

**Distribution Tariffs**  
**for the**  
**Gas Year 2008/09**

**4 July 2008**



## 1. Introduction

Bord Gais Networks (BGN) welcomes the opportunity to present its paper to the CER on the Distribution Tariffs for 2008/09. This paper outlines the allowable revenue calculation for 2008/09 by applying the Revenue Control Formulae as determined by the CER in previous decisions and the resultant indicative tariffs.

The calculation of 2008/09 Distribution tariffs involves three steps:

1. Deriving the allowed revenue through application of the revenue control formulae;
2. Forecasting system demand;
3. 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 Formulae and incorporating up-to-date demand forecasts results in a real tariff increase of 2.7% (7.4% including inflation) for capacity and 1.3% (6.0% including inflation) for commodity charges or 2.4% (7.1% including inflation) on a weighed average basis (based on 80/20 capacity/commodity split). The increase is due to lower overall demand for capacity and commodity than originally forecast as part of Price Control 2 (PC2) for 2008/09, the inflation adjustment and a slight increase in allowed revenue from the K factor adjustment.

While the Distribution unit tariffs are projected to increase, a large portion of the increase will be mitigated as a result of the reduction in individual customer capacity and demand requirements and therefore the average cost per customer in 2008/09 is estimated to increase by 2.4 % (including inflation).

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

## 3. Allowable Revenue Calculation for 2008/09

The allowable revenues for this control period are calculated in accordance with previous CER decisions.

In calculating the allowable revenue for 2008/09, BGN have Applied the Revenue Control Formulae. The original allowed revenues are adjusted annually to take account of certain uncontrollable costs (a.k.a. pass-through costs), number of customer connections, inflation and any revenue over/under-recoveries.

Details of each calculation and adjustment are discussed below.

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

The allowable revenue for 2008/09 is calculated by applying the Revenue Control Formula according to the CER decision (CER/07/111) and the amended correction factor formula in "Distribution Use of System Revenue Requirement and Tariffs" 1 October 2004 – 30 September 2005 (CER/04/283) for closing out 2006/07.

The Revenue Control Formulae set out the parameters for the calculation of the allowable revenue to be recovered for a given gas year (in this case 2008/09 gas year). The formulae adjust the Original CER Allowed Revenues for revised forecast/outturn inflation, pass-through costs, customer connections and any over or under-recoveries. In applying the formulae the following values were assumed or updated:

Inflation

- In setting the 2008/09 tariffs, 3.3% inflation was assumed for the time period from April 08 to March 09<sup>1</sup>
- The inflation used to bring the PC2 allowances for '08/09 up to 2008/09 monies is 10.23%<sup>2</sup> and includes an adjustment for moving from the Price Control 1 methodology to the Price Control 2 methodology

Euribor<sup>3</sup>

- 2006/07 Euribor of 4.368% which represents an average 12-month rate
- 2007/08 Euribor of 5.418% which represents an average 12-month rate

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

As agreed with the CER, pass through costs include: Rates, Safety Advertising and Initiatives, CER Levy, Gaslink (ISO) and Gas Shrinkage. These costs are influenced by factors that are largely outside BGN's control.

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

<i>€m 08/09 monies</i>				
<b>Original CER Allowed Revenue</b>	<b>Revenue Control Formula Adjustment</b>	<b>Total 2008/09 Revenue Requirement</b>	<b>% Change v. Original</b>	
<b>193.01</b>	<b>0.26</b>	<b>193.27</b>	<b>0.1%</b>	

The differences between the original allowed revenues determined at the outset of the current control period and the allowed revenues derived from applying the revenue control formulae are due to a combination of the following factors:

- 1) Projected changes in forecast pass-through costs and customer connections for 2008/09;
- 2) Impact of the correction factor within the formula.

<i>values in 08/09 monies</i>	<b>€m</b>
<b>Revenue Control Formula Adjustment</b>	
Revised 08/09 Forecast	<b>-1.26</b>
2006/07 Correction Factor (Kt-1)	<b>1.52</b>
<b>Total Revenue Control Formula Adjustments</b>	<b>0.26</b>

Each of these factors is described in more detail below.

