA	SPD	SPD
Short circuit time constant T'' , corresponding to the change from I_k'' to $I_{k(100)}$	s	None	DPD
Positive sequence X/R ratio at the instant of fault	-	None	DPD
Power Generating Module VOLTAGE CONTROL			
If operating in Power Factor control mode, allowable Power Factor range		SPD	SPD
If operating in Power Factor control mode, target Power Factor		SPD	SPD
If operating in voltage control mode, voltage set point	V	SPD	SPD
If operating in reactive power control mode, reactive power set point	VA	SPD	SPD
If operating to any other control mode, description of parameters and set points.	Text	SPD	SPD
Frequency Response Settings			
Frequency response droop setting in LFSM	Per cent	DPD	DPD
Frequency response droop setting in FSM (if applicable)	Per cent	DPD	DPD
Frequency response mode, ie LFSM or FSM	text	DPD	DPD

<u>DATA DESCRIPTION</u> 5b Power Generating Module Data	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
Power Generating Module INSTALLED INTERFACE PROTECTION (see note 5)			
U/V Stage 1	V and s	SPD	SPD
U/V Stage 2	V and s	SPD	SPD
O/V Stage 1	V and s	SPD	SPD
O/V Stage 2 (if fitted)	V and s	SPD	SPD
U/F Stage 1	Hz and s	SPD	SPD
U/F Stage 2	Hz and s	SPD	SPD
O/F Stage 1	Hz and s	SPD	SPD
O/F Stage 2 (if fitted)	Hz	SPD	SPD
LoM (RoCoF)	Hzs ⁻¹ and s	SPD	SPD
LoM (Vector Shift)	degrees	SPD	SPD
LoM – other	Text	SPD	SPD

Notes:

- For all new connections the energy source shall be selected from Table 1 [and the energy conversion technology should be selected from Table 2](#). For [example Manual of Procedures for the ENTSO-E Central Information Transparency Platform](#):
- Biomass;
- Fossil brown coal/lignite;
- Fossil coal derived gas;
- Fossil gas;
- Fossil hard coal;
- Fossil oil;
- Fossil oil shale;
- Fossil peat;
- Geothermal;
- Hydro pumped storage;
- Hydro run-of-river and poundage;

- ~~Hydro water reservoir;~~
- ~~Marine;~~
- ~~Nuclear;~~
- ~~Other renewable;~~
- ~~Solar;~~
- ~~Waste;~~
- ~~Wind offshore;~~
- ~~Wind onshore; or~~
- ~~Other.~~
-

1. ~~For connections made before 1 January 2017, the list set out at paragraph 23 in Version 2 of the Regulatory Instructions and Guidance relating to the distributed generation incentive, innovation funding incentive and registered solar PV power zones, reference 83/07, published by Ofgem, in April 2007, may be submitted as generating module would have an alternative to the production type energy source R and an energy conversion technology of 11)::~~

Table 1

	<u>Energy Source</u>
<u>A</u>	<u>Advanced Fuel (produced via gasification or pyrolysis of biofuel or waste)</u>
<u>B</u>	<u>Biofuel - Biogas from anaerobic digestion (excluding landfill & sewage)</u>
<u>C</u>	<u>Biofuel - Landfill gas</u>
<u>D</u>	<u>Biofuel - Sewage gas</u>
<u>E</u>	<u>Biofuel - Other</u>
<u>F</u>	<u>Biomass</u>
<u>G</u>	<u>Fossil - Brown coal/lignite</u>
<u>H</u>	<u>Fossil - Coal gas</u>
<u>I</u>	<u>Fossil - Gas</u>
<u>J</u>	<u>Fossil - Hard coal</u>
<u>K</u>	<u>Fossil - Oil</u>
<u>L</u>	<u>Fossil - Oil shale</u>
<u>M</u>	<u>Fossil - Peat</u>
<u>N</u>	<u>Fossil - Other</u>
<u>O</u>	<u>Geothermal</u>
<u>P</u>	<u>Hydrogen</u>
<u>Q</u>	<u>Nuclear</u>
<u>R</u>	<u>Solar</u>
<u>S</u>	<u>Stored Energy (all stored energy irrespective of the original energy source)</u>
<u>T</u>	<u>Waste</u>
<u>U</u>	<u>Water (flowing water or head of water)</u>
<u>V</u>	<u>Wind</u>
<u>W</u>	<u>Other</u>

