

SGN

LDZ Shrinkage

Assessment and Adjustment

For 1 April 2019 - 31 March 2020

July 2020



SGN

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LDZ Shrinkage Assessment and Adjustment for the Period 1 April 2019 – 31 March 2020

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2019 to 31 March 2020, 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 2019/20 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 2019/20 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 2019/20 shrinkage assessment, SGN has applied V1.4, which has been approved for use. The assessment for the purposes of the 2019/20 shrinkage adjustment has resulted in annual shrinkage for 2019/20 of **659.8 GWh**, which is **1.2 GWh** lower than estimated.

The Leakage Volume (LVt) and Actual Shrinkage Volume (ASVt) to be used for incentive revenue purposes for 2019/20 are 617.5 GWh (LVt) and 661.1 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 2019/20 were proposed based on an assessment of leakage for the formula year 2017/18. SGN applied V1.4 of the Leakage Model to carry out the assessment of leakage for the formula Year 2019/20. No further amendments have been made to the methodologies applied within the leakage model.



LDZ	Baseline CV				Actual CV	
	2019/20 Assessed Shrinkage - ASVt (GWh)	2019/20 Assessed Leakage - LVt (GWh)	2019/20 Estimated Leakage (GWh)	2019/20 Estimated Leakage (kWh/Day)	2019/20 Assessed Leakage (GWh)	2019/20 Assessed Leakage (kWh/Day)
South	198.1	186.2	187.3	511,854	186.9	510,539
South East	284.4	268.0	264.5	722,664	267.8	731,803
Scotland	177.6	162.4	162.9	445,195	160.5	438,652
Campbeltown	0.2	0.2	0.2	473	0.2	421
Oban	0.3	0.3	0.3	875	0.3	847
Stranraer	0.2	0.2	0.3	685	0.2	481
Thurso	0.1	0.1	0.1	358	0.1	350
Wick	0.2	0.1	0.1	405	0.1	397
SGN Total	661.1	617.5	615.8	1,682,509	616.2	1,683,490

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 0.4 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 2019/20 is 0.0113% which was determined from Advantica’s 2006 review of their OUG model.

Table 2: Assessment of Own Use Gas

LDZ	Consumption 2019/20 (GWh)	Applied OUG Factor 2019/20	Daily OUG Quantity (kWh)
South	37,754	0.0113%	11,656
South East	52,571		16,231
Scotland	48,706		15,038
Campbeltown	40		12
Oban	37		11
Stranraer	160		49
Thurso	55		17
Wick	52		16
SGN Total	139,373		

The assessment of OUG has resulted in a decrease in energy of 0.6 GWh from the 2019/20 Final Proposal position. This is due to a decrease in consumption from the Final Proposal forecast view.

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 2019/20.

Table 3: Assessment of Theft of Gas

LDZ	Consumption 2019/20 (GWh)	Applied ToG Factor 2019/20	Daily ToG Quantity (kWh)
South	37,754	0.0200%	20,630
South East	52,571		28,727
Scotland	48,706		26,615
Campbeltown	40		22
Oban	37		20
Stranraer	160		87
Thurso	55		30
Wick	52		28
SGN Total	139,373		

The assessment of TOG has resulted in a decrease in energy of **1.0 GWh** for the 2019/20 Final Proposal position. This is due to a decrease in consumption from the Final Proposal forecast view.

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 2019/20 in February 2019. 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 2019. The proposed/applied LDZ Shrinkage Quantities are shown in Table 4 below, along with the assessed LDZ specific Shrinkage Quantities for 2019/20 produced in the method detailed within this document.

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

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2019/20	Applied Shrinkage Quantities 2019/20	Difference Between Assessed & Applied Quantities (kWh/day)
South	510,539	11,656	20,630	542,826	544,729	-1,903
South East	731,803	16,231	28,727	776,762	771,779	4,983
Scotland	438,652	15,038	26,615	480,305	486,434	-6,129
Campbeltown	421	12	22	455	509	-54
Oban	847	11	20	878	907	-29
Stranraer	481	49	87	618	819	-201
Thurso	350	17	30	396	405	-9
Wick	397	16	28	441	450	-9
SGN Total	1,683,490	43,030	76,160	1,802,681	1,806,032	-3,351