- 1) Revised Forecast for 2008/09

The original forecast used to determine the allowed revenues for this control period have been revised to reflect the following parameters:

<sup>1</sup> The inflation for 2008/09 is estimated to be 3.3% based on the HICP figure for April'08.

<sup>2</sup> Inflation of 2.9% (2005/06 to 2006/07) by 3.7% (2006/07 to 2007/08) by 3.3% (2007/08 to 2008/09) gives a total inflation (actual and projected) of 10.23%.

<sup>3</sup> This is used to uplift revenue over/under-recoveries for the previous 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%.

- Projected decrease in customer connections resulting in a decrease in revenue allowance (Customer connections for 2008/9 are projected at 23,600 compared to 31,935 on which the original allowed revenue was based);
- Shrinkage gas costs are higher than forecast due to a large increase in natural gas market prices;
- Projected decrease in Rates charges
- Safety costs are forecast to be marginally lower than forecast as part of the Price Review for 2008/09
- CER Levy has increased based on amounts billed from CER in 2007

The impact of each of these factors on the total revenue requirement for 2008/09 is summarised in the table below:

<b>08/09 Forecasts</b>	<b>€m</b>
Connection Differences Cost	-1.04
Pass-through Costs	
Gas Shrinkage	1.74
Gaslink	0.00
Rates	-2.53
Safety	-0.21
CER Levy	0.78
Pass-through Costs Difference	-0.22
<b>Total 08/09 Adjustment (08/09 monies)</b>	<b>-1.26</b>

Please see Appendix 1 for additional details and calculations.

For Price Control 2 a costs sharing incentive is introduced for rates, safety and Gas Shrinkage. If the actual costs differ from the PC2 allowance then 50% of the difference will be borne by BGN and 50% by the customers. It is proposed that this mechanism would apply in the year of close out when actual figures for pass through costs are known.

## 2) Correction Factor

The correction factor adjusts for differences in revised forecasted and actual outturn revenues of the previous period (i.e. 2006/07).

### ➤ *Correction Factor 2006/07 ( $K_{t-1}$ )*

This correction factor adjusts for the difference between 2006/07 actual revenues, pass-through costs and customer connections versus 2006/07 projected revenues, pass-through costs and customer connections forecasted in June 2007 when 2007/08 allowed revenues were set.

As can be seen from the table below, the under recovery of revenue for 2006/07 of €3.80m is offset by lower outturn pass-through costs, particularly for Gas Shrinkage and Safety costs.

<b>06/07 Actual - Outturn (Kt-1)</b>	<b>€m</b>
Revenue Under/(Over) Recovery	3.80
Connection Differences Cost	-0.41
Pass-through Costs	
Gas Shrinkage	-1.01
GPRO & Market Opening	0.11
Rates	-0.52
Safety	-1.18
CER Levy	0.56
Pass-through Costs Difference	-2.05
Total 06/07 Adjustment (06/07 monies)	1.33
Interest Rate Multiplier	X 1.14
<b>Total 08/09 Adjustment (08/09 monies)</b>	<b>1.52</b>

Please see Appendix 2 for the correction formula calculations and assumptions.

### Revenue Summary

As a result of these calculations and adjustments, the total revenue requirement for the gas year 2008/09 is €193.27 million (in 08/09 monies). A summary calculation of this figure can be seen in the table below.

<i>values in 08/09 monies</i>	€m
Original CER Allowed Revenue	193.01
Revenue Control Formula Adjustments	
Forecast 2008/09	-1.26
2006/07 Correction Factor (Kt-1)	1.52
Total Revenue Control Formula Adjustments	0.26
<b>Final 2008/09 Revenue</b>	<b>193.27</b>

The table shows an increase of approximately €0.26 million or 0.1% including inflation over the original base case revenue. As mentioned previously, this increase is due to the projected changes in pass through costs for 2008/09 and the correction factor adjustment for 2006/07.

