

DISTRIBUTION GLOSSARY AND DEFINITIONS (DGD)

DISTRIBUTION PLANNING AND CONNECTION CODE (DPC)

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).
<u>Anchor Generator</u>	<u>A Generator who owns and operates any Anchor Power Generating Module, is party to a Distribution Restoration Contract and is a therefore a Restoration Service Provider.</u>
<u>Anchor Plant Test</u>	<u>An Anchor Power Generating Module Test or an Anchor Power Station Test, in both cases to confirm compliance with the requirements of the Distribution Restoration Contract.</u>
<u>Anchor Power Generating Module</u>	<u>An Embedded Power Generating Module with Anchor Power Generating Module Capability.</u>
<u>Anchor Power Generating Module Capability</u>	<u>The ability of Power Generating Module to Start-Up from Shutdown and to energise part of the DNO's System forming part of a Distribution Restoration Zone within 8 hours (or as otherwise defined in the relevant Distribution Restoration Contract), without external electrical power supplies from the DNO's Distribution System.</u>
<u>Anchor Power Generating Module Test</u>	<u>A test carried out on an Anchor Power Generating Module at an Anchor Power Station while that Power Station remains energized from an external alternating current electrical supply.</u>
<u>Anchor Power Station</u>	<u>An Embedded Power Station which contains an Anchor Power Generating Module.</u>
<u>Anchor Power Station Test</u>	<u>A test carried out by an Anchor Generator on an Anchor Power Generating Module while that Anchor Power Station is disconnected from all external electrical power supplies from the DNO's Distribution System.</u>
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.

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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. <u>It includes Users' equipment which imposes Demand on the System .</u>
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.

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Block Loading Capability

The incremental **Active Power** steps, from no load to **Registered Capacity**, which an **Anchor Power Generating Module** or relevant **Restoration Service Providers' Plant** can instantaneously supply without causing it to trip or go outside the **Frequency** range of 47.5 – 52Hz and assuming the initial **Frequency** is 50.0Hz (or another **Frequency** range as otherwise agreed). The time between each incremental step shall also be defined by the relevant **Restoration Service Provider**.

Business Day

Any day other than a Saturday, a Sunday, Christmas Day, Good Friday, or a day that is a bank holiday within the meaning of the Banking and Financial Dealings Act 1971.

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**

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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 .
De-energise	The deliberate movement of any switch or the removal of any fuse or the taking of any other step whereby no electrical current can flow between the DNO's Distribution System and the User's Equipment at the Connection Point (and "De-energisation" shall be construed accordingly.)

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Demand	The demand of MW or MVA _r of electricity (ie both Active Power and Reactive Power respectively) unless otherwise stated.
Demand Control	Any or all of the following methods of achieving a Demand reduction: <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	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.
Demand Facility	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 .
Demand Services Provider	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.

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Demand Unit

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 Facilit** 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**.

Such an appliance or device commissioned before this date, but which has been materially altered will also be included in this definition.

Where there is more than one **Demand Unit** in a **Demand Facilit**, these **Demand Units** shall together be considered as one **Demand Unit** if they cannot be operated independently from each other.

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.

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.

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~~21 (**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 Compliance Practice

The process set out in DGC12.5.

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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 .
<u>Distribution Restoration Contract</u>	<u>An agreement between Restoration Service Providers, NGESO and the DNO under which the Restoration Service Providers provide Anchor Power Generating Module Capability or other relevant services to energise and/or contribute to the establishment of a Distribution Restoration Zone.</u>
<u>Distribution Restoration Zone</u>	<u>Part of a DNO's System, which is arranged to be energised by an Anchor Power Generating Module when that part of the DNO's System is not connected to the National Electricity Transmission System, for example following a Total System Shutdown or Partial System Shutdown. The Distribution Restoration Zone shall comprise an Anchor Power Generating Module and may also include the Plant and Apparatus of one or more Restoration Service Providers.</u> <u>The Distribution Restoration Zone is primarily comprised of part of the DNO's System, but may include relevant parts of the National Electricity Transmission System as provided for in the Distribution Restoration Zone Plan.</u>

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<u>Distribution Restoration Zone Control System</u>	<u>A mains independent automatic control and supervisory system which assesses the Equipment status and operational conditions of a DNO's System for the purposes of instructing Anchor Generators' Power Generating Modules and Restoration Service Providers' Plant and operating items of the DNO's Equipment for the purposes of establishing and running a Distribution Restoration Zone.</u>
<u>Distribution Restoration Zone Plan</u>	<u>A plan produced under DOC9.4.6 detailing the agreed method and procedure by which the DNO will instruct an Anchor Generator to energise part of the DNO's System, together with other Restoration Service Providers, to meet appropriately sized blocks of local Demand so as to form a Power Island.</u> <u>A Distribution Restoration Zone Plan falls outside the provisions of a Local Joint Restoration Plan.</u>
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.
Effective Date	The effective date specified in the relevant modification to the Distribution Code , which may be after the implementation date of the modification to allow time for Users to make any arrangements that may be necessary in order to comply with that modification.
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	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 . The definition of Embedded Generator also includes the OTSO in relation to any Embedded Transmission System
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 .

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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.

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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.

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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 .
<u>Loaded</u>	<u>Supplying Active Power to the System. Like terms (eg Deloaded) shall be construed accordingly.</u>
<u>Local Joint Restoration Plan</u>	<u>A plan produced under the Grid Code detailing the agreed method and procedure by which a Black Start Station will energise part of the Total System and meet appropriately sized blocks of local Demand so as to form a Power Island.</u> <u>A Distribution Restoration Zone Plan falls outside the provisions of a Local Joint Restoration Plan.</u>
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	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. 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.
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 .)

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Minimum Generation	The minimum output which a Power Generating Module can reasonably generate as registered under the Distribution Data Registration Code ,
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 .

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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 .

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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
<u>Quick Re-synchronization</u>	<u>The capability of a Power Generating Module to Re-synchronize to the System in a relatively short time under conditions defined in the Grid Code.</u>
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).

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Registered Capacity	<p>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.</p> <p>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.</p>
Registered Data	Data referred to in the schedules to the Distribution Data Registration Code .
Remote Transmission Assets.	<p>Any Plant and Apparatus or meters owned by NGET which:</p> <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 .
<u>Restoration Service Provider</u>	<u>A Generator or a Customer with a legal or contractual obligation to provide services that can be deployed for recovery from a Total Shutdown or Partial Shutdown.</u>
Retrospective Modification	<p>A modification to the Distribution Code shall be a Retrospective Modification, if the modification is either:</p> <ol style="list-style-type: none"> Stated to be a Retrospective Modification in the relevant Distribution Code Modification Report to the Authority; or <p>A G59/3-7 Modification.</p>
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 .

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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
<u>Shutdown</u>	<u>The condition of a Power Generating Module, including its auxiliaries, where there is no energy conversion occurring, there is no Active Power output and there can be no Active Power output until the Power Generating Module is deliberately and actively returned to a state of readiness.</u>
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.

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<u>Synchronized</u>	<p>The condition where Power Generating Module is connected to a System so that the Frequencies and phase relationships of that Power Generating Module and the System to which it is connected are identical. Like terms shall be construed accordingly; eg Synchronism, De-Synchronized, Re-Synchronized</p> <p>It is also used to describe the condition where a Customer's Apparatus is consuming electricity supplied from the System.</p>
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.
<u>Target Frequency</u>	<p>That Frequency determined by NGESO as the desired operating Frequency of the Total System, or a relevant Power Island. This will normally be 50.00Hz plus or minus 0.05 Hz, except in exceptional circumstances as determined by NGESO, when this may be between 49.90 Hz or 50.10 Hz. An example of exceptional circumstances may be during a recovery from a Total Shutdown or Partial Shutdown.</p>
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.

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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 .

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DPC7 REQUIREMENTS FOR EMBEDDED GENERATORS

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DPC7.4.8 Black Start Capability

DPC7.4.8.1 Two principal recovery routes from a **Total Shutdown** or **Partial Shutdown** exist, via **Local Joint Restoration Plans**, and via **Distribution Restoration Zone Plans**. Their requirements are described in detail in DOC9.

DPC7.4.8.2 The **National Electricity Transmission System** will be equipped with **Black Start Stations** (in accordance with the **Distribution Operating Code** DOC 9). It will ~~be~~is necessary for each **Embedded Generator** to notify the **DNO** if its **Power Generating Module** has a restart capability without connection to an external power supply, unless the **Embedded Generator** ~~shall have~~has previously notified **NGESO** accordingly under the **Grid Code**. Such generation may be registered by **NGESO** as a **Black Start Station**, for **Local Joint Restoration Plans**, or registered by **NGESO** and the **DNO** in the case of **Anchor Power Stations** for **Distribution Restoration Zone Plans**.

DPC7.4.8.3 **Distribution Restoration Zone Plans** may also include other **Restoration Service Providers** as parties in addition to **Anchor Power Stations**. In both cases, the relevant **Plant** and **Equipment** shall be provided with resilient back up power sources that will allow all the **Plant** and **Equipment** to operate autonomously, or be operated remotely, for at least [24] hours following the start of the **Total Shutdown** or **Partial Shutdown**. In these cases the **DNO** will generally provide power resilient communications to the **Anchor Power Station** or **Restoration Service Provider's** site, unless specifically agreed otherwise. The **Anchor Generator** and **Restoration Service Provider** must ensure that all the communications between the **DNO's** telemetry outstation, or the **DNO's** other terminal equipment, and the **Restoration Service Provider's Apparatus** are also resilient to mains power loss for at least [24] hours. The communication equipment must always include the facility for resilient voice communication.

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DPC8 TRANSFER OF PLANNING DATA

DPC8.1 Introduction

DPC8.1.1 **Distribution Planning and Connection Code** DPC8 details information to be exchanged between the **DNO** and **Users** that are connected at **High Voltage** including **Embedded Generators** and **Other Authorised Distributors**.

It includes data that is necessary in order for the **DNO's Distribution System** to be developed in an efficient, co-ordinated and economic manner, and to enable the **DNO** to comply with the conditions contained in its **Distribution Licence**.

DPC8.2 Planning Information to be Provided by Users

DISTRIBUTION PLANNING AND CONNECTION CODE (DPC)

- DPC8.2.1 Prospective and existing **Users** of the **DNO's Distribution System** must provide sufficient planning data/information as can reasonably be made available, when requested by the **DNO** from time to time to enable the **DNO** to comply with the requirements under its **Distribution Licence**. For those **Users** from whom **Demand** forecasts are required under **DOC1**, there will be a requirement to prepare an annual submission to the **DNO**. This submission, which is to be in accordance with **DOC1**, should include a development plan covering at least the subsequent 3 years and, where the **User** holds planning data or information relating to subsequent years up to 7 years ahead that data or information, including changes either increasing or decreasing in **Demand**, transfer requirements or generating capacity as appropriate.
- DPC8.2.2 In addition to periodic updates of planning information a **User** should give adequate notice of any significant changes to the **User's System** or operating regime to enable the **DNO** to prepare its development plan, budget for, and implement any necessary **System** modifications. Such information should include any changes either increasing or decreasing in **Demand**, transfer requirements or generating capacity as appropriate. In the event of unplanned changes in a **User's System** or operating regime a **User** shall notify the **DNO** as soon as is practically possible to ensure any contingency measures, as necessary, can be implemented by the **DNO**.
- DPC8.2.3 The **DNO** has an obligation under the **CUSC** to submit certain planning data/information relating to **Existing Offshore Generators** to **NGESO**. Any **Existing Offshore Generators** will be required to cooperate with the **DNO** to contribute to the full and timely completion of the **Offshore Transmission Implementation Plan**.
- DPC8.3 **Information to be Provided to Users**
- DPC8.3.1 Where the **DNO** has received from a **User** any information or data under DPC8.3 or where the **DNO** proposes to make modifications to the **DNO's Distribution System** which, in either case, in the reasonable opinion of the **DNO**, may have an impact upon the **System** of any other **User**, the **DNO** will notify that **User** of the proposals subject to any constraints relating to the timing of release of information or confidentiality provisions.
- DPC8.3.2 On request from a **User**, the **DNO** will notify the **User** of all the data submitted by and relating to that **User** that the **DNO** is holding and using for **Distribution Code** purposes.
- DPC8.4 **Reactive Compensation Plant**
- DPC8.4.1 A **User** shall provide the **DNO** with information on any reactive compensation **Plant** directly or indirectly connected to a **DNO's Distribution System**, other than at **Low Voltage**, including:-
- (a) The MVAr capacitive or inductive rating of the **Equipment** and operating range if variable;
 - (b) Details of any automatic control logic such that the operating characteristics can be determined; and
 - (c) The point of connection to the **DNO's Distribution System**.