Table 2

	<u>Energy Conversion Technology</u>
<u>1</u>	<u>Engine (combustion / reciprocating)</u>
<u>2</u>	<u>Fuel Cell</u>
<u>3</u>	<u>Gas turbine (OCGT)</u>
<u>4</u>	<u>Geothermal power plant</u>
<u>5</u>	<u>Hydro - Reservoir (not pumped)</u>
<u>6</u>	<u>Hydro - Run of river</u>
<u>7</u>	<u>Hydro - Other</u>
<u>8</u>	<u>Interconnector</u>
<u>9</u>	<u>Offshore wind turbines</u>
<u>10</u>	<u>Onshore wind turbines</u>
<u>11</u>	<u>Photovoltaic</u>
<u>12</u>	<u>Steam turbine (thermal power plant)</u>
<u>13</u>	<u>Steam-gas turbine (CCGT)</u>
<u>14</u>	<u>Tidal lagoons</u>
<u>15</u>	<u>Tidal stream devices</u>
<u>16</u>	<u>Wave devices</u>
<u>17</u>	<u>Storage - Chemical - Ammonia</u>
<u>18</u>	<u>Storage - Chemical - Hydrogen</u>
<u>19</u>	<u>Storage - Chemical - Synthetic Fuels</u>
<u>20</u>	<u>Storage - Chemical - Drop-in Fuels</u>
<u>21</u>	<u>Storage - Chemical - Methanol</u>
<u>22</u>	<u>Storage - Chemical - Synthetic Natural Gas</u>
<u>23</u>	<u>Storage - Electrical - Supercapacitors</u>
<u>24</u>	<u>Storage - Electrical - Superconducting Magnetic ES (SMES)</u>
<u>25</u>	<u>Storage - Mechanical - Adiabatic Compressed Air</u>
<u>26</u>	<u>Storage - Mechanical - Diabatic Compressed Air</u>
<u>27</u>	<u>Storage - Mechanical - Liquid Air Energy Storage</u>
<u>28</u>	<u>Storage - Mechanical - Pumped Hydro</u>
<u>29</u>	<u>Storage - Mechanical - Flywheels</u>
<u>30</u>	<u>Storage - Thermal - Latent Heat Storage</u>
<u>31</u>	<u>Storage - Thermal - Thermochemical Storage</u>
<u>32</u>	<u>Storage - Thermal - Sensible Heat Storage</u>
<u>33</u>	<u>Storage - Electrochemical Classic Batteries -Lead Acid</u>
<u>34</u>	<u>Storage - Electrochemical Classic Batteries -Lithium Polymer (Li-Polymer)</u>
<u>35</u>	<u>Storage - Electrochemical Classic Batteries -Metal Air</u>
<u>36</u>	<u>Storage - Electrochemical Classic Batteries -Nickel Cadmium (Ni-Cd)</u>
<u>37</u>	<u>Storage - Electrochemical Classic Batteries -Sodium Nickel Chloride (Na-NiCl₂)</u>
<u>38</u>	<u>Storage - Electrochemical Classic Batteries -Lithium Ion (Li-ion)</u>

	Energy Conversion Technology
39	Storage - Electrochemical Classic Batteries -Sodium Ion (Na-ion)
40	Storage - Electrochemical Classic Batteries -Lithium Sulphur (Li-S)
41	Storage - Electrochemical Classic Batteries -Sodium Sulphur(Na-S)
42	Storage - Electrochemical Classic Batteries -Nickle –Metal Hydride (Ni-MH)
43	Storage - Electrochemical Flow Batteries - Vanadium Red-Oxide
44	Storage - Electrochemical Flow Batteries - Zinc – Iron (Zn –Fe)
45	Storage - Electrochemical Flow Batteries - Zinc – Bromine (Zn –Br)
46	Storage - Other
47	Other

2. Intermittent and Non-intermittent Generation is defined in ENA EREP 130 as follows:
 - Intermittent Generation: Generation plant where the energy source for the prime mover can not be made available on demand
 - Non-intermittent Generation: Generation plant where the energy source for the prime mover can be made available on demand
3. For wind turbines only - IEC 61400-21 (P₆₀ and P_{0.2})
4. See ER G74, ETR 120 and IEC 60909 for guidance on fault current data. Additionally, fault current contribution data may be provided in the form of detailed graphs, waveforms and/or tables. This information need not be provided where detailed fault level contribution / impedance data is provided for the site in Schedule 5a or for each **Power Generating Module** in Schedules 5c.
5. This information need not be provided where the interface protection is provided on a per **Power Station** basis. In such cases the information should be provided in Schedule 5a.

