Distribution Tariffs

For the

Gas Year 2016/17

17th August 2016

1. Introduction

Gas Networks Ireland (GNI) welcomes the opportunity to present its paper to the CER on the Distribution Tariffs for 2016/17. This paper outlines the allowable revenue calculation for 2016/17 by applying the Revenue Control Formula.

The calculation of the 2016/17 Distribution tariffs involves four steps:

1. Updating the CER Allowed Revenue for 16/17 to reflect the incremental Opex and Capex allowances allowed by the CER.

2. Deriving the allowed revenue through application of the Revenue Control Formula;

3. Forecasting system demand for 2016/17;

4. Calculating unit capacity and commodity tariffs using the existing tariff structure based on the allowed revenue set against projected peak day and annual volume figures.

2. Executive Summary

Applying the Revenue Control Formula and incorporating up-to-date demand forecasts results in a real tariff decrease of circa 1.1% (nominal increase of circa 0.2%) on a weighted average basis (based on 80/20 capacity/commodity split) when compared to 2015/16 tariffs.

The price control determines the allowed revenues for a 5-year period. GNI has calculated the 2016/17 revenue in line with the price control decision of November 2012, and the CER's subsequent updates. When compared with the CER's original 2016/17 allowed revenue, there has been an increase of €1.4m in nominal monies. This is the net effect of the incremental 2016/17 Capex and Opex allowances.

The 2016/17 allowed revenue has also been adjusted to reflect forecast Pass-through costs such as Local Authority Rates, Safety Advertising, Gas Shrinkage and an adjustment for revenue over-recovery during 2014/15. A correction for the 2012/13 over-recovery is also included, as this over-recovery is being corrected over three tariff periods as opposed to the standard single tariff period, as directed by the CER.

Having updated the CER published 5 year allowance for PC3 and run the Revenue control formula as stated above, the GNI revenue requirement for 16/17 is c. €191.25m.

The following sections outline the application of the Revenue Control Formula and discuss the tariff calculation in more detail.

3. Allowable Revenue Calculation for 2016/17[1]

The allowable revenues for the *Price Control 3 period* are derived in accordance with the Revenue Control Formula. This is in line with the Price Control decision, "Decision on October 2012 to September 2017 Distribution Revenue for Bord Gáis Networks - Decision Paper (CER/12/194)".

In calculating the allowable revenue for *2016/17*, GNI have applied the Revenue Control Formula. The allowed revenues are adjusted annually to take account of certain uncontrollable costs, i.e. pass-through costs, inflation and any revenue over/under-recoveries.

Details of each calculation and adjustment to the original Allowed Revenue are discussed below.

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[1] *All values are as per GNI Revenue Models and as such may contain rounding variations.*

a) *Allowable Revenue derived from the Revenue Control Formula*

The allowable revenue for 2016/17 is calculated by applying the Revenue Control Formula as outlined above. Calculation of the correction factor, K_{t-1} for the close out of 2014/15 is as outlined in the Price Control decision for the period 2012/13 – 2016/17.

In applying the Revenue Control Formula the following values were assumed or updated:

Inflation[2]
- In setting the 2016/17 tariffs, 1.30% inflation was assumed for the time period from April 16 to March 17.

Euribor[3]
- 2014/15 Euribor of 0.35% which represents an average 12-month rate to May 22nd 2015.
- 2015/16 Euribor of 0.08% which represents an average 12-month rate to May 23rd 2016.

Please see Appendix 3 for an explanation of the interest rate multiplier/Euribor rates.

GNI have received CER approval to include Opex costs for the Apprenticeship Scheme, a Technical Training program, the PPM Front Office Project and growth related projects such as the Towns Refresh Campaign and Innovation. Approval for Capex costs for Listowel Town and the PPM Front Office Project has also been received. As these costs were not approved in the original Price Control 3 decision, GNI have followed the CER guidance per sec. 8.5 of CER/12/194 and made subsequent applications, as part of the 16/17 tariff setting process.

The net effect of this adjustment results in the 16/17 allowed revenue increasing by €1.4m.