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DPC8.5 **Lumped Network Susceptance**

DPC8.5.1 Under certain circumstances it will be necessary for the **User** to provide, at the request of the **DNO**, details of the equivalent lumped network susceptance at **Normal Frequency** of the **User's System** at nominal **Frequency** referred back to the connection with the **DNO's Distribution System**. This should include any shunt reactors which are an integrated part of a cable system and which are not normally in or out of service independent of the cable (ie they are regarded as part of the cable).

DPC8.5.2 It should not include:-

- (a) Independently switched reactive compensation plant connected to the **User's System** (covered in DPC8.4.1)
- (b) Any susceptance of the **User's System** inherent in the **Reactive Power Demand**.

DPC8.6 **Short Circuit Infeed to the DNO's Distribution System**

DPC8.6.1 Information shall be exchanged between the **DNO** and the **User** on fault infeed levels at the point of connection with the **DNO's Distribution System** in the form of:-

- (a) The maximum and minimum 3-phase symmetrical and phase earth short circuit infeed.
- (b) The X/R ratio under short circuit conditions.
- (c) In the case of interconnected **Systems**, adequate equivalent network information.

DPC8.7 **Interconnection Impedance**

DPC8.7.1 For **User** interconnections that operate in parallel with the **DNO's Distribution System** details of the interconnection impedance shall be exchanged between the **DNO** and the **User**. This information shall include an equivalent single impedance (resistance, reactance and shunt susceptance) of the parallel **User** or **DNO's Distribution System**.

DPC8.8 **Demand Transfer Capability**

DPC8.8.1 Information shall be exchanged on **Demand** transfer capability where the same **Demand** may be supplied from alternative **DNO** or **User** points of supply. This shall include the proportion of **Demand** normally fed from each point of supply and the arrangements (manual or automatic) for transfer under planned/fault outage conditions.

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DPC8.9 Other Authorised Distributor's Distribution System Data

DPC8.9.1 **Other Authorised Distributors** shall provide the **DNO** with detailed data relating to the interface between their **Distribution System** and that of the **DNO**, covering circuit parameters, switchgear and **Protection** arrangements of equipment directly connected to or affecting the **Distribution System** to enable the **DNO** to assess any implications associated with these points of connection. Reciprocal arrangements will apply between the **DNO** and its **Users**.

DPC8.10 Transient Overvoltage Effects

DPC8.10.1 For **User's** busbars connected to the **DNO's Distribution System** sufficient details may need to be exchanged with respect to the **User/DNO Ownership Boundary** to enable an assessment, where necessary, of transient overvoltage effects to be made. This information may relate to physical and electrical layouts, parameters, specifications and **Protection** details.

DPC8.11 Distribution Restoration Zone Related Information

DPC8.11.1 Data identified under this DPC8.11 must be submitted by **Restoration Service Providers** as part of the creation of a **Distribution Restoration Zone Plan**, as described in DOC9.4.6, and on subsequent request from the **DNO** for it to be refreshed.

DPC8.11.2 This information may also be requested by the **DNO** during the establishment of a **Distribution Restoration Zone** and shall be provided by **Restoration Service Providers** where reasonably practicable.

DPC8.11.3 The following information must be supplied by each **Restoration Service Provider** in relation to each relevant item of **Plant** which contributes to the **Distribution Restoration Zone Plan**:

(a) From each **Anchor Generator** and each other **Restoration Service Provider** the estimated time by when each item of relevant **Plant** identified in the **Distribution Restoration Zone Plan** can be **Synchronised** in response to an instruction from the **DNO** following a **Total Shutdown** or **Partial Shutdown**. The estimate should reflect the **Anchor Generator's** and **Restoration Service Provider's** ability to **Re-synchronise** their **Plant**, assuming all were running immediately prior to the **Total Shutdown** or **Partial Shutdown**. Additionally, the estimate should highlight any specific issues (ie those that would affect the time at which the **Anchor Power Generating Module** and **Restoration Service Provider's Plant** can be **Synchronised**) that may arise, as time progresses without external supplies being restored.

(b) The **Block Loading Capability** of the relevant **Plant** shall be provided in either graphical or tabular format showing the estimated **Block Loading Capability** from 0MW to the **Plant's Registered Capacity**. Any particular **Active Power** loading points at which the **Anchor Generator's Power Generating Module** or **Restoration Service Provider's Plant** should be operated until further changes in output can be accommodated should also be identified.

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The data of each **Anchor Power Generating Module** and **Restoration Service Provider's Plant** forming part of a **Distribution Restoration Zone** should be provided for the condition of the **Anchor Power Generating Module** or **Restoration Service Provider's Plant** which are considered as both 'hot' units (that were **Synchronised** immediately prior to the **Total** or **Partial Shutdown**) and cold units (not run for 48 hours or more prior to the **Total** or **Partial Shutdown**). The **Block Loading Capability** assessment should be done against a frequency variation of 49.5Hz – 50.5Hz, assuming an initial 50Hz frequency (or other such frequency range as may be agreed).

DPC8.1~~2~~ More Detailed Information

In certain circumstances more detailed information may be needed and ~~will~~shall be provided upon the reasonable request of the **DNO**.

DISTRIBUTION OPERATING CODE (DOC)

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DOC5 TESTING AND MONITORING

DOC5.1 Introduction

DOC5.1.1 To ensure that the **DNO's Distribution System** is operated efficiently and within its licence standards and to meet statutory actions the **DNO** will organise and carry out testing and/or monitoring of the effect of **Users'** electrical apparatus on the **DNO's Distribution System**.

DOC5.1.2 The testing and/or monitoring procedures will be specifically related to the technical criteria detailed in the **Distribution Planning and Connection Code**. They will also relate to the parameters submitted by **Users** in the **Distribution Data Registration Code**. Such testing can also be initiated on request from the **User** for the purpose of the **User** ensuring compliance with the above technical criteria.

DOC5.1.3 This DOC5 also covers the testing requirements that might be imposed from time to time on **Embedded Medium Power Stations** owned by a **Generators** who are not party to the **CUSC**

DOC5.1.4 The testing carried out under this **Distribution Operating Code (DOC5)** should not be confused with the more extensive **System Test** outlined in DOC12.

DOC5.2 Objective

DOC5.2.1 The objective of this **Distribution Operating Code** is to specify the **DNO's** requirement to test and/or monitor its **DNO's Distribution System** to ensure that **Users** are not operating outside the technical parameters required by the **Distribution Planning and Connection Code** and/or the **Distribution Operating Codes**.

DOC5.2.2 This DOC5 includes the necessary arrangements and actions to establish that certain Restoration Service Providers can provide the Black Start services that they have contracted to provide in accordance with OC9 of the Grid Code and DOC9.

DOC5.3 Scope

DOC5.3.1 This Distribution Operating Code applies to the following **Users** of the **DNO's Distribution System**:-

- (a) **Customers** (it is not intended that the **Distribution Code** will necessarily apply to small **Customers** individually - their obligations will generally be dealt with on their behalf by their **Supplier**).
- (b) **Embedded Generators**.
- (c) **Other Authorised Distributor** connected to the **DNO's Distribution System**.
- (d) **Suppliers**.
- (e) **Meter Operators**.

DOC5.4 Procedure Related to Compliance and Quality of Supply

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- DOC5.4.1 The **DNO** will from time to time determine the need to test and/or monitor compliance and/or the quality of supply at various points on its **DNO's Distribution System**.
- DOC5.4.2 The requirement for specific testing and/or monitoring may be initiated by reasonable concerns relating to compliance with the **Distribution Code** and/or associated **Annex 1 Standards**. It may also be initiated by the receipt of complaints as to the quality of supply on the **DNO's Distribution System**.
- DOC5.4.3 Where required by the **DNO** the **User** will undertake compliance tests as agreed with the **DNO** and relevant and necessary for proving compliance with the **Distribution Code** and/or associated **Annex 1 Standards**.
- DOC5.4.4 In certain situations the **DNO** may require the testing and/or monitoring to take place at the point of connection of a **User** with the **DNO's Distribution System**.
- DOC5.4.5 Where testing and/or monitoring is required at the **Connection Point**, the **DNO** will advise the **User** involved and will make available the results of such tests to the **User**.
- DOC5.4.6 Where the results of such tests show that the **User** is operating outside the technical parameters specified in the **Distribution Planning and Connection Code**, the **User** will be informed accordingly.
- DOC5.4.7 Where the **User** requests, a retest will be carried out and the test witnessed by a **User** representative.
- DOC5.4.8 A **User** shown to be operating outside the limits specified in **Distribution Planning and Connection Code** will rectify the situation or disconnect the **Apparatus** causing the problem from its electrical **System** connected to the **DNO's Distribution System** immediately or within such time as is agreed with the **DNO**.
- DOC5.4.9 Continued failure to rectify the situation will result in the **User** being disconnected or de-energised in accordance with the **Connection Agreement** from the **DNO's Distribution System** either as a breach of the **Distribution Code** or through the authority of the **ESQCR**, where appropriate.
- DOC5.5 **Procedure Related to Connection Point Parameters**
- DOC5.5.1 The **DNO** from time to time will monitor the effect of the **User** on the **DNO's Distribution System**.
- DOC5.5.2 The monitoring will normally be related to amount of **Active Power** and **Reactive Power** transferred across the **Connection Point**.
- DOC5.5.3 Where the **User** is exporting to or importing from the **DNO's Distribution System** **Active Power** and **Reactive Power** in excess of the parameters in the **Connection Agreement** the **DNO** will inform the **User** and where appropriate demonstrate the results of such monitoring.
- DOC5.5.4 The **User** may request technical information on the method of monitoring and, if necessary, request another method reasonably acceptable to the **DNO**.

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DOC5.5.5 Where the **User** is operating outside the specified parameters, the **User** will immediately restrict the **Active Power** and **Reactive Power** transfers to within the specified parameters.

DOC5.5.6 Where the **User** requires increased **Active Power** and **Reactive Power** in excess of the physical capacity of the **Connection Point** the **User** will restrict power transfers to those specified in the **Connection Agreement** until a modified **Connection Agreement** has been applied for from the **DNO** and physically established.

DOC5.6 Grid Code Compliance for Medium Power Stations not subject to an embedded generation agreement

DOC5.6.1 Procedure For Compliance

DOC5.6.1.1 **NGESO** may, from time to time, but generally not more than twice in any calendar year, request that the **DNO** procure from the **Generator** a statement confirming compliance with the relevant **Grid Code** Connection Conditions at the **Embedded Medium Power Station** not subject to an embedded generation agreement in question. Such requests will generally, but not necessarily, be contingent on the issues raised in DOC6.5.3.3 below.

