OPERATING CODE NO. 1
(OC1)

DEMAND FORECASTS

GRID CODE MODIFICATION GC0156
DATED 20 NOVEMBER 2022

CONTENTS

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

OC1.1 INTRODUCTION

OC1.1.1 **Operating Code No**.**1** ("**OC1**") is concerned with **Demand** forecasting for operational purposes. In order to match generation output with **Demand** for electricity it is necessary to undertake **Demand** forecasting. It is also necessary to undertake **Demand** forecasting of **Reactive Power**.

OC1.1.2 In the **Operational Planning Phase**, **Demand** forecasting shall be conducted by **The Company** taking account of **Demand** forecasts furnished by **Network Operators**, who shall provide **The Company** with information in the form set out in this **OC1**. The data supplied under the **PC** is also taken into account.

OC1.1.3 In the **Programming Phase** and **Control Phase**, **The Company** will conduct its own **Demand** forecasting taking into account information to be furnished by **Suppliers** and **Network Operators** and the other factors referred to in OC1.6.1.

OC1.1.4 In this **OC1**, the point of connection of the **External Interconnection** to the **National Electricity Transmission System** shall be considered as a **Grid Supply Point**. **Reactive Power Demand** includes the series **Reactive** losses of the **User's System** but excludes any network susceptance and any **Reactive** compensation on the **User's System**. **The Company** will obtain the lumped network susceptance and details of **Reactive** compensation from the requirements to submit data under the **PC**.

OC1.1.5 Data relating to **Demand Control** should include details relating to MW.

OC1.1.6 **OC1** deals with the provision of data on **Demand Control** in the **Operational Planning Phase**, the **Programming Phase** and the **Post-Control Phase**, whereas **OC6** (amongst other things) deals with the provision of data on **Demand Control** following the **Programming Phase** and in the **Control Phase**.

OC1.1.7 In this **OC1**, Year 0 means the current **Financial Year** at any time, Year 1 means the next **Financial Year** at any time, Year 2 means the **Financial Year** after Year 1, etc.

OC1.1.8 References in **OC1** to data being supplied on a half hourly basis refer to it being supplied for each period of 30 minutes ending on the hour and half-hour in each hour.

OC1.2 OBJECTIVE

The objectives of **OC1** are to:

OC1.2.1 enable the provision of data to **The Company** by **Users** in the **Programming Phase**, **Control Phase** and **Post-Control Phase**; and

OC1.2.2 provide for the factors to be taken into account by **The Company** when **Demand** forecasting in the **Programming Phase** and **Control Phase**.

OC1.3 SCOPE

OC1 applies to **The Company** and to **Users** which in this **OC1** means:

(a) **Network Operators**, and

(b) **Suppliers**.

OC1.4 DATA REQUIRED BY THE COMPANY IN THE OPERATIONAL PLANNING PHASE

OC1.4.1 (a) Each **User**, as specified in (b) below, shall provide **The Company** with the data requested in OC1.4.2 below.

(b) The data will need to be supplied by each **Network Operator** directly connected to the **National Electricity Transmission System** in relation to **Demand Control** and in relation each **Generator** with respect to the output of **Embedded Medium Power Stations** within its **System**.

OC1.4.2 (a) Data

By calendar week 28 each year each **Network Operator** will provide to **The Company** in writing the forecast information listed in (c) below for the current **Financial Year** and each of the succeeding five **Financial Years**.

(b) Data Providers

In circumstances when the busbar arrangement at a **Grid Supply Point** is expected to be operated in separate sections, separate sets of forecast information for each section will be provided to **The Company**.

(c) Embedded Medium Power Station Output and Demand Control

For the specified time of the annual peak half hour **National Electricity Transmission System Demand**, as specified by **The Company** under PC.A.5.2.2, the output of **Embedded Medium Power Stations** and forecasts of **Demand** to be relieved by **Demand Control** on a **Grid Supply Point** basis giving details of the amount and duration of the **Demand Control**.