Schedule 5c (i)

DATA REGISTRATION CODE

Power Generating Module DATA FOR EMBEDDED Power Generating Modules

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
5c (i) Synchronous Power Generating Modules (or Equivalent Synchronous Power Generating Modules –see note 1)			
Power Generating Module MODEL DATA			
Power Generating Module identifier	Text	SPD	SPD
Type of Power Generating Module (round rotor, salient pole or asynchronous equivalent – see note 1)	Text	SPD	SPD
Positive sequence (armature) resistance	per unit	DPD	SPD
Short circuit ratio (see note 2)	Number	DPD	DPD
Inertia constant (Power Generating Module and Prime Mover)	MWsec/ MVA	DPD	SPD
Direct axis reactances: Sub-transient (X''_d) – unsaturated / saturated Transient (X'_d) – unsaturated / saturated Synchronous (X_d) – unsaturated / saturated	per unit per unit per unit	SPD / SPD DPD / DPD DPD / DPD	SPD / SPD SPD / SPD SPD / SPD
Quadrature axis reactances: Sub-transient (X''_q) – unsaturated / saturated Transient (X'_q) – unsaturated / saturated Synchronous (X_q) – unsaturated / saturated	per unit per unit per unit	None None None	DPD / DPD DPD / DPD DPD / DPD
Time constants: State whether time constants are open or short circuit D-axis sub-transient – unsaturated / saturated D-axis transient – unsaturated / saturated Q-axis sub-transient – unsaturated / saturated Q-axis transient – unsaturated / saturated	Text s s s s	DPD DPD / DPD DPD / DPD None None	SPD SPD / SPD SPD / SPD DPD / DPD DPD / DPD
Stator leakage reactance (unsaturated)	per unit	None	DPD
Zero sequence resistance (earthed star only, including any neutral earthing resistance)	per unit	DPD	DPD
Zero sequence reactance (earthed star only, including any neutral earthing reactance)	per unit	DPD	DPD
Negative sequence resistance	per unit	DPD	DPD
Negative sequence reactance	per unit	DPD	DPD
Rated field current	A	DPD	DPD

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
5c (i) Synchronous Power Generating Modules (or Equivalent Synchronous Power Generating Modules –see note 1)			
Field current open circuit saturation curve (from 50% to 120% of rated terminal voltage)	Graph	DPD	DPD
Potier reactance (if saturation factor available – see note 3)	per unit	DPD	DPD
Saturation factor (pu field current to produce 1.2pu terminal voltage on open circuit)	per unit	DPD	DPD
Frequency response droop setting	Per cent	DPD	DPD
Frequency response mode, ie LFSM-O or FSM	text	DPD	DPD
Power Generating Module MODELS			
Governor and prime mover model (see note 4)	Model	DPD	DPD
AVR / excitation model (see note 4)	Model	DPD	DPD

Notes:

- Asynchronous generators may be represented here by an equivalent synchronous generator data set
- The short circuit ratio (SCR) of a **Power Generating Module** is one measure of the performance of a machine under short circuit conditions and is important in determining the unit's stability performance. The reciprocal of the per unit on rating saturated synchronous reactance, $X_d(\text{sat})$, is equal to the SCR.
- The Potier reactance is only required if the saturation factor is available. The saturation factor is defined as the pu value of field current required to generate 1.2pu stator terminal voltage on open circuit.
- SPD** will normally be sufficient, except where the **DNO** considers that the stability and security of the network is at risk. Sufficient **DPD** should then be provided in order to build up a suitable **Power Generating Module** dynamic model for analysis. Alternatively a 'Black Box' dynamic model of the **Power Generating Module** may be provided. All models should be suitable for the software analysis package used by the **DNO**.

