## OPERATING CODE NO. 6

(OC6)

### DEMAND CONTROL

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(This contents page does not form part of the Grid Code)

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**OC6.1 INTRODUCTION**

**OC6.1.1** Operating Code No.6 ("OC6") is concerned with the provisions to be made by Network Operators, and in relation to Non-Embedded Customers by NGET, to permit the reduction of Demand in the event of insufficient Active Power generation being available to meet Demand, or in the event of breakdown or operating problems (such as in respect of System Frequency, System voltage levels or System thermal overloads) on any part of the National Electricity Transmission System.

**OC6.1.2** OC6 deals with the following:

(a) Customer voltage reduction initiated by Network Operators (other than following the instruction of NGET);

(b) Customer Demand reduction by Disconnection initiated by Network Operators (other than following the instruction of NGET);

(c) Demand reduction instructed by NGET;

(d) automatic low frequency Demand Disconnection; and

(e) emergency manual Demand Disconnection.

The term "Demand Control" is used to describe any or all of these methods of achieving a Demand reduction.

**OC6.1.3** The procedure set out in OC6 includes a system of warnings to give advance notice of Demand Control that may be required by NGET under this OC6.

**OC6.1.4** Data relating to Demand Control should include details relating to MW

**OC6.1.5** The Electricity Supply Emergency Code as reviewed and published from time to time by the appropriate government department for energy emergencies provides that in certain circumstances consumers are given a certain degree of "protection" when rota disconnections are implemented pursuant to a direction under the Energy Act 1976. No such protection can be given in relation to Demand Control under the Grid Code.

To invoke the Electricity Supply Emergency Code the Secretary of State will issue direction(s) to all Network Operators affected, exercising emergency powers under the Electricity Act 1989 or by virtue of an Order in Council under the Energy Act 1976. Following the issuance of such direction, NGET will act to coordinate the implementation of an agreed schedule of rota disconnections across all affected Network Operators’ licence area(s) and to disseminate any information as necessary throughout the period of the emergency in accordance with the instructions NGET receives from the Secretary of State or those authorised on his behalf for this purpose.

**OC6.1.6** Connections between Large Power Stations and the National Electricity Transmission System and between such Power Stations and a User System will not, as far as possible, be disconnected by NGET pursuant to the provisions of OC6 insofar as that would interrupt supplies for the purposes of operation of the Power Station (including Start-Up and shutting down);

(b) for the purposes of keeping the Power Station in a state such that it could be Started-up when it is off-Load for ordinary operational reasons; or

(c) for the purposes of compliance with the requirements of a Nuclear Site Licence.

Demand Control pursuant to this OC6 therefore applies subject to this exception.
OBJECTIVE

The overall objective of OC6 is to require the provision of facilities to enable NGET to achieve reduction in Demand that will either avoid or relieve operating problems on the National Electricity Transmission System, in whole or in part, and thereby to enable NGET to instruct Demand Control in a manner that does not unduly discriminate against, or unduly prefer, any one or any group of Suppliers or Network Operators or Non-Embedded Customers. It is also to ensure that NGET is notified of any Demand Control utilised by Users other than following an instruction from NGET.

For certain Grid Supply Points in Scotland it is recognised that it may not be possible to meet the requirements in OC6.4.5(b), OC6.5.3(b) (in respect of Demand Disconnection only), OC6.5.6 (ii), OC6.6.2 (c) and OC6.7.2 (b). In these circumstances NGET and the relevant Network Operator(s) will agree equivalent requirements covering a number of Grid Supply Points. If NGET and the relevant Network Operator fail to agree equivalent requirements covering a number of Grid Supply Points, then the relevant Network Operator will apply the provisions of OC6.4.5(b), OC6.5.3(b) (in respect of Demand Disconnection only), OC6.5.6(ii), OC6.6.2(c) and OC6.7.2(b) as evenly as reasonably practicable over the relevant Network Operator’s entire System.