OC1.5 DATA REQUIRED BY THE COMPANY IN THE PROGRAMMING PHASE, CONTROL PHASE AND POST-CONTROL PHASE

OC1.5.1 Programming Phase

For the period of 2 to 8 weeks ahead the following will be supplied to **The Company** in writing by 1000 hours each Monday:

(a) Demand Control

Each **Network Operator** will supply MW profiles of the amount and duration of their proposed use of **Demand Control** 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**) on a half hourly and **Grid Supply Point** basis;

(b) Medium Power Station Operation

Each **Network Operator** will, if reasonably required by **The Company**, supply MW schedules for the operation of **Embedded Medium Power Stations** within its **System** on a half hourly and **Grid Supply Point** basis.

OC1.5.2 For the period 2 to 12 days ahead the following will be supplied to **The Company** in writing by 1200 hours each Wednesday:

(a) Demand Control

Each **Network Operator** will supply MW profiles of the amount and duration of their proposed use of **Demand Control** 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**) on a half hourly and **Grid Supply Point** basis;

(b) Medium Power Station Operation

Each **Network Operator** will, if reasonably required by **The Company**, supply MW schedules for the operation of **Embedded Medium Power Stations** within its **System** on a half hourly and **Grid Supply Point** basis.

OC1.5.3 Medium Power Station Output

Each **Network Operator** will, if reasonably required by **The Company**, supply **The Company** with MW schedules for the operation of **Embedded Medium Power Stations** within its **System** on a half hourly and **Grid Supply Point** basis in writing by 1000 hours each day (or such other time specified by **The Company** 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 **The Company** at least one week in advance) to cover holiday periods);

OC1.5.4 Other Codes

Under **OC6** each **Network Operator** will notify **The Company** of their proposed use of **Demand Control** (which may result in a **Demand** change equal to or greater than the **Demand Control Notification Level**), and under **BC1**, each **Supplier** will notify **The Company** of their proposed use of **Customer Demand Management** (which may result in a **Demand** change equal to or greater than the **Customer Demand Management Notification Level**) in this timescale.

OC1.5.5 Control Phase

OC1.5.5.1 Demand Control

Under **OC6**, each **Network Operator** will notify **The Company** of any **Demand Control** proposed by itself 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** which is planned after 1000 hours, and of any changes to the planned **Demand Control** notified to **The Company** prior to 1000 hours as soon as possible after the formulation of the new plans;

OC1.5.5.2 Customer Demand Management

(a) Each **Supplier** will notify **The Company** of any **Customer Demand Management** proposed by itself which may result in a **Demand** change equal to or greater than the **Customer Demand Management Notification Level** averaged over any half hour on any **Grid Supply Point** which is planned to occur at any time in the **Control Phase** and of any changes to the planned **Customer Demand Management** already notified to **The Company** as soon as possible after the formulation of the new plans.

(b) The following information is required on a **Grid Supply Point** and half-hourly basis:

(i) the proposed date, time and duration of implementation of **Customer Demand Management**; and

(ii) the proposed reduction in **Demand** by use of **Customer Demand Management**.

OC1.5.5.3 Load Management Blocks

In Scotland, by 11:00 each day, each **Supplier** who controls a **Load Management Block** of **Demand** with a capacity of 5MW or more shall submit to **The Company** a schedule of its proposed switching times and profiles in respect of each block for the next day.

OC1.5.6 Post-Control Phase

The following will be supplied to **The Company** in writing by 0600 hours each day in respect of **Active Power** data and by 1000 hours each day in respect of **Reactive Power** data:

(a) Demand Control

Each **Network Operator** will supply MW profiles for the previous calendar day of the amount and duration of **Demand** reduction achieved by itself from the use of **Demand Control** equal to or greater than the **Demand Control Notification Level** (averaged over any half hour on any **Grid Supply Point**), on a half hourly and **Grid Supply Point** basis.

(b) Customer Demand Management

Each **Supplier** will supply MW profiles of the amount and duration of **Demand** reduction achieved by itself from the use of **Customer Demand Management** equal to or greater than the **Customer Demand Management Notification Level** (averaged over any half hour on any **Grid Supply Point**) on a half hourly and **Grid Supply Point** basis during the previous calendar day.

