

SGN

LDZ Shrinkage

Assessment and Adjustment

For 1 April 2018 - 31 March 2019

July 2019



SGN

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LDZ Shrinkage Assessment and Adjustment for the Period 1 April 2018 – 31 March 2019

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2018 to 31 March 2019, 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 2018/19 were 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 2018/19 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 2018/19 shrinkage assessment, SGN has applied V1.4, which has been approved for use. The assessment for the purposes of the 2018/19 shrinkage adjustment has resulted in annual shrinkage for 2018/19 of **683.9 GWh**, which is **1.4 GWh** lower than estimated.

The Leakage Volume (LVt) and Actual Shrinkage Volume (ASVt) to be used for incentive revenue purposes for 2018/19 are 643.2 GWh (LVt) and 686.1 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 2018/19 were proposed based on an assessment of leakage for the formula year 2016/17. SGN applied V1.4 of the Leakage Model to carry out the assessment of leakage for the formula Year 2018/19. No further amendments have been made to the methodologies applied within the leakage model.

LDZ	Baseline CV				Actual CV	
	2018/19 Assessed Shrinkage - ASVt (GWh)	2018/19 Assessed Leakage - LVt (GWh)	2018/19 Estimated Leakage (GWh)	2018/19 Estimated Leakage (kWh/Day)	2018/19 Assessed Leakage (GWh)	2018/19 Assessed Leakage (kWh/Day)
South	204.6	192.7	191.8	525,512	192.9	528,551
South East	296.0	280.2	277.9	761,347	280.4	768,262
Scotland	184.5	169.4	169.4	464,196	166.8	456,943
Campbeltown	0.2	0.2	0.2	464	0.2	422
Oban	0.3	0.3	0.3	897	0.3	838
Stranraer	0.2	0.2	0.3	693	0.2	499
Thurso	0.1	0.1	0.1	357	0.1	351
Wick	0.2	0.1	0.1	406	0.1	398
SGN Total	686.1	643.2	640.2	1,753,872	641.0	1,756,264

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 0.9 GWh.

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-Thomson 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-Thomson effect and LDZ throughput, calorific value, pressure and temperature data. The OUG factor applied for 2018/19 is 0.0113% which was determined from Advantica's 2006 review of their OUG model.

Table 2: Assessment of Own Use Gas

LDZ	Consumption 2018/19 (GWh)	Applied OUG Factor 2018/19	Daily OUG Quantity (kWh)
South	38,022	0.0113%	11,771
South East	50,439		15,616
Scotland	48,284		14,948
Campbeltown	39		12
Oban	36		11
Stranraer	162		50
Thurso	52		16
Wick	48		15
SGN Total	137,081		42,439

The assessment of OUG has resulted in a decrease in energy of 0.8 GWh for the 2018/19 Final Proposal position. This is due to a decrease in consumption.

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 2018/19.

Table 3: Assessment of Theft of Gas

LDZ	Consumption 2018/19 (GWh)	Applied ToG Factor 2018/19	Daily ToG Quantity (kWh)
South	38,022	0.0200%	20,834
South East	50,439		27,638
Scotland	48,284		26,457
Campbeltown	39		21
Oban	36		20
Stranraer	162		89
Thurso	52		28
Wick	48		26
SGN Total	137,081		75,113

The assessment of TOG has resulted in a decrease in energy of 1.5 GWh for the 2018/19 Final Proposal position. This is due to a decrease in consumption.

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 2018/19 in February 2018. 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 2018. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2018/19 produced in the method detailed within this document.

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

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2018/19	Applied Shrinkage Quantities 2018/19	Difference Between Assessed & Applied Quantities (kWh/day)
South	528,551	11,771	20,834	561,156	558,090	3,066
South East	768,262	15,616	27,638	811,516	810,173	1,343
Scotland	456,943	14,948	26,457	498,348	506,411	-8,063
Campbeltown	422	12	21	455	496	-41
Oban	838	11	20	868	927	-58
Stranraer	499	50	89	638	800	-162
Thurso	351	16	28	395	402	-7
Wick	398	15	26	439	448	-9
SGN Total	1,756,264	42,439	75,113	1,873,816	1,877,746	-3,930

The difference between Scotia Gas Network's estimated and assessed LDZ Shrinkage Quantities is 3,930KWh 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 2018 to 31 March 2019, 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;

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

Table 5 below shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1 April 2018 to 31 March 2019.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
South	3,066
South East	1,343
Scotland	-8,063
Campbeltown	-41
Oban	-58
Stranraer	-162
Thurso	-7
Wick	-9
SGN Total	-3,930

3.3 Financial Adjustment

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

$$FA(\pounds) = \sum_{1/4/18}^{31/3/19} SLRQ(kWh) \times SAP(p/kWh)/100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1 April 2018 to 31 March 2019

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 2018 to 31 March 2019, calculated on a daily basis in line with the methodology indicated above.