SCOPE

OC6 applies to NGET and to Users which in OC6 means:

(a) Generators; and
(b) Network Operators.

It also applies to NGET in relation to Non-Embedded Customers.

Explanation

(a) Although OC6 does not apply to Suppliers, the implementation of Demand Control may affect their Customers.

(b) In all situations envisaged in OC6, Demand Control is exercisable:

(i) by reference to a Network Operator’s System; or
(ii) by NGET in relation to Non-Embedded Customers.

(c) Demand Control in all situations relates to the physical organisation of the Total System, and not to any contractual arrangements that may exist.

(a) Accordingly, Demand Control will be exercisable with reference to, for example, five per cent (or such other figure as may be utilised under OC6.5) tranches of Demand by a Network Operator.

(b) For a Supplier, whose Customers may be spread throughout a number of User Systems (and the National Electricity Transmission System), to split its Customers into five per cent (or such other figure as may be utilised under OC6.5) tranches of Demand would not result in Demand Control being implemented effectively on the Total System.

(c) Where Demand Control is needed in a particular area, NGET would not know which Supplier to contact and (even if it were to) the resulting Demand Control implemented, because of the diversity of contracts, may well not produce the required result.

(a) Suppliers should note, however, that, although implementation of Demand Control in respect of their Customers is not exercisable by them, their Customers may be affected by Demand Control.

(b) This will be implemented by Network Operators where the Customers are within User Systems directly connected to the National Electricity Transmission System and by NGET where they are Non-Embedded Customers.
(c) The contractual arrangements relating to Customers being supplied by Suppliers will, accordingly, need to reflect this.

(d) The existence of a commercial arrangement for the provision of Customer Demand Management or Commercial Ancillary Services does not relieve a Network Operator from the Demand Control provisions of OC6.5, OC6.6 and OC6.7, which may be exercised from time to time.

**OC6.4**  
**PROCEDURE FOR THE NOTIFICATION OF DEMAND CONTROL INITIATED BY NETWORK OPERATORS (OTHER THAN FOLLOWING THE INSTRUCTION OF NGET)**

**OC6.4.1** Pursuant to the provisions of OC1, in respect of the time periods prior to 1100 hours each day, each Network Operator will notify NGET of all Customer voltage reductions and/or restorations and Demand Disconnection or reconnection, on a Grid Supply Point and half-hourly basis, which will or may, either alone or when aggregated with any other Demand Control planned by that Network Operator, result in a Demand change equal to or greater than the Demand Control Notification Level averaged over any half hour on any Grid Supply Point, which is planned to be instructed by the Network Operator other than following an instruction from NGET relating to Demand reduction.

**OC6.4.2** Under OC6, each Network Operator will notify NGET in writing by 1100 hours each day (or such other time specified by NGET from time to time) for the next day (except that it will be for the next 3 days on Fridays and 2 days on Saturdays and may be longer (as specified by NGET at least one week in advance) to cover holiday periods) of Customer voltage reduction or Demand Disconnection which will or may result in a Demand change equal to or greater than the Demand Control Notification Level averaged over any half hour on any Grid Supply Point, (or which when aggregated with any other Demand Control planned by that Network Operator is equal to or greater than the Demand Control Notification Level), planned to take place during the next Operational Day.

**OC6.4.3** When the Customer voltage reduction or Demand Disconnection which may result in a Demand change equal to or greater than the Demand Control Notification Level averaged over any half hour on any Grid Supply Point (or which when aggregated with any other Demand Control planned or implemented by that Network Operator is equal to or greater than the Demand Control Notification Level) is planned after 1100 hours, each Network Operator must notify NGET as soon as possible after the decision to implement has been made. If the Customer voltage reduction or Demand Disconnection is implemented immediately after the decision to implement is made, each Network Operator must notify NGET within five minutes of implementation.

