

# **Single Electricity Market Committee**

**Directed Contracts –  
Q1 2013 to Q4 2013  
Quantification and Pricing for  
September 2012 Auction (Round 2)**

**Information Paper**

**12<sup>th</sup> September 2012**

**SEM-12-084**

## **1. Background**

In June 2012 the Northern Ireland Authority for Utility Regulation (Utility Regulator) and the Commission for Energy Regulation (CER), together referred to as the Regulatory Authorities or RAs, published a decision paper (SEM/12/048<sup>1</sup>) on the quantification and pricing for the initial “front loaded” Directed Contract (DC) auction. It covered DCs for the period from Q4 2012 to Q3 2013.

This followed the publication on 19<sup>th</sup> April 2012 of a SEM Committee<sup>2</sup> decision paper (SEM-12-026<sup>3</sup>) committing to a new rolling quarterly approach to the offering of DCs.

This paper follows the approach set out in the June decision paper (SEM12/048) and provides information on quantities and pricing for the upcoming DC auctions covering the period Q1 2013 to Q4 2013. Suppliers will also receive notification from the RAs of their updated DC eligibilities for this round of auctions.

## **2. Directed Contract Quantities**

DC subscription windows will be held every quarter, with DCs being allocated on a rolling basis up to 5 quarters ahead. The September 2012 DC Primary Subscription Window will be held from Monday 17<sup>th</sup> to Friday 21<sup>st</sup> September inclusive, with the associated DC Supplemental Subscription Window on Tuesday 25<sup>th</sup> and Wednesday 26<sup>th</sup> September. DCs will be offered in quarterly segments for the period Q1 2013 to Q4 2013.

There are three DC products in the market: Baseload, Mid-Merit and Peak. Suppliers can elect to subscribe for any given product in any particular quarter from ESB. The definitions of the products are set out in the Master Agreement. These are as follows:

- Baseload Product: For Trading Periods at the Contract Quantity arising in all hours.
- Mid-merit Product: For Trading Periods at the Contract Quantity during the hours beginning at 07:00 and ending at 23:00 on Business Days and for Trading Periods on days that are not Business Days at 80% of the Contract Quantity.
- Peak: For Trading Periods arising during the hours beginning at 17:00 and ending at 21:00 on all days during, October, November, December, January, February and March at the Contract Quantity.

As previously, the RAs used the Herfindahl Hirschman Index (HHI) to set DC quantities and have continued to use a target HHI level of 1,150 for the period Q1 2013 to Q4 2013. NI Power PPB's market share does not warrant the offering of DCs. The DC quantities to be offered by ESB for Q1 2013 to Q4 2013 are set out

---

<sup>1</sup> Decision Paper on Directed Contracts Version 2 – [SEM/12/048](#).

<sup>2</sup> The SEM Committee is established in Ireland and Northern Ireland by virtue of section 8A of the Electricity Regulation Act 1999 as inserted by section 4 of the Electricity Regulation (Amendment) Act 2007, and Article 6 (1) of the Electricity (Single Wholesale Market) (Northern Ireland) Order 2007 respectively. The SEM Committee is a Committee of both CER and NIAUR (together the RAs) that, on behalf of the RAs, takes any decision as to the exercise of a relevant function of CER or NIAUR in relation to an SEM matter.

below. The total DC quantities offered by ESB to date for Q1 2013 to Q4 2013 (including these Round 2 quantities) are also shown below.

