



# **LDZ SHRINKAGE ASSESSMENT AND ADJUSTMENT**

## **FOR 1 APRIL 2009 – 31 March 2010**

**Scotia Gas Networks**

**October 2010**

**Version 2.0**

# CONTENTS

	Page
1 Executive Summary .....	1
2 LDZ Shrinkage Factor Assessment .....	1
2.1 Leakage.....	1
2.1.1 Assessment of 2009/10 Leakage .....	1
2.2 Operational Usage .....	2
2.3 Theft of Gas .....	2
2.4 LDZ Specific Shrinkage Quantities .....	3
2.4.1 Reasons for Differences .....	3
3 LDZ Shrinkage Adjustment .....	4
3.1 Introduction.....	4
3.2 LDZ Shrinkage Reconciliation Calculations .....	4
3.3 Financial Adjustment.....	4
4 LDZ Shrinkage Commodity Charge Adjustment .....	5
4.2 Commodity Charges.....	5
4.3 LDZ Shrinkage Reconciliation Quantities.....	6
4.4 Financial Adjustment .....	6

# **LDZ Shrinkage Assessment and Adjustment for the Period**

## **1 April 2009 – 31 March 2010**

### **1 Executive Summary**

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2009 to 31 March 2010, in accordance with *Uniform Network Code Section N 3.3.3*.

In accordance with Uniform Network Code Section N3.3.3 the following information provides an assessment of shrinkage for Scotland, Thurso, Wick, Campbletown, Oban, Stranraer, South, and South East LDZs. SGN's final proposals for the Formula Year 2009/10 was not subject to Standard Special Condition A11(18) disapproval and as a result, the proposed LDZ Shrinkage Quantities were applied in accordance with *Uniform Network Code Section N 3.1.8*.

LDZ Shrinkage Quantities are comprised of three main components:

- Leakage with individual quantities being applied at LDZ level;
- Operational Usage with a single factor being applied across all LDZs; and
- Transporter responsible Theft of Gas with a single factor being applied across all LDZs

The assessment of LDZ Shrinkage for the Formula Year 2009/10 detailed within this document provides, where applicable, reasons for significant variance between the estimated and the assessed LDZ Shrinkage Quantities for the period.

For this year's leakage assessment, SGN applied v1.3 of the Leakage Model, which includes the changes to the Low Pressure Service methodology approved by Ofgem last year. SGN applied this model in last year's leakage assessment and no further modifications have been made. The leakage assessment resulted in an annual estimated leakage for 2009/10 of 912GWh for the purposes of the Shrinkage Adjustment, which is 16GWh lower than original estimated, and 912GWh<sup>1</sup> for the purposes of the Environmental Emissions Incentive (LV<sub>ti</sub> as defined in Special Condition E9 of the Distribution Gas Transporter Licences). LDZ specific values can be found in Table 1.

### **2 LDZ Shrinkage Factor Assessment**

#### **2.1 Leakage**

LDZ specific Shrinkage Quantities for 2009/10 were proposed based on an assessment of leakage for the formula year 2008/09.

##### **2.1.1 Assessment of 2009/10 Leakage**

SGN applied V1.3 of the Leakage Model to carry out the assessment of leakage for the formula Year 2009/10. This version includes the new methodology for calculation of leakage from Low Pressure Services, which takes into account the replacement of metallic services with plastic services, which have lower leakage rates. The industry was consulted in April 2009 and there were no representations received from shippers in respect of this consultation. Therefore, Ofgem approved the use of this new methodology.

Estimated and assessed leakage quantities for each LDZ are shown in Table 1;

<sup>1</sup> Calculated using the LDZ specific Baseline CVs and reported net of any applicable caps/collars.

**Table 1. Estimated and Assessed Leakage Energy by LDZ**

LDZ	2009/10 Estimated Leakage (GWh)	2009/10 Assessed Leakage (GWh)	2009/10 Assessed Leakage (LV <sub>t,i</sub> )(GWh)	2009/10 Estimated Leakage (kWh/Day)	2009/10 Assessed Leakage (kWh/Day)
<b>SOUTH</b>	273	263	263	747,945	721,894
<b>SOUTH EAST</b>	399	392	392	1,093,151	1,074,190
<b>SCOTLAND</b>	255	255	257	698,630	698,327
<b>OBAN</b>	0.28	0.38	0	767	1,032
<b>CAMPBELTOWN</b>	0.10	0.25	0	274	675
<b>STRANRAER</b>	0.34	0.33	0	932	912
<b>THURSO</b>	0.19	0.24	0	521	657
<b>WICK</b>	0.12	0.21	0	329	587
<b>Total</b>	<b>928</b>	<b>912</b>	<b>912</b>	<b>2,542,548</b>	<b>2,498,273</b>

As shown in Table 1, above the assessment of leakage has resulted in an decrease in energy of approximately 16GWh.