**OC6.4.4** Where, after NGET has been notified, whether pursuant to OC1, OC6.4.2 or OC6.4.3, the planned Customer voltage reduction or Demand Disconnection is changed, the Network Operator will notify NGET as soon as possible of the new plans, or if the Customer voltage reduction or Demand Disconnection implemented is different to that notified, the Network Operator will notify NGET of what took place within five minutes of implementation.

**OC6.4.5** Any notification under OC6.4.2, OC6.4.3 or OC6.4.4 will contain the following information on a Grid Supply Point and half hourly basis:

(a) the proposed (in the case of prior notification) and actual (in the case of subsequent notification) date, time and duration of implementation of the Customer voltage reduction or Demand Disconnection; and

(b) the proposed reduction in Demand by use of the Customer voltage reduction or Demand Disconnection.

**OC6.4.6** Pursuant to the provisions of OC1.5.6, each Network Operator will supply to NGET details of the amount of Demand reduction actually achieved by use of the Customer voltage reduction or Demand Disconnection.
OC6.5 PROCEDURE FOR THE IMPLEMENTATION OF DEMAND CONTROL ON THE INSTRUCTIONS OF NGET

OC6.5.1 A National Electricity Transmission System Warning - High Risk of Demand Reduction will, where possible, be issued by NGET, as more particularly set out in OC6.5.4, OC7.4.8 and BC1.5.4 when NGET anticipates that it will or may instruct a Network Operator to implement Demand reduction. It will, as provided in OC6.5.10 and OC7.4.8.2, also be issued to Non-Embedded Customers.

OC6.5.2 Where NGET expects to instruct Demand reduction within the following 30 minutes, NGET will where possible, issue a National Electricity Transmission System Warning - Demand Control Imminent in accordance with OC7.4.8.2(c) and OC7.4.8.6.

OC6.5.3 (a) Whether a National Electricity Transmission System Warning - High Risk of Demand Reduction or National Electricity Transmission System Warning - Demand Control Imminent has been issued or not:

(i) provided the instruction relates to not more than 20 per cent of its total Demand (measured at the time the Demand reduction is required); and

(ii) if the instruction relates to less than 20 per cent of its total Demand, is in

- two voltage reduction stages of between 2 and 4 percent, each of which can be expected to deliver around 1.5 percent Demand reduction; and

- up to three Demand Disconnection stages, each of which can reasonably be expected to deliver between four and six percent Demand reduction,

each Network Operator will abide by the instructions of NGET, which should specify whether a voltage reduction or Demand Disconnection stage is required; or

(iii) if the instruction relates to less than 20 per cent of its total Demand, is in four Demand Disconnection stages each of which can reasonably be expected to deliver between four and six per cent Demand reduction,

each Network Operator will abide by the instructions of NGET with regard to Demand reduction under OC6.5 without delay.

(b) The Demand reduction must be achieved within the Network Operator’s System as far as possible uniformly across all Grid Supply Points (unless otherwise specified in the National Electricity Transmission System Warning - High Risk of Demand Reduction) either by Customer voltage reduction or by Demand Disconnection.

(c) Demand Control initiated by voltage reduction shall be initiated as soon as possible but in any event no longer than two minutes from the instruction being received from NGET, and completed within 10 minutes of the instruction being received from NGET.

(d) Demand Control initiated by Demand Disconnection shall be initiated as soon as possible but in any event no longer than two minutes from the instruction being received from NGET, and completed within five minutes of the instruction being received from NGET.

(e) Each Network Operator must notify NGET in writing by calendar week 24 each year, for the succeeding Financial Year onwards, whether Demand Control is to be implemented either:

i) by a combination of voltage reduction and Demand Disconnection; or

ii) Demand Disconnection alone;

together with the magnitude of the voltage reduction stages (where applicable) and for Demand Disconnection stages, the demand reduction anticipated. Thereafter, any changes must be notified in writing to NGET at least 10 Business Days prior to the change coming into effect.
OC6.5.4 (a) Where NGET wishes to instruct a Demand reduction of more than 20 per cent of a Network Operator's Demand (measured at the time the Demand reduction is required), it shall, if it is able, issue a National Electricity Transmission System Warning - High Risk of Demand Reduction to the Network Operator by 1600 hours on the previous day. The warning will state the percentage level of Demand reduction that NGET may want to instruct (measured at the time the Demand reduction is required).