Schedule 5c (ii)

DATA REGISTRATION CODE

Power Generating Module DATA FOR EMBEDDED Power Generating Modules

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
5c (ii) Fixed Speed Induction Power Generating Modules			
Power Generating Module MODEL DATA (see notes 1 and 2)			
Magnetising reactance	per unit	DPD	SPD
Stator resistance	per unit	DPD	SPD
Stator reactance	per unit	DPD	SPD
Inner cage or running rotor resistance	per unit	DPD	SPD
Inner cage or running rotor reactance	per unit	DPD	SPD
Outer cage or standstill rotor resistance	per unit	DPD	SPD
Outer cage or standstill rotor reactance	per unit	DPD	SPD
State whether data is inner-outer cage or running-standstill	Text	DPD	SPD
Number of pole pairs	number	DPD	DPD
Gearbox ratio	number	DPD	DPD
Slip at rated output	%	DPD	SPD
Total effective inertia constant (generator and prime mover)	MWsec/ MVA	DPD	SPD
Inertia constant of the generator rotor	MWsec/ MVA	DPD	DPD
Inertia constant of the prime mover rotor	MWsec/ MVA	DPD	DPD
Equivalent shaft stiffness between the two masses	Nm/ Electrical radian	DPD	DPD
Describe method of adding star capacitance over operating range (see notes 3 and 4)	Text	DPD	DPD

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
5c (ii) Fixed Speed Induction Power Generating Modules			
Shunt capacitance connected in parallel at % of rated output Starting 20% 40% 60% 80% 100%	kVAr or Graph	SPD	SPD
Active Power and Reactive Power import during start-up Active Power and Reactive Power import during switching operations eg '6 to 4 pole' change-over	MW- MVar / Time Graphs	SPD DPD	SPD SPD
Under voltage protection setting & time delay	puV, s	SPD	SPD
Governor and prime mover model (see note 5)	Model	DPD	DPD

Notes:

- Asynchronous generators may be represented by an equivalent synchronous data set
- The **User** will need to provide the above data for each asynchronous **Power Generating Module** based on the number of pole sets (ie two data sets for dual speed 4/6 pole machines).
- LV connected generators may just have a simple fixed capacitor bank.
- If electronic power factor control (eg SVC) is installed, provide details of the operating range and characteristics eg pf or MVar range - operating regime: constant or voltage set-point / slope and response times.
- SPD** will normally be sufficient, except where the **DNO** considers that the stability and security of the network is at risk. Sufficient **DPD** should then be provided in order to build up a suitable **Power Generating Module** dynamic model for analysis. Alternatively a 'Black Box' dynamic model of the **Power Generating Module** may be provided. All models should be suitable for the software analysis package used by the **DNO**.

Schedule 5c (iii)

DATA REGISTRATION CODE

Power Generating Module DATA FOR EMBEDDED Power Generating Modules

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
5c (iii) Doubly Fed Induction Power Generating Modules			
Power Generating Module maximum fault current contribution data (see note 1)	Schedule	SPD	SPD
Power Generating Module MODEL DATA (see note 2)			
Magnetising reactance	per unit	DPD	SPD
Stator resistance	per unit	DPD	SPD
Stator reactance	per unit	DPD	SPD
Running rotor resistance	per unit	DPD	SPD
Running rotor reactance	per unit	DPD	SPD
Standstill rotor resistance	per unit	DPD	SPD
Standstill rotor reactance	per unit	DPD	SPD
Rotor current limit	A	DPD	DPD
Number of pole pairs	number	DPD	DPD
Gearbox ratio	number	DPD	DPD
Generator rotor speed range (minimum to rated speed)	rpm	DPD	SPD
Electrical power output versus generator rotor speed	Graph / Table	DPD	DPD
Total effective inertia constant (generator and prime mover) at rated speed	MWsec/ MVA	DPD	SPD
Inertia constant of the generator rotor at rated speed	MWsec/ MVA	DPD	DPD
Inertia constant of the prime mover rotor at rated speed	MWsec/ MVA	DPD	DPD
Equivalent shaft stiffness between the two masses	Nm/ Electrical radian	DPD	DPD
DFIG unit models including excitation and prime mover control systems (see note 2)	Models	DPD	DPD
Number of operations of fast fault current injection that can be sequentially accomplished and any limitations on time, thermal limitations, protection etc.	Text	DPD	SPD

Notes:

1. Fault current contribution data should be provided under Schedule 5b.
2. **SPD** will normally be sufficient, except where the **DNO** considers that the stability and security of the network is at risk. Sufficient **DPD** should then be provided in order to build up a suitable **Power Generating Module** dynamic model for analysis. Alternatively a 'Black Box' dynamic model of the **Power Generating Module** may be provided. All models should be suitable for the software analysis package used by the **DNO**.