DOC5.6.1.2 On request from the **DNO**, in furtherance of DOC5.6.1.1 above or at other times not generally more than twice per calendar year, the **Generator** will provide to the **DNO** a statement with appropriate supporting evidence of compliance with the relevant **Grid Code** requirements. The **DNO** will immediately submit this information to **NGESO**. The **Generator** is at liberty to submit the data directly to **NGESO**, but a copy must be submitted in parallel to the **DNO**.

DOC5.6.1.3 In the event that in **NGESO's** view an **Embedded Medium Power Station** fails persistently to comply with the **Grid Code** Connection Conditions **NGESO** shall notify the **DNO** giving details of the failure and of the monitoring that **NGESO** has carried out.

DOC5.6.1.4 The **DNO** will notify the **Generator** responsible for the **Embedded Medium Power Station** in question as soon as possible, and in any case within 2 working days of all the facts contained in the **NGESO** notice.

DOC5.6.1.5 The **Generator** responsible for the **Embedded Medium Power Station** in question will, as soon as possible, provide the **DNO** with an explanation of the reasons for the failure and details of the action that it proposes to take to comply with the **Grid Code** Connections Conditions within a reasonable period.

DOC 5.6.1.6 **NGESO**, the **DNO** and the **Generator** will then discuss the action the **Generator** proposes to take and will endeavour to reach agreement as to:

- (a) any short term operational measures necessary to protect other **Users**; and
- (b) the parameters which are to be submitted for the **Power Generating Module** and the effective date(s) for the application of the agreed parameters.

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DOC5.6.2 Procedure for Testing

DOC5.6.2.1 Subject to the provisions of DOC5.6.1 should the **DNO** fail to procure a notice of compliance to **NGESO's** reasonable satisfaction, **NGESO** may at any time (although not normally more than twice in any calendar year in respect of any particular **Embedded Medium Power Station** not subject to an embedded generation agreement issue an instruction requiring the **DNO** to facilitate a test, provided **NGESO** has reasonable grounds of justification based upon:

- (a) a submission of data in respect of the relevant **Embedded Medium Power Station** indicating a change in performance; or
- (b) a statement from the **DNO** or **Generator** indicating a change in performance; or
- (c) monitoring by **NGESO**, whether or not carried out in accordance with DOC5.6.1.3 above; or
- (d) notification from the **DNO** of completion of an agreed action from DOC5.6.1 above.

DOC5.6.2.2 The test referred to in DOC5.6.2.1 on any one or more of the **Power Generating Modules** comprising part of the relevant **Embedded Medium Power Station** should only be to demonstrate that:

- (a) the relevant **Power Generating Module** meets the requirements of the paragraphs in the **Grid Code** Connection Conditions or European Connection Conditions (as applicable) which are applicable to such **Power Generating Modules** or **Power Station**; or
- (b) the relevant **Power Generating Module** meets the requirements for operation in limited frequency sensitive mode as describe in the **Grid Code** in accordance with CC.6.3.3 (or ECC6.3.3), BC3.5.2 and BC3.7.2,

DOC5.6.2.3 The instruction referred to in DOC5.6.2.1 may only be issued where, following consultation and the preparation of a mutually agreed testing plan (to include prevailing economic conditions etc) and timetable between the **DNO**, **Generator** and **NGESO**, **NGESO** has:

- (a) confirmed to the **DNO** and **Generator** the manner in which the test will be conducted, which shall be consistent with the principles established in DOC5.6.3; and
- (b) received confirmation from the **DNO** that the relevant **Power Generating Module** would not then be unavailable by reason of forced outage or **Planned Outage** expected prior to the instruction.

DOC5.6.3 Conduct of Test

DOC5.6.3.1 The **Generator** is responsible for carrying out the test when requested by the **DNO** following a valid request from **NGESO** in accordance with DOC5.6.2.1 and the **Generator** retains the responsibility for the safety of personnel and plant during the test.

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DOC5.6.3.2 The performance of the **Power Generating Module** concerned will be recorded at **NGESO** and/or **DNO Control Centres** with monitoring at site as and when necessary during the test.

DOC5.6.3.3 If monitoring at site is undertaken, the performance of the **Power Generating Module** will be recorded on a suitable recorder (with measurements taken as appropriate on the **Power Generating Module** Stator Terminals / on the LV side of the generator transformer or at the **Connection Point** if this has been agreed between the **DNO** and the **Generator**) in the relevant **User's Control Centre**, in the presence of a reasonable number of representatives appointed and authorised by **NGESO**. If **NGESO** or the **DNO** or the **Generator** requests, monitoring at site will include measurement of the following parameters during the test.:

- (a) for Steam Turbines: governor pilot oil pressure, valve position and steam pressure; or
- (b) for Gas Turbines: Inlet Guide Vane position, Fuel Valve positions, Fuel Demand signal and Exhaust Gas temperature; or
- (c) for Hydro Turbines: Governor Demand signal, Actuator Output signal, Guide Vane position; and/or
- (d) for Excitation Systems: Generator Field Voltage and Power System Stabiliser signal where appropriate.

DOC5.6.3.4 The relevant test parameters and the pass/fail criteria shall be drawn from Section OC5.5.3 of the **Grid Code**.

DOC5.6.4 Test Failure/Re-test

DOC5.6.4.1 If the **Power Generating Module** concerned fails to pass the test the **Generator** must provide the **DNO** and **NGESO** with a written report specifying in reasonable detail the reasons for any failure of the test so far as they are then known to the **Generator** after due and careful enquiry.

DOC5.6.4.2 The **DNO** has the responsibility under the **Grid Code** to forward the report of DOC5.6.4.1 above to **NGESO**. This report must be provided within five Business Days of the test. If a dispute arises relating to the failure, **NGESO**, the **DNO** and the **Generator** shall seek to resolve the dispute by discussion, and, if they fail to reach agreement, either of the **DNO** or **Generator** may by notice respectively:

- (a) require **NGESO** to initiate a re-test on 48 hours' notice which shall be carried out following the procedure set out in OC5.5.2 and OC5.5.3 and subject as provided in OC5.5.1.3, as if **NGESO** had issued an instruction at the time of notice from the relevant **User**; or
- (b) confirm that it (or they) will exercise its right to carry out a re-test on 48 hours' notice which shall be carried out following the procedure set out in **Grid Code** Sections OC5.5.2 and OC5.5.3 and subject as provided in **Grid Code** Sections OC5.5.1.6, as if **NGESO** had issued an instruction at the time of notice from the **DNO**.

DOC5.6.5 Dispute following Re-test

DISTRIBUTION OPERATING CODE (DOC)

DOC5.6.5.1 If the **Power Generating Module** in NGESO's view fails to pass the re-test and a dispute arises on that re-test, NGESO, the DNO and the **Generator** may use the **CUSC Disputes Resolution Procedure**, (which embodies the ESI disputes resolution procedure) for a ruling in relation to the dispute, which ruling shall be binding.

DOC5.6.6 Dispute Resolution

DOC5.6.6.1 If following the procedure set out in DOC5.6.5 it is accepted that the **Power Generating Module** has failed the test or re-test (as applicable), the **Generator** shall within 14 days, or such longer period as NGESO may reasonably agree, following such failure, submit in writing to the DNO for submission to NGESO for approval the date and time by which the **Generator** shall have brought the **Power Generating Module** concerned to a condition where it complies with the relevant requirement.

DOC5.6.6.2 Should NGESO not approve the **Generator's**, proposed date or time (or any revised proposal), the **Generator** shall amend such proposal having regard to any comments NGESO and/or the DNO may have made and re-submit it for approval.

DOC5.6.6.3 If the **Power Generating Module** fails the test the **Generator** shall resubmit to the DNO the relevant registered parameters of that **Power Generating Module** for the period of time until the **Power Generating Module** can achieve the parameters previously registered, as demonstrated (if required by NGESO in accordance with DOC5.6.6.4) in a re-test. The DNO will submit these parameters to NGESO as required by the **Grid Code**.

DOC5.6.6.4 Once the **Generator**, has indicated to NGESO via the DNO the date and time that the **Power Generating Module** can achieve the parameters previously registered or submitted, NGESO shall either accept this information or require the **Generator** to demonstrate the restoration of the capability by means of a repetition of the test referred to in DOC5.6.7 by an instruction requiring the DNO to ensure on 48 hours' notice that such a test is carried out by the **Generator**.

DOC5.6.6.5 The provisions of this DOC5.6.6 will apply to such further test.

DOC5.7 Black Start Testing

DOC5.7.1 Introduction

DOC5.7.1.1 Two principal recovery routes from a **Black Start** exist; via **Local Joint Restoration Plans**, and via **Distribution Restoration Zone Plans**. Their requirements are described separately in DOC9.

DOC5.7.1.1 This DOC5.7 deals with the testing requirements for **Distribution Restoration Zone Plans** only. Testing of **Local Joint Restoration Plans** is undertaken under the direction of NGESO in accordance with OC5 of the **Grid Code**

DOC5.7.2 General Requirements

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- DOC5.7.2.1 **NGESO** may require the **DNO** in coordination with an **Anchor Generator** to carry out an **Anchor Power Generating Module Test** or an **Anchor Power Station Test** in order to demonstrate that an **Anchor Power Generating Module** and/or the **Anchor Power Station** can provide **Anchor Power Generating Module Capability**. Prior to any test taking place, the **DNO** shall ensure the **DNO's Distribution System** is appropriately configured to undertake the test.
- DOC5.7.2.2 **NGESO** will request the **DNO** to instruct the relevant **Anchor Generator** to carry out a test (either an **Anchor Power Generating Module Test** or an **Anchor Power Station Test**) in order to demonstrate that an **Anchor Power Station** has **Anchor Plant Capability**.
- DOC5.7.2.3 Where applicable, **NGESO** may also require the **DNO** to instruct an **Anchor Generator** to carry out the necessary test in order to demonstrate that the **Anchor Power Station** has a **Quick Re-Synchronisation Capability**.
- DOC5.7.2.4 All **Anchor Plant Tests** shall be carried out at the time agreed between **NGESO**, the **DNO** and the **Anchor Generator** in the notice periods given in DOC5.7.2.7 and shall be undertaken in the presence of a reasonable number of representatives appointed by **NGESO** and/or the **DNO**, who shall be given access to all information relevant to the **Anchor Plant Test**.
- DOC5.7.2.5 When **NGESO** requests the **DNO** to instruct an **Anchor Generator** to carry out an **Anchor Plant Test**, the **DNO** shall notify the details of the proposed **Anchor Plant Test** to the relevant **Anchor Generator** at least 7 days prior to the time of the **Anchor Plant Test**.
- DOC5.7.2.6 **NGESO** may require the **DNO** to instruct an **Anchor Generator** to carry out an **Anchor Power Generating Module Test** at any time (but will not require an **Anchor Power Generating Module Test** to be carried out more than once in each calendar year in respect of any particular **Anchor Power Generating Module** unless it can justify on reasonable grounds the necessity for further tests or unless the further test is a re-test).
- DOC5.7.2.7 When an **Anchor Power Generating Module** is to undergo testing, the following requirements shall apply:
- (a) Where **NGESO** requests the **DNO** to instruct an **Anchor Generator** to carry out an **Anchor Power Generating Module test**, on each **Anchor Power Generating Module**, within an **Anchor Power Station**, the **Anchor Generator** shall execute such a test. The test must be undertaken at least once every three calendar years. **NGESO** will not require the **DNO** to instruct an **Anchor Power Generating Module test** to be carried out on more than one **Anchor Power Generating Module** at that **Anchor Power Station** at the same time, and would not, in the absence of exceptional circumstances, expect any of the other **Anchor Power Generating Modules** at the **Anchor Power Station** to be directly affected by the **Anchor Power Generating Module test**.
 - (b) **NGESO** may occasionally require the **DNO** to instruct an **Anchor Generator** to carry out an **Anchor Power Station Test** at any time (but will not require an **Anchor Power Station Test** to be carried out more than once in every three calendar years in respect of any particular **Anchor Power**

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Generating Module unless it can reasonably justify the necessity for further tests or unless the further test is a re-test). If successful, this **Anchor Power Station Test** shall count as a successful **Anchor Power Generating Module Test** for the **Anchor Power Generating Module** used in the test.