## 2.2 Operational Usage

Operational Usage is gas, also known as Own Use Gas (OUG), used within the LDZ for such purposes as pre-heater fuel to counter the impact of the Joule-Thompson effect and for other minor operational purposes, e.g. venting.

Pre-heater fuel is the largest component of OUG and it is determined using the output from a model that utilises the thermodynamic principles of the Joule-Thompson effect and LDZ throughput, calorific value, pressure and temperature data.

The OUG factor for 2009/10 of 0.0113% was determined from Advantica's 2006 review of their OUG model. The assessed figure remains the same.

LDZ	Consumption 2009/10 (GWh)	Applied OUG Factor 2009/10	Daily OUG Quantity (kWh)
<b>SOUTH</b>	40841.9205	0.011%	12,309
<b>SOUTH EAST</b>	66127.4697		19,929
<b>SCOTLAND</b>	54609.3840		16,458
<b>OBAN</b>	34.4000		10
<b>CAMPBELTOWN</b>	34.9000		11
<b>STRANRAER</b>	143.9000		43
<b>THURSO</b>	50.2000		15
<b>WICK</b>	45.6000		14
<b>SGN</b>	<b>161,888</b>		<b>48,788</b>

**Table 2. Assessment of OUG**

## 2.3 Theft of Gas

Uniform Network Code Section N1.3.2 states that LDZ Shrinkage shall include gas lost through theft either upstream of the customer control valve or downstream where there is no shipper serving the gas consumer. Unidentified theft was estimated to be 0.02% of throughput for 2009/10.

LDZ	Consumption 2009/10 (GWh)	Applied ToG Factor 2009/10	Daily ToG Quantity (kWh)
<b>SOUTH</b>	40841.9205	0.020%	22,379
<b>SOUTH EAST</b>	66127.4697		36,234
<b>SCOTLAND</b>	54609.3840		29,923
<b>OBAN</b>	34.4000		19
<b>CAMPBELTOWN</b>	34.9000		19
<b>STRANRAER</b>	143.9000		79
<b>THURSO</b>	50.2000		28
<b>WICK</b>	45.6000		25
<b>SGN</b>	<b>161,888</b>		<b>88,706</b>

**Table 3. Assessment of ToG**

The assessed figure remains the same. The quantification of the level of theft and proportion attributable to Transporters is under review – both in the Shrinkage Gas Forum and Theft of Gas Forum.

## 2.4 LDZ Specific Shrinkage Quantities

Scotia Gas Networks made their final LDZ specific Shrinkage Quantities proposal for the Formula Year 2009/10 in March 2009. Scotia Gas Network's proposal was not subject to Ofgem disapproval under Licence Condition A11(18) disapproval, with the proposed LDZ specific Shrinkage Quantities being applied with effect from the 1 April 2009. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2009/10 produced in the method detailed within this document.

**Table 4. LDZ Specific Shrinkage Quantities (kWh/day)**

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2009/10	Applied Shrinkage Quantities 2009/10	Difference Between Assessed & Applied Quantities
<b>SOUTH</b>	721,894	12,309	22,379	756,582	789,041	-32,459
<b>SOUTH EAST</b>	1,074,190	19,929	36,234	1,130,353	1,153,425	-23,072
<b>SCOTLAND</b>	698,327	16,458	29,923	744,708	747,945	-3,237
<b>OBAN</b>	1,032	10	19	1,061	795	266
<b>CAMPBELTOWN</b>	675	11	19	704	301	403
<b>STRANRAER</b>	912	43	79	1,034	1,041	-7
<b>THURSO</b>	657	15	28	700	548	152
<b>WICK</b>	587	14	25	626	356	270
<b>Total</b>	<b>2,498,273</b>	<b>48,788</b>	<b>88,706</b>	<b>2,635,767</b>	<b>2,693,452</b>	<b>-57,685</b>

### 2.4.1 Reasons for Differences

The difference between Scotia Gas Network's estimated and assessed LDZ Shrinkage Quantities is 57,685kWh per day, as displayed in table 4 which is primarily due to a leakage reduction.

