Firmus Energy (Distribution) Limited – Regulatory (P_i) Model Publication – Guidance Notes

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FE Published Pi Model – Guidance Notes

1. Background

1.1 The Utility Regulator (UR) stated its intention to publish[1] the conveyance charge (Pi) calculation model for the 2014 Gas Distribution Price Control (GD14) in the final determination document of 20th December 2013, subsequent to the final determination being published.

1.2 This publication is intended to aid transparency and sharing of key information between UR, key stakeholders and users of our Price Control determinations.

1.3 These brief guidance notes are intended solely as a guide. In order to fully understand the calculations being performed within the model these notes should be read in conjunction with the Firmus Energy (Distribution) Limited Conveyance Licence[2] **"The Licence".** For the avoidance of doubt these guidance notes will not change, alter, or amend, any definition or obligation contained within "The Licence" and, in the event of any inconsistency between "The Licence" and these guidance notes; "The Licence" will take precedence.

1.4 In simple terms the model calculates the annual revenues for calendar years 2014, 2015 and 2016 based on the approved GD14 determined allowances. FE has an incentive to outperform on determined volumes of gas. This model also considers allowances from 2017 to 2046, which is as a result of the operation of the licence. These are mainly based on assumptions, as derived from GD14 and as proposed by Firmus Energy (FE). At the next Price Control, the assumptions will be updated to reflect current proposals of that determination. These revenues are to enable FE to run their business in an efficient, safe and effective manner. The revenue recovery period is set so that FE will receive the bulk of their network investment within a reasonable timeframe (after which residual values will be returned).

1.5 All figures quoted in the published model are expressed in thousands of pounds sterling (GBP), unless otherwise stated, and in 2012 prices as the base year (more specifically based to average 2012 Retail Price Index), in line with the final determination document.

2. Terminology within the model

2.1 Definitions and Interpretation of terminology contained within the published model are detailed in Licence Condition 4.10.

2.2 Depreciated Asset Value (DAV), Total Regulatory Value (TRV) and Profile Adjustment (PA) are separately described and detailed below in sections 5, 6 and 7 respectively.

2.3 Formula years *m*, *n* and *q* are as defined in Licence Condition 4.4.4 and are updated at every Price Control.

[1] See paragraph 1.56 of the publication *"GD14 Price Control for Northern Ireland's Gas Distribution Networks for 2014-2016 – Final Determination- 20 December 2013"*.
[2] http://www.uregni.gov.uk/uploads/publications/BGEfirmus_Conveyance_Licence.pdf

3. Calculating Cash-flow

3.1 Cash-flow is the term used to describe the net allowed revenues or cash necessary to run the Gas Distribution Network. This is recovered via conveyance charges, which customers pay when using the network.

3.2 Per condition 4.6.6 of the Licence, cash-flow for formula year *t*, is defined in line with the formula,

$$F_{B,t} = \sum_{all\_i}\left(P_{B,i,t} \cdot V_{B,i,t}\right) - C_{B,t} - O_{B,t}$$

and calculated in line 28, sheet "Pi's Calc" of the published model.

3.3 $\sum_{all\_i}\left(P_{B,i,t} \cdot V_{B,i,t}\right)$ represents the summation for each conveyance category *i* of the product of revenue per therm and volume for the specific formula year *t*, known as total allowed revenue for year *t* and calculated in line 24, sheet "Pi's Calc" of the published model.

3.4 Subtracted from this allowed revenue are the following to achieve a value for the cash-flow for formula year *t*:

3.4.1 $C_{B,t}$ is the total best available Capital expenditure in formula year *t*, as described in Licence Condition 4.5.2 and calculated in line 25, sheet "Pi's Calc" of the published model;

3.4.2 $O_{B,t}$ is total best available Operating expenditure in formula year *t,* as described in Licence Condition 4.5.2 and calculated in line 26, sheet "Pi's Calc" of the published model;

3.5 The annual 'Discounted' cash-flow is calculated by multiplying the cash-flow in formula year *t* by the appropriate discount factor (based on the allowed cost of capital, which is reviewed and set at every Price Control) calculated in the formula year it relates to, where the discount factor is calculated in line with Licence Condition 4.6.4 and formula $\frac{1+r_{B,t} \cdot f_{B,t}}{(1+r_B)^{t-n}}$ as detailed in line 7, sheet "Pi's Calc" of the published model.