The revenue derived from applying the Revenue Control Formula is as follows:

€m 16/17 monies						
2016/17 Allowed Revenue (Aug '15)	Re-calculated 2016/17 Allowed Revenue - 2016/17 Tariff	2016/17 Revised Pass Through Costs	2012/13 Correction	2014/15 Correction	Revenue Requirement	% Variation
196.44	197.85	-1.00	-2.38	-3.22	191.25	-2.65%

The differences between the revised allowed revenues determined as part of the 2015/16 Tariff Decision and the allowed revenues derived from applying the Revenue Control Formula are due to a combination of factors:

1) Projected changes in forecast pass-through costs for 2016/17 (-€0.998m);

2) K-Factor adjustment for 2014/15 (which includes 3rd year of 2012/13 correction) of -€5.60m

    a. Impact of the close out for 2014/15 (-€3.222m);
    b. Impact of the close out for 2012/13 - Year 3 (-€2.380m);

Each of these factors is described in more detail below.

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[2] Inflation for 2016/17 is estimated to be 1.30%, based on blended rates from; *Irish Central Bank Quarterly Bulletin* - Apr'16; *ESRI Quarterly Economic Commentary* - Jun'16; *Dept. of Finance Draft Stability Program Update* - Apr'16.
[3] This is used to uplift revenue over-recoveries for the 2014/15 tariff year. Revenue over-recoveries up to 103% and under-recoveries attract an interest rate of Euribor + 2%. Any over-recovery over 103% of allowable revenue attracts an interest rate of Euribor + 4% for Year $_{t-1}$.

1) <u>Revised Forecast for 2016/17</u>

The original submitted Pass-through Costs used to determine the proposed allowed revenues for Price Control 3 have been revised to reflect the following parameters:

- Lower Local Authority rates than forecast, as the 2016 Global Valuation Process delivered rate reductions;
- Higher Safety Advertising costs;
- Lower than forecast Shrinkage gas costs due to lower forecast wholesale gas prices and exchange rate;

The impact of each of these factors on the total revenue requirement for 2016/17 is summarised in the table below:

16/17 Forecasts		€m	Saving/Charge
Pass-through Costs			
	Rates	-1.23	Saving
	Safety	1.81	Charge
	CER Levy	-0.50	Saving
	Gas Shrinkage	-1.08	Saving
Pass-through Costs Difference - *Reduction*		-1.00	
Total 16/17 Variance (16/17 monies)		**-1.00**	Saving

For the Price Control a cost sharing incentive is in place for rates and safety.

In relation to rates, if the actual costs differ from the proposed allowance then 50% of the difference will be borne by, or to the benefit of GNI and 50% by the customers.

When forecasting safety costs 100% of the difference between the allowance and the forecast will be passed through to the customer. When closing out safety costs for 2016/17, the forecast is measured against actual output and 50% of the difference between the forecast safety costs and actual safety costs will be passed through.

2) <u>Correction Factor 2014/15</u> (K_{t-1})

This correction factor adjusts for the difference between 2014/15 actual revenues and pass-through costs versus 2014/15 projected revenues and pass-through costs forecasted in August 2014 when 2014/15 Tariffs were set. The close out of 2014/15 has resulted in an over-recovery of **€3.222m**. This is made up of an over-recovery of revenue for 2014/15 of -€2.284m less the lower outturn pass-through costs, particularly the Revenue Protection costs. The increase in Shrinkage was due to a variation in the Sterling to Euro rate from a forecast rate of 0.82 to an actual rate of 0.74.
Refer to table ***14/15 Actual: Out-turn (K_{t-1})*** for further detail on this correction factor.

3) <u>Correction Factor 2012/13</u> (K_{t-3})

This correction factor adjusts for the difference between 2012/13 actual revenues and pass-through costs versus 2012/13 projected revenues and pass-through costs forecasted in August 2012 when 2012/13 Tariffs were set.
The close out of 2012/13 had resulted in an over-recovery of **€5.63m**. One third of this over-recovery was returned through the 2014/15 tariff, with another third returned through the 2015/16 Tariff. The final third of this over-recovery is being returned through the 2016/17 Tariff. This calculation takes into account the NPV value of the over-recovery - returning a value of €2.38m.

