

Shrinkage Assessment & Adjustment

1 April 2019 – 31 March 2020

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Table of Contents

1. Executive Summary.....	3
2. Shrinkage Quantity Assessment.....	5
2.1 Leakage.....	5
2.1.1 Assessment of 2019/20 Leakage.....	5
2.1.2 Differences between Estimated and Assessed Leakage.....	5
2.2 Own Use Gas.....	5
2.3 Theft of Gas.....	6
2.4 LDZ Specific Shrinkage Quantities.....	7
2.4.1 Reasons for Differences.....	7
3. Shrinkage Adjustment.....	8
3.1 Introduction.....	8
3.2 LDZ Shrinkage Reconciliation Calculations.....	8
3.3 Energy Financial Adjustment.....	9
4. Shrinkage Commodity Charge.....	10
4.1 Introduction.....	10
4.2 Applicable Commodity Charges.....	10
4.3 LDZ Shrinkage Reconciliation Quantities.....	11
4.4 Financial Adjustment.....	11
5. Leakage Volume (LVt) and Shrinkage Volume (ASVt).....	13
5.1 Introduction.....	13
5.2. LVt and ASVt for the 2019/20 Formula Year.....	14



Assessment & Adjustment

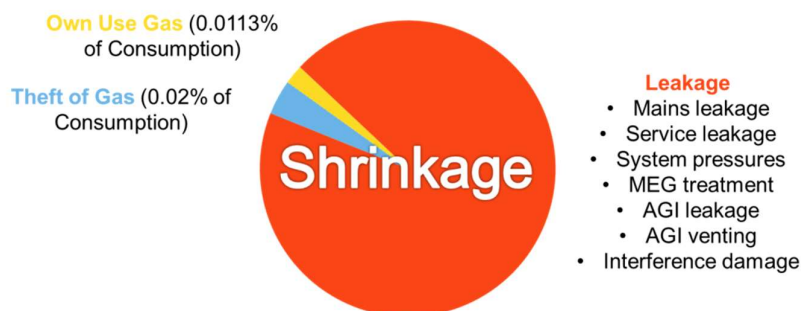
1 April 2019 – 31 March 2020

1. Executive Summary

This document presents an assessment of LDZ Shrinkage for the period 1 April 2019 – 31 March 2020, in accordance with Uniform Network Code Section N 3.3. In addition, this report provides notification of leakage and shrinkage volumes to be used for incentive purposes as required by Special Condition 1F.14 of the Gas Transporter licence.

Cadent's Final LDZ Shrinkage Quantity Proposal for the Formula Year 2019/20, issued 28 Feb 2019, proposed individual LDZ Shrinkage Quantities equating to a total annual Shrinkage Quantity of 1,169.7 GWh. The Final Proposal for the Formula Year 2019/20 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 calculated at LDZ level;
- Own Use Gas, with a single factor of forecast annual throughput being applied across all LDZs; and
- Theft of Gas, which is gas stolen upstream of the meter with a single factor of forecast annual throughput being applied across all LDZs.

The assessment of LDZ Shrinkage for the Formula Year 2019/20 detailed within the document provides, where applicable, the reasons for any significant variance between the estimated and the assessed LDZ Shrinkage Quantities for the period.

The assessment of LDZ Shrinkage (1,171.7 GWh) is 1.9 GWh (0.2%) higher than the volume of Shrinkage purchased. The leakage assessment resulted in calculated leakage volume of 1,088.9 GWh, which is 1.4 GWh (0.1%) higher than originally estimated.

In addition to an increase in leakage there was an increase of 0.6 GWh in the assessed volumes for Own Use Gas and Theft of Gas.

The assessed Shrinkage volume is higher than the estimated volume, we will therefore return monies to the value of £19,550.55 to Shippers and a further amount of £1,250.03 for Commodity Charges.

The Leakage Volume (LVt) and Actual Shrinkage Volume (ASVt) to be used for incentive revenue purposes for 2019/20 are 1,090.1 GWh and 1,172.8 GWh, respectively. The values used for incentive purposes are calculated using the calorific value assumptions that underpin the incentive baseline targets, thus avoiding potential windfall gains or losses arising from variations in outturn calorific values.



Assessment & Adjustment

1 April 2019 – 31 March 2020

2. Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2019/20 were proposed based on an assessment of leakage with the anticipated mains replacement being taken into account, leading to an assumed procurement of 1,087.5 GWh for leakage.

2.1.1 Assessment of 2019/20 Leakage

Cadent applied v1.4 of the Leakage Model to carry out the assessment of leakage. Table 1 below shows that assessed leakage varies to the 2019/20 proposals by approximately 1.4 GWh.