#### 4. Revised Demand

The revised forecast demand figures are based on latest up-to-date demand information as opposed to the demand projections for gas year 2008/09 that were published in the original CER document setting the revenues for the current control period (CER/07/111). The table below shows the variance between the original and forecast volumes.

<b>Total Demand</b>	<b>08/09 Original</b>	<b>08/09 Projected</b>	<b>% Change</b>
Capacity <i>GWh/pk Day</i>	115.4	113.3	-1.8%
Commodity <i>GWh</i>	16,133	15,777	-2.2%
<b>Weighted Average</b>			-1.9%

The original forecast demand was based on estimated Daily Metered (DM) and Non Daily Metered (NDM) demands. The revised forecast is based on the approved procedures between CER and BGN 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 based 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 BGN for the customers connected to the system as at **May 29, 2008**. This demand was then adjusted upwards to reflect projected growth in customer numbers during two periods, between June 2008 – September 2008 and October 2008 – September 2009. The projected growth in gas demand for these two periods combined is approximately 3%.<sup>4</sup>

<sup>4</sup> As customers are connected to the network throughout the year, an average demand for the gas year 2008/09 is used.

## 5. Tariff Calculation

The following 2008/09 capacity and commodity tariffs were derived based on the allowed revenue and projected peak day and annual volume figures discussed above using the same tariff structure as in last year's tariff.

### **2008/09 Proposed Distribution Tariff**

Volume Range (MWh)		Capacity Charge (c/pk day kWh)		
>	< or =	A	B	Total
0	73	148.6649		148.6649
73	14,653	131.6044	3.8259	A - B *Ln(PDV[MWh])
14,653	57,500	328.7952	47.1824	A - B *Ln(PDV[MWh])
57,500		40.5463		40.5463
Volume Range (MWh)		Commodity Charge (c/kWh)		
>	< or =	A	B	Total
0	73	0.3049		0.3049
73	14,653	0.2434	0.0237	A - B *Ln(PDV[MWh])
14,653	57,500	0.2837	0.0374	A - B *Ln(PDV[MWh])
57,500		0.0555		0.0555

*This method results in an overall increase of 7.1% in average unit charges including inflation (7.4% for capacity and 6.0% for commodity) or 2.4% in real terms (2.7% for capacity and 1.3% for commodity) on the 2007/08 distribution tariff.*

This overall increase can be largely explained by inflation adjustments and the decline in forecast demand when compared to that originally forecast for 08/09.

While the Distribution unit tariffs are projected to increase, a large portion of the increase will be mitigated as a result of the reduction in individual customer capacity and demand requirements and therefore the average cost per customer in 2008/09 is estimated to increase by 2.4 % (including inflation).

## 6. Worked Example

Distribution unit rates are designed to decrease with customer size for most users. Small customers (with annual consumption  $\leq 73$ MWh) and very large customers (with annual consumption  $\geq 57,500$ MWh) 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 formula 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 (based on the load factor of 50%):

### *Capacity Charge*

Capacity Unit Charge =  $131.6044 - 3.8259 * \ln(27.397) = 118.94$  c/kWh-pk day  
(This represents a 7.4% increase over 2007/8 rates all other things being equal)

Annual Capacity Charge =  $118.94 * 27,397 / 100 = \text{€}2,586$

### *Commodity Charge*

Commodity Unit Charge =  $0.2434 - 0.0237 * \ln(27.397) = 0.1651$  c/kWh  
(This represents a 6.0% increase over 2007/8 rates all other things being equal)

Annual Commodity Charge =  $0.1651 * 5,000,000 / 100 = \text{€}8,254$

### *Total Distribution Charge*

Capacity Charge + Commodity Charge =  $\text{€}2,586 + \text{€}8,254 = \text{€}10,840$   
(This represents an increase of approximately 7.1% including inflation for this customer, all other things being equal)