- (c) If a **Distribution Restoration Contract** includes **Quick Resynchronization**, **NGESO** may occasionally require the **DNO** to instruct the **Anchor Generator** to carry out a **Quick Re-synchronisation Unit Test** at any time, but will generally only be required where such an **Anchor Generator** has made a change to its **Plant** and **Apparatus** which has an impact on its houseload operation or after two unsuccessful tripping **Events** in the operational environment.

Tests (a) to (c) will be deemed a success where stable operation is achieved within a time frame agreed in the **Distribution Restoration Contract**.

DOC5.7.3 Anchor Power Generating Module Testing

DOC5.7.3.1 All tests shall be instructed and coordinated by the **DNO**. The **DNO** shall inform **NGESO** of the progress and completion of the tests following the relevant requirements of **Grid Code OC7**.

DOC5.7.3.2 All tests should respect the technical requirements included in the **Distribution Restoration Contract**. By default these will include:

- (a) be capable of **Block Loading Capability**;
- (b) be capable of operating in FSM, LFSM-O and LFSM-U, as specified in EREC G99 sections 13.2.6, 13.2.4 and 13.2.5 respectively;
- (c) control **Frequency** in case of overfrequency and underfrequency within the whole **Active Power** output range between the **Minimum Generation and Registered Capacity** as well as at houseload operation levels;
- (d) be capable of parallel operation with other **Power Generating Modules** within an isolated part of the **Total System** that is still supplying **Customers**;
- (e) control voltage automatically;
- (f) be capable of starting from **Shutdown** without any external electrical energy supply within a time frame specified in the **Distribution Restoration Contract**;
- (g) be able to **Synchronize** within the frequency limits of EREC G99 section 13.2;
- (h) be capable of connecting to and energizing a de-energized section of the **DNO's Distribution Network**; and
- (i) be capable of automatically regulating dips in voltage caused by the connection of demand.

DOC5.7.3.3 Anchor Power Generating Module Test

- (a) Prior to the test, the **DNO** shall reconfigure the **DNO's Distribution System** to enable the **Anchor Power Generating Module Test** to be completed whilst having due regard for the safety of plant and personnel on its **Distribution System**;

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- (b) The relevant **Anchor Power Generating Module** shall be loaded in normal operation at the start the test sequence;
- (c) All the auxiliary power sources used in the **Anchor Power Station** which relate to the relevant **Anchor Power Generating Module** is situated, shall be **Shutdown**;
- (d) The **Anchor Power Generating Module** shall be **Deloaded**, **de-Synchronised** and **Shutdown** and all alternating current electrical supplies to its auxiliaries shall be disconnected.
- (e) The auxiliary power sources for the relevant **Anchor Power Generating Module** shall be made available, and shall re-energise the electrical systems of the relevant **Anchor Power Generating Module**.
- (f) The auxiliaries of the relevant **Anchor Power Generating Module** shall be fed by the auxiliary power supplies to enable the relevant **Anchor Power Generating Module** to return to a condition where it is ready to **Synchronize** to the **Total System**.
- (g) The relevant **Anchor Power Generating Module** shall be **Synchronised** to the **System** but not loaded, unless the appropriate instruction has been given by **NGESO** to the **DNO** under BC2 of the **Grid Code** which would also be in accordance with the requirements of the **Distribution Restoration Zone Plan** and **Distribution Restoration Contract**.
- (h) **NGESO** and the **DNO** shall agree with the **Anchor Generator** when the test has been completed in accordance with the test requirements of the **Distribution Restoration Zone Plan**.

DOC5.7.3.4 Anchor Power Station Test

- (a) Prior to the test, the **DNO** shall reconfigure the **DNO's Distribution System** as necessary to enable the **Anchor Power Station Test** to be completed whilst having due regard for the safety of plant and personnel on its **Distribution System**.
- (b) All **Anchor Power Generating Modules** at the **Anchor Power Station**, other than the **Anchor Power Generating Module** on which the **Anchor Power Generating Module Test** is to be carried out, and all the auxiliary power supplies at the **Anchor Power Station**, shall be **Shutdown**.
- (c) The relevant **Anchor Power Generating Module** shall start the test sequence **Loaded** in normal operation.
- (d) The relevant **Anchor Power Generating Module** shall be **Deloaded** and **De-synchronised**.
- (e) All external alternating current electrical supplies to the electrical systems of the relevant **Anchor Power Generating Module**, and to the **Power Station** electrical installation of the relevant **Anchor Power Station**, shall be disconnected.
- (f) An independent auxiliary power supply at the **Anchor Power Station** shall be used to re-energise either directly, or via the **Power Station** electrical installation, the electrical supplies to the relevant **Anchor Power Generating Module**.
- (g) The provisions of DOC5.7.3.3 (e) and (f) shall thereafter be followed.

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- (h) NGESO and the DNO shall agree with the Anchor Generator when the test has been completed in accordance with the test requirements of the Distribution Restoration Zone Plan.

DOC5.7.3.5 Quick Re-synchronisation Unit Test

- (a) If required by the Distribution Restoration Contract, the Quick Re-synchronisation Unit Test will be included as part of the Anchor Power Generating Module Test. The following requirements apply:
- i. In case of disconnection of the Anchor Power Generating Module from the System, the Power Generating Module shall be capable of quick re-synchronisation in line with the Protection strategy agreed between the DNO and Generator in co-ordination with NGESO;
 - ii. An Anchor Power Generating Module with a minimum re-synchronisation time greater than 15 minutes after its disconnection from any external power supply must be capable of houseload operation from any operating point on its Power Generating Module performance chart. In this case, the identification of houseload operation must not be based solely on switchgear position signals;
 - iii. Anchor Power Generating Modules shall be capable of houseload operation, irrespective of any auxiliary connection to the Total System. The minimum operation time shall be specified by DNO, in liaison with NGESO, taking into consideration the specific characteristics of prime mover technology.
- (b) The tests shall be performed as follows:
- i. The relevant Anchor Power Generating Module shall be Synchronised and Loaded;
 - ii. All the auxiliary power sources used at the Anchor Power Power Station in which that Anchor Power Generating Module is situated shall be Shutdown.
 - iii. The Anchor Power Generating Module shall be tripped to house load.
 - iv. The relevant Anchor Power Generating Module shall be Synchronised to the System but not Loaded, unless so instructed by the DNO.
 - v. NGESO and the DNO shall agree with the Anchor Generator when the test has been completed in accordance with the test requirements of the Distribution Restoration Zone Plan.

DISTRIBUTION OPERATING CODE (DOC)**DOC5.7.4 Tests for other Distribution Restart Zone Restoration Service Providers' Plant and Apparatus**

- (a) Prior to the test, the DNO will reconfigure the DNO's Distribution System as necessary to enable the test of the relevant Plant and Apparatus to be completed whilst having due regard for the safety of plant and personnel on its Distribution System.**
- (b) The relevant Plant and/or Apparatus shall be operating normally, ie in the operational state it is anticipated to be in if a Shutdown were to occur;**
- (c) All the auxiliary power supplies which relate to the relevant Plant and/or Apparatus shall be Shutdown.**
- (d) The Plant and/or Equipment shall be De-Loaded, De-Synchronised and Shutdown as appropriate and all alternating current electrical supplies to its auxiliaries shall be disconnected.**
- (e) The auxiliary power supplies at the to the relevant Plant and/or Apparatus shall be made available and shall re-energise the Unit Board (or equivalent) of the relevant Plant and/or Apparatus.**
- (f) The auxiliaries of the relevant Plant and/or Apparatus shall be fed by the auxiliary power supplies, via the Unit Board (or equivalent), to enable the relevant Plant and/or Apparatus to return to a condition when it is ready to be reconnected and/or Synchronised to the DNO's Distribution System.**
- (g) Relevant Plant shall be Synchronised to the DNO's Distribution System but not Loaded, unless the appropriate instruction has been given by NGESO to the DNO under BC2 which would also be in accordance with the requirements of the Distribution Restoration Zone Plan and Distribution Restoration Contract.**
- (h) The DNO and NGESO shall agree with the Restoration Service Provider when the test has been completed in accordance with the test requirements of the Distribution Restoration Zone Plan.**

DOC5.7.5 Distribution Restoration Zone Controller Tests

Where the DNO uses a Distribution Restoration Zone Control System as part of the implementation of a Distribution Restoration Zone Plan, the DNO shall undertake tests to ensure the correct functioning of the Distribution Restoration Zone Control System. These shall include the following:-

- i) that communications systems, including those relevant systems belonging to Restoration Service Providers, maintain correct operation when operating in mains independent mode for at least 72 hours.**
- ii) that the Distribution Restoration Zone Controller is able to reconfigure the DNO's System in response to the appropriate test or simulated signals etc. This functionality shall be demonstrated as being**

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available for at least 72 hours when operating in mains independent mode.

iii) that the **Distribution Restoration Zone Controller** is able to instruct **Restoration Service Providers Plant and Apparatus** (including **Anchor Plant**) in response to the appropriate test or simulated signals etc. This functionality shall be demonstrated as being available for at least 72 hours when operating in mains independent mode.

The **DNO** shall conduct the above tests at least once every three years.

DOC5.7.6 Test Failures/Re-Tests and Disputes

DOC5.7.6.1 The **DNO** is required ensure that **Restoration Service Providers' Plant** and/or **Apparatus** is capable of meeting the requirements of OC5.7.4 of the **Grid Code**, DOC 5.7 of the **Distribution Code**, the relevant **Distribution Restoration Zone Plan** and the associated **Distribution Restoration Contracts**.

DOC5.7.6.2 The **DNO** shall notify **NGESO** where any such failure has an impact on the **DNO's** ability to activate a **Distributed Restoration Zone Plan**.

DOC5.7.6.3 The **DNO** will liaise with **NGESO** to facilitate tripartite work between the **DNO**, **NGESO** and the **Restoration Service Provider** to undertake tests or investigations where there has been a repeated failure of the **Restoration Service Provider's Plant** and/or **Apparatus** to meet the requirements.

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DOC9 CONTINGENCY PLANNING

DOC9.1 Introduction

This **Distribution Operating Code** DOC9 sets out requirements and procedures relating to the following planning procedures for abnormal situations:

DOC9.1.1 Black Start

This **Distribution Operating Code** DOC9 covers the requirements for the implementation of **Black Start** recovery procedures following a **Total Shutdown** or **Partial Shutdown** of the **Total System** as recognised by NGESO. The **Black Start** procedure provides for the recovery of the **Total System** in the shortest possible time taking into account **Power Station** capabilities and the operational constraints of the **Total System**, in accordance with the **Grid Code** and the requirements of NGESO.

Two principal recovery routes exist, via **Local Joint Restoration Plans**, and via **Distribution Restoration Zone Plans**. Their requirements are described separately in this DOC9.

In practice and in order to re-establish the integrity of the **Total System** and reconnect **Demand** in as short a time as possible, it is expected that NGESO will activate **Local Joint Restoration Plans** and **Distribution Restoration Zone Plans** in parallel whilst noting the operation of **Local Joint Restoration Plans** and **Distribution Restoration Zone Plans** are mutually exclusive and cannot be operated concurrently on the same part of the **Total System**.