(b) The National Electricity Transmission System Warning - High Risk of Demand Reduction will specify the percentage of Demand reduction that NGET may require in integral multiples of the percentage levels notified by Users under OC6.5.3(c) up to (and including) 20 per cent and of five per cent above 20 per cent and will not relate to more than 40 per cent of Demand (measured at the time the Demand reduction is required) of the Demand on the User System of a Network Operator.

(c) If NGET has issued the National Electricity Transmission System Warning - High Risk of Demand Reduction by 1600 hours on the previous day, on receipt of it the relevant Network Operator shall make available the percentage reduction in Demand specified for use within the period of the National Electricity Transmission System Warning.

(d) If NGET has not issued the National Electricity Transmission System Warning - High Risk of Demand Reduction by 1600 hours the previous day, but after that time, the Network Operator shall make available as much of the required Demand reduction as it is able, for use within the period of the National Electricity Transmission System Warning.

OC6.5.5 (a) If NGET has given a National Electricity Transmission System Warning - High Risk of Demand Reduction to a Network Operator, and has issued it by 1600 hours on the previous day, it can instruct the Network Operator to reduce its Demand by the percentage specified in the National Electricity Transmission System Warning.

(b) NGET accepts that if it has not issued the National Electricity Transmission System Warning - High Risk of Demand Reduction by 1600 hours on the previous day or if it has issued it by 1600 hours on the previous day, but it requires a further percentage of Demand reduction (which may be in excess of 40 per cent of the total Demand on the User System of the Network Operator (measured at the time the Demand reduction is required) from that set out in the National Electricity Transmission System Warning, it can only receive an amount that can be made available at that time by the Network Operator.

(c) Other than with regard to the proviso, the provisions of OC6.5.3 shall apply to those instructions.

OC6.5.6 Once a Demand reduction has been applied by a Network Operator at the instruction of NGET, the Network Operator may interchange the Customers to whom the Demand reduction has been applied provided that,

(i) the percentage of Demand reduction at all times within the Network Operator's System does not change; and

(ii) at all times it is achieved within the Network Operator's System as far as possible uniformly across all Grid Supply Points (unless otherwise specified in the National Electricity Transmission System Warning - High Risk of Demand Reduction if one has been issued),

until NGET instructs that Network Operator in accordance with OC6.

OC6.5.7 Each Network Operator will abide by the instructions of NGET with regard to the restoration of Demand under OC6.5 without delay. It shall not restore Demand until it has received such instruction. The restoration of Demand must be achieved as soon as possible and the process of restoration must begin within 2 minutes of the instruction being given by NGET.
OC6.5.8 In circumstances of protracted shortage of generation or where a statutory instruction has been given (eg. a fuel security period) and when a reduction in Demand is envisaged by NGET to be prolonged, NGET will notify the Network Operator of the expected duration.

OC6.5.9 The Network Operator will notify NGET in writing that it has complied with NGET's instruction under OC6.5, within five minutes of so doing, together with an estimation of the Demand reduction or restoration achieved, as the case may be.

OC6.5.10 NGET may itself implement Demand reduction and subsequent restoration on Non-Embedded Customers as part of a Demand Control requirement and it will organise the National Electricity Transmission System so that it will be able to reduce Demand by Disconnection of, or Customer voltage reduction to, all or any Non-Embedded Customers. Equivalent provisions to those in OC6.5.4 shall apply to issuing a National Electricity Transmission System Warning - High Risk of Demand Reduction to Non-Embedded Customers, as envisaged in OC7.4.8.