	ESTIMATED LEAKAGE (GWh)	ASSESSED LEAKAGE (GWh)	DIFFERENCE (GWh)
EAST ANGLIA	184.6	180.7	-3.9
EAST MIDLANDS	191.1	197.4	6.3
NORTH LONDON	192.8	190.2	-2.7
NORTH WEST	272.9	276.4	3.4
WEST MIDLANDS	246.1	244.3	-1.8
CADENT	1,087.5	1,088.9	1.4

Table 1. Estimated and Assessed Leakage Energy by LDZ for 2019/20

2.1.2 Differences between Estimated and Assessed Leakage

The estimation of leakage is based on reasoned forecast expectations for each of the components that determine final assessment volumes. Cadent are committed to ensuring that the forecast is as accurate as possible, this is beneficial to our customers because it reduces the size of two year lagged financial true ups against allowed levels of cost.

2.2 Own Use Gas

Own Use Gas is gas used within the LDZ for such purposes as pre-heater fuel and for other minor operational purposes. Pre-heating is required to counter the impact of gas freezing during depressurisation.

The volumes procured in 2019/20 in respect of Own Use Gas were based on the application of the standard factor (0.0113% of consumption) to our 2019/20 demand forecast. The actual demand in 2019/20 was higher than that used for the forecast calculation, the impact of this is a difference between estimated and assessed volumes of 0.2 GWh.



	ESTIMATED 2019/20 CONSUMPTION (GWh)	2019/20 ACTUAL CONSUMPTION (GWh)	ESTIMATED OUG (GWh)	ASSESSED OUG (GWh)	ADJUSTMENT (GWh)
EAST ANGLIA	42,908	43,154	4.8	4.9	0.03
EAST MIDLANDS	56,704	57,717	6.4	6.5	0.1
NORTH LONDON	52,207	50,699	5.9	5.7	-0.2
NORTH WEST	65,880	67,170	7.4	7.6	0.1
WEST MIDLANDS	44,968	45,693	5.1	5.2	0.1
CADENT	262,667	264,433	29.7	29.9	0.2

Table 2. Assessment of OUG (0.0113% of Consumption)

2.3 Theft of Gas

Uniform Network Code Section N1.4.2 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 customer”.

The volumes procured in 2019/20 in respect of Theft of Gas (TOG) were based on the application of the standard factor (0.02% of consumption) to our 2019/20 demand forecast. The impact of the difference in demand between estimated and assessed gives a volume difference of 0.4 GWh.

	ESTIMATED 2019/20 CONSUMPTION (GWh)	2019/20 ACTUAL CONSUMPTION (GWh)	ESTIMATED TOG (GWh)	ASSESSED TOG (GWh)	ADJUSTMENT (GWh)
EAST ANGLIA	42,908	43,154	8.6	8.6	0.05
EAST MIDLANDS	56,704	57,717	11.3	11.5	0.2
NORTH LONDON	52,207	50,699	10.4	10.1	-0.3
NORTH WEST	65,880	67,170	13.2	13.4	0.3
WEST MIDLANDS	44,968	45,693	9.0	9.1	0.1
CADENT	262,667	264,433	52.5	52.9	0.4

Table 3. Assessment of TOG (0.02% of Consumption)



2.4 LDZ Specific Shrinkage Quantities

Cadent initially proposed LDZ specific Shrinkage Quantities for the formula year 2019/20 in December 2018, with the same quantities again being included within the Final Proposal. Cadent's proposal was not subject to Ofgem disapproval under Standard Special Condition A11 (18), with the proposed LDZ specific Shrinkage Quantities being applied with effect from the 1 April 2019. The applied LDZ Shrinkage Quantities are shown in table 4 below, along with the Assessed LDZ specific Shrinkage Quantities.

	APPLIED QUANTITIES (GWh)	ASSESSED QUANTITIES (GWh)	DIFFERENCE (GWh)	DIFFERENCE (kWh/day)
EAST ANGLIA	198.0	194.2	-3.8	-10,365
EAST MIDLANDS	208.8	215.5	6.6	18,167
NORTH LONDON	209.2	206.0	-3.2	-8,607
NORTH WEST	293.5	297.4	3.8	10,467
WEST MIDLANDS	260.1	258.6	-1.6	-4,337
CADENT	1,169.7	1,171.7	1.9	5,324

Table 4. LDZ Specific Shrinkage Quantities (GWh)

2.4.1 Reasons for Differences

The difference between Cadent's forecast projection and the actual outturn volumes are minimal which demonstrates the quality of our forecasting team. There is a marginal impact from higher than forecasted demand levels, which impact Own Use Gas and Theft of Gas. The remaining difference is being impacted by minor differences in forecast assumptions against actual performance in the areas of Mains Replacement, Average System Pressures and MEG Treatment.



Assessment & Adjustment

1 April 2019 – 31 March 2020

3. Shrinkage Adjustment

3.1 Introduction

This section advises Shippers of the Shrinkage Adjustment for Cadent operated LDZs for the period 1 April 2019 to 31 March 2020, as referred to in Network Code Section N3.4.1.