DOC9.1.2 Re-synchronising Islands

The requirements for ~~re~~**Re-synchronising** parts of the **Total System** where there is no **Total Shutdown** or **Partial Shutdown** but parts of the **Total System** are out of synchronism with each other.

DOC9.1.3 Joint System Incident Procedure

The requirements for the establishment of a communication route and arrangements between responsible representatives of the **DNO** and **Users** involved in, or who may be involved in, an actual or potential serious or widespread **Total System** disruption which requires or may require urgent managerial response, day or night.

DOC9.1.4 Civil Emergencies

The requirements for dealing with a Civil Emergency which under the **Act** is any natural disaster or other emergency which, in the opinion of the **Secretary of State**, is or may be likely to disrupt electricity supplies. The procedures may be similar to, or separate from, the **Demand** reduction schemes in **Distribution Operating Code** DOC6.

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DOC9.2 Objectives

This **Distribution Operating Code** sets out Contingency Planning procedures to enable co-ordination between all **Users** with a common approach to give uniformity of priorities to restart or to operate the **Total System** in abnormal situations. It also specifies requirements to be met during periods of declared civil emergencies.

DOC9.3 Scope

This Distribution Operating Code applies to the **DNO** and to Users which in this Distribution Operating Code means, the Users specified below with a High Voltage connection to the **DNO's Distribution System**:

- (a) **Customers** (it is not intended that the **Distribution Code** shall apply to small **Customers** individually).
- (b) **Embedded Generators**, but excluding the **OTSO**.
- (c) **Other Authorised Distributors** connected to the **DNO's Distribution System**.

Any actions required of **Users** connected at **HV** will be identified by the **DNO** and discussed with **Users**.

DOC9.4 Black Start

DOC9.4.1 Shutdown

DOC9.4.1.1 During a **Total Shutdown** or **Partial Shutdown** and during the subsequent recovery the Security Standards set out in, or deriving authority pursuant to, the **Transmission Licence** and the **Distribution Licence** may not apply and the **Total System** may be operated outside normal voltage and **Frequency** standards.

DOC9.4.1.2 In a **Total Shutdown** or **Partial Shutdown**, it may be necessary for **NGESO** to issue Emergency Instructions and it may be necessary to depart from the normal **Balancing Mechanism** operation in issuing Bid-Offer Acceptances.

DOC9.4.2 Local Joint Restoration Plans

DOC9.4.1.32.1 Certain **Embedded Power Stations** (which may or may not be **Embedded**) are registered by **NGESO**, as having the ability of at least one of its **Power Generating Modules** to start up from shutdown without connections to external power supplies. Such **Power Stations** are to be referred to as **Black Start Stations**.

DOC9.4.1.42.2 For each **Black Start Station** plans will be put in place, in accordance with the **Grid Code**, which in the event of a **Partial Shutdown** or **Total Shutdown**, will provide for the establishment of a **Power Island**. These plans are known as Local Joint Restoration Plans produced jointly by **NGESO** the **DNO** and **Generators** and may include **Embedded Generators**. **DNOs** will be party to these **Plans** irrespective of whether the **Black Start Station** is **Embedded**.

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DOC9.4.~~4~~52.3 In Scotland a Local Joint Restoration Plan may include more than one **Black Start Station** and may be produced with and include obligations on the relevant **Transmission Licensee, Generators** responsible for **Power Generating Modules** not at a **Black Start Station** and other **Users**. Any instruction to initiate a **Local Joint Retoration Plan** will be issued to the **DNO** by the relevant **Transmission Licensee**.

DOC9.4.3 Distribution Restoration Zone Plans

DOC9.4.3.1 Certain **Embedded Power Stations** are registered by the **DNO** and **NGESO**, and which are not **Black Start Stations**, as having the capability of at least one of its **Power Generating Modules** to start up from **Shutdown** without connections to external power supplies. Such **Power Stations** where their owner has a **Distrubtion Restoration Contract** are to be referred to as **Anchor Power Stations**, and their owners as **Anchor Generators**.

DOC9.4.3.2 For each **Anchor Power Station** plans will be put in place, in accordance with the **Grid Code**, which in the event of a **Partial Shutdown** or **Total Shutdown**, will provide for the creation of a **Power Island**. These plans are known as **Distribution Restoration Zone Plans** and are a multi party agreement between **NGESO**, the **DNO** and the **Restoration Service Providers** (including the **Anchor Generator**).

DOC9.4.3.3 In Scotland a **Distribution Restoration Zone Plan** will be under the direction of the relevant **Transmission Licensee**. Any instruction to initiate a **Distribution Restoration Zone** will be issued by the relevant **Transmission Licensee**.

DOC9.4.24 Situations requiring Black Start Situation

In the event of a **Total Shutdown** or **Partial Shutdown**, the **DNO** will, as soon as reasonably practicable, inform **Users** which, in the **DNO's** opinion, need to be informed that a **Total Shutdown** or, as the case may be, a **Partial Shutdown**, exists and that **NGESO** intends to implement the **Black Start** procedure.

In Scotland, in exceptional circumstances, as specified in the **Local Joint Restoration Plan** or **Distribution Restoration Zone Plan**, the relevant **Transmission Licensee** may invoke such **Local Joint Restoration Plan** or **Distribution Restoration Zone Plan** for its own **Transmission System** and operate within its provisions.

DOC9.4.3-5 Black Start- Recovery Procedure

DOC9.4.~~35~~1 The procedure necessary for a recovery from a **Total Shutdown** or **Partial Shutdown** is known as **Black Start**, the main objective of which is the restoration of the **Total System** as an integrated whole as soon as possible bearing in mind the restoration of **Customers**. The procedure for a **Partial Shutdown** is the same as that for a **Total Shutdown** except that it applies only to a part of the **Total System**. It should be remembered that a **Partial Shutdown** may affect parts of the **Total System** which are not themselves shut down.

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DOC9.4.35.2 The complexities and uncertainties of recovery from a **Total Shutdown** or **Partial Shutdown** require that **Black Start** is sufficiently flexible in order to accommodate the full range of **Power Generating Module** and **Total System** characteristics and operational possibilities and this precludes the setting out of concise chronological sequences. The overall strategy will in general include the overlapping phases of establishment of isolated groups of **Power Generating Facilities** together with complementary local **Demand** termed “**Power Islands**”, step by step integration of these groups into larger sub-systems and eventually re-establishment of a complete **Total System**.

DOC9.4.35.3 Where there are no **Power Generating Facilities** with a contracted **Black Start** capability within the **DNO’s Distribution System**, then restoration of supply may be substantially delayed while the relevant **Transmission Licensee** re-establishes the **National Electricity Transmission System** or part of the **National Electricity Transmission System** from a restored **Power Island**. The **DNO** shall re-appraise the priorities in these situations and restore supplies in accordance with such priorities.

DOC9.4.6 Distribution Restoration Zone Plan Establishment

DOC9.4.6.1 In England and Wales, in relation to each **Distribution Restoration Zone**, The **DNO** with **NGESO**, **NGET** and the relevant **Restoration Service Providers** will discuss and agree a **Distribution Restoration Zone Plan**.

DOC9.4.6.2 In respect of Scottish Transmission Systems where the opportunity for a **Distribution Restoration Zone** is identified, the **DNO**, **NGESO**, the relevant **Scottish Transmission Licensee(s)** and relevant **Restoration Service Providers** will discuss and agree a **Distribution Restoration Zone Plan**.

DOC9.4.6.3 Other **Generators** or **Customers**, may be reasonably required by the **DNO** and **NGESO** to discuss and agree the details of a **Distribution Restoration Zone Plan**.

DOC9.4.6.4 In establishing a **Distribution Restoration Zone**, the **DNO** will use a combination of instructions to relevant **Restoration Service Providers** and the use of one or more **Distribution Restoration Zone Control Systems** to ensure the integrity and safety of plant and personnel forming the **Distribution Restoration Zone**.

DOC9.4.6.5 In England and Wales where the need for a **Distribution Restoration Zone Plan** arises, when there is none in place, the following provisions shall apply:

(a) The **DNO**, **NGESO**, **NGET** and the relevant **Restoration Service Providers** will discuss and agree the detail of the **Distribution Restoration Zone Plan** as soon as reasonably practicable once the requirement for a **Distribution Restoration Zone Plan** is identified by the **DNO** and **NGESO**. **NGESO** will notify all affected parties and will initiate these discussions.

(b) Each **Distribution Restoration Zone Plan** will be in relation to a specific **Anchor Power Station**.

(c) The **Distribution Restoration Zone Plan** will record which relevant **Restoration Service Providers** and which relevant **Restoration Service Provider’s Plant** and **Appartus** are covered by the **Distribution**

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Restoration Zone Plan and set out what is required from the DNO, NGESO, NGET and each relevant Restoration Service Provider.

- (d) Each Distribution Restoration Zone Plan shall be prepared by the relevant DNO and agreed with NGESO, NGET and the relevant Service Provider(s) to reflect the above discussions and agreement.
- (e) Each Distribution Restoration Zone Plan will include the test criteria to be satisfied by each Restoration Service Provider's Plant and Apparatus when subject to the testing requirements of DOC5.7.
- (f) Each page of the Distribution Restoration Zone Plan shall bear a date of issue and the issue number.
- (g) When a Distribution Restoration Zone Plan has been prepared, it shall be sent by the DNO to NGESO, NGET and the relevant Restoration Service Providers involved, for confirmation of its accuracy.
- (h) The Distribution Restoration Zone Plan shall then (pending its accuracy being confirmed) be signed on behalf of the DNO, NGESO, NGET and each relevant Restoration Service Provider as a written confirmation of its accuracy.
- (i) Once agreed under this DOC9.4.6, the procedure will become a Distribution Restoration Zone Plan under the Distribution Code and Grid Code (subject to any change pursuant to this DOC9 and OC9 of the Grid Code) and will apply between the DNO, NGESO, NGET and the relevant Restoration Service Providers as if it were part of the Distribution Code.
- (j) Once signed, a copy of the Distribution Restoration Zone Plan will be distributed by the DNO to NGESO, NGET and each relevant Restoration Service Provider which is a party, and stating the date of implementation.
- (k) The DNO, NGESO, NGET and relevant Restoration Service Providers must make the Distribution Restoration Zone Plan readily available to the relevant operational staff.
- (l) If the DNO, NGESO, NGET or any other relevant Restoration Service Provider which is a party to a Distribution Restoration Zone Plan, becomes aware that a change is needed to that Distribution Restoration Zone Plan, it shall initiate a discussion between the DNO, NGESO, NGET, and the relevant Restoration Service Providers to seek to agree the relevant change. The principles applying to establishing a new Distribution Restoration Zone Plan under this DOC9.4.6 shall apply to such discussions and to any consequent changes.

DOC9.4.6.6 In respect of Scottish Transmission Systems, where the opportunity for a Distribution Restoration Zone Plan is identified, the following provisions shall apply:

- (a) The DNO, NGESO, the relevant Scottish Transmission Licensee(s) and the relevant Restoration Service Providers will discuss and agree the detail of

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the **Distribution Restoration Zone Plan** as soon as reasonably practicable one the requirement for a **Distribution Restoration Zone Plan** is identified by the **DNO** or **NGESO**. **NGESO** will notify the relevant **Scottish Transmission Licensee(s)**. The **DNO** will be responsible for notifying all affected **Scottish Restoration Service Providers** forming part of the **Distribution Restoration Zones**.

