

---

**Northern Gas Networks**  
**Capacity Management & System Operation**

*30 March 2007*

---

*Shrinkage Adjustments for Gas Year 2005/06*

*Northern Gas Networks*

---

Prepared for:  
Northern Gas Networks

Prepared by:  
Keith Dixon  
Capacity Management &  
System Operation  
Doxford Park

SR3 3XR



---

**Contents**

1.0 Executive Summary .....	1
2.0 Assessment of North and North East LDZ Shrinkage Factors .....	3
2.1 Leakage .....	3
2.2 Assessment of 2005/06 Leakage .....	3
2.3 Operational Usage .....	3
2.4 Theft of Gas .....	4
2.5 North and North East LDZ Shrinkage Factors.....	4
3.0 Northern Gas Networks LDZ Shrinkage Adjustment .....	5
3.1 Shrinkage Adjustments for North and North East LDZs.....	5
4.0 Financial Adjustments Applicable to Northern Gas Networks .....	6
4.1 Financial Adjustment for Shrinkage Energy Reconciliation.....	6
4.2 Financial Adjustment required for Commodity Charge Reconciliation .....	6
4.3 Transportation Commodity Charges.....	7

## 1.0 Executive Summary

This document provides information to shippers on the following :

- Assessment of North and North East LDZ Shrinkage Factors
- Northern Gas Networks LDZ Shrinkage Adjustment
- Financial Adjustments applicable to Northern Gas Networks

### **Assessment of North and North East LDZ Shrinkage Factors**

In accordance with Uniform Network Code Section N3.3.3 the following information provides an assessment of shrinkage for both North and North Eastern LDZs. National Grid’s final proposals for the Gas Year 2005/06 was not subject to Condition 7(4) disapproval and as a result, the proposed LDZ Shrinkage Factors were applied in accordance with *Uniform Network Code TPD Section N 3.1.8*.

*LDZ Shrinkage Factors Gas Year 2005/06*

LDZ	Shrinkage Factor
North	0.603%
North East	0.664%

The methodology and data sources used to determine the Shrinkage Factors for Gas Year 2005/06 are specified in Northern Gas Networks final proposals document for Gas Year 2005/06.

The assessment of Northern Gas Networks LDZ Shrinkage Quantity for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006, which is shown in section 2.0 of this document provides, where applicable, reasons for significant variance between the estimated and the assessed LDZ Shrinkage Factors for the period.

The assessment of shrinkage quantity for North and North East LDZs for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006 is approximately 20.9 GWh lower than the amount of shrinkage identified for that period, based on the above factors.

The reason for this difference is a decrease in leakage energy, from 548.8 GWh to 527.9 GWh.

### **Northern Gas Networks LDZ Shrinkage Adjustment**

This section advises Shippers of the Shrinkage Adjustment for North and North East LDZ’s for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006, as referred to in *Uniform Network Code TPD Section N 3.4.1*.

Using the applied and assessed shrinkage factors the following shrinkage quantities were calculated for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006.

*LDZ Shrinkage Reconciliation for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006*

LDZ	Procured LDZ Shrinkage Quantity (kWh)	Assessed LDZ Shrinkage Quantity (kWh)	LDZ Shrinkage Reconciliation Quantity (kWh)
North	240,510,455	230,364,344	- 10,146,111
North East	308,285,346	297,568,251	-10,717,094
NGN Total	548,795,800	527,932,595	-20,863,205

Note: Negative values indicate an over procurement.

**Financial Adjustments applicable to Northern Gas Networks**

In accordance with the *LDZ Shrinkage Adjustments Methodology Version 1.0*, the two elements of financial adjustment (i.e. Shrinkage Energy Adjustment Reconciliation and Commodity Charge Reconciliation) have been calculated, the combined results of which are shown in the table below:

*Northern Gas Networks Total Financial Adjustment*

<b>LDZ</b>	<b>LDZ Shrinkage Reconciliation Quantity (kWh)</b>	<b>Adjustment Value</b>
<b>North</b>	<b>- 10,146,111</b>	<b>-£190,941</b>
<b>North East</b>	<b>-10,717,094</b>	<b>-£203,535</b>
<b>NGN Total</b>	<b>-20,863,205</b>	<b>-£394,476</b>

Note : the figures above are for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006

**Northern Gas Networks Total Financial Adjustment is therefore -£394,476.**

## 2.0 Assessment of North and North East LDZ Shrinkage Factors

The following section details the assessment of the Northern Gas Networks shrinkage factors for both North and North East LDZs.

