CUSC - SECTION 4

BALANCING SERVICES

*Payment Formulae – **Response Energy Payment***

4.1.3.9A (a) The **Response Energy Payments** for **BM Unit** i in **Settlement Period** j to be made by **The Company** to a **User** referred to in Paragraph 4.1.3.8 shall be calculated in accordance with the following formulae:-

$$REP_{ij} = RE_{ij} \times \text{Reference Price}$$

But so that where REP$_{ij}$ is negative such amount shall be paid by the **User** to **The Company**.

Where:

REP$_{ij}$ is the **Response Energy Payment** to be made to or, as the case may be, by the User; and

RE$_{ij}$ is the expected response energy for **BM Unit** i in **Settlement Period** j calculated as follows:-

$$RE_{ij} = \int_0^{SPD} \left[\begin{array}{l} \max(FR_{ij}(t),0) \times (1 - SF_{LF}) \\ + \min(FR_{ij}(t),0) \times (1 - SF_H) \end{array} \right] \times K_T \times K_{GRC} \, dt$$

Where:

$\int_0^{SPD} dt$ is the integral at times t, over the **Settlement Period** duration.

SF$_{LF}$ is equal to SF$_P$ in the case of a **BM Unit** being instructed to deliver **Primary Response** without **Secondary Response** or the mean of SF$_P$ and SF$_S$ in

the case of a **BM Unit** being instructed to deliver **Primary Response** and **Secondary Response**.

SF_P, SF_S, SF_H, K_T and K_{GRC} have the meanings ascribed to them in Paragraph 4.1.3.9.

$FR_{ij}(t)$ is the expected change in **Active Power** output for **BM Unit** i, at time t (resolved to the nearest integer minute), expressed in MW derived from the relevant **Frequency Response Power Delivery Data** table in the **Mandatory Services Agreement** (as such table is interpreted in accordance with Paragraph 4.1.3.11) by reference to the level of **De-Load** of the **BM Unit** concerned at the end of the minute and the mean **Frequency Deviation** over that minute when that **BM Unit** is providing **Mode A Frequency Response** and zero at all other times.

For this purpose:-

(i)   for a positive **Frequency Deviation** the expected change in **Active Power** output of **BM Unit** i shall be derived from the table entitled **"High Frequency Response Power Delivery – Mode A"** set out in the **Mandatory Services Agreement** and shall be signed negative; and

(ii)   for a negative **Frequency Deviation**, the expected change in **Active Power** output of **BM Unit** i shall be derived from:

    A) the table entitled "Primary Response Power Delivery – Mode A" in the case of a **BM Unit** being instructed to deliver **Primary Response** without **Secondary Response**; or

    B) the table entitled "Primary and Secondary Response Power Delivery – Mode A" in the case of a **BM Unit** being instructed to deliver **Primary Response** and **Secondary Response**,

    in each case set out in the **Mandatory Services Agreement** and shall be signed positive.

A User with a "CfD BMU" (a BM Unit registered in respect of a Power Station whose operator is a party to an agreement with the CfD Counterparty) the User can elect, at the outset of the agreement with the CfD Counterparty, to set the Reference Price to Max for Response Energy Payments for that CfD BMU for the duration of that agreement. Until such election, which can only be made once by reference to that CfD agreement, the Reference Price shall be 0 by default.

Where: RE_{ij} is positive then:

Reference Price = max ($\sum_s$ {**PXP$_{sj}$** x **QXP$_{sj}$**} / $\sum_s$ {**QXP$_{sj}$**} x 1.25, 0) except in the case of (a) a non-fuel cost **BM Unit** or (b) a BM Unit registered in respect of a Power Station whose operator is a party to an agreement with the CfD Counterparty still in effect during the relevant Settlement Period, where it = 0
where $\sum_s$ represents the sum over all **Market Index Data Providers**.

Where RE_{ij} is negative then:

Reference Price = max ($\sum_s$ {**PXP$_{sj}$** x **QXP$_{sj}$**} / $\sum_s$ {**QXP$_{sj}$**} x 0.75, 0) except in the case of (a) a non-fuel cost **BM Unit** or (b) a BM Unit which relates to a Power Station whose operator is a party to an agreement with the CfD Counterparty, still in effect during the relevant Settlement Period, where it = 0

where $\sum_s$ represents the sum over all **Market Index Data Providers**

Where for the purposes of this Paragraph:

a non-fuel cost **BM Unit** means a **BM Unit** [associated with] [registered in respect of] a non-fuel cost **Power Station**

a non-fuel cost **Power Station** means:

a **Power Station** of the following type which does not have the facility to store the energy produced)

Onshore wind
Offshore wind
Solar
Tidal
Wave