14/15 Actual: Out-turn (K$_{t-1}$)	€m	*Saving/Charge*
Revenue Over Recovery	-2.28	
Passthrough Costs		
Rates	-0.12	*Saving*
Safety	-0.14	*Saving*
CER Levy	-0.08	*Saving*
Gaslink	-0.02	*Saving*
Gas Shrinkage	0.11	*Charge*
Revenue Protection	-0.56	*Saving*
Pass-through Costs Difference	**-0.80**	*Saving*
Total 14/15 Adjustment	-3.08	
Euribor Interest Rate Multiplier (14/15 & 15/16)	1.045	
Total 14/15 Savings inclusive of multiplier	**-3.22**	
12/13 Correction - Year 3:		
12/13 Revenue Over Recovery	-2.38	
Total Adjustment	-5.60	

Please see Appendix 2 for the correction formulae calculations.

Revenue Summary

When the impact of the additional costs were taken into account, the 2016/17 Allowed Revenue increased by €1.4m from €196.44m to €197.85m. The revenue correction factors were then calculated and included, and as a result of these the total revenue requirement for the gas year 2016/17 decreased by approximately €6.60m to €191.25m (in 16/17 monies). This increase is mainly due to correcting for 2014/15 forecast inflation.

A summary of the calculation of this figure can be seen in the table below, which highlights:
- The increase of €1.4m as a result of the additional costs requested for 2016/17.
- The subsequent application of the correction factors increases the allowed revenue to €191.25m.
- Overall, the 16/17 Tariff revenue has decreased by 2.65%.

Revenue Requirements (16/17 monies)	€m	€m
Allowed Revenue - CER Decision Tariff 15/16.		196.4
Allowed Incremental Costs	1.4	
Recalculated Allowed Revenue		197.8
Total Revenue Correction Factor	- 6.6	
Final 2016/17 Revenue		191.2

4. Revised Demand

The revised forecast demand figures are based on the latest up-to-date demand information for gas year 2016/17. The table below shows the variance between the original PC3 Decision forecast volumes for 2016/17 and the final forecast volumes for both the 2015/16 Tariff & 2016/17 Tariff Setting Processes. As per Tariff setting 2015/16, the current demand projections have increased for commodity and decreased for capacity from the PC3 projections.

Total Demand	Original PC3 Decision: 16/17 Forecast Demand	15/16 Tariff Setting: 15/16 Forecast Demands	16/17 Tariff Setting: 16/17 Forecast Demands	% Change Tariff Setting Demands.
Commodity GWh	14,626	15,344	15,372	0.2%
Capacity GWH/pk Day	118.27	113.58	112.15	-1.3%

The final forecast is based on the approved annual AQ and SPC capacity setting procedures between CER and GNI for the existing DM and NDM customers and a projected demand for new NDM customer connections.

Capacity and commodity forecasts for new DM connections are based on the values provided in the connection agreement on which the connection is designed.

Non-daily Metered demand for the existing customers is based on the sum of individual capacities and commodities set in accordance with the approved procedures between CER and GNI for the customers connected to the system as at *May 1, 2016*. Capacity demand was then adjusted upwards to reflect the additional new DM and LDM connections to the network while commodity demand was adjusted downwards to reflect the projected increase in residential and IC energy efficiency and the lower connection numbers.

The overall NDM capacity demand has declined over the past few years. This has been reflected in a decrease in the key NDM capacity demand forecasting parameter, the *1-in-50 NDM parameter*. This capacity demand decrease has been further influenced by a decrease in residential NDM demand as a proportion of the overall NDM Sector (from 67.2% in 08/09 to 61.8% in 15/16). Residential NDM demand is more temperature sensitive, which drives a higher peak capacity requirement.

5.   Tariff Calculation

The following 2016/17 capacity and commodity tariffs were derived based on the allowed revenue and projected peak day and annual volume figures, using the tariff structure outlined in the Price Control 3 Decision Paper.

