



LDZ SHRINKAGE ASSESSMENT AND ADJUSTMENT

FOR 1 APRIL 2011 – 31 March 2012

Scotia Gas Networks

July 2012

Version 1.0

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LDZ Shrinkage Assessment and Adjustment for the Period

1 April 2011 – 31 March 2012

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2011 to 31 March 2012, 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 2011/12 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 2011/12 of 832GWh for the purposes of the Shrinkage Adjustment, which is 28GWh lower than original estimated, and 832GWh¹ 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 Factor Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2011/12 were proposed based on an assessment of leakage for the formula year 2010/11.

2.1.1 Assessment of 2011/12 Leakage

SGN applied V1.3 of the Leakage Model to carry out the assessment of leakage for the formula Year 2011/12. 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	2011/12 Estimated Leakage (GWh)	2011/12 Assessed Leakage (GWh)	2011/12 Estimated Leakage (kWh/Day)	2011/12 Assessed Leakage (kWh/Day)
SOUTH	251	238	685,792	650,724
SOUTH EAST	366	361	1,000,000	986,910
SCOTLAND	241	231	658,470	631,210
CAMPBELTOWN	0.25	0.24	683	658
OBAN	0.38	0.37	1,038	1,000
STRANRAER	0.33	0.31	902	855
THURSO	0.24	0.24	656	657
WICK	0.21	0.21	574	586
Total	859	832	2,348,115	2,272,600

As shown in Table 1, above the assessment of leakage has resulted in a decrease in energy of approximately 28GWh.

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 2011/12 of 0.0113% was determined from Advantica's 2006 review of their OUG model. The assessed figure remains the same.

LDZ	Consumption 2011/12 (GWh)	Applied OUG Factor 2011/12	Daily OUG Quantity (kWh)
SOUTH	38858.9641	0.0113%	12,030
SOUTH EAST	59687.0758		18,478
SCOTLAND	51493.9202		15,942
CAMPBELTOWN	33.4622		10
OBAN	32.9646		10
STRANRAER	137.7870		43
THURSO	48.0694		15
WICK	43.6802		14
SGN	150,336		46,542

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 2011/12.

LDZ	Consumption 2011/12 (GWh)	Applied ToG Factor 2011/12	Daily ToG Quantity (kWh)
SOUTH	38858.9641	0.020%	21,293
SOUTH EAST	59687.0758		32,705
SCOTLAND	51493.9202		28,216
CAMPBELTOWN	33.4622		18
OBAN	32.9646		18
STRANRAER	137.7870		75
THURSO	48.0694		26
WICK	43.6802		24
SGN	150,336		82,376

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 2011/12 in March 2011. 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 2011. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2011/12 produced in the method detailed within this document.

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2011/12	Applied Shrinkage Quantities 2011/12	Difference Between Assessed & Applied Quantities
SOUTH	650,724	12,030	21,293	684,047	719,570	-35,523
SOUTH EAST	986,910	18,478	32,705	1,038,094	1,055,159	-17,065
SCOTLAND	631,210	15,942	28,216	675,368	704,360	-28,992
CAMPBELTOWN	658	10	18	687	703	-16
OBAN	1,000	10	18	1,028	1,059	-31
STRANRAER	855	43	75	973	1,032	-59
THURSO	657	15	26	699	698	1
WICK	586	14	24	623	624	-1
Total	2,272,600	46,542	82,376	2,401,518	2,483,205	-81,687

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 81,687kWh per day, as displayed in table 4 which is primarily due to a lower 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 2011 to 31 March 2012, 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 2011 to 31 March 2012.

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

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
SOUTH	-35,523
SOUTH EAST	-17,065
SCOTLAND	-28,992
CAMPBELTOWN	-16
OBAN	-31
STRANRAER	-59
THURSO	1
WICK	-1
SGN	-81,687

3.3 Financial Adjustment

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

$$FA(\pounds) = \sum_{1/4/11}^{31/3/12} SLRQ(kWh) \times SAP(p / kWh) / 100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1 April 2011 to 31 March 2012

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 2011 to 31 March 2012, calculated on a daily basis in line with the methodology indicated above.