Schedule 5c (iv)

DATA REGISTRATION CODE

Power Generating Module DATA FOR EMBEDDED Power Generating Modules

<u>DATA DESCRIPTION</u> 5c (iv) Series Converter Connected Power Generating Modules	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
Power Generating Module maximum fault current contribution data (see note 1)	Schedule	SPD	SPD
Power Generating Module MODEL DATA (see note 2)			
Gearbox ratio	number	DPD	DPD
Generator rotor speed range (minimum to rated speed)	rpm	DPD	SPD
Electrical power output versus generator rotor speed	Graph / Table	DPD	DPD
Total effective inertia constant (generator and prime mover)	MWsec/ MVA	DPD	SPD
Inertia constant of the generator rotor at rated speed	MWsec/ MVA	DPD	DPD
Inertia constant of the prime mover rotor at rated speed	MWsec/ MVA	DPD	DPD
Equivalent shaft stiffness between the two masses	Nm/ Electrical radian	DPD	DPD
Series Converter Power Generating Module models including excitation, voltage/ Reactive Power and prime mover control systems (see note 2)	Models	DPD	DPD
Number of operations of fast fault current injection that can be sequentially accomplished and any limitations on time, thermal limitations, protection etc.	Text	DPD	SPD

Notes:

1. Fault current contribution data should be provided under Schedule 5b.
2. **SPD** will normally be sufficient, except where the **DNO** considers that the stability and security of the network is at risk. Sufficient **DPD** should then be provided in order to build up a suitable **Power Generating Module** dynamic model for analysis. Alternatively a 'Black Box' dynamic model of the **Power Generating Module** may be provided. All models should be suitable for the software analysis package used by the **DNO**. Where required by the **DNO**, generator electrical parameters should be provided based on Schedule 5c (i) or 5c (ii), according to the type of machine used.

Schedule 5c (v)**DATA REGISTRATION CODE****Power Generating Module DATA FOR EMBEDDED Power Generating Modules**

<u>DATA DESCRIPTION</u> 5c (v) Transformers	<u>UNITS</u>	<u>Data Category for Generators connected at LV</u>	<u>Data Category for Generators Connected at HV</u>
Transformer identifier	Text	SPD	SPD
Transformer type (Unit/Station/Auxiliary)	Text	SPD	SPD
Number of identical units	Number	SPD	SPD
Type of cooling	Text	SPD	SPD
Rated (apparent) power	MVA	SPD	SPD
Rated voltage ratio (on principal tap)	kV/kV	SPD	SPD
Positive sequence resistance on principal tap	per unit	DPD	SPD
Positive sequence reactance at principal tap	per unit	SPD	SPD
Positive sequence reactance at minimum tap	per unit	None	DPD
Positive sequence reactance at maximum tap	per unit	None	DPD
Zero sequence resistance	per unit	DPD	DPD
Zero sequence reactance	per unit	DPD	DPD
Winding configuration (eg Dyn11)	Text	DPD	SPD
Type of tap changer (on load / off circuit)	Text	SPD	SPD
Tap step size	%	SPD	SPD
Maximum ratio tap	%	SPD	SPD
Minimum ratio tap	%	SPD	SPD
Tap position in service (for off load tapchangers only)	%	DPD	DPD
Method of voltage control	Text	DPD	SPD
Method of earthing of high-voltage winding	Text	SPD	SPD
Method of earthing of low-voltage winding	Text	SPD	SPD

Schedule 5d**DATA REGISTRATION CODE****DNO NETWORK DATA****(Data indicative of that which may be requested by Users for parts of the Distribution System)**