- (b) Each **Distribution Restoration Zone Plan** will be in relation to a specific **Scottish DNO's System** and will include **NGESO**, the relevant **Scottish Transmission Licensee** and relevant **Restoration Service Providers**.
- (c) The **Distribution Restoration Zone Plan** will record which relevant **Restoration Service Providers** and which relevant **Restoration Service Provider's** sites are covered by the **Distribution Restoration Zone Plan** and set out what is required from the **DNO**, **NGESO**, the relevant **Scottish Transmission Licensee(s)** and each relevant **Restoration Service Provider** should a **Black Start** situation arise.
- (d) Each **Distribution Restoration Zone Plan** shall be prepared by the **DNO** in coordination with **NGESO**, the relevant **Scottish Transmission Licensee** and the relevant **Restoration Service Providers** to reflect the above discussions and agreement.
- (e) Each **Distribution Restoration Zone Plan** will include the test criteria to be satisfied by each **Restoration Service Provider's Plant and Apparatus** when subject to the testing requirements of DOC5.7.
- (f) Each page of the **Distribution Restoration Zone Plan** shall bear a date of issue and the issue number.
- (g) When a **Distribution Restoration Zone Plan** has been prepared, it shall be sent by the **DNO** to **NGESO**, relevant **Scottish Transmission Licensee(s)** and the relevant **Restoration Service Providers** involved for confirmation of its accuracy.
- (h) The **Distribution Restoration Zone Plan** shall then (pending its accuracy being confirmed) be signed by the **DNO**, **NGESO**, the relevant **Scottish Transmission Licensee(s)** and relevant **Restoration Service Providers** to confirm accuracy.
- (i) Once agreed under this DOC9.4.6, the procedure will become a **Distribution Restoration Zone Plan** under the **Distribution Code** and **Grid Code** (subject to any change pursuant to this DOC9 and OC9 of the **Grid Code**) and will apply between The **DNO**, **NGESO**, relevant **Scottish Transmission Licensee** and the relevant **Restoration Service Providers** as if it were part of the **Distribution Code** .
- (j) Once signed, a copy of the **Distribution Restoration Zone Plan** will be distributed by the **DNO** to **NGESO**, the relevant **Scottish Transmission Licensee(s)** and each relevant **Restoration Service Provider** which is a party to it and stating the date of implementation.

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- (k) The DNO, NGESO, the relevant Scottish Transmission Licensee(s) and each relevant Restoration Service Provider must make the Distribution Restoration Zone Plan readily available to the relevant operational staff.
- (l) If the DNO, NGESO, the relevant Scottish Transmission Licensee(s) or any relevant Restoration Service Provider which is a party to the plan, becomes aware that a change is needed to that plan, it shall initiate a discussion between the parties to seek to agree the relevant change. If the DNO, a relevant Scottish Transmission Licensee or relevant Restoration Service Provider becomes so aware, it shall contact NGESO in coordination with the DNO who will then initiate such discussions. The principles applying to establishing a new Distribution Restoration Zone Plan under this DOC9.4.6 shall apply to such discussions and to any consequent changes.

DOC9.4.7 Distributed Restoration Plan Testing

DOC.9.4.7.1 Distribution Restoration Zone Plan testing in England and Wales

- (a) The DNO, NGESO, NGET and the relevant Restoration Service Providers will conduct regular joint exercises of the Distribution Restoration Zone Plan to which they are parties. The objectives of such exercises include:
- To test the effectiveness of the Distribution Restoration Zone Plan;
 - To provide for joint training of the parties in respect of the Distribution Restoration Zone Plan;
 - To maintain the parties' awareness and familiarity of the Distribution Restoration Zone Plan;
 - To promote understanding of each parties' roles under a Distribution Restoration Zone Plan;
 - To identify any improvement areas which should be incorporated in to the Distribution Restoration Zone Plan.
 - The principles applying to the establishment of a new Distribution Restoration Zone Plan under this DOC9.4.3.7 shall apply to any changes to the Distribution Restoration Zone Plan.
- (b) NGESO in coordination with the DNO will propose to the other parties of a Distribution Restoration Zone Plan a date for the exercise to take place to be agreed with the other parties. All the Distribution Restoration Zone Plan parties will jointly share the task of planning, preparing, participating in and facilitating the exercises, which will normally be in desktop format or as otherwise agreed. The precise timing of the exercise for each Distribution Restoration Zone Plan will be agreed by all parties, but will not be less than one every 5 years.

DOC.9.4.7.2 Distribution Restoration Zone Plan testing in Scotland

- (a) The DNO, NGESO, the relevant Scottish Transmission Licensee(s) and the relevant Restoration Service Providers will conduct regular

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joint exercises of the **Distribution Restoration Zone Plan** to which they are parties. The objectives of such exercises include:

- To test the effectiveness of the **Distribution Restoration Zone Plan**;
- To provide for joint training of the parties in respect of the **Distribution Restoration Zone Plan**;
- To maintain the parties' awareness and familiarity of the **Distribution Restoration Zone Plan**;
- To promote understanding of each parties' roles under a **Distribution Restoration Zone Plan**;
- To identify any improvement areas which should be incorporated into the **Distribution Restoration Zone Plan**.
- The principles applying to the establishment of a new **Distribution Restoration Zone Plan** under this DOC9.4.8.3 shall apply to any changes to the **Distribution Restoration Zone Plan**.

(b) The **DNO** in coordination with **NGESO** and the relevant Scottish **Transmission Licensee** will propose to the parties of a **Distribution Restoration Zone Plan** a date for the exercise to take place and which shall be agreed with the other parties. All the **Distribution Restoration Zone Plan** parties will jointly share the task of planning, preparing, participating in and facilitating the exercises, which will normally be in desktop format or as otherwise agreed. The precise timing of the exercise for each **Distribution Restoration Zone Plan** will be agreed by all parties, but will not be less than one every 5 years.

DOC9.4.8 Local Joint Restoration Plan Operation

~~DOC9.4.3.4 The procedure for a **Black Start** shall, therefore, be that specified by the relevant **Transmission Licensee** at the time. **Users** shall abide by the **DNO's** instructions during a **Black Start** situation, even if they conflict with the general overall strategy outlined in DOC9.4.3.2.~~

~~DOC9.4.3.58.1~~ The **DNO** may, in accordance with the relevant **Local Joint Restoration Plans** and the **Transmission Licensee's** requirements, be required to issue instructions (although this list should not be regarded as exhaustive) to a **Black Start Station** relating to the commencement of generation, to a **User** connected to the **DNO's Distribution System** or **Customers** in the **DNO's** authorised operating area, as appropriate, relating to the restoration of **Demand** and to an **Embedded Power Generating Facilities** relating to their preparation for commencement of generation when an external power supply is made available to them, and in each case may include switching instructions.

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DOC9.4.3.68.2 Where ~~the DNO, as part of the Black Start procedure, has given~~ an instruction has been given to a **Black Start Station** to initiate startup the **Black Start Station** shall confirm to the **DNO** when the startup of a **Power Generating Module** has been completed. Following confirmation of startup, the **DNO** will endeavour to stabilise that **Power Generating Module** by the establishment of appropriate **Demand** following which the **DNO** may instruct the **Black Start Station** to start up the remaining available **Power Generating Modules** and auxiliary gas turbines if any at that **Black Start Station** and synchronise them to create a **Power Island**.

DOC9.4.9 Distribution Restoration Zone Plan Operation.

DOC9.4.9.1 **NGESO** may issue instructions to the **DNO** which conflict with a **Distribution Restoration Zone Plan** or its operation. In such cases, these instructions will take precedence over the requirements of the **Distribution Restoration Zone Plan**. When issuing such instructions **NGESO** will state whether or not it wishes the remainder of the **Distribution Restoration Zone Plan** to apply. If, notwithstanding that, **NGESO** has stated that it wishes the remainder of the **Distribution Restoration Zone Plan** to apply, the relevant **Restoration Service Provider** or the **DNO** consider that **NGESO's** instructions mean that it is not possible to operate the **Distribution Restoration Zone Plan** as modified by those instructions, any of them may give notice to **NGESO** and the other parties to the **Distribution Restoration Zone Plan** to this effect and **NGESO** will immediately consult with all parties to the **Distribution Restoration Zone Plan**. Unless all parties to the **Distribution Restoration Zone Plan** reach an agreement forthwith as to how the **Distribution Restoration Zone Plan** shall operate in those circumstances, operation in accordance with the **Distribution Restoration Zone Plan** will terminate.

DOC9.4.9.2 Where **NGESO**, as part of a **Black Start**, has given an instruction to a **DNO** to activate a **Distribution Restoration Zone Plan**, the **DNO** will instruct the **Anchor Generator** to start up the relevant **Power Generating Module** in accordance with the **Distribution Restoration Zone Plan**.

DOC9.4.9.3 The **DNO** will ensure that switching carried out on the **Distribution System** and other actions are as set out in the **Distribution Restoration Zone Plan**.

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- DOC9.4.9.4 Following activation of the **Distribution Restoration Zone Plan** and confirmation that all necessary **Protection**, control and any automatic facilities (including the use of a **Distribution Restoration Zone Control System** if applicable) are ready and that the relevant **Restoration Service Providers** are ready, **NGESO** will instruct the **DNO** to energise an isolated part of the **DNO's System**. The **DNO** will then, in accordance with the requirements of the **Distribution Restoration Zone Plan**, establish communication and agree the output of the relevant **Anchor Generator's Plant** and **Relevant Restoration Service Providers Plant** and the connection of **Demand** so as to create a **Power Island**. During this period, the **DNO** shall manage the output of the relevant **Anchor Generator's Power Generating Module(s)** and/or **Relevant Restoration Service Provider's Plant** to the **Demand** prevailing in the **Power Island** in which it is situated, on the basis that it will (where practicable) seek to maintain the **Target Frequency**. Relevant **Restoration Service Providers** shall (where practical) also seek to follow the requirements relating to **Reactive Power** (which may include the requirement to maintain a target voltage) set out in the **Distribution Restoration Zone Plan**.
- DOC9.4.9.5 Operation in accordance with the **Distribution Restoration Zone Plan** will be terminated by **NGESO** (by notifying the relevant **DNO** who will then notify the parties to the **Distribution Restoration Zone Plan**) co-incident with connecting the **Distribution Restoration Zone** to other **Power Islands**. Operation in accordance with the **Distribution Restoration Zone Plan** will also terminate in the circumstances provided for in DOC9.4.9.1 if an agreement is not reached or if **NGESO** states that it does not wish the remainder of the **Distribution Restoration Zone Plan** to apply.
- DOC9.4.9.6 In the event of a **Black Start Event** where **NGESO** wishes to activate one or more **Distribution Restoration Zones**, **NGESO** will issue an emergency instruction to the **DNO** to activate the relevant **Distribution Restoration Zone Plan**. In Scotland the emergency instruction to a Scottish **DNO** to activate a Scottish **Distribution Restoration Zone Plan** would be issued by the relevant Scottish **Transmission Licensee**.
- DOC9.4.9.7 Upon receipt of an emergency instruction from **NGESO** (or the relevant Scottish **Transmission Licensee**) the **DNO** will activate the **Distribution Restoration Zone Plan**.
- DOC9.4.9.8 All instructions to relevant **Restoration Service Providers** forming part of the **Distribution Restoration Zone** will be issued by the **DNO**. All instructions to **Restoration Service Providers** who are party to the **CUSC** and who are active in the **Distribution Restoration Zone Plan** will be issued by the **DNO**.
- DOC9.4.9.9 These arrangements will remain in place until the **Distribution Restoration Zone** is **Re-synchronised** to other parts of the **National Electricity Transmission System** and/or until operation of the **Distribution Restoration Zone Plan** is terminated as provided for in the **Distribution Restoration Zone Plan**.

