

SGN

LDZ Shrinkage

Assessment and Adjustment

For 1 April 2015 - 31 March 2016

July 2016



SGN

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LDZ Shrinkage Assessment and Adjustment for the Period 1 April 2015 – 31 March 2016

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2015 to 31 March 2016, in accordance with Uniform Network Code Section N 3.3.3, in addition to providing notification of the leakage and shrinkage volumes to be used for incentive purposes as required by Special Condition 1F.14 of the Gas Transporter License.

In accordance with Uniform Network Code Section N3.3.3 the following information provides an assessment of shrinkage for Scotland, Thurso, Wick, Campbeltown, Oban, Stranraer, South, and South East LDZs. SGNs Final LDZ Shrinkage Proposals for the Formula Year 2015/16 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 2015/16 detailed within this document provides, where applicable, reasons for significant variance between the estimated and the assessed LDZ Shrinkage Quantities for the period.

For the 2015/16 leakage assessment, SGN has applied V1.4, which has been approved for use. The leakage assessment for the purposes of the 2015/16 shrinkage adjustment has resulted in annual leakage for 2015/16 of 722.6GWh, which is 1.5 GWh higher than estimated.

The Leakage Volume (LVt) and Actual Shrinkage Volume (ASVt) to be used for incentive revenue purposes for 2015/16 are 722.6 GWh (LVt) and 766.1 GWh (ASVt). The values relating to each specific LDZ can be found in Table 1. The values used for incentive revenue purposes differ from those used to calculate the Shrinkage Adjustment for UNC purposes because they are calculated using the same calorific value assumptions underpinning the incentive baseline targets, thus avoiding potential windfall gains or losses arising from variations in outturn calorific value.

2 LDZ Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2015/16 were proposed based on an assessment of leakage for the formula year 2013/14. SGN applied V1.4 of the Leakage Model to carry out the assessment of leakage for the formula Year 2015/16. No further amendments have been made to the methodologies applied within the leakage model.



Baseline CV				Actual CV		
LDZ	2015/16 Assessed Shrinkage - ASVt (GWh)	2015/16 Assessed Leakage - LVt (GWh)	2015/16 Estimated Leakage (GWh)	2015/16 Estimated Leakage (kWh/Day)	2015/16 Assessed Leakage (GWh)	2015/16 Assessed Leakage (kWh/Day)
South	222.0	210.9	207.3	566,421	211.2	577,046
South East	332.2	315.5	318.8	871,093	316.5	864,887
Scotland	210.7	195.2	193.6	528,825	193.8	529,635
Campbeltown	0.2	0.2	0.2	656	0.2	438
Oban	0.3	0.3	0.4	1,066	0.3	852
Stranraer	0.3	0.3	0.3	847	0.2	676
Thurso	0.1	0.1	0.2	656	0.1	346
Wick	0.2	0.1	0.3	765	0.1	388
SGN Total	766.1	722.6	721.14	1,970,328	722.583	1,974,269

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

Table 1: Estimated and Assessed Energy by LDZ

As shown in Table 1, above the assessment of leakage has resulted in an increase in energy of 1.5GWh.

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 applied for 2015/16 is 0.0113% which was determined from Advantica's 2006 review of their OUG model.

Table 2: Assessment of Own Use Gas

LDZ	Consumption 2015/16 (GWh)	Applied OUG Factor 2015/16	Daily OUG Quantity (kWh)
South	35,662	0.0113%	11,010
South East	53,365		16,476
Scotland	49,680		15,338
Campbeltown	28		9
Oban	28		9
Stranraer	115		36
Thurso	40		12
Wick	36		11
SGN Total	138,954		42,901

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 0.0200% of throughput for 2015/16.

Table 3: Assessment of Theft of Gas

LDZ	Consumption 2015/16 (GWh)	Applied ToG Factor 2015/16	Daily ToG Quantity (kWh)
South	35,662	0.0200%	19,487
South East	53,365		29,161
Scotland	49,680		27,147
Campbeltown	28		15
Oban	28		15
Stranraer	115		63
Thurso	40		22
Wick	36		20
SGN Total	138,954		75,931

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 2015/16 in February 2015. 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 2015. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2015/16 produced in the method detailed within this document.

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

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2015/16	Applied Shrinkage Quantities 2015/16	Difference Between Assessed & Applied Quantities (kWh/day)
South	577,046	11,010	19,487	607,544	598,789	8,755
South East	864,887	16,476	29,161	910,524	917,330	-6,806
Scotland	529,635	15,338	27,147	572,121	571,681	440
Campbeltown	438	9	15	462	694	-232
Oban	852	9	15	876	1,106	-230
Stranraer	676	36	63	775	967	-192
Thurso	346	12	22	380	697	-317
Wick	388	11	20	419	791	-372
SGN Total	1,974,269	42,901	75,931	2,093,102	2,092,055	1,047

The difference between Scotia Gas Network's estimated and assessed LDZ Shrinkage Quantities is 1,047Wh per day, as shown in Table 4.