<u>DATA DESCRIPTION</u>	<u>UNITS</u>
5d DNO Network Data (see note 1)	
Fault Level at Connection Point prior to Power Generating Facility connection.	
Peak asymmetrical short circuit current at 10ms (i_p) for a 3 ϕ short circuit fault at the Connection Point	kA
RMS value of the initial symmetrical short circuit current (I_k'') for a 3 ϕ short circuit fault at the Connection Point	kA
RMS value of the symmetrical short circuit current at 100ms ($I_{k(100)}$) for a 3 ϕ short circuit fault at the Connection Point	kA
Peak asymmetrical short circuit current at 10ms (i_{p-e}) for a 1 ϕ -E short circuit fault at the Connection Point	kA
RMS value of the initial symmetrical short circuit current (I_{k-e}'') for a 1 ϕ -E short circuit fault at the Connection Point	kA
RMS value of the symmetrical short circuit current at 100ms ($I_{k-e(100)}$) for a 1 ϕ -E short circuit fault at the Connection Point	kA
Circuit Data	
Circuit schematic diagram and geographic diagram showing normal open points	Diagram
Circuit impedances (R, X, B positive & zero sequence)	Specify
Circuit ratings and any seasonal variations	Specify
Is the network operated radial or non-radial?	Text
Circuit transformer voltage ratios eg HV/433/250	kV/V/V
Are circuit transformers zoned by applying the progressively higher tap settings for each group of transformers in zones along the circuit to optimise voltage regulation?	Y/N
Transformer Data (for each transformer)	
Transformer identifier	Text
Rated voltage ratio (on principal tap)	kV/kV
Winding configuration eg Dyn11	Text
Rated (apparent) power	MVA
Type of tap changer (on load / off circuit)	Text
Tap changer rating (forward and reverse power)	MVA / MVA
Tap step size	%

<u>DATA DESCRIPTION</u>	<u>UNITS</u>
5d DNO Network Data (see note 1)	
Maximum ratio tap	%
Minimum ratio tap	%
Normal tap position	%
Method of voltage control (voltage / LDC / NRC / other)	Text / Report
Controlled busbar (high-voltage side / low-voltage side / remote busbar)	Text
Target voltage and limits	kV, ±%
Normal system voltage on the high-voltage side	kV
Normal system voltage on the low-voltage side	kV
Positive sequence resistance	% on rating
Positive sequence reactance at principal tap	% on rating
Zero sequence resistance	% on rating
Zero sequence reactance	% on rating
Method of earthing of the high-voltage winding	Text
Method of earthing of the low-voltage winding	Text

Notes:

1. **Users** are advised to refer to network data items published in the **DNO's** Long Term Development Statement.

Schedule 5e

DATA REGISTRATION CODE

DATA FOR EMBEDDED TRANSMISSION SYSTEMS

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>DATA CATEGORY</u>
5e Embedded Transmission System Data		
EMBEDDED TRANSMISSION SYSTEM LOCATION & OPERATION		
Embedded Transmission System name	Text	SPD
Postal address or site boundary plan (1/500)	Text / Plan	SPD
Connection Point (OS grid reference or description)	Text	SPD
Connection Point voltage	V	SPD
Single line diagram of existing and proposed connections or Operation Diagrams when available	Diagram	SPD
Number of Power Station and/or Power Generating Modules connected to the Embedded Transmission System	Number	SPD
Operating regime of Power Station and/or Power Generating Modules – intermittent or non-intermittent (see note 1)	Text	SPD
Means of carrying out voltage control and/or power factor control at the Connection Point	Report	SPD
Embedded Transmission System performance chart (net, at Connection Point , as per DPC7 Figure 1)	Figure	DPD
EMBEDDED TRANSMISSION SYSTEM IMPORT REQUIREMENTS (see note 2)		
Maximum Active Power import	MW	SPD
Maximum Reactive Power import (lagging)	MVAr	SPD
Maximum Reactive Power export (leading)	MVAr	SPD
Requirements for Top - Up and / or Standby supplies	Text	SPD
EMBEDDED TRANSMISSION SYSTEM EXPORT REQUIREMENTS (see note 3)		
Total Embedded Transmission System output at Registered Capacity (net of auxiliary loads)		
Registered Capacity (maximum Active Power export)	MW	SPD
Maximum Reactive Power export (lagging)	MVAr	SPD
Maximum Reactive Power import (leading)	MVAr	SPD

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>DATA CATEGORY</u>
5e Embedded Transmission System Data		
Total Embedded Transmission System output Minimum Stable Operating Level at Minimum Generation (net of auxiliary loads)		
Minimum Stable Operating Level Minimum Generation (minimum Active Power export)	MW	DPD
Minimum Regulating Level	MW	DPD
Maximum Reactive Power export (lagging)	MVAr	DPD
Maximum Reactive Power import (leading)	MVAr	DPD
Embedded Transmission System MAXIMUM FAULT CURRENT CONTRIBUTION (see note 4)		
Peak asymmetrical short circuit current at 10ms (i_p) for a 3 ϕ short circuit fault at the Connection Point	kA	SPD
RMS value of the initial symmetrical short circuit current (I_k'') for a 3 ϕ short circuit fault at the Connection Point	kA	SPD
RMS value of the symmetrical short circuit current at 100ms ($I_{k(100)}$) for a 3 ϕ short circuit fault at the Connection Point	kA	SPD
Short circuit time constant T'' , corresponding to the change from I_k'' to $I_{k(100)}$	s	DPD
Positive sequence X/R ratio at the instant of fault	-	DPD
Embedded Transmission System INTERFACE ARRANGEMENTS (see note 5)		
Means of connection, disconnection and synchronising between DNO and User	Method statement	SPD
Site protection / co-ordination arrangements with DNO	Report	DPD
Site communications, control and monitoring (HV / LV)	Report	DPD