**ESB DCs for Q1 '13 to Q4 '13 in Forthcoming  
Round 2 Auction, MW**

QUARTER	BASELOAD	MIDMERIT	PEAK
Q1 2013	126	0	0
Q2 2013	100	14	N/A
Q3 2013	102	19	N/A
Q4 2013	103	21	0

**Total DCs for Q1 '13 to Q4 '13 offered to  
date (including September 2012 auction)**

QUARTER	BASELOAD	MIDMERIT	PEAK
Q1 2013	298	0	0
Q2 2013	260	14	N/A
Q3 2013	202	58	N/A
Q4 2013	103	21	0

**Percentage of DCs offered to date  
(including September 2012 auction)<sup>4</sup>**

QUARTER	BASELOAD	MIDMERIT	PEAK
Q1 2013	100%	100%	100%
Q2 2013	75%	75%	N/A
Q3 2013	50%	50%	N/A
Q4 2013	25%	25%	25%

The Concentration Model and the process set out above will continue to be conducted by the RAs on a quarterly basis in line with the rolling approach to DCs as per SEM-12-026.

The PLEXOS validated forecast model has been updated since the first round of DCs and used in the derivation of DC quantities for Round 2 - see Appendix for details.

### **3. Directed Contract Pricing**

The prices of DCs are determined by regression formulae that express the DC strike price in a given quarter and for a given product (Baseload, Mid-Merit or Peak) as a function of forward fuel and carbon prices. The dependent variable in the regression formulae is the DC strike price; the independent variables are forward fuel and carbon prices.

The pricing formulae are updated every quarter in line with the new rolling approach to DCs as per SEM-12-026. Every 2<sup>nd</sup> quarter whole new pricing formulae will be derived (i.e. including the formulae constant and the coefficients) taking account of new market data such as generator data and demand assumptions, and every other quarter just the formulae constant is changed (as is the case this quarter).

Round 2 Base prices of DCs were derived from the validated market simulation model, PLEXOS, by taking the average of 10 PLEXOS runs, each based on different forced outage schedules. Forward fuel and carbon prices as at 4<sup>th</sup> September 2012

---

<sup>4</sup> Note the exact percentages shown in this table may vary depending on outturn DC volumes in future auction rounds.

were used. The constants of the DC pricing formulae were then updated so that the formulae match the Round 2 Base prices when forward fuel and carbon prices as at 4<sup>th</sup> September 2012 are inputted.

The PLEXOS validated forecast model has been updated since the first round of DCs - see Appendix for details.

The DC seller, ESB, will apply the approved published fuel and carbon indices to the regression formulae each day throughout the subscription window and notify suppliers who have elected to subscribe for DC products on that day of the calculated strike price. ESB contracts will be priced in euro.

It should be noted that if, between the publication date of the pricing formulae and a time at which it is applied during the subscription period, forward fuel or carbon markets move to a point outside the range of values for which there is sufficient confidence in the pricing formulae, the Regulatory Authorities reserve the right to suspend subscription and rerun the econometric pricing model or otherwise to amend the determination of the DC strike prices to correct any mispricing. The rerun would be done using the prevailing forward fuel and carbon prices as inputs. In this case, the resulting formulae would replace the original formulae and would be used to establish DC strike prices thereafter. The formulae may also be rerun if there is significant change to plant availability. The subscription window would reopen once the formulae have been revised.

The Directed Contract regression formulae take the following form:

$$DCStrike_{q,p} = \alpha_{q,p} + \beta_{q,p} * Gas_q + \delta_{q,p} * Coal_q + \epsilon_{q,p} * CO2_q + \eta_{q,p} * Gas_q^2$$

where:

$DCStrike_{q,p}$  = Directed Contract Strike Price (in €/MWh) for the relevant quarter (q) and product (p), i.e., baseload, mid-merit and peak.

$\alpha_{q,p}$  = formula constant, which may vary by quarter (q) and product (p).

$\beta_{q,p}$ ,  $\delta_{q,p}$ ,  $\epsilon_{q,p}$  and  $\eta_{q,p}$  = formula coefficients, which may vary by quarter (q) and product (p).

$Gas_q$  = the price (in pence sterling per therm) for quarterly Intercontinental Exchange Natural Gas Futures for the relevant quarter, as published on [www.theice.com](http://www.theice.com) as the "Daily Volumes for ICE UK Natural Gas Futures (Quarters)" ÷ (GBP/EURO Exchange Rate) / 100.