2016/17 Proposed Distribution Tariff

Volume Range (MWh)		Capacity Charge (c/pk day kWh)		
>	*< or =*	*A*	*B*	*Total*
0	73	154.5120		154.5120
73	14,653	136.7805	3.9764	A - B *Ln(PDV[MWh])
14,653	57,500	341.7271	49.0381	A - B *Ln(PDV[MWh])
57,500		42.1410		42.1410

Volume Range (MWh)		Commodity Charge (c/kWh)		
>	*< or =*	*A*	*B*	*Total*
0	73	0.3370		0.3370
73	14,653	0.2692	0.0262	A - B *Ln(PDV[MWh])
14,653	57,500	0.3137	0.0414	A - B *Ln(PDV[MWh])
57,500		0.0613		0.0613

The table below shows the first category tariff changes from 2015/16 to 2016/17 in both real and nominal terms. The percentage changes are the same for the other three tariff categories.

	2015/16 Tariff		2016/17 Tariff	Nominal	Real
	15/16 charge in 15/16 monies (Nominal)	15/16 charge in 16/17 monies	16/17 charge in 16/17 monies (Nominal)	15/16 charge in 15/16 monies vs 16/17 tariff	15/16 charge in 16/17 monies vs 16/17 tariff
Capacity charge	153.6833	155.6812	154.5120	0.5%	-0.8%
Commodity charge	0.3412	0.3456	0.3370	-1.2%	-2.5%
				% change in Weighted Tariff	
				0.2%	-1.1%

This method results in an overall nominal increase of 0.2% in average unit charges including inflation (+0.5% for capacity and -1.2% for commodity) or a decrease of 1.1% in real terms (-0.8% for capacity and -2.5% for commodity) on the 2015/16 distribution tariff.

6. Worked Example

Distribution unit rates are designed to decrease with customer size for most users. Small customers (with annual consumption <=73MWh) and very large customers (with annual consumption >=57,500MWh) pay a flat charge per unit of capacity and throughput. For all other customers (with annual consumption between 73MWh and 57,500 MWh), unit charges are generally designed to decrease with customer size (and hence their peak day requirements). The use of a logarithmic function in the tariff formula ensures that unit rates decrease with customer capacity requirements in a non-linear fashion. Coefficients A and B in the tariff formulae are constants that are adjusted annually to ensure the recovery of allowed revenue. Hence, the percent increase/decrease in the coefficients represents the percent increase/decrease in unit rates, all other things being equal (i.e. the capacity remains the same).

The example below illustrates how the tariff charges are calculated for a customer with an annual consumption of 5,000MWh and capacity of 27.397MWh

Capacity Charge

Capacity Unit Charge = 136.7805 – 3.9764* *Ln* (27.397) = 123.6169 c/kWh-pk day
(This represents a 0.5% increase over 2015/16 rates)

Annual Capacity Charge = 123.6169 * 27,397 / 100 = €33,867

Commodity Charge

Commodity Unit Charge = 0.2692 – 0.0262 * *Ln* (27.397) = 0.18246 c/kWh
(This represents a 1.2% decrease over 2015/16 rates)

Annual Commodity Charge = 0.18246 * 5,000,000 / 100 = €9,123

Total Distribution Charge

Capacity Charge + Commodity Charge = €33,887 + €9,133 = €42,990

Compared to the 15/16 tariff in 16/17 monies (a charge of €42,924) - This represents an increase of approximately 0.2% including inflation for this customer.

The above example illustrates the calculation of the 2016/17 distribution tariffs and comparison to the last year's charges for a particular customer assuming constant consumption levels in terms of throughput and peak day volume.

APPENDIX 1: Revenue Control Formula Calculation

$$R_{t+1} = \left\{ \left[\prod_{j=2007/8}^{t+1} \left(1 + \frac{HICPD_j}{100} \right) \right] * \left[B_{t+1} + \sum_{g=1}^{N} P_{g,t+1} * (CF_{g,t+1} - C_{g,t+1}) \right] \right\} + PF_{t+1} + K_{t-1}$$

Description		Formula Ref	Value
Inflation *(Cumulative Effect)*		*HICPDj*	3.52%
Allowed Revenues *(Base Assumption)*	*2010/11 monies*	B_{t+1}	191.11
Connection differences cost	*2010/11 monies*	$P_{g,Ct+1}$ * $(CF_{t+1} - C_{t+1})$	
Pass-through Costs *(Forecasts - Base Assumption)*	*Year t+1 monies*	PF_{t+1}	-1.00
Correction factor K_{t-1}	*Year t+1 monies*	K_{t-1}	-5.60
Allowed Revenue in t+1	*Year t+1 monies*	**R_{t+1}**	**191.25**