### 2.1 Leakage

The proposed shrinkage factors for North and North East LDZ's for Gas Year 2005/06 were:

Table 2.10 - LDZ Shrinkage Factors Gas Year 2005/06

LDZ	Shrinkage Factor
North	0.603%
North East	0.664%

This factor resulted in an estimated LDZ specific shrinkage quantity of:

Table 2.11- Estimated LDZ Specific Shrinkage Quantity

LDZ	Shrinkage Quantity (GWh)
North	240.5
North East	308.3

Note: for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006.

### 2.2 Assessment of 2005/06 Leakage

The same methodology has been used to assess the 2005/06 leakage as that employed by Northern Gas Networks in the original estimate of leakage for Gas Year 2004/05.

The 2005/06 Gas Year Leakage Assessment calculation reflects changes in average system pressures and OUG factor, with all other elements of the 2004 Leakage Assessment remaining unchanged (as agreed at the LDZ Shrinkage Forum held 22<sup>th</sup> June 2006).

Estimated and assessed leakage quantities for North and North East LDZs for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006 are shown below :

Table 2.20 - Estimated and Assessed Leakage Energy and Leakage Factors by LDZ

LDZ	2005/06 Original Estimated Leakage Energy GWh	2005/06 Assessed Leakage Energy GWh	Difference GWh
North	240.5	230.4	-10.1
North East	308.3	297.6	-10.7
NGN Total	548.8	527.9	-20.8

The assessment process has identified changes in shrinkage factor for North and North East LDZs that has resulted in an overall decrease in energy of approximately 20.8 GWh.

### 2.3 Operational Usage

Operational Usage gas is employed by Northern Gas Networks primarily as pre-heater fuel at a number of pressure reduction stations to prevent gas temperatures falling below zero degrees Celsius. There is also some minor additional use during venting operations.

The final proposed 05/06 OUG factor of 0.035%, for all GDN's, was set as a compromise factor. It was widely recognised that the OUG factor of 0.06% (used in 2004/05) was too high and it became apparent that an alternative OUG model had been developed by Advantica (commissioned by

Transco in 2002), which had the aim of overcoming the known shortcomings of the then current model

GDNs thus proposed, at the Shrinkage Forum on 15<sup>th</sup> August 2005, to use the LDZ OUG factors (which combine to a national average of 0.0113%) from the Advantica model, as published in the May 2002 Advantica report 'Own Use Gas Model for Pre-Heaters'.

Objections were raised to using these LDZ OUG factors, as some users believed that this report did not offer sufficiently robust evidence to justify an OUG factor of 0.0113%, and a compromise of 0.035% was reached.

However Advantica subsequently reviewed the model, as presented to the Shrinkage Forum on 22<sup>nd</sup> June 2006. This verified the robustness of the model and shows that the objections by the users, although no doubt based on good intentions, were incorrect. Thus the OUG factors should have been set at 0.0113% (National average) for 2005/06.

The adjustment process is the appropriate means to make a correction for an incorrect OUG factor being proposed for 2005/06.

## 2.4 Theft of Gas

An estimate of unidentified theft for 2005/06 was 0.2% of throughput, of which 10% was deemed to be the responsibility of Gas Transporters in 2005/06.

This figure has not been re-assessed as part of this process and remains constant within the overall shrinkage factor.