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 2015 to 31 March 2016, 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;

$$\begin{array}{rcccl} \text{LDZ Shrinkage} & & & & \\ \text{Reconciliation Quantity} & = & \text{Assessed LDZ} & & \text{Procured LDZ} \\ \text{(SLRQ)} & & \text{Shrinkage Quantity} & - & \text{Shrinkage} \\ & & \text{(SLAQ)} & & \text{Quantity (SLPQ)} \end{array}$$

Table 5 below shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1 April 2015 to 31 March 2016.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
South	8,755
South East	-6,806
Scotland	440
Campbeltown	-232
Oban	-230
Stranraer	-192
Thurso	-317
Wick	-372
SGN Total	1,047

3.3 Financial Adjustment

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

$$FA(£) = \sum_{1/4/15}^{31/3/16} SLRQ(kWh) \times SAP(p / kWh) / 100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1 April 2015 to 31 March 2016

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 affected portfolio in each LDZ for each month.

Table 6, below, shows the financial adjustment by LDZ for the period 1 April 2015 to 31 March 2016, calculated on a daily basis in line with the methodology indicated above.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
South	8,755	£41,983.20
South East	-6,806	-£32,635.78
Scotland	440	£2,108.86
Campbeltown	-232	-£1,111.47
Oban	-230	-£1,102.99
Stranraer	-192	-£922.07
Thurso	-317	-£1,518.39
Wick	-372	-£1,782.35
SGN Total	1,047	£5,019.02

The overall financial value for the Energy Adjustment of £5,019.02 is positive and therefore identified as a debit to Scotia Gas Networks and a credit to Shippers.

4 LDZ 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 2015 to 31 March 2016.

4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2015 to 31 March 2016.

Table 7: Scotland LDZ Commodity Charges for the 2015/16 period

Commodity	Period of Application	
	01/04/15 to 30/09/15	01/10/15 to 31/03/16
NTS Commodity (=TO+SO)	0.000367	0.000357
LDZ System Commodity Charge	0.000264	0.000264

Table 8: Southern LDZ Commodity Charges for the 2015/16 period

Commodity	Period of Application	
	01/04/15 to 30/09/15	01/10/15 to 31/03/16
NTS Commodity (=TO+SO)	0.000367	0.000357
LDZ System Commodity Charge	0.000329	0.000329

4.3 LDZ Shrinkage Reconciliation Quantities

Table 9 below shows the LDZ Shrinkage Reconciliation Quantities (LRQ) for each LDZ for each period of differing Commodity Charges.

Table 9: LDZ Shrinkage Reconciliation Quantities kWh

LDZ	Total over Period	01/04/15 to 30/09/15	01/10/15 to 31/03/16
South	3,204,261	1,602,130	1,602,130
South East	-2,490,843	-1,245,421	-1,245,421
Scotland	160,954	80,477	80,477
Campbeltown	-84,830	-42,415	-42,415
Oban	-84,183	-42,091	-42,091
Stranraer	-70,375	-35,187	-35,187
Thurso	-115,887	-57,944	-57,944
Wick	-136,033	-68,017	-68,017
SGN Total	383,064	191,532	191,532

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;

$$FA_{cc} (£) = \sum_{01/04/15}^{30/09/15} LRQ(kWh) \times CC_1 (£/kWh) + \sum_{1/10/15}^{31/03/16} LRQ(kWh) \times CC_2 (£/kWh)$$

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 2015 to 30 September 2015

$CC_2 (£/kWh)$ = SGN LDZ and Customer Commodity Charge applicable to the period 1 October 2015 to 31 March 2016

Table 10 : Financial Adjustment due to Scotia Gas Networks by LDZ for the period 1 April 2015 to 31 March 2016

Transportation Charges - Scotia Gas Networks					
LDZ	Pricing Period		Pricing Period		Assessment Period
	01/04/15 to 30/09/15	01/10/15 to 31/03/16	01/04/15 to 30/09/15	01/10/15 to 31/01/16	01/04/15 to 31/03/16
	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment
South	1,602,130	1,602,130	£1,115.08	£1,099.06	£2,214.14
South East	-1,245,421	-1,245,421	-£866.81	-£854.36	-£1,721.17
Scotland	80,477	80,477	£50.78	£49.98	£100.76
Campbeltown	-42,415	-42,415	-£26.76	-£26.34	-£53.10
Oban	-42,091	-42,091	-£26.56	-£26.14	-£52.70
Stranraer	-35,187	-35,187	-£22.20	-£21.85	-£44.05
Thurso	-57,944	-57,944	-£36.56	-£35.98	-£72.55
Wick	-68,017	-68,017	-£42.92	-£42.24	-£85.16
SGN Total	191,532	191,532	£144.04	£142.13	£286.17

The overall financial value for the LDZ and Commodity Charge Adjustment £286.17 is positive and therefore identified as a debit to Scotia Gas Networks and a credit to Shippers.