3.6 $\sum_{t=n+1}^{q}\left(F_{B,t}\left(\frac{1+r_{B,t} \cdot f_{B,t}}{(1+r_B)^{t-n}}\right)\right)$ is the summation of all 'Discounted' cash-flows to formula year *q* as described in Licence Condition 4.6.4 and calculated in Cell C32, sheet "Pi's Calc" of the published model.

4. Establishing Best Available Revenue per Unit

4.1 'Best available revenue per unit' is the term used to describe the allowed unit revenue that can be charged by FE for delivery of a unit (therm) of gas. This is be one component of a customer's gas bill, which is charged via a Gas Supply company. This is used in the calculation of the total Conveyance Revenue, being the summation of the total volumes times the appropriate revenue per unit of volume across all customer categories (designated "P"), for a given period. That is to say, the charge per therm of gas is ultimately dependent on the actual volume of gas that is flowed through the system, which provides the Total Conveyance Revenue.

4.2 In simple terms, the published model determines the allowed revenue for the GD14 price control period i.e. for calendar years 2014, 2015 and 2016 and PA at the end of 2016. FE is entitled to set its conveyance charges for calendar years 2014, 2015 and 2016 in order to recover this allowed revenue.

4.3 Per condition 4.6 of the Licence, best available revenue per unit is calculated in accordance with the formula,

$$\sum_{t=n+1}^{q}\left(F_{B,t}\left(\frac{1+r_{B,t}\cdot f_{B,t}}{(1+r_B)^{t-n}}\right)\right)-TRV_{B,n}+\frac{DAV_{B,q}}{(1+r_B)^{q-n}}=0$$

and represented in the calculations performed from Cell C32 to Cell C42, sheet "Pi's Calc" of the published model.

4.4 The summation of all 'Discounted' cash-flows to formula year *q* as described in paragraph 3.6 above, are adjusted by the following items in the formulation of the 'best available' revenue per unit (therm) required to achieve the correct level of allowed revenue on a flat basis across the period *t=n+1* to *t=q*:

4.4.1 $TRV_{B,n}$ is the best available closing TRV (detailed below in Section 6) calculated at *t=n* (i.e. the opening TRV for formula year *t=n+1*) as calculated in accordance with Licence Condition 4.6.8 and is subtracted from the summation of 'Discounted' cash-flows.

4.4.2 $\frac{DAV_{B,q}}{(1+r_B)^{q-n}}$ is the best available terminal value of the DAV (if Licence Condition 4.4.16 is applicable, that is the final DAV is positive), in year *q*, which is discounted back to year *t=n+1* at the appropriate discount factor, as described in Licence Condition 4.6.4, and added to the net value of the summation of 'Discounted' cash-flows minus TRV per 4.4.1 above.

4.5 The overall Licence Condition formula calculation in paragraph 4.3 above, is equated to zero, to ensure FE receive the correct allowed revenues to formula year *q*, assuming the conveyance charges remain flat across all future years.

4.6 The model requires a goal seek function to be performed in the case where there are any key input changes, in order to reconcile the change(s) through to the annual Pi category Conveyance Tariff. This ensures that the formula shown in 4.3 above (as calculated in Cell C42, sheet "Pi's Calc") equates to zero.

4.7 This goal seek function can be performed by running an inbuilt Macro within the model (by pressing **Ctrl + q**) to zero the calculation in cell C42, sheet "Pi's Calc", by solving the target P1 Domestic Conveyance Category within cell D18, sheet "Pi's Calc" (and in all other years, cells E18 to Y18), that all other P categories are assumed to be a function of, based on historical ratios.

4.8 Importantly it should be noted that the FE model will be reset for calendar years 2017 onwards as part of the next Price Control review to reflect the actualisation of previous years' data and to update forecast data to the best available values at that time.

5. Calculating the Depreciated Asset Value (DAV)

5.1 The DAV is the total value of network investment to date, or assets used in constructing or building the gas network, net of any accumulated depreciation charged against such investment, which attempts to write down the value of each asset over its useful economic life. This represents the regulated value of the physical assets of FE.

