



LDZ SHRINKAGE ASSESSMENT AND ADJUSTMENT

FOR 1 APRIL 2012 – 31 March 2013

Scotia Gas Networks

Sept 2013

Version 2.0

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LDZ Shrinkage Assessment and Adjustment for the Period

1 April 2012 – 31 March 2013

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2012 to 31 March 2013, 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 2011/12 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 2012/13 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. 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 2012/13 of 817GWh for the purposes of the Shrinkage Adjustment, which is 6GWh lower than original estimated, and 817GWh¹ for the purposes of the Environmental Emissions Incentive (LV_{ti} as defined in Special Condition E9 of the Distribution Gas Transporter Licences). LDZ specific values can be found in Table 1.

2 LDZ Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2012/13 were proposed based on an assessment of leakage for the formula year 2012/13.

2.1.1 Assessment of 2012/13 Leakage

SGN applied V1.3 of the Leakage Model to carry out the assessment of leakage for the formula Year 2012/13. 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;

¹ 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	2012/13 Estimated Leakage (GWh)	2012/13 Assessed Leakage (GWh)	2012/13 Estimated Leakage (kWh/Day)	2012/13 Assessed Leakage (kWh/Day)
SOUTH	240	235	657,534	644,854
SOUTH EAST	354	354	969,863	969,585
SCOTLAND	228	226	624,658	620,053
CAMPBELTOWN	0.24	0.24	658	667
OBAN	0.37	0.40	1,014	1,083
STRANRAER	0.31	0.30	849	831
THURSO	0.24	0.24	658	659
WICK	0.21	0.28	575	756
Total	823	817	2,255,808	2,238,488

As shown in Table 1, above the assessment of leakage has resulted in a decrease in energy of approximately 6GWh.

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 2012/13 of 0.0113% was determined from Advantica's 2006 review of their OUG model. The assessed figure remains the same.

LDZ	Consumption 2012/13 (GWh)	Applied OUG Factor 2012/13	Daily OUG Quantity (kWh)
SOUTH	39391.1074	0.0113%	12,195
SOUTH EAST	54638.8662		16,916
SCOTLAND	52194.3145		16,159
CAMPBELTOWN	36.4345		11
OBAN	35.8927		11
STRANRAER	150.0259		46
THURSO	52.3391		16
WICK	47.5601		15
SGN	146,547		45,369

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 2012/13.

LDZ	Consumption 2012/13 (GWh)	Applied ToG Factor 2012/13	Daily ToG Quantity (kWh)
SOUTH	39391.1074	0.020%	21,584
SOUTH EAST	54638.8662		29,939
SCOTLAND	52194.3145		28,600
CAMPBELTOWN	36.4345		20
OBAN	35.8927		20
STRANRAER	150.0259		82
THURSO	52.3391		29
WICK	47.5601		26
SGN	146,547		80,299

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 2012/13 in March 2012. 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 2012. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2012/13 produced in the method detailed within this document.

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2012/13	Applied Shrinkage Quantities 2012/13	Difference Between Assessed & Applied Quantities
SOUTH	644,854	12,195	21,584	678,633	692,470	-13,837
SOUTH EAST	969,585	16,916	29,939	1,016,440	1,023,215	-6,775
SCOTLAND	620,053	16,159	28,600	664,811	670,447	-5,636
CAMPBELTOWN	667	11	20	698	689	9
OBAN	1,083	11	20	1,114	1,031	83
STRANRAER	831	46	82	960	975	-15
THURSO	659	16	29	704	700	4
WICK	756	15	26	796	625	171
Total	2,238,488	45,369	80,299	2,364,156	2,390,152	-25,996

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

2.4.1 Reasons for Differences

The difference between Scotia Gas Network's estimated and assessed LDZ Shrinkage Quantities is 25,996kWh per day, as displayed in table 4 which is primarily due to slightly lower than forecast operating pressures.

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 2012 to 31 March 2013, 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 2012 to 31 March 2013.