OC6.5.11 Pursuant to the provisions of OC1.5.6, the Network Operator will supply to NGET details of the amount of Demand reduction or restoration actually achieved.
Each Network Operator will make arrangements that will enable automatic low Frequency Disconnection of at least:

(i) 60 per cent of its total Demand (based on Annual ACS Conditions) at the time of forecast National Electricity Transmission System peak Demand where such Network Operator’s System is connected to the National Electricity Transmission System in NGET’s Transmission Area

(ii) 40 per cent of its total Demand (based on Annual ACS Conditions) at the time of forecast National Electricity Transmission System peak Demand where such Network Operator’s System is connected to the National Electricity Transmission System in either SPT’s or SHETL’s Transmission Area

in order to seek to limit the consequences of a major loss of generation or an Event on the Total System which leaves part of the Total System with a generation deficit. Where a Network Operator’s System is connected to the National Electricity Transmission System in more than one Transmission Area, the figure above for the Transmission Area in which the majority of the Network Operator’s Demand is connected shall apply.

The Demand of each Network Operator which is subject to automatic low Frequency Disconnection will be split into discrete MW blocks.

The number, size (% Demand) and the associated low Frequency settings of these blocks, will be as specified in Table CC.A.5.5.1a. NGET will keep the settings under review.

The distribution of the blocks will be such as to give a reasonably uniform Disconnection within the Network Operator’s System, as the case may be, across all Grid Supply Points.

Each Network Operator will notify NGET in writing by calendar week 24 each year of the details of the automatic low Frequency Disconnection on its User System. The information provided should identify, for each Grid Supply Point at the date and time of the annual peak of the National Electricity Transmission System Demand at Annual ACS Conditions (as notified pursuant to OC1.4.2), the frequency settings at which Demand Disconnection will be initiated and amount of Demand disconnected at each such setting.

Where conditions are such that, following automatic low Frequency Demand Disconnection, and the subsequent Frequency recovery, it is not possible to restore a large proportion of the total Demand so disconnected within a reasonable period of time, NGET may instruct a Network Operator to implement additional Demand Disconnection manually, and restore an equivalent amount of the Demand that had been disconnected automatically. The purpose of such action is to ensure that a subsequent fall in Frequency will again be contained by the operation of automatic low Frequency Demand Disconnection.

Once an automatic low Frequency Demand Disconnection has taken place, the Network Operator on whose User System it has occurred, will not reconnect until NGET instructs that Network Operator to do so in accordance with OC6.

Once the Frequency has recovered, each Network Operator will abide by the instructions of NGET with regard to reconnection under OC6.6 without delay. Reconnection must be achieved as soon as possible and the process of reconnection must begin within 2 minutes of the instruction being given by NGET.

Non-Embedded Customers (including a Pumped Storage Generator) must provide automatic low Frequency disconnection, which will be split into discrete blocks.

The number and size of blocks and the associated low Frequency settings will be as specified by NGET by week 24 each calendar year following discussion with the Non-Embedded Customers (including a Pumped Storage Generator) in accordance with the relevant Bilateral Agreement.
OC6.6.7 (a) In addition, Generators may wish to disconnect Generating Units from the System, either manually or automatically, should they be subject to Frequency levels which could result in Generating Unit damage.

(b) This Disconnection facility on such Generating Unit directly connected to the National Electricity Transmission System, will be agreed with NGET in accordance with the Bilateral Agreement.

(c) Any Embedded Power Stations will need to agree this Disconnection facility with the relevant User to whose System that Power Station is connected, which will then need to notify NGET of this.

OC6.6.8 The Network Operator or Non-Embedded Customer, as the case may be, will notify NGET with an estimation of the Demand reduction which has occurred under automatic low Frequency Demand Disconnection and similarly notify the restoration, as the case may be, in each case within five minutes of the Disconnection or restoration.

OC6.6.9 Pursuant to the provisions of OC1.5.6 the Network Operator and Non-Embedded Customer will supply to NGET details of the amount of Demand reduction or restoration actually achieved.