Total Revenue Requirement = €191.25m

APPENDIX 2: Correction Factor Calculations (K_{t-1})

$$K_{t-1} = \begin{bmatrix} R_{t-1} * \left\{ \left(\dfrac{1 + \dfrac{HICPA_{t-1}}{100}}{1 + \dfrac{HICPF_{t-1}}{100}} \right) - \left(\dfrac{1 + \dfrac{HICPR_{t-1}}{100}}{1 + \dfrac{HICPF_{t-1}}{100}} \right) \right\} + \\ \left\{ \left[\displaystyle\prod_{j=2003/4}^{t-1} \left(1 + \dfrac{HICPA_j}{100} \right) \right] * \displaystyle\sum_{g=1}^{N} P_{g,Ct} \left(CA_{g,t-1} - CR_{g,t-1} \right) \right\} - \\ PA_{t-1} - \left(AR_{t-1} - FR_{t-1} \right) \end{bmatrix} * \left(1 + \dfrac{I_t}{100} \right) * \left(1 + \dfrac{I_{t-1}}{100} \right)$$

CORRECTION FACTORS			
	Period t	2015/16	
	Period t-1	2014/15	

CALCULATION OF K_{t-1}

Description		Formula Ref	Value
Allowed Revenue period t-1	*Year t-1 Monies*	R_{t-1}	193.28
Actual Inflation t-1		$HICPA_{t-1}$	2.81%
Forecast Inflation t-1		$HICPF_{t-1}$	3.74%
Calculation - Revenue * Inflation	$R_{t-1} * \{(1+ HICPA_{t-1}) /(1+ HICPF_{t-1})-(1+ HICPR_{t-1})/(1+ HICPF_{t-1})\}$		**191.55**
Cummulative Inflation		$HICPAj$	2.81%
Actual Customer Connections v Forecast	*2010/11 monies*	$Pc_t * (CA_{t-1} - CR_{t-1})$	
Calculation - Customer Connections	$(1+HICPA_j) * Pc_t * (CA_{t-1} - CR_{t-1})$		**0.00**
Expected pass-through costs less Actual	*Year t-1 Monies*	PA_{t-1}	0.80
Actual Revenue Recovered in period t-1	*Year t-1 Monies*	AR_{t-1}	193.83
Calculation - Actual Revenue	$- PA_{t-1} - (AR_{t-1}-FR_{t-1})$		**-194.63**
Actual Revenue Recovered vs Allowed			100%
Interest Rate period t		I_t	2.08%
Interest Rate period t-1		I_{t-1}	2.35%
Correction Factor period t-1		K_{t-1}	**-3.22**

Correction Factor period t-3	**-2.38**
Total Correction Factor	**-5.60**

Correction Factor for 2012/13's Revenue Recovery Profile.

3 Year Revenue Over-Recovery (2012/13)	
Revenue to be recovered in Year 1 (2014/15)	-1.88
Revenue Recovery over Subsequent 2 Years	-4.10
Total Revenue to be recovered over 3 years	-5.63
Revenue to be recovered in 2015/16	-2.05
Revenue to be recovered in 2016/17 (NPV)	-2.38

APPENDIX 3: Interest Rate Multiplier/Euribor Rates

The interest rate multiplier is used to uplift revenue over/ under - recoveries for the tariff year 2014/15. In 2014/15 Distribution had a revenue under-recovery. Revenue under -recoveries attract an interest rate of Euribor + 2%. The Euribor Rate applied is based on information downloaded from the Euribor website: http://www.euribor.org/html/content/euribor_data.html.

Table 3 - Interest Rate Multiplier/Euribor Rates

Euribor 14/15	0.35%	
Euribor 15/16	0.08%	
Euribor +2% 14/15	2.35%	(I_{t-1})
Euribor +2% 15/16	2.08%	(I_t)
The interest rate factor to be calculated as:		
$(1+I_{t-1}/100)^{\wedge}(1+I_t/100)$	1.045	