$Coal_q$  = the price (in US dollars per metric tonne) for quarterly Forward Coal API2 swap transactions, as reported by Argus Coal Daily International ÷ USD/EURO Exchange Rate.

$CO2_q$  = the settle price (in Euro per tonne of Carbon Dioxide) for the December month Intercontinental Exchange ECX EUA Carbon futures as reported on [www.theice.com](http://www.theice.com) as "ICE ECX EUA Futures (monthly)" for the given calendar

year. This data is available under the report section of this website once the following options are selected – Category “End of Day Report”; Market – “ICE Futures Europe”; Report – “ICE Futures Europe”. The December price for a given year will apply to all quarters falling within that year.

The values of the constants and the independent variable coefficients are set out in the table below.

Coefficients						
Multiply Gas coefficient by euro/therm Gas price and Gas <sup>2</sup> coefficient by the square of the euro/therm Gas price and all other coefficients by euro/tonne fuel or euro/tonne CO2 price.						
Contract (p)	Quarter (q)	Constant ( $\alpha_{q,p}$ )	Gas ( $\beta_{q,p}$ )	Coal ( $\delta_{q,p}$ )	CO2 ( $\epsilon_{q,p}$ )	Gas <sup>2</sup> ( $\eta_{q,p}$ )
Baseload	Q1 '13	11.29	62.039	0.0416	0.3810	0.000
Mid-Merit	Q1 '13	16.50	60.947	0.0572	0.4014	0.000
Peak	Q1 '13	119.72	-86.284	0.1182	0.3661	66.254
Baseload	Q2 '13	10.81	62.209	0.0239	0.4143	0.000
Mid-Merit	Q2 '13	14.70	60.974	0.0311	0.4250	0.000
Baseload	Q3 '13	11.35	61.135	0.0389	0.4350	0.000
Mid-Merit	Q3 '13	14.42	60.988	0.0485	0.4609	0.000
Baseload	Q4 '13	12.30	59.858	0.0513	0.3634	0.000
Mid-Merit	Q4 '13	14.77	62.199	0.0601	0.3819	0.000
Peak	Q4 '13	131.58	-122.212	0.1331	0.3175	90.410

## **Appendix**

### **Updates to the PLEXOS Validated forecast model since Round 1**

#### **Outages**

Generator outages have been updated with the latest information.

#### **Moyle Cable Outage**

One of the Moyle Interconnector's cables is on outage with no definite return date so its Max and Min Flow have been changed to 250MW and -250MW respectively.

#### **Price of Dump Energy**

Price of Dump Energy has been increased to -100,000 €/MWh.

#### **Demand File**

The demand CSV file has been updated to the 2013 load forecast published with the Decision Paper on BNE Peaker for 2013 here:

[http://www.allislandproject.org/en/cp\\_decision\\_documents.aspx?article=75c548a7-34ee-497c-afd2-62f8aa0062df](http://www.allislandproject.org/en/cp_decision_documents.aspx?article=75c548a7-34ee-497c-afd2-62f8aa0062df)

#### **ED1 Max Capacity**

ED1's Max Capacity in the model has been changed from 117.6MW to 112MW. ED1 is a Priority Dispatch plant. Although it is available up to 117.6MW it is usually nominated to a maximum of 112MW so that it can provide frequency response and also most efficiently fulfill the terms of its PSO contract. Therefore it is usually scheduled to a maximum of 112MW in the SEM.

#### **Embedded Generation File**

The Embedded Generation CSV file which used patterns has been replaced with a full half hourly CSV file. This ensures that the correct values are used from 00:00am to 06:00am every day. This half hourly CSV file is published with this Information Note.

#### **Great Island CCGT**

The new Great Island CCGT has been removed from the model as its expected commercial operation date now falls outside the modelling period.

#### **PLEXOS Version**

PLEXOS Version 6207R03 is used.