OC6.6.10 (a) In the case of a User, it is not necessary for it to provide automatic low Frequency disconnection under OC6.6 only to the extent that it is providing, at the time it would be so needed, low Frequency disconnection at a higher level of Frequency as an Ancillary Service, namely if the amount provided as an Ancillary Service is less than that required under OC6.6 then the User must provide the balance required under OC6.6 at the time it is so needed.

(b) The provisions of OC7.4.8 relating to the use of Demand Control should be borne in mind by Users.

OC6.7 EMERGENCY MANUAL DISCONNECTION

OC6.7.1 Each Network Operator will make arrangements that will enable it, following an instruction from NGET, to disconnect Customers on its User System under emergency conditions irrespective of Frequency within 30 minutes. It must be possible to apply the Demand Disconnections to individual or specific groups of Grid Supply Points, as determined by NGET.

OC6.7.2 (a) Each Network Operator shall provide NGET in writing by week 24 in each calendar year, in respect of the next following year beginning week 24, on a Grid Supply Point basis, with the following information (which is set out in a tabular format in the Appendix):

(i) its total peak Demand (based on Annual ACS Conditions); and

(ii) the percentage value of the total peak Demand that can be disconnected (and must include that which can also be reduced by voltage reduction, where applicable) within timescales of 5/10/15/20/25/30 minutes.

(b) The information should include, in relation to the first 5 minutes, as a minimum, the 20% of Demand that must be reduced on instruction under OC6.5.

OC6.7.3 Each Network Operator will abide by the instructions of NGET with regard to Disconnection under OC6.7 without delay, and the Disconnection must be achieved as soon as possible after the instruction being given by NGET, and in any case, within the timescale registered in OC6.7. The instruction may relate to an individual Grid Supply Point and/or groups of Grid Supply Points.

OC6.7.4 NGET will notify a Network Operator who has been instructed under OC6.7, of what has happened on the National Electricity Transmission System to necessitate the instruction, in accordance with the provisions of OC7 and, if relevant, OC10.

OC6.7.5 Once a Disconnection has been applied by a Network Operator at the instruction of NGET, that Network Operator will not reconnect until NGET instructs it to do so in accordance with OC6.
OC6.7.6 Each Network Operator will abide by the instructions of NGET with regard to reconnection under OC6.7 without delay, and shall not reconnect until it has received such instruction and reconnection must be achieved as soon as possible and the process of reconnection must begin within 2 minutes of the instruction being given by NGET.

OC6.7.7 NGET may itself disconnect manually and reconnect Non-Embedded Customers as part of a Demand Control requirement under emergency conditions.

OC6.7.8 If NGET determines that emergency manual Disconnection referred to in OC6.7 is inadequate, NGET may disconnect Network Operators and/or Non-Embedded Customers at Grid Supply Points, to preserve the security of the National Electricity Transmission System.

OC6.7.9 Pursuant to the provisions of OC1.5.6 the Network Operator will supply to NGET details of the amount of Demand reduction or restoration actually achieved.

OC6.8 OPERATION OF THE BALANCING MECHANISM DURING DEMAND CONTROL

Demand Control will constitute an Emergency Instruction in accordance with BC2.9 and it may be necessary to depart from normal Balancing Mechanism operation in accordance with BC2 in issuing Bid-Off acceptance. NGET will inform affected BM Participants in accordance with the provisions of OC7.
## APPENDIX 1 - EMERGENCY MANUAL DEMAND REDUCTION/DISCONNECTION SUMMARY SHEET

(As set out in OC6.7)

**NETWORK OPERATOR:**

<table>
<thead>
<tr>
<th>GRID SUPPLY POINT (Name)</th>
<th>PEAK MW</th>
<th>% OF GROUP DEMAND DISCONNECTION (AND/OR REDUCTION IN THE CASE OF THE FIRST 5 MINUTES) (CUMULATIVE)</th>
<th>REMARKS</th>
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<tr>
<th>TIME (MINS)</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>30</th>
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**Notes:**

1. Data to be provided annually by week 24 to cover the following year.

< END OF OPERATING CODE NO. 6 >