The above example illustrates the calculation of the 2008/9 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 ( <i>Cumulative Effect</i> )		HICPD <sub>j</sub>	10.23%
Allowed Revenues ( <i>Base Assumption</i> )	2005/06 monies	B <sub>t+1</sub>	175.10
Connection differences cost	2005/06 monies	P <sub>g,Ct+1</sub> * (CF <sub>t+1</sub> - C <sub>t+1</sub> )	-0.94
Pass-through Costs ( <i>Forecasts - Base Assumption</i> )	Year t+1 monies	PF <sub>t+1</sub>	-0.22
Correction factor K <sub>t-1</sub>		K <sub>t-1</sub>	1.52
<b>Allowed Revenue in t+1</b>	Year t+1 monies	<b>R<sub>t+1</sub></b>	<b>193.27</b>

2008/09 Revenue Control Formula Adjustment			
Connection differences cost	2005/06 monies	P <sub>g,Ct+1</sub> * (CF <sub>t+1</sub> - C <sub>t+1</sub> )	-0.94
Inflation ( <i>Cumulative Effect</i> )			10.23%
Connection differences cost	2008/09 monies		-1.04
Pass-through Costs ( <i>Forecasts - Base Assumption</i> )	2008/09 monies		-0.22
			<b>-1.26</b>

*Total Revenue Requirement = Original CER Allowed Revenue + Revenue Control Formula Adjustment = €193.01m + €0.26m = €193.27m*

values in 08/09 monies	€m
<b>Revenue Control Formula Adjustment</b>	
Revised 08/09 Forecast	-1.26
2006/07 Correction Factor (K <sub>t-1</sub> )	1.52
<b>Total Revenue Control Formula Adjustments</b>	<b>0.26</b>

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

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

CALCULATION OF $K_{t-1}$			
Description		Formula Ref	Value
Allowed Revenue period t-1	Year t-1 Monies	$R_{t-1}$	179.59
Actual Inflation t-1		$HICPA_{t-1}$	11.7%
Forecast Inflation t-1		$HICPF_{t-1}$	11.7%
Revised Forecast Inflation t-1		$HICPR_{t-1}$	11.7%
<b>Calculation - Revenue * Inflation</b>	$R_{t-1} * \left\{ \left( \frac{1 + HICPA_{t-1}}{1 + HICPF_{t-1}} \right) - \left( \frac{1 + HICPR_{t-1}}{1 + HICPF_{t-1}} \right) \right\}$		<b>0.00</b>
Cummulative Inflation		$HICPA_j$	11.7%
Actual Customer Connections v Forecast	2002/03 Monies	$P_{Ct} * (CA_{t-1} - CR_{t-1})$	-0.37
<b>Calculation - Customer Connections</b>	$(1 + HICPA_j) * P_{Ct} * (CA_{t-1} - CR_{t-1})$		<b>-0.41</b>
Expected pass-through costs less Actual	Year t-1 Monies	$PA_{t-1}$	2.05
Actual Revenue Recovered in period t-1	Year t-1 Monies	$AR_{t-1}$	172.56
Forecast of Revenue Recovered in period t-1	Year t-1 Monies	$FR_{t-1}$	176.36
<b>Calculation - Actual Revenue</b>	$- PA_{t-1} - (AR_{t-1} - FR_{t-1})$		<b>1.75</b>
Actual Revenue Recovered v's Allowed			98%
Interest Rate period t		$I_t$	7.42%
Interest Rate period t-1		$I_{t-1}$	6.37%
<b>Correction Factor period t-1</b>		$K_{t-1}$	<b>1.52</b>

**APPENDIX 3: Interest Rate Multiplier/Euribor Rates**

The interest rate multiplier is used to uplift revenue over/ under – recoveries for the previous year (06/07). In 2006/07 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](http://www.euribor.org/html/content/euribor_data.html).

Euribor 06/07	4.37%	
Euribor 07/08	5.42%	
Euribor +2% '06/07	6.37%	$I_t$
Euribor +2% '07/08	7.42%	$I_{t-1}$

The interest rate factor calculated as  

$$=(1+I_{t-1}/100)^* (1+ I_t/100) \quad 1.14$$