Single Electricity Market Committee

Directed Contracts – Q3 2013 to Q2 2014 Quantification and Pricing for March 2013 Auction (Round 4 of Quarterly Auctions)

Information Paper

11th March 2013

SEM-13-014

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[1]) 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 19th April 2012 of a SEM Committee[2] decision paper (SEM/12/026[3]) committing to a new rolling quarterly approach to the offering of DCs.

This paper follows the approach set out in the June decision paper (SEM-12-048) and provides information on quantities and pricing for the upcoming DC auctions covering the period Q3 2013 to Q2 2014. Suppliers will also receive notification from the RAs of their updated DC eligibilities for this round of auctions.

2. Directed Contract Quantities

Further to SEM/12/026 DC subscription windows are held every quarter, with DCs being allocated on a rolling basis up to 5 quarters ahead. The March 2013 DC Primary Subscription Window will be held from Tuesday 19th to Thursday 21st March inclusive, with the associated DC Supplemental Subscription Window on Thursday 28th March. DCs will be offered in quarterly segments for the period Q3 2013 to Q2 2014.

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.

To date, for the determination of DC volumes, the Moyle and East West interconnectors have been assumed to be 100% "competitive capacity" up to their availability.

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[1] Decision Paper on Directed Contracts Version 2 – SEM/12/048.

[2] 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.

[3] Directed Contracts Implementation for 2012/13 and Beyond - SEM/12/026

However, following consultation the SEM Committee (SEMC) decided to change this approach in a December 2012 decision paper[4]. The SEMC decided to model flows on both EWIC and Moyle assuming SMP + 5%, and to use the results in the Concentration model for DC quantity determination. This is now being applied for this round of DCs (and will be for subsequent rounds also).

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 Q3 2013 to Q2 2014. NI Power PPB's market share does not warrant the offering of DCs. The DC quantities to be offered by ESB for Q3 2013 to Q2 2014 are set out below. The total DC quantities offered by ESB to date for Q3 2013 to Q2 2014 (including these Round 4 quantities) are also shown below.

ESB DCs for Q3 '13 to Q2 '14 in Forthcoming Round 4 Auction, MW

QUARTER	BASELOAD	MIDMERIT	PEAK
Q3 2013	**78**	**53**	**N/A**
Q4 2013	**90**	**37**	**61**
Q1 2014	**75**	**54**	**54**
Q2 2014	**91**	**15**	**N/A**

Total DCs for Q3 '13 to Q2 '14 offered to date (including March 2013 auction)

QUARTER	BASELOAD	MIDMERIT	PEAK
Q3 2013	360	111	N/A
Q4 2013	303	58	61
Q1 2014	153	105	100
Q2 2014	91	15	N/A

Percentage of DCs offered to date (including March 2013 auction)[5]

QUARTER	BASELOAD	MIDMERIT	PEAK
Q3 2013	100%	100%	N/A
Q4 2013	75%	75%	75%
Q1 2014	50%	50%	50%
Q2 2014	25%	25%	N/A

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 Round 3 of quarterly DCs and used in the derivation of DC quantities for Round 4 - see Section 4 and Appendix for details.

[4] http://www.allislandproject.org/en/mmu_decision_documents.aspx?article=adbbabe4-3f59-4b0f-a560-8702bc54958e

[5] Note the exact percentages shown in this table will vary depending on outturn DC volumes in future auction rounds.

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 2nd 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 in Round 4).

The PLEXOS validated forecast model has been updated for this 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 for Round 4 take the following form:

$$DCStrike_{q,p} = \alpha_{q,p} + \beta_{q,p} * Gas_q + \delta_{q,p} * Coal_q + \varepsilon_{q,p} * CO2_q$$

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).

$\beta_{q,p}$, $\delta_{q,p}$, and $\varepsilon_{q,p}$ = 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 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 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, Coal coefficient by euro/tonne Coal price and CO2 coefficient by euro/tonne C02 price.					
Contract (p)	**Quarter (q)**	**Constant ($\alpha_{q,p}$)**	**Gas ($\beta_{q,p}$)**	**Coal ($\delta_{q,p}$)**	**CO2 ($\varepsilon_{q,p}$)**
Baseload	Q3 '13	7.93	63.760	0.0333	0.4137
Mid-Merit	Q3 '13	13.66	65.374	0.0359	0.4348
Baseload	Q4 '13	13.32	58.791	0.0453	0.4177
Mid-Merit	Q4 '13	21.13	61.584	0.0460	0.4393
Peak	Q4 '13	86.39	21.323	0.0877	0.3698
Baseload	Q1 '14	11.42	62.016	0.0313	0.4042
Mid-Merit	Q1 '14	19.34	63.048	0.0362	0.4313
Peak	Q1 '14	87.34	20.053	0.0586	0.3667
Baseload	Q2 '14	6.26	62.258	0.0428	0.4449
Mid-Merit	Q2 '14	9.95	66.046	0.0481	0.4722

4. Update to GB model

A proxy gas generator is used to model the GB price and to help model flows across the interconnectors. In the PLEXOS validated forecast model published on 27/06/2012 the GB model had twelve Heat Rates and VO&M costs (one for each traded EFA block for both summer and winter). These were based on analysis of the GB intraday price, Gas and Carbon prices, and Interconnector User bids over the period from November 2010 to October 2011.

These Heat Rates and VO&Ms are now out of date and were leading to unrealistic forecast flows on the interconnectors in modeling results.

Therefore, following analysis of the GB intraday price, Gas and Carbon prices, Capacity Payments, and Uplift values over the period from January 2012 to December 2012, the twelve Heat Rates and VO&Ms previously used to model interconnector flows have been replaced with a single Heat Rate of 5 GJ/MWh. This is a technical rather than policy change with respect to interconnector flow modeling, and is designed to forecast interconnector flows more accurately within PLEXOS and to replicate more realistic interconnector flow profiles.

Appendix

Updates to the PLEXOS Validated forecast model for Round 4

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 are still set at 250MW and -250MW respectively.

TLAFs

Generator TLAFs have been updated to the 2012/13 values found on the EirGrid website here:
http://www.eirgrid.com/customers/gridconnections/generatorconnections/transmissionlossadjustmentfactors/tlafdocumentationarchive/

GB Generator, Heat Rates and VO&Ms

The previous "EFA Block" Heat Rates and VO&Ms on the GB Generator have been replaced with a single Heat Rate of 5 GJ/MWh. See Section 4.

UK Carbon Floor

The UK Carbon Price Support is no longer being applied to Northern Ireland generator bids.

Great Island CCGT

The new Great Island CCGT has been included in the model from the start of Q2 2014.

PLEXOS Version

PLEXOS Version 6207R03 is used.