5.2 Per condition 4.6.7 of the Licence, the DAV is calculated in accordance with the formula, $DAV_{B,t} = DAV_{B,t-1} + C_{B,t} - D_{B,t}$ and represented in the calculations performed in the "DAV" sheet of the published model, the closing annual values are per Line 36, sheet "Pi's Calc" of the published model.

5.3 Licence Condition 4.6.7 provides a detailed description of the DAV breakdown as well as the above formulae for calculation, essentially the DAV in formula year *t*, equates to:

5.3.1 $DAV_{B,t-1}$ is the best available closing DAV in formula year *t-1*, which becomes the opening DAV in formula year *t*.

5.3.2 $C_{B,t}$ is the addition required to the opening DAV, in relation to best available Capital expenditure to be incurred in formula year *t*, such as that described in paragraph 3.4.1 above.

5.3.3 $D_{B,t}$ is the best available value of depreciation to be deducted for additions of Capital expenditure in formula year *t*, as well as depreciation for formula year *t*, in relation to un-depreciated expenditure from prior formula years.

6. Calculating the Total Regulatory Value (TRV)

6.1 The TRV is the Total Regulatory Asset Value of FE, on which it is allowed a cost of capital rate of return. This encompasses the aggregate value of FE's Capex, Opex, Profile Adjustment, Operating Rolling Incentive Adjustment and Capital Rolling Incentive Adjustment, summarised by the formula below in paragraph 6.2.

6.2 Per condition 4.6.8 of the Licence, the TRV is calculated in accordance with the formula, $TRV_{B,n} = DAV_{B,n} + DA_B + PA_B + ORI_B + CRI_B$ and represented in the calculations performed in Line 48, sheet "Pi's Calc" of the published model, where,

6.3 $DAV_{B,n}$ is the best available closing value of the DAV in the formula year *n* of the applicable price control period.

6.4 DA_B is the best available adjustment required for the difference between actual/forecast and determined depreciation for a price control period, described in Licence Condition 4.6.8 and calculated in Cell M14, sheet "Opening Values" of the published model.

6.5 PA_B is the best available Profile Adjustment value as described and calculated in Section 7 below, and represented by the calculations in Line 54 to Line 60, sheet "Pi's Calc" of the published model.

6.6 ORI_B is the best available value of the Operating Rolling Incentive calculation, as described and calculated in accordance with Licence Condition 4.6.10.

6.7 CRI_B is the best available value of the Capital Rolling Incentive calculation, as described and calculated in accordance with Licence Condition 4.6.11.

7. Calculating the Profile Adjustment (PA)

7.1 The PA represents revenue carried forward to future years as part of the TRV to be recovered through future revenues to maintain an even price profile over time. On this basis, the FE model profiles revenues across multiple price control periods (currently until 2035 as set out in licence condition 4.9, **"the recovery period"**). This ensures a balanced profile of cost recovery between current and future customers, reflecting the expected future increase in customer numbers (and hence volumes).

7.2 Per condition 4.6.9 of the Licence, the PA is calculated in accordance with the formula,

$$PA_B = -\left(\begin{array}{l} \sum_{t=m+1}^{n} F_{E,t}(1+r_{E,t}\cdot f_{E,t})\cdot(1+r_E)^{n-t} \\ -TRV_{E,m}\cdot(1+r_E)^{n-m} \\ +DAV_{E,n} \end{array} \right)$$

and represented in the calculations performed in Line 54 to Line 60, sheet "Pi's Calc" of the published model, where,

7.3 $\sum_{t=m+1}^{n} F_{E,t}(1+r_{E,t}\cdot f_{E,t})\cdot(1+r_E)^{n-t}$ is the calculation of 'adjusted' cash-flows grossed up for the impact of the annual rate of return for the previous price control period, calculated in Line 54, sheet "Pi's Calc" of the published model.

7.4 $TRV_{E,m}\cdot(1+r_E)^{n-m}$ is the calculation of the actual TRV in formula year *m*, grossed up for the impact of the annual rate of return for the previous price control period, calculated in Line 56, sheet "Pi's Calc" of the published model.

7.5 $DAV_{E,n}$ is the value of the DAV in the formula year *n* of the applicable price control period as determined by the Regulator at the price review as described in section 5, above.