Table 6. LDZ Shrinkage Reconciliation for the period 1 April 2011 to 31 March 2012

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
SOUTH	-35,523	-£250,662.52
SOUTH EAST	-17,065	-£120,416.14
SCOTLAND	-28,992	-£204,577.72
CAMPBELTOWN	-16	-£114.33
OBAN	-31	-£217.40
STRANRAER	-59	-£416.68
THURSO	1	£4.38
WICK	-1	-£3.54
SGN	-81,687	-£576,403.95

The overall financial value for the Energy Adjustment, £576,403.95 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 £576,403.95.

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 2011 to 31 March 2012.

4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2011 to 31 March 2012.

Scotland LDZs

Commodity	Period of Application	
	1/04/11 to 30/09/11	1/10/11 to 31/03/12
NTS Commodity	0.000179	0.000246
LDZ System Commodity Charge	0.000214	0.000214

Table 7.1. Scotland Commodity Charges for the period 1 April 2011 to 31 March 2012

Southern and South-Eastern LDZs

Commodity	Period of Application	
	1/04/11 to 30/09/11	1/10/11 to 31/03/12
NTS Commodity	0.000179	0.000246
LDZ System Commodity Charge	0.00027	0.00027

Table 7.2. Southern Commodity Charges for the period 1 April 2011 to 31 March 2012

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	1/04/11 to 30/09/11	1/10/11 to 31/03/12
SOUTH	-13,001,540	-6,500,770	-6,500,770
SOUTH EAST	-6,245,829	-3,122,915	-3,122,915
SCOTLAND	-10,611,181	-5,305,591	-5,305,591
CAMPBELTOWN	-5,930	-2,965	-2,965
OBAN	-11,276	-5,638	-5,638
STRANRAER	-21,613	-10,806	-10,806
THURSO	227	114	114
WICK	-184	-92	-92
SGN	-29,897,326	-14,948,663	-14,948,663

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;

$$FA_{cc} (£) = \sum_{1/04/11}^{30/09/11} LRQ(kWh) \times CC_1 (£/kWh) + \sum_{1/10/11}^{31/3/12} LRQ(kWh) \times CC_2 (£/kWh)$$

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 2011 to 31 March 2012

$CC_2 (£/kWh)$ = SGN LDZ and Customer Commodity Charge applicable to the period 1 April 2011 to 31 March 2012

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
	1/04/11 to 30/09/11	1/10/11 to 31/03/12	1/04/11 to 30/09/11	1/10/11 to 31/03/12	01/04/11 to 31/03/12
LDZ	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment
SOUTH	-6,500,770	-6,500,770	-£2,918.85	-£3,354.40	-£6,273.24
SOUTH EAST	-3,122,915	-3,122,915	-£1,402.19	-£1,611.42	-£3,013.61
SCOTLAND	-5,305,591	-5,305,591	-£2,085.10	-£2,440.57	-£4,525.67
CAMPBELTOWN	-2,965	-2,965	-£1.17	-£1.36	-£2.53
OBAN	-5,638	-5,638	-£2.22	-£2.59	-£4.81
STRANRAER	-10,806	-10,806	-£4.25	-£4.97	-£9.22
THURSO	114	114	£0.04	£0.05	£0.10
WICK	-92	-92	-£0.04	-£0.04	-£0.08
SGN	14,948,663	14,948,663	-£6,413.75	-£7,415.31	-£13,829.06

Table 9. Financial Adjustment due to Scotia Gas Networks, by LDZ for the period 1 April 2011 to 31 March 2012

The overall financial value for the LDZ and Commodity Charge Adjustment is therefore £13,829.06, a debit to Domestic Shippers under the RbD Process.