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- DOC9.4.9.10 The DNO will issue instructions to the relevant Restoration Service Providers to inform them of the requirement that a Distribution Restoration Zone is to be energised in accordance with the Distribution Restoration Zone Plan and that they should prepare their Plant and Apparatus so that it is in a state of readiness for energizing or contributing to the Distribution Restoration Zone. The relevant Restoration Service Provider(s) will inform the DNO the indicative time at when their Plant and Apparatus will be in a state of readiness to energize, or to Synchronise to, the System.
- DOC9.4.9.11 Automatic instructions issued by a Distribution Restoration Zone Control System shall be considered to be, and have the same status as, instructions from the DNO.
- DOC9.4.9.12 Relevant Restoration Service Providers who are not Anchor Generators shall not start to Synchronise to the DNO's Distribution System until given a formal instruction by the DNO in accordance with DOC9.4.9.20. Such instructions would only be given once the DNO has achieved energization of part of its System by issuing instructions to Anchor Generators, and the DNO's Distribution System is in a position to expand that portion which is energized and supply more Demand in accordance with the Distribution Restoration Zone Plan.
- DOC9.4.9.13 The DNO shall inform NGESO (and relevant Scottish Transmission Licensee in the case of a Scottish Distribution Restoration Zone) when it has contacted Anchor Generators and other relevant Restoration Service Providers in accordance with the Distribution Restoration Zone Plan and provide an indicative time of when its System and associated Equipment is in a position to be re-energised and the expected time of when the Anchor Generator will be in a position to re-energise the intended section of the DNO's Distribution System.
- DOC9.4.9.14 At this point the DNO shall start to reconfigure its System such that it is in an appropriate state of readiness to enable the Anchor Generator to re-energise the intended part of its System in accordance with the Distribution Restoration Zone Plan. To enable this process to take place, the DNO may need to change the topology and status of its System. Reconfiguration of the DNO's System prior to energisation of the relevant part of the DNO's System, may be achieved conventionally or via fully automatic means which could include a Distribution Restoration Zone Control System, as required by the Distribution Restoration Zone Plan.
- DOC9.4.9.15 When the DNO has reconfigured its System it will contact the Anchor Generator to confirm and agree a time for the Anchor Generator to operate their Power Generating Module(s) so as to energise the required section of the DNO's System. Where subsequently the Anchor Generator or DNO needs to change the agreed energisation time as a result of an unforeseen event the Anchor Generator and DNO will agree a revised energisation time.

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- DOC9.4.9.16 On determining an agreed energisation time , the **DNO** will inform **NGESO** (or the relevant Scottish **Transmission Licensee**) of the time when the **Anchor Generator's Power Generating Module(s)** is scheduled to energise the intended section of the **DNO's System**. Should this scheduled time subsequently change, the **DNO** will inform **NGESO** (or the relevant Scottish **Transmission Licensee**) as necessary and provide an indication of any revised re-energisation time and the reason for the change.
- DOC9.4.9.17 At the agreed re-energisation time as detailed in DOC9.4.9.15, the **DNO** will contact the **Anchor Generator** and issue an instruction for the **Anchor Generator** to energise a section of the **DNO's System** unless this is being achieved via fully automatic means which could include a **Distribution Restoration Zone Control System**.
- DOC9.4.9.18 When the **DNO's System** has been energised and is supplying some local **Demand** and/or controllable **Demand** provided by a relevant **Restoration Service Provider**, the **Anchor Generator** will be required to follow instruction from the **DNO**, or via fully automatic means which could include a **Distribution Restoration Zone Control System**. The **DNO**, in liaison with the **Anchor Generator** will ensure the **DNO's System** is operated in a stable manner with additional **Demand** blocks being switched into service when it is appropriate to do so. As part of this process the **DNO** in coordination with the **Anchor Generator** shall ensure there is no risk to the **DNO's System** or the **Anchor Power Generating Module** through disturbances that could arise in the **Distribution Restoration Zone**. This may be achieved through a series of energisation steps or through a soft energisation between the **Anchor Generator's Power Generating Module(s)** and sections of the **DNO's System**. The requirements of this DOC9.4.9.18 may be achieved via manual instructions, remote switching carried out at the **DNO's Control Centre**, a **Distribution Restoration Zone Control System** or a combination of these options.
- DOC9.4.9.19 If during the **Demand** restoration process any relevant **Restoration Service Provider's Plant** cannot, because of the nature of the **Demand** being supplied, keep within its safe operating parameters, the, relevant **Restoration Service Provider** shall inform the **DNO** without undue delay who in turn shall inform **NGESO**. In the case of a **Distribution Restoration Zone** in Scotland the **DNO** shall inform the relevant Scottish **Transmission Licensee**.
- DOC9.4.9.20 The **DNO** will, where possible, either instruct **Demand** to be altered or will re-configure the **Distribution Restoration Zone** or will instruct the relevant **Restoration Service Provider** forming part of the **Distribution Restoration Zone** to re-configure its **System** in order to alleviate the problem being experienced by the Relevant **Restoration Service Provider's Equipment**. **NGESO** and the **DNO** (and Relevant **Transmission Licensee** in Scotland) accepts that any decision to keep a Relevant **Restoration Service Provider's Plant** and **Apparatus** from operating, if outside its safe operating parameters, is one for the **Restoration Service Provider** concerned alone and accepts that the relevant **Restoration Service Provider's Plant** and **Apparatus** may change output if the relevant **Restoration Service Provider** believes it is necessary for safety reasons (whether relating to personnel or **Plant** and/or **Apparatus**). If such a change is made without prior notice, then the relevant **Restoration Service Provider** shall inform the **DNO** as soon as reasonably practical. The **DNO** will inform **NGESO** (and the relevant

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Transmission Licensee in the case of Scottish Distribution Restoration Zones) of the progress with the key stages of each Distribution Restoration Zone Plan.

DOC9.4.9.21 To stabilise the voltage and Frequency of the DNO's System and increase the Demand fed from within the Distribution Restoration Zone, the DNO will subsequently need to instruct further relevant Restoration Service Providers to Synchronise to the Distribution Restoration Zone, either via manual instruction or through the use of a Distribution Restoration Zone Control System(s). The control of the Frequency and voltage of the Distribution Restoration Zone will be the responsibility of the DNO. For the avoidance of doubt the control of System Frequency and voltage control during the whole Black Start phase is the responsibility of NGESO, although NGESO will require DNOs to manage the Frequency and voltage levels of Power Islands in the case of Distribution Restoration Zones.

DOC9.4.9.22 Once the Distribution Restoration Zone is operating as described in DOC9.4.9.20 and DOC9.4.9.21, the DNO shall undertake a step by step process of energising more elements of its System. The DNO will progressively restore auxiliary supplies to substations, supplies to Customers and other relevant Restoration Service Providers to stabilise the DNO's System. The DNO will do this by issuing instructions in the conventional way or via fully automatic means which could include a Distribution Restoration Zone Control System. During this phase, the DNO will need to ensure that each relevant Restoration Service Provider's Equipment is operated within its designed operational limits, that they are contributing to voltage and Frequency control and adequate positive and negative headroom is maintained on such Plant to enable the management of Power Island contingences. During this period, there may be a need to initiate the restoration and operation of relevant Restoration Service Provider's Equipment to help balance the Distribution Restoration Zone.

DOC9.4.9.23 As the Distribution Restoration Zone starts to grow and become more clearly established, the DNO may need to update Protection and control settings to match the needs of the Power Island.

DOC9.4.9.24 With the Distribution Restoration Zone now operating in a stable manner, the DNO shall ensure that that relevant Restoration Service Providers Equipment are operated within safe operating limits and have a sufficient headroom to be able to contribute to voltage and Frequency control. This is an essential pre-requisite to enable the Power Island to withstand volatility in Demand and generation, DNO interaction or credible faults and disturbances.

DOC9.4.9.25 Where circumstances permit, expansion of a Distribution Restoration Zone to a transmission busbar and to wider parts of the Transmission System will be managed in accordance with the Distribution Restoration Zone Plan and DOC9.5.

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DOC9.4.3.79 Interconnection of Power Islands

In accordance with the requirements of the relevant **Transmission Licensee**, the **DNO** may be required to issue instructions to **Users** so as to establish, maintain and expand **Power Islands** and to interconnect **Power Islands** to achieve larger sub-systems and subsequently to form an integrated **System** and re-establishment of the **Total System**. **Users** shall at all times abide by the **DNO's** instructions in relation to interconnection of **Power Islands**.

DOC9.4.3.810 Conclusion of Black Start

The conclusion of the **Black Start** situation and the time of the normal operation of the **Total System** will be determined by the relevant **Transmission Licensee** who shall inform the **DNO**. The **DNO** will inform **Users** of the **DNO's Distribution System** which in the **DNO's** opinion need to be informed that the **Black Start** situation no longer exists and that normal operation of the **Total System** has begun.

DOC9.5 Re-synchronisation of De-synchronised Islands

DOC9.5.1 Resynchronization of De-synchronised islands might be required as a routine contingency, or as part of an Local Joint Restoration Plan. Resynchronization will also be required as part of a Distribution Restoration Zone Plan. The Distribution Restoration Zone Plan specific requirements are described in DOC9.5.3.

DOC9.5.2 Local Joint Restoration Plan or routine contingency:

DOC9.5.2.1 Where parts of the **Total System** are out of synchronism with each other, irrespective of whether ~~but~~ there is ~~no~~ a Total Shutdown or a Partial Shutdown, **NGESO** will instruct **Users** to regulate generation or **Demand**, as the case may be, to enable the de-synchronised islands to be re-synchronised.

DOC9.5.2.2 **DNOs** may be involved in re-synchronising by issuing instructions to **Users** in accordance with the requirements of **NGESO**. **Users** shall at all times abide by the **DNO's** instructions in relation to re-synchronising de-synchronised islands.

DOC9.5.2.3 The re-synchronising of de-synchronised islands are covered by De-synchronised Island Procedures agreed between **NGESO** and the relevant **Transmission Licensee, DNO** and **Generators**.

DOC9.5.3 Islanding Loading and Generation Management

DOC9.5.3.1 Generation in Distribution Restoration Zone De-synchronised Power Islands may be dealt with in different ways as follows:

DOC9.5.3.2 The general approach and the approach for LJRPs

(a) Indirect Data

(i) In this section DOC9.5.3.2.(a), relevant loading and other operational parameters are exchanged indirectly between **Generators** who are **BM Participants** and the **DNO** via **NGESO**.

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(ii) NGESO, each Generator with Synchronised (or connected and available to generate although not Synchronised) Power Generating Modules in the De-Synchronised Island and the DNO shall exchange information as set out in this DOC9.5.3.2.(a) to enable NGESO to issue instructions via the Balancing Mechanism or via an emergency instruction to that Generator in relation to its Power Generating Modules in the De-Synchronised Power Island until Re-Synchronisation takes place, on the basis that the Generator will (where practicable) seek to maintain the Target Frequency.

(iii) The information to NGESO from the Generator will cover its relevant operational parameters as required in the Balancing Code in the Grid Code and from NGESO to the Generator will cover data on Demand and changes in Demand in the De-Synchronised Power Island.

(iv) The information from the DNO to NGESO will comprise data on Demand in the De-Synchronised Island, including data on any constraints within the De-Synchronised Power Island.

(v) NGESO will keep the DNO informed of the balancing instructions or Emergency Instructions it is issuing to Embedded Power Generating Modules within the De-Synchronised Power Island.

(b) Direct Data

(i) In this section DOC9.5.3.2(b) relevant loading and other operational parameters are exchanged directly between Generators who are BM Participants and the DNO.