### 3 LDZ Shrinkage Adjustment

#### 3.1 Introduction

This document advises Shippers of the Shrinkage Adjustment for Scotia Gas Networks operated LDZs for the period 1 April 2009 to 31 March 2010, as referred to in the *Uniform Network Code* Section N 3.4.1. The Shrinkage Adjustments have been calculated in accordance with the LDZ Shrinkage Adjustments Methodology Version 2.0.

#### 3.2 LDZ Shrinkage Reconciliation Calculations

The LDZ Shrinkage Reconciliation Quantity (SLRQ) is calculated as the difference between the Assessed and Procured LDZ Shrinkage Quantities. This reconciliation quantity is the amount that Scotia Gas Networks has over or under procured.

Therefore, for each LDZ;

$$\text{LDZ Shrinkage Reconciliation Quantity (SLRQ)} = \text{Assessed LDZ Shrinkage Quantity (SLAQ)} - \text{Procured LDZ Shrinkage Quantity (SLPQ)}$$

Table 5 below shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1 April 2009 to 31 March 2010.

**Table 5. LDZ Shrinkage Reconciliation Quantity (kWh/day)**

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
<b>SOUTH</b>	-32,459
<b>SOUTH EAST</b>	-23,072
<b>SCOTLAND</b>	-3,237
<b>OBAN</b>	266
<b>CAMPBELTOWN</b>	403
<b>STRANRAER</b>	-7
<b>THURSO</b>	152
<b>WICK</b>	270
<b>SGN</b>	-57,685

#### 3.3 Financial Adjustment

The Financial Adjustment (FA) due to Scotia Gas Networks for Energy (cost of the gas) is calculated as shown below:

$$FA(\pounds) = \sum_{1/4/09}^{31/3/10} SLRQ(kWh) \times SAP(p / kWh) / 100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1 April 2009 to 31 March 2010

The allocation of any debit or credit to Shippers resulting from the Adjustment process is achieved by calculating the energy adjustment on a daily basis, multiplying this by the daily system average price,

summing this by LDZ by month and apportioning this by the relevant Shipper RbD affected portfolio in each LDZ for each month.

Table 6, below, shows the financial adjustment by LDZ for the period 1 April 2009 to 31 March 2010, calculated on a daily basis in line with the methodology indicated above.

**Table 6. LDZ Shrinkage Reconciliation for the period 1 April 2009 to 31 March 2010**

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
<b>SOUTH</b>	-32,459	-£112,469.11
<b>SOUTH EAST</b>	-23,072	-£79,944.53
<b>SCOTLAND</b>	-3,237	-£11,216.14
<b>OBAN</b>	266	£922.62
<b>CAMPBELTOWN</b>	403	£1,397.88
<b>STRANRAER</b>	-7	-£25.21
<b>THURSO</b>	152	£525.36
<b>WICK</b>	270	£934.07
<b>SGN</b>	-57,685	-£199,875.06

The overall financial value for the Energy Adjustment, £199,875.06, is therefore a credit to Scotia Gas Networks. Under the rules of Reconciliation by Difference, this is an adjustment of equal and opposite value to Domestic Shippers, i.e. a debit of £199,875.06.

## 4 LDZ Shrinkage Commodity Charge Adjustment

### 4.1 Introduction

This section advises Shippers of the Commodity Charge associated with the Scotia Gas Networks operated LDZ Shrinkage Adjustment for the period 1 April 2009 to 31 March 2010.

### 4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2009 to 31 March 2010.

#### Scotland LDZs

Commodity	Period of Application	
	1/04/09 to 30/09/09	1/10/09 to 31/03/10
<b>NTS Commodity</b>	0.000155	0.000181
<b>LDZ System Commodity Charge</b>	0.000167	0.000167

**Table 7.1. Scotland Commodity Charges for the period 1 April 2009 to 31 March 2010**

## Southern and South-Eastern LDZs

Commodity	Period of Application	
	1/04/09 to 30/09/09	1/10/09 to 31/03/10
NTS Commodity	0.000155	0.000181
LDZ System Commodity Charge	0.000213	0.000206

**Table 7.2. Southern Commodity Charges for the period 1 April 2009 to 31 March 2010**

### 4.3 LDZ Shrinkage Reconciliation Quantities

Table 8, below, shows the LDZ Shrinkage Reconciliation Quantities (LRQ) for each LDZ for each period of differing Commodity Charges.