## 2.5 North and North East LDZ Shrinkage Factors

The assessment of the original Shrinkage Factors for Gas Year 2005/06 for North and North East LDZs has resulted in minor changes brought about by movement in the average system pressure used in the leakage calculation model. Table 2.50 below illustrates these changes:

*Table 2.50 - North and North East LDZ Shrinkage Factors*

LDZ	Applied Shrinkage Factors 2005/06	Assessed Shrinkage Factors 2005/06	Difference
North	0.603%	0.5776%	0.0254%
North East	0.664%	0.6409%	0.0231%

Northern Gas Networks assessed LDZ Shrinkage Factors are different because of the change in average system pressures and OUG used in the assessment of leakage, as discussed in section 2.2. This decrease represents a Northern Gas Network reduced energy requirement of 20.8 GWh.

### 3.0 Northern Gas Networks LDZ Shrinkage Adjustment

The shrinkage adjustment applicable to Northern Gas Networks for North and North East LDZ is for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006.

#### 3.1 Shrinkage Adjustments for North and North East LDZs

Shrinkage adjustments for the LDZs owned and operated by Northern Gas Networks have been calculated in accordance with *LDZ Shrinkage Adjustments Methodology Version 1.0* that is published on the Joint Office Website.

Using the applied and assessed shrinkage factors the following shrinkage quantities were calculated for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006.

Table 3.10 – LDZ Shrinkage Reconciliation for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006

LDZ	Procured LDZ Shrinkage Quantity (kWh)	Assessed LDZ Shrinkage Quantity (kWh)	LDZ Shrinkage Reconciliation Quantity (kWh)
North	240,510,455	230,364,344	- 10,146,111
North East	308,285,346	297,568,251	-10,717,094
<b>NGN Total</b>	<b>548,795,800</b>	<b>527,932,595</b>	<b>-20,863,205</b>

Note: Negative values indicate an over procurement.

## 4.0 Financial Adjustments Applicable to Northern Gas Networks

In accordance with the *LDZ Shrinkage Adjustments Methodology Version 1.0* there are two elements of financial adjustment. These are:

- Financial Adjustment for shrinkage energy reconciliation
- Financial Adjustment required for commodity charge reconciliation

Both of these financial elements are determined in the following sections.

### 4.1 Financial Adjustment for Shrinkage Energy Reconciliation

Applying the algorithm in section 2.2 of *LDZ Shrinkage Adjustments Methodology Version 1.0* the following financial adjustment has been determined for Northern Gas networks for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006.

Table 4.10 – Financial Adjustment (Gas Reconciliation)

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh)	Adjustment Value
North	- 10,146,111	-£190,941
North East	-10,717,094	-£203,535
<b>NGN Total</b>	<b>-20,863,205</b>	<b>-£394,476</b>

Note: The adjustment values above are derived from changes in the assessed shrinkage factors for North and North East LDZ and applying these to four decimal places.

The Northern Gas Networks total financial adjustment of £394,476 is negative and therefore identified as a debit from Domestic Shippers.

### 4.2 Financial Adjustment required for Commodity Charge Reconciliation

Applying the algorithm in section 2.3 of *Annex 2 – LDZ Shrinkage Adjustments Methodology v0.4*, the following financial adjustment has been determined for Northern Gas networks for the period 1<sup>st</sup> October 2005 to 30<sup>th</sup> September 2006.

Table 4.20 – Financial Adjustment (Transportation Commodity Reconciliation)

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh)	Adjustment Value
North	- 10,146,111	-£31,149.22
North East	-10,717,094	-£32,902.87
<b>NGN Total</b>	<b>-20,863,205</b>	<b>-£64,052.10</b>

The Northern Gas Networks total financial commodity charge adjustment of £64,052.10 is negative and therefore identified as a debit from Domestic Shippers.

**Northern Gas Networks Total Financial Adjustment is therefore -£458,528.10**

### 4.3 Transportation Commodity Charges

The commodity charges used in the Transportation Commodity Reconciliation calculations are :

*Table 4.21 – Transportation Commodity Charges*

	Period of Application	
	01/10/05 to 31/03/06	01/04/06 to 30/09/06
NTS Commodity	0.000127	0.000121
LDZ Commodity	0.001393	0.001393
Customer Commodity	0.001552	0.001552
<b>Total Commodity Rate</b>	<b>0.003072</b>	<b>0.003066</b>