Phoenix Natural Gas Limited – Regulatory (P$_i$) Model Publication – Guidance Notes

Final Version – June 2014

PNGL 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 Phoenix Natural Gas Limited Conveyance Licence[2] **"The Licence"**, the Retrospective Adjustments and the Rolling Capex Incentive agreed as part of PC03[3]. 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 allowed revenues for calendar years 2014, 2015 and 2016 based on the approved GD14 determined allowances. 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 Phoenix Natural Gas Limited (PNGL). At the next Price Control, the assumptions will be updated to reflect current proposals of that determination. These revenues are to enable PNGL to run their business in an efficient, safe and effective manner. The revenue recovery period is set so that PNGL 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 the September 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 2.3.23.

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.

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[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/PNGL_Conveyance_Licence.pdf
[3] See Appendix 5 of the PNGL12 Final Decisions Paper *"Phoenix Natural Gas Limited Price Control Review 2012-2013 – Final Decisions – January 2012"*.

2.3 Formula years *m*, *n* and *q* are as defined in Licence Condition 2.3.12 and are updated at every Price Control.

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 2.3.16 of the Licence, cash-flow for formula year *t*, is defined in line with the formula,

$$F_{B,t} = \sum_i \left(P_{B,i,t} \cdot V_{B,i,t} \right) - C_{B,t} - CC'_{B,t} - O_{B,t} - Q'_{B,t}$$

and calculated in line 30, sheet "Pi's Calc" of the published model.

3.3 $\sum_i \left(P_{B,i,t} \cdot V_{B,i,t} \right)$ 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* (see Licence condition 2.3.8) and calculated in line 23, sheet "Pi's Calc" of the published model. The allowed revenue is recovered in line with PNGL's published conveyance charges each year.

3.4 Subtracted (or added, dependent on +/- calculation) 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 2.3.14 and detailed in line 24, 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 2.3.14 and detailed in line 25, sheet "Pi's Calc" of the published model;

3.4.3 $CC'_{B,t}$ is the change in best available Capital Creditors from formula year *t-1* to year *t*, as described and detailed in Licence Condition 2.3.16 and calculated in line 26, sheet "Pi's Calc" of the published model;

3.4.4 $Q'_{B,t}$ is the change in best available working Capital from formula year *t-1* to formula year *t,* ,as described and detailed in Licence Condition 2.3.16 and calculated in line 27, sheet "Pi's Calc" of the published model; and

3.4.5 Any Capex Overspend adjustments for each formula year *t* in line with that described in paragraphs 15.15 – 15.16 of the final determination (see also paragraph 1.3) and set out in line 28, sheet "Pi's Calc" of the published model.

3.5 The annual 'Discounted' cash-flow is calculated by dividing 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 2.3.15 and formula $(1 + r_{B,n+1}) \cdot (1 + r_{B,n+2}) \ldots (1 + r_{B,t})$ as detailed in line 7, sheet "Pi's Calc" of the published model.

3.6 $\sum_{t=n+1}^{q} \left(\frac{F_{B,t}}{(1+r_B)^{t-n}} \right)$ is the summation of all 'Discounted' cash-flows to formula year q as described in Licence Condition 2.3.15 and calculated in Cell C34, sheet "Pi's Calc" of the published model.

4. <u>Establishing Best Available Revenue per Therm and Total Conveyance Revenue</u>

4.1 'Best available revenue per therm' is the term used to describe the allowed revenue that can be charged by PNGL for delivery of a unit (therm) of gas. This is one component of a customer's gas bill, which is charged via a Gas Supply company. The total Conveyance Revenue refers to 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. PNGL 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 2.3.15 of the Licence, best available revenue per therm and total allowed revenue is calculated in accordance with the formula, $\sum_{t=n+1}^{q} \left(\frac{F_{B,t}}{(1+r_B)^{t-n}} \right) - TRV_{B,n} + \frac{DAV_{B,q} + Q_{B,q} + CC_{B,q}}{(1+r_B)^{q-n}} = 0$ and represented in the calculations performed from Cell C34 to Cell C46, 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 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 2.3.18 and is subtracted from the summation of 'Discounted' cash-flows.