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

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
SOUTH	-13,837
SOUTH EAST	-6,775
SCOTLAND	-5,636
CAMPBELTOWN	9
OBAN	83
STRANRAER	-15
THURSO	4
WICK	171
SGN	-25,996

3.3 Financial Adjustment

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

$$FA(\pounds) = \sum_{1/4/12}^{31/3/13} SLRQ(kWh) \times SAP(p / kWh) / 100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1 April 2012 to 31 March 2013

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 2012 to 31 March 2013, calculated on a daily basis in line with the methodology indicated above.

Table 6. LDZ Shrinkage Reconciliation for the period 1 April 2012 to 31 March 2013

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
SOUTH	-13,837	-£109,045.56
SOUTH EAST	-6,775	-£53,392.69
SCOTLAND	-5,636	-£44,412.15
CAMPBELTOWN	9	£70.82
OBAN	83	£650.73
STRANRAER	-15	-£118.66
THURSO	4	£31.14
WICK	171	£1,350.95
SGN	-25,996	-£204,865.42

The overall financial value for the Energy Adjustment, £204,865.42 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 £204,865.42.

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 2012 to 31 March 2013.

4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2012 to 31 March 2013.

Scotland LDZs

Commodity	Period of Application		
	1/04/12 to 30/09/12	1/10/12 to 31/03/13	
NTS Commodity (=TO+SO)	0.000242	0.000323	
LDZ System Commodity Charge	0.000222	0.000222	

Table 7.1. Scotland Commodity Charges for the period 1 April 2012 to 31 March 2013

Southern and South-Eastern LDZs

Commodity	Period of Application		
	1/04/12 to 30/09/12	1/10/12 to 31/03/13	
NTS Commodity (=TO+SO)	0.000242	0.000323	
LDZ System Commodity Charge	0.000285	0.000285	

Table 7.2. Southern Commodity Charges for the period 1 April 2012 to 31 March 2013

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	1/04/12 to 30/09/12	1/10/12 to 31/03/13
SOUTH	-5,050,477	-2,532,157	-2,518,320
SOUTH EAST	-2,472,898	-1,239,837	-1,233,062
SCOTLAND	-2,056,962	-1,031,299	-1,025,663
CAMPBELTOWN	3,280	1,645	1,636
OBAN	30,139	15,111	15,028
STRANRAER	-5,496	-2,755	-2,740
THURSO	1,442	723	719
WICK	62,570	31,370	31,199
SGN	-9,488,402	-4,757,199	-4,731,203

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;

$$FA_{cc} (£) = \sum_{1/04/12}^{30/09/12} LRQ(kWh) \times CC_1 (£/kWh) + \sum_{1/10/12}^{31/3/13} LRQ(kWh) \times CC_2 (£/kWh)$$

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 2012 to 31 March 2013

$CC_2 (£/kWh)$ = SGN LDZ and Customer Commodity Charge applicable to the period 1 April 2012 to 31 March 2013

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

Transportation Charges - Scotia Gas Networks					
	Pricing Period		Pricing Period		Assessment Period
	1/04/12 to 30/09/12	1/10/12 to 31/03/13	1/04/12 to 30/09/12	1/10/12 to 31/03/13	01/04/12 to 31/03/13
LDZ	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment
SOUTH	-2,532,157	-2,518,320	-£1,334.45	-£1,531.14	-£2,865.59
SOUTH EAST	-1,239,837	-1,233,062	-£653.39	-£749.70	-£1,403.10
SCOTLAND	-1,031,299	-1,025,663	-£478.52	-£558.99	-£1,037.51
CAMPBELTOWN	1,645	1,636	£0.76	£0.89	£1.65
OBAN	15,111	15,028	£7.01	£8.19	£15.20
STRANRAER	-2,755	-2,740	-£1.28	-£1.49	-£2.77
THURSO	723	719	£0.34	£0.39	£0.73
WICK	31,370	31,199	£14.56	£17.00	£31.56
SGN	-4,757,199	-4,731,203	-£2,444.98	-£2,814.84	-£5,259.82

Table 9. Financial Adjustment due to Scotia Gas Networks, by LDZ for the period 1 April 2012 to 31 March 2013

The overall financial value for the LDZ and Commodity Charge Adjustment is therefore £5,259.82 a debit to Domestic Shippers under the RbD Process.