**Table 8. LDZ Shrinkage Reconciliation Quantities**

LDZ	Total over Period	1/04/09 to 30/09/09	1/10/09 to 31/03/10
<b>SOUTH</b>	-11,847,570	-5,940,014	-5,907,555
<b>SOUTH EAST</b>	-8,421,409	-4,222,241	-4,199,169
<b>SCOTLAND</b>	-1,181,516	-592,376	-589,139
<b>OBAN</b>	97,189	48,728	48,461
<b>CAMPBELTOWN</b>	147,254	73,829	73,425
<b>STRANRAER</b>	-2,656	-1,332	-1,324
<b>THURSO</b>	55,342	27,747	27,595
<b>WICK</b>	98,396	49,333	49,063
<b>SGN</b>	-21,054,970	<b>-10,556,327</b>	<b>-10,498,643</b>

### 4.4 Financial Adjustment

#### Scotia Gas Networks

The Financial Adjustment (FA) due to Scotia Gas Networks for Commodity Charge reconciliation is calculated as shown below;

$$FA_{cc} (£) = \sum_{1/04/09}^{30/09/09} LRQ(kWh) \times CC_1 (£/kWh) + \sum_{1/10/09}^{31/3/10} LRQ(kWh) \times CC_2 (£/kWh)$$

Where:

$FA_{cc} (£)$  = Financial Adjustment associated with the SGN LDZ and Customer Commodity Charges

$LRQ (kWh)$  = LDZ Shrinkage Reconciliation Quantity

$CC_1 (£/kWh)$  = SGN LDZ and Customer Commodity Charges applicable to the period 1 April 2009 to 31 March 2010

$CC_2 (£/kWh)$  = SGN LDZ and Customer Commodity Charge applicable to the period 1 April 2009 to 31 March 2010



Table 9, below, shows the financial adjustment by LDZ calculated on a daily basis in line with the methodology indicated above.

**Table 9. Financial Adjustment due to Scotia Gas Networks, by LDZ for the period 1 April 2009 to 31 March 2010**

<b>Transportation Charges - Scotia Gas Networks</b>					
	<b>Pricing Period</b>		<b>Pricing Period</b>		<b>Assessment Period</b>
	<b>1/04/09 to 30/09/09</b>	<b>1/10/09 to 31/03/10</b>	<b>1/04/09 to 30/09/09</b>	<b>1/10/09 to 31/03/10</b>	<b>01/04/09 to 31/03/10</b>
<b>LDZ</b>	<b>Total Volume (kWh)</b>	<b>Total Volume (kWh)</b>	<b>Total Adjustment</b>	<b>Total Adjustment</b>	<b>Total Adjustment</b>
<b>SOUTH</b>	-5,940,014	-5,907,555	-£2,185.93	-£2,286.22	-£4,472.15
<b>SOUTH EAST</b>	-4,222,241	-4,199,169	-£1,553.78	-£1,625.08	-£3,178.86
<b>SCOTLAND</b>	-592,376	-589,139	-£190.75	-£205.02	-£395.77
<b>OBAN</b>	48,728	48,461	£15.69	£16.86	£32.55
<b>CAMPBELTOWN</b>	73,829	73,425	£23.77	£25.55	£49.32
<b>STRANRAER</b>	-1,332	-1,324	-£0.43	-£0.46	-£0.89
<b>THURSO</b>	27,747	27,595	£8.93	£9.60	£18.54
<b>WICK</b>	49,333	49,063	£15.89	£17.07	£32.96
<b>SGN</b>	<b>-10,556,327</b>	<b>-10,498,643</b>	<b>-£3,866.60</b>	<b>-£4,047.69</b>	<b>-£7,914.29</b>

The overall financial value for the LDZ and Commodity Charge Adjustment is therefore £7,914.29, a debit to Domestic Shippers under the RbD Process.