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- (ii) NGESO will issue an emergency instruction and/or a instructions via the **Balancing Mechanism**, to the **Generator** to "float" local **Demand** and maintain **Frequency** at **Target Frequency**. Under this instruction, the **Generator** will be required to regulate the output of its **Power Generating Module(s)** at the **Power Station** in question to the **Demand** prevailing in the **De-Synchronised Power Island** in which it is situated, until **Re-Synchronisation** takes place, on the basis that it will (where practicable) seek to maintain the **Target Frequency**.
- (iii) The **DNO** is required to be in contact with the **Generator** at the **Power Station** so that the **DNO** can supply data to the **Generator** on **Demand** changes within the **De-Synchronised Power Island**.
- (iv) If more than one **Power Generating Module** is **Synchronised** on the **De-Synchronised Power Island**, or is connected to the **De-Synchronised Power Island** and available to generate although not **Synchronised**, the **DNO** will need to liaise with **NGESO** to agree which **Power Generating Module(s)** will be utilised to accommodate changes in **Demand** in the **De-Synchronised Power Island**. The **DNO** will then maintain contact with the relevant **Generator** (or **Generators**) in relation to that **Power Generating Module(s)**.
- (v) The **Generator** at the **Power Station** must contact the **DNO** if the level of **Demand** which it has been asked to meet as a result of the emergency instruction and/or instruction in the **Balancing Mechanism** to "float" and the detail on **Demand** passed on by the **DNO**, is likely to cause problems for safety reasons (whether relating to personnel or **Plant** and/or **Apparatus**) in the operation of its **Power Generating Modules(s)**, in order that the **DNO** can alter the level of **Demand** which that **Generator** needs to arrange to meet. Any decision to operate outside any relevant parameters is one entirely for the **Generator**.

DOC9.5.3.3 Distribution Restoration Zone data management

- (a) Once a **Distribution Restoration Zone** has been formed the **DNO** will issue instructions to the **Anchor Generator** to "float" local **Demand** and maintain **Frequency** at the **Target Frequency**. Relevant **Restoration Service Providers** shall regulate the output of their **Plant** to the **Demand** prevailing in the **Distribution Restoration Zone** in which it is situated, on the basis that it will (where practicable) seek to maintain the **Target Frequency** until **Re-Synchronisation** takes place.
- (b) The **DNO** shall be in contact with the **Restoration Service Providers** to supply data on **Demand** changes within the **de-Synchronised Power Island**.
- (c) If there is more than one **Restoration Service Provider** in the **Distribution Restoration Zone**, or connected to the **Distribution Restoration Zone** and available to operate although not **Synchronised**, the **DNO** will need to liaise with **NGESO** to agree which **Restoration Service Providers** will be used to accommodate changes in **Demand** in the **Distribution Restoration Zone**. The **DNO** shall then maintain contact with the relevant **Restoration Service Providers**.

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(d) The **Anchor Generator** must contact the **DNO** if the level of **Demand** which it has been asked to meet as a result of the instruction to "float", is likely to cause problems for safety reasons (whether relating to personnel or **Plant** and/or **Apparatus**) in the operation of its **Anchor Power Generating Module**, in order that the **DNO** can alter the level of **Demand** which that **Anchor Power Generating Module** needs to meet. Any decision to operate outside any relevant parameters is one entirely for the **Anchor Generator**.

DOC9.6 Joint System Incident Procedure

DOC9.6.1 A **Joint System Incident** is an **Event** (as referred to in **Distribution Operating Code DOC7**) wherever occurring which in the opinion of the **DNO** has or may have a serious and/or widespread effect on, in the case of an incident on a **User's System**, the **DNO's Distribution System** or the **National Electricity Transmission System** or, in the case of an incident on the **DNO's Distribution System** or the **National Electricity Transmission System**, on a **User's**, or **Users', System(s)**. Where an incident on a **User's System** has or may have no effect on the **DNO's Distribution System** or the **National Electricity Transmission System**, then such an incident does not fall within this **Distribution Operating Code** and accordingly **DOC9** shall not apply to it.

DOC9.6.2 Each **User** requested by the **DNO** in accordance with the **Distribution Planning and Connection Code**, shall provide in writing to the **DNO** and the **DNO** shall provide in writing to each such **User** a telephone number or numbers at which or through which responsible management representatives, who are fully authorised to take binding decisions on behalf of their appointers, can be contacted day or night when there is a **Joint System Incident**. The lists of telephone numbers shall be provided at the time that a **User** connects to the **DNO's Distribution System** and must be updated (in writing) as often as the information contained in them changes.

DOC9.6.3 On the occurrence of an **Event**, then pursuant to **Distribution Operating Code DOC7**:

- (a) If it is on the **System** of a **User**, the **User** shall notify the **DNO** accordingly together with any other **User** who is or may be affected and will inform the **DNO** of which **Users** it has informed.
- (b) If it is on the **DNO's Distribution System**, the **DNO** shall notify all **Users** who are or may be affected.

DOC9.6.4 Following notification by a **User** of an **Event**, the **DNO** will if it considers necessary, telephone the **User** on the telephone number referred to in **DOC9.6.2** to obtain such additional information as it requires.

DOC9.6.5 Following notification of an **Event** in accordance with **DOC9.6.3(a)** or **(b)**, and/or the receipt of any additional information requested pursuant to **DOC9.6.4**, the **DNO** will determine whether or not the **Event** is a **Joint System Incident**, and, if so, the **DNO** may set up a **System Incident Centre** in order to avoid overloading existing operational arrangements of the **DNO**.

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- DOC9.6.6 The **DNO** shall as soon as possible notify all relevant **Users** that a **System Incident Centre** has been established and the telephone number(s) of the **DNO's System Incident Centre** if different from those already supplied pursuant to DOC9.6.2.
- DOC9.6.7 All communications between the responsible management representatives of the relevant parties with regard to the **DNO's** role in the **Joint System Incident** shall be made via the **System Incident Centre**, if it has been established.
- DOC9.7 **Civil Emergencies**
- DOC9.7.1 Directions under Section 96 of the **Act** place an obligation on the **DNO** to prepare and maintain plans for mitigating the effects of any civil emergency which may occur in accordance with the Electricity Supply Emergency Code. That Code describes the steps which Government might take to deal with an electricity supply emergency envisaged under Section 96(7) of the **Act** or Section 3(i)(b) of the Energy Act 1976 and sets down the actions which Companies in the Electricity Supply Industry should plan to take and which may be needed or required in order to deal with such an emergency.
- DOC9.7.2 In an electricity emergency it may become necessary to restrict **Users' Demand** for and consumption of electricity and may be achieved by one or more of the following methods:
- (a) Appeals by the Government to the public for voluntary restraint.
 - (b) The issue of Orders under the Energy Act 1976 requiring restrictions on consumption by industry and commerce.
 - (c) The issue of directions under the Energy Act 1976 requiring rota disconnections and associated restrictions.
- DOC9.7.3 In the event that the **Secretary of State** issues directions to the **DNO** to implement rota disconnections, the **DNO** will establish an Emergency Co-ordinating Centre and as soon as possible establish communications with such relevant **Users** as is necessary to ensure operational liaison. The plans to be implemented will be similar or separate from the schemes outlined in **Distribution Operating Code**, DOC6.
- DOC9.7.4 The plans make provision for the need to maintain supply, so far as practicable, to consumers in protected categories. For the purpose of the **Distribution Code** a Nuclear **Power Generating Module** shall be deemed to be a protected category in accordance with the provisions of DOC6.1.4.

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 5f –Restoration Service Providers’s Information for Distribution Restoration Zones
- DDRC6.54 Schedule 6 - **Demand** forecasts - as described in DOC1, time varying output/generation forecasts for the **Users** defined in the scope.
- DDRC6.65 Schedule 7 - **Operational Planning** - as described in **DOC2**, outage planning information.
- DDRC6.76 Schedule 8 - **System** Design Information - comprising **System** technical data.
- DDRC6.87 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.
- DDRC6.98 The schedules applicable to each class of **User** are as follows:-

Schedule Number:-	Title	Applicable to:-
Error! Reference source not found.	Power Station Data	Every Power Station
Error! Reference source not found.	Power Generating Module Data	All Embedded Power Generating Modules
Error! Reference source not found.	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
Error! Reference source not found.	DNO Network Data	DNO’s Distribution System
Error! Reference source not found.	All Embedded Transmission System	All Embedded Transmission System

Schedule Number:-	Title	Applicable to:-
<u>Schedule 5f</u>	<u>Re-synchronization times and Block Loading Capabilities</u>	<u>All Restoration Service Providers for Distribution Restoration Zones</u>
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
Error! Reference source not found.	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
Error! Reference source not found. Error! Reference source not found.	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 5f**DATA REGISTRATION CODE****RE-SYNCHRONISATION TIMES AND BLOCK LOADING CAPABILITIES FROM RESTORATION SERVICE PROVIDERS FOR DISTRIBUTION RESTORATION ZONES**

<u>DATA DESCRIPTION</u>	<u>UNITS</u>	<u>DATA CATEGORY</u>
<u>5f Restoration Service Provider Data</u>		
<u>RE-SYNCHRONIZATION TIMES</u>		
Assuming all <u>Restoration Service Providers' Plant and Apparatus</u> were running immediately prior to the <u>Total Shutdown or Partial Shutdown</u> and in the event of loss of all external power supplies, provide the following information:		
The estimated time by when each item of relevant <u>Plant</u> identified in the <u>Distribution Restoration Zone Plan</u> can be <u>Synchronised</u> after receiving an instruction following a <u>Total Shutdown or Partial Shutdown</u> . (see note 1)	<u>Tabular or graphical</u>	<u>DPD</u>
Describe any significant issues (ie those that would affect the time at which the <u>Anchor Power Generating Module or Restoration Service Provider's Plant</u> to be <u>Synchronised</u>) that may arise, as time progresses without external supplies being restored.	<u>Text</u>	<u>DPD</u>
The expected time for each <u>Power Generating Module</u> to re-synchronise to the <u>DNO's System</u> if all were running immediately prior to the <u>Total Shutdown or Partial Shutdown</u> . Additionally, this should highlight any specific issues (ie those that would affect the time before which the <u>Power Generating Module</u> could be <u>Synchronised</u>) that may arise, as time progresses without external supplies being restored.	<u>Text</u>	<u>DPD</u>
<u>BLOCK LOADING CAPABILITIES</u>		
The estimated <u>Block Loading Capability</u> of the relevant <u>Plant</u> shall be provided in either graphical or tabular format showing the estimated <u>block loading capability</u> from OMW to the <u>Plant's Registered Capacity</u> . Any particular <u>Active Power</u> loading points at which the <u>Anchor Generator's Plant or Restoration Service Provider's Plant</u> should be operated until further changes in output can be accommodated should also be identified. (See note 2)	<u>Tabular or graphical</u>	<u>DPD</u>

Note 1 The estimate should relate to the **Anchor Generator's and Restoration Service Provider's** ability to **Re-Synchronise** all their **Plant**, assuming all were running immediately prior to the **Total Shutdown or Partial Shutdown**

Note 2 The data of each **Anchor Power Generating Module** and **Restoration Service Provider's Plant** forming part of a **Distribution Restoration Zone** should be provided for the condition of an **Anchor Power Generating Module** or **Restoration Service Provider's Plant** (which are considered as both 'hot' units (running prior to **Shutdown**) and cold units (not run for 48 hours or more prior to **Shutdown**) that were **Synchronised** immediately prior to the **Total Shutdown** or **Partial Shutdown**. The **Block Loading Capability** assessment should be done against a frequency variation of 49.5Hz – 50.5Hz, assuming an initial **Frequency** of 50.0Hz..