Notes:

- Intermittent and Non-intermittent Generation is defined in ENA EREP 130 as follows:
 - Intermittent Generation: Generation plant where the energy source for the prime mover can not be made available on demand
 - Non-intermittent Generation: Generation plant where the energy source for the prime mover can be made available on demand
- This section relates to operating conditions when the **Embedded Transmission System** is importing **Active Power**, typically when it is not generating. The maximum **Active Power** import requirement and the associated maximum **Reactive Power** import and/or export requirements should be stated.
- This section relates to operating conditions when the **Embedded Transmission System** is exporting **Active Power**. The **Active Power** export and associated maximum **Reactive Power** range should be stated for operation at **Registered Capacity** and for operation at **Minimum Stable Operating Level**.

4. See ER G74, ETR 120 and IEC 60909 for guidance on short-circuit current data. Additionally, fault current contribution data may be provided in the form of detailed graphs, waveforms and/or tables.
5. The interface arrangements need to be agreed and implemented between the **User** and the **DNO** before energisation and consideration should be given to addressing the Distribution Code requirements including DGC5, DGC8, DPC6.7, DOC5, DOC7.4, DOC8.6.3, DOC8.6.4, DOC9 and DOC10 and the requirements of EREC G59 and EREC G99 as applicable. For example DOC7 requires up to date contact details and procedures are required to establish an effective means of communication between the **Generator** and the **DNO**.

39	23/05/19	Update to reflect modification to EREC P28. <ul style="list-style-type: none"> • Annex 1 - Qualifying Standards • DPC4.2.3.2 – Voltage Disturbances • DPC4.2.3.3 – Voltage Step Changes
40	16/06/19	Annex 1 updated to reflect new versions of ERECs G59, G83, G98, and G99.
41	10/08/19	Update to Annex 1 to replace ER P2/6 with EREC P2/7. Consequential removal of Guidance Note 1. Update of Annex 2 to replace ETR 130 with EREP 130. Both updates include the following consequential changes: <ul style="list-style-type: none"> • Clarifying EREC P2 as being a standard defining the security of supply that is to be achieved and EREP 130 the guidance as how this is achieved. • Formally incorporating Distributed Energy Resources (DER) into EREC P2 and EREP 130; • Removal of F-Factors and other tables associated with assessing the security contribution from Distributed Generation from EREC P2 whilst retaining and updating in EREP 130; • Refreshing the definition of demand to appropriately include consideration and treatment of flexible resources such as Distributed Generation (DG) and Demand Side Response (DSR); and • Specifically excluding the security of supply to DG installations from the scope of EREC P2 as justified by the consortiums analysis and findings.
42	01/09/19	Update reference to EREC G59/3-7 and EREC G83/3-5 in Annex 1 and consequential amendments in GN2, DPC7.2.1, DPC7.4.9.2.
43	14/11/19	Update reference to EREC G99/1-5 in Annex 1
44	09/03/20	Update reference to EREC G99/1-6 in Annex 1
45	12/06/20	Update reference to Engineering Report 131 and title. Reassignment of documents to Annex 1 and Annex 2 classifications; EREP 130 Annex 2 to Annex 1. EREC S34, TS 41-24, EREC G12 and EREC P25 Annex 1 to Annex 2. Updated the cross referring in the text to the Annexes. Update reference to EREC G5/5 from G5/4.
46	TBC	[Storage]
47	TBC	Update of Annex 1 for EREC G98 Issue 1, amendment 5 and EREC G99 Issue 1 amendment 7.

		<u>Replacement of Production Type in DDRC Schedule 5b with Energy Source and Energy Conversion Technology to reflect DNO's licence requirement to populate the Embedded Capacity Register.</u>
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END