The overall financial value for the Energy Adjustment of £28,345.94 is therefore identified as a credit to SGN and a debit to Shippers.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
South	3,066	£22,115.25
South East	1,343	£9,685.34
Scotland	-8,063	-£58,149.46
Campbeltown	-41	-£297.73
Oban	-58	-£420.37
Stranraer	-162	-£1,168.99
Thurso	-7	-£47.09
Wick	-9	-£62.89
SGN Total	-3,930	-£28,345.94

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 2018 to 31 March 2019.

4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2018 to 31 March 2019.

Commodity	Period of Application	
	01/04/18 to 30/09/18	01/10/18 to 31/03/19
NTS Commodity (=TO+SO)	0.000303	0.000309
LDZ System Commodity Charge	0.000303	0.000303

Table 7: Scotland LDZ Commodity Charges for the 2018/19 period

Commodity	Period of Application	
	01/04/18 to 30/09/18	01/10/18 to 31/03/19
NTS Commodity (=TO+SO)	0.000303	0.000309
LDZ System Commodity Charge	0.000355	0.000355

Table 8: Southern LDZ Commodity Charges for the 2018/19 period

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	01/04/18 to 30/09/18	01/10/18 to 31/03/19
South	1,119,241	561,154	558,087
South East	490,170	245,756	244,413
Scotland	-2,942,912	-1,475,487	-1,467,425
Campbeltown	-15,068	-7,555	-7,513
Oban	-21,275	-10,666	-10,608
Stranraer	-59,162	-29,662	-29,500
Thurso	-2,383	-1,195	-1,188
Wick	-3,183	-1,596	-1,587
SGN Total	-1,434,572	-719,251.3	-715,321

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;

$$FA_{cc}(\pounds) = \sum_{01/04/18}^{30/09/18} LRQ(kWh) \times CC_1(\pounds/kWh) + \sum_{1/10/18}^{31/03/19} LRQ(kWh) \times CC_2(\pounds/kWh)$$

Where:

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

$LRQ(kWh)$ = LDZ Shrinkage Reconciliation Quantity

$CC_1(\pounds/kWh)$ = SGN LDZ and Customer Commodity Charges applicable to the period 1 April 2018 to 30 September 2018

$CC_2(\pounds/kWh)$ = SGN LDZ and Customer Commodity Charge applicable to the period 1 October 2018 to 31 March 2019

Table 10: Financial Adjustment due to Scotia Gas Networks by LDZ for the period 1 April 2018 to 31 March 2019

Transportation Charges - Scotia Gas Networks					
LDZ	Pricing Period		Pricing Period		Assessment Period
	01/04/18 to 30/09/18	01/10/18 to 31/03/19	01/04/18 to 30/09/18	01/10/18 to 31/03/19	01/04/18 to 31/03/19
	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment
South	561,154	558,087	£369.24	£370.57	£739.81
South East	245,756	244,413	£161.71	£162.29	£324.00
Scotland	-1,475,487	-1,467,425	-£894.15	-£898.06	-£1,792.21
Campbeltown	-7,555	-7,513	-£4.58	-£4.60	-£9.18
Oban	-10,666	-10,608	-£6.46	-£6.49	-£12.96
Stranraer	-29,662	-29,500	-£17.98	-£18.05	-£36.03
Thurso	-1,195	-1,188	-£0.72	-£0.73	-£1.45
Wick	-1,596	-1,587	-£0.97	-£0.97	-£1.94
SGN Total	-719,251	-715,321	-£393.91	-£396.05	-£789.95

The overall financial value for the LDZ and Commodity Charge Adjustment is **£789.95 negative** and therefore identified as a credit to SGN and a debit to Shippers.