4.4.2 $\frac{DAV_{B,q} + Q_{B,q} + CC_{B,q}}{(1+r_B)^{q-n}}$ is the best available terminal values for DAV (if Licence Condition 2.3.20 is applicable, that is the final DAV is positive), Capital Creditors and Working Capital in year q, which are discounted back to year $t=n+1$ at the appropriate discount factor, as described in Licence Condition 2.3.15, and added (or subtracted dependent on whether these are positive or negative in formula year q).

4.5 The overall Licence Condition formula calculation in paragraph 4.3 above, is equated to zero, to ensure PNGL receive the correct allowed revenues to formula year q, assuming the revenue per therm remains flat across all

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future years. PNGL is entitled to set its conveyance charges for calendar years 2014, 2015 and 2016 in order to recover this allowed revenue, subject to regulatory approval.

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 C46, 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 C46, sheet "Pi's Calc", by solving the target P1 Domestic Conveyance Category within cell D17, sheet "Pi's Calc" (and in all other years, cells E17 to AJ17), 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 PNGL 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. <u>Calculating the Depreciated Asset Value (DAV)</u>

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 PNGL.

5.2 Per condition 2.3.17 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 38, sheet "Pi's Calc" of the published model.

5.3 Licence Condition 2.3.17 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 total 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 capital expenditure from prior formula years.

5.4 Per Licence Condition 2.3.17, it should be noted that *"The Depreciated Asset Value at the end of formula year t=n shall be subject to any direction that is set out in the Determination Notice for the preceding review that relates to the treatment of the difference between the actual value of Capital expenditure and the Determined value of Capital expenditure"*.

6. <u>Calculating the Total Regulatory Value (TRV)</u>

6.1 The TRV is the Total Regulatory Asset Value of PNGL, on which it is allowed a cost of capital rate of return. This encompasses the aggregate value of PNGL's Opening Total Regulatory value in 2006[4], which occurred when a new licence was granted and includes the following components; Capex, Opex, Profile Adjustment, Capital Creditors and Working Capital which is still to be recovered by future revenue and is summarised by the formula below in paragraph 6.2.

6.2 Per condition 2.3.18 of the Licence, the TRV is calculated in accordance with the formula,

$$TRV_{B,n} = DAV_{B,n} + Q_{B,n} + CC_{B,n} + PA_{B,n}$$ and represented in the calculations performed in Line 52, sheet "Pi's Calc" of the published model, where,

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

6.4 $Q_{B,n}$ is the best available value of Working Capital in year *n* of the applicable price control period, described in Licence Condition 2.3.23.

6.5 $CC_{B,n}$ is the best available value of Capital Creditors in year *n* of the applicable price control period, described in Licence Condition 2.3.23.

6.6 $PA_{B,n}$ is the best available Profile Adjustment value as calculated for the formula year *n* of the applicable price control period, in accordance with Licence Condition 2.3.19 and represented by the calculations in Line 58 to Line 68, sheet "Pi's Calc" of the published model.

7. <u>Calculating the Profile Adjustment (PA)</u>

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 PNGL model profiles revenues across multiple price control periods (currently until 2046 as set out in licence condition 2.3.22, **"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).

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[4] As detailed per:
http://www.uregni.gov.uk/uploads/publications/Notice_of_Modifications_to_PNGL_Licence.pdf

7.2 Per condition 2.3.19 of the Licence, the PA is calculated in accordance with the formula,

$$PA_{E,m} = -\left(\sum_{t=m+1}^{n} F_{E,t}(1+r_E)^{n-t} - TRV_{E,m}(1+r_E)^{n-m} + DAV_{E,n} + CC_{E,n} + Q_{E,n} \right)$$

and represented in the calculations performed in Line 58 to Line 68, sheet "Pi's Calc" of the published model, where,

7.3 $\sum_{t=m+1}^{n} F_{E,t}(1+r_E)^{n-t}$ is the calculation of 'adjusted' cash-flows grossed up for the impact of the annual rate of return, calculated in Line 58, sheet "Pi's Calc" of the published model.

7.4 $TRV_{E,m}(1+r_E)^{n-m}$ 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 60, 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.

7.6 $CC_{E,n}$ is the determined value of Capital Creditors in year n of the applicable price control period, described per Licence Condition 2.3.23.

7.7 $Q_{E,n}$ is the determined value of Working Capital in year n of the applicable price control period, described per Licence Condition 2.3.23.