The difference between Scotia Gas Network's estimated and assessed LDZ Shrinkage Quantities is **3,351KWh** 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 2019 to 31 March 2020, 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 2019 to 31 March 2020.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
South	-1,903
South East	4,983
Scotland	-6,129
Campbeltown	-54
Oban	-29
Stranraer	-201
Thurso	-9
Wick	-9
SGN Total	-3,351

3.3 Financial Adjustment

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

$$FA(\pounds) = \sum_{1/4/19}^{31/3/20} SLRQ(kWh) \times SAP(p/kWh)/100$$

Where:

FA (£) = Financial Adjustment

SLRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period 1 April 2019 to 31 March 2020

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 2019 to 31 March 2020, calculated on a daily basis in line with the methodology indicated above.

The overall financial value for the Energy Adjustment of **£12,305.38** 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	-1,903	-£6,987.05
South East	4,983	£18,296.81
Scotland	-6,129	-£22,506.34
Campbeltown	-54	-£197.84
Oban	-29	-£105.87
Stranraer	-201	-£739.29
Thurso	-9	-£32.60
Wick	-9	-£33.20
SGN Total	-3,351	-£12,305.38

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 2019 to 31 March 2020.

4.2 Commodity Charges

The following Commodity Charges (£/kWh) applied over the period 1 April 2019 to 31 March 2020.

Commodity	Period of Application	
	01/04/19 to 30/09/19	01/10/19 to 31/03/20
NTS Commodity (=TO+SO)	0.000385	0.000348
LDZ System Commodity Charge	0.000306	0.000306

Table 7: Scotland LDZ Commodity Charges for the 2019/20 period

Commodity	Period of Application	
	01/04/19 to 30/09/19	01/10/19 to 31/03/20
NTS Commodity (=TO+SO)	0.000385	0.000348
LDZ System Commodity Charge	0.000367	0.000367

Table 8: Southern LDZ Commodity Charges for the 2019/20 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	01/04/19 to 30/09/19	01/10/19 to 31/03/20
South	-696,431	-348,216	-348,216
South East	1,823,728	911,864	911,864
Scotland	-2,243,311	-1,121,656	-1,121,656
Campbeltown	-19,719	-9,860	-9,860
Oban	-10,553	-5,276	-5,276
Stranraer	-73,688	-36,844	-36,844
Thurso	-3,250	-1,625	-1,625
Wick	-3,309	-1,655	-1,655
SGN Total	-1,226,534	-613,267	-613,267

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;

$$FA_{cc}(\pounds) = \sum_{01/04/19}^{30/09/19} LRQ(kWh) \times CC_1(\pounds/kWh) + \sum_{1/10/19}^{31/03/20} LRQ(kWh) \times CC_2(\pounds/kWh)$$

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 2019 to 30 September 2019

$CC_2(\pounds/kWh)$ = SGN LDZ and Customer Commodity Charge applicable to the period 1 October 2019 to 31 March 2020

Table 10: Financial Adjustment due to Scotia Gas Networks by LDZ for the period 1 April 2019 to 31 March 2020

Transportation Charges - Scotia Gas Networks					
LDZ	Pricing Period		Pricing Period		Assessment Period
	01/04/19 to 30/09/19	01/10/19 to 31/03/20	01/04/19 to 30/09/19	01/10/19 to 31/03/20	01/04/19 to 31/03/20
	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment
South	-348,216	-348,216	£261.86	£248.97	£510.83
South East	911,864	911,864	£685.72	£651.98	£1,337.70
Scotland	-1,121,656	-1,121,656	£775.06	£733.56	£1,508.63
Campbeltown	-9,860	-9,860	£6.81	£6.45	£13.26
Oban	-5,276	-5,276	£3.65	£3.45	£7.10
Stranraer	-36,844	-36,844	£25.46	£24.10	£49.56
Thurso	-1,625	-1,625	£1.12	£1.06	£2.19
Wick	-1,655	-1,655	£1.14	£1.08	£2.23
SGN Total	-613,267	-613,267	£389.39	£366.69	£756.08

The overall financial value for the LDZ and Commodity Charge Adjustment is **£756.08** negative and therefore identified as a credit to SGN and a debit to Shippers.