OC1.6 THE COMPANY FORECASTS

OC1.6.1 The following factors will be taken into account by **The Company** when conducting **National Electricity Transmission System Demand** forecasting in the **Programming Phase** and **Control Phase**:

(a) Historic **Demand** data (this includes **National Electricity Transmission System Losses**).

(b) Weather forecasts and the current and historic weather conditions.

(c) The incidence of major events or activities which are known to **The Company** in advance.

(d) Anticipated interconnection flows across **External Interconnections**.

(e) **Demand Control** equal to or greater than the **Demand Control Notification Level** (averaged over any half hour at any **Grid Supply Point**) proposed to be exercised by **Network Operators** and of which **The Company** has been informed.

(f) **Customer Demand Management** equal to or greater than the **Customer Demand Management Notification Level** (averaged over any half hour at any **Grid Supply point**) proposed to be exercised by **Suppliers** and of which **The Company** has been informed.

(g) Other information supplied by **Users**.

(h) Anticipated **Pumped Storage Unit** demand.

(i) the sensitivity of **Demand** to anticipated market prices for electricity.

(j) **BM Unit Data** submitted by **BM Participants** to **The Company** in accordance with the provisions of **BC1** and **BC2**.

(k) **Demand** taken by **Station Transformers**

(l) Anticipated **Electricity Storage Module** demand

OC1.6.2 Taking into account the factors specified in OC1.6.1 **The Company** uses **Demand** forecast methodology to produce forecasts of **National Electricity Transmission System Demand**. A written record of the use of the methodology must be kept by **The Company** for a period of at least 12 months.

OC1.6.3 The methodology will be based upon factors (a), (b) and (c) above to produce, by statistical means, unbiased forecasts of **National Demand**. **National Electricity Transmission System Demand** will be calculated from these forecasts but will also take into account factors (d), (e), (f), (g), (h), (i) and (j) above. No other factors are taken into account by **The Company**, and it will base its **National Electricity Transmission System Demand** forecasts on those factors only.

OC1.7 System Restoration

OC1.7.1 During normal system operation **The Company** shall publish:-

a) **Demand** data for each **System Restoration Region**

b) on a daily basis, 60% and 100% **National Demand** forecasts that would feed into the **System Restoration** Regional targets.

OC1.7.2 During a **System Restoration** event **The Company** shall publish:-

a) current **Demand** data which will need to be collated and a forecast of **Demand** made for each **System Restoration Region**.

b) forecasts of 60% and 100% of daily **National Demand**, necessary to monitor the achievement of the **System Restoration Region's** targets.

Commented [11]: Comment from Alastair Frew - when the term daily is used when does this mean? Is it immediately after that day's peak has occurred also will this value be changed during the day as the forecast is revised?
Suggested change to OC.1.7.2 "the pre-shutdown forecasts of 60% and 100% of daily National Demand, necessary for the System Restoration Region's targets."

Commented [CA(P2]: Doesn't this need to be more specific than just the generic definition of Demand? Measured Demand at a GSP? Gross demand of Users connected to a GSP?

Commented [CA(P3]: Delete space - **DH Response - Corrected**

Commented [CA(P4]: System Restoration is a process.

How about:

During **System Restoration The Company** ….

Commented [CA(P5]: Again this needs to be more specific. Does the ESO need any information from Users to be able to establish and publish these figures?

Commented [CA(P6]: Clarify what data is to be published eg i) the current 'demand' or ii) the forecast (at what times sin the future should be forecasts be provided) or iii) both?

Commented [CA(P7]: Is the forecast of daily National Demand or just the percentage of the relevant demand figure established from OC1.7.1 b)

Commented [CA(P8]: ..necessary to minitor achievement of the …. - **DH Response - Corrected**

Commented [CA(P9]: Isn't the ESO target just a national target?

< END OF OPERATING CODE NO. 1 >