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 Cadent has over or under procured.

Therefore, for each LDZ:

$$S_{LRQ} = (S_{LAQ} - S_{LPQ})$$

Where S_{LRQ} = Reconciliation LDZ specific Daily Shrinkage Quantity (kWh)
 S_{LAQ} = Assessed LDZ specific Daily Shrinkage Quantity (kWh)
 S_{LPQ} = Procured LDZ specific Daily Shrinkage Quantity (kWh)

Table 5 below, shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1 April 2019 to 31 March 2020.

	LDZ RECONCILIATION QUANTITY (kWh/day)
EAST ANGLIA	-10,365
EAST MIDLANDS	18,167
NORTH LONDON	-8,607
NORTH WEST	10,467
WEST MIDLANDS	-4,337
CADENT	5,324

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



3.3 Energy Financial Adjustment

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

$$FA(\pounds) = \sum_{01/04/19}^{31/03/20} S_{LRQ}(kWh) \times SAP(p/kWh) / 100$$

Where $FA(\pounds)$ = Financial Adjustment

$S_{LRQ}(kWh)$ = LDZ Shrinkage Reconciliation Quantity

SAP = Daily System Average Price for the period

The allocation of any charge 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.

	LDZ SHRINKAGE DAILY RECONCILIATION QUANTITY (kWh)	ADJUSTMENT VALUE DUE TO CHANGES TO SHRINKAGE QUANTITIES
EAST ANGLIA	-10,365	£-38,059.79
EAST MIDLANDS	18,167	£66,708.30
NORTH LONDON	-8,607	£-31,604.06
NORTH WEST	10,467	£38,433.16
WEST MIDLANDS	-4,337	£-15,927.07
CADENT	5,324	£19,550.55

Table 6. LDZ Shrinkage Reconciliation for the period 1 April 2019 to 31 March 2020

The assessed Shrinkage volume is higher than the estimated volume therefore we will return monies to the value of £19,550.55 to Shippers and a further amount of £1,250.03 for Commodity Charges.



Assessment & Adjustment

1 April 2019 – 31 March 2020

4. Shrinkage Commodity Charge

4.1 Introduction

This section advises Shippers of the Commodity Charge associated with the Cadent operated LDZ Shrinkage Adjustment for the period 1 April 2019 to 31 March 2020.

4.2 Applicable Commodity Charges

Table 7 below, shows the Commodity Charges that applied over the period 1 April 2019 to 31 March 2020.

		PERIOD OF APPLICATION	
		01/04/2019 to 30/09/2019	01/10/2019 to 31/03/2020
NTS SO EXIT COMMODITY (p/kWh)		0.0149	0.0122
NTS TO EXIT COMMODITY (p/kWh)		0.0236	0.0226
LDZ SYSTEM COMMODITY CHARGE (p/kWh)	EAST ANGLIA	0.0290	0.0290
	EAST MIDLANDS	0.0290	0.0290
	NORTH LONDON	0.0336	0.0336
	NORTH WEST	0.0338	0.0338
	WEST MIDLANDS	0.0333	0.0333

Table 7. Applicable Commodity Charges 1 April 2019 to 31 March 2020



4.3 LDZ Shrinkage Reconciliation Quantities

Table 8 below, shows the total LDZ Shrinkage Reconciliation Quantities (LRQ) for each LDZ for each period of differing Commodity Charge.

	TOTAL OVER PERIOD	01/04/2019 to 30/09/2019	01/10/2019 to 31/03/2020
EAST ANGLIA	-3,793,596	-1,896,798	-1,896,798
EAST MIDLANDS	6,649,126	3,324,563	3,324,563
NORTH LONDON	-3,150,123	-1,575,061	-1,575,061
NORTH WEST	3,830,811	1,915,406	1,915,406
WEST MIDLANDS	-1,587,525	-793,762	-793,762
CADENT	1,948,694	974,347	974,347

Table 8. LDZ Shrinkage Reconciliation Quantities (kWh)

4.4 Financial Adjustment

The financial adjustment (FA) due for Commodity Charge reconciliation is calculated as a sum for each LDZ, as shown below.

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

Where: $FA_{cc}(\pounds)$ = Financial Adjustment associated with the Commodity Charge

$LRQ(kWh)$ = LDZ Shrinkage Reconciliation Quantity

$CC_1(\pounds/kWh)$ = Commodity Charge applicable to the period 1 April 2019 to 30 September 2019

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



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

TRANSPORTATION CHARGES					
	TOTAL VOLUME (kWh)		TOTAL ADJUSTMENT		ASSESSMENT PERIOD
	PRICING PERIOD		PRICING PERIOD		
	01/04/2019 to 30/09/2020	01/10/2019 to 31/03/2020	01/04/2019 to 30/09/2019	01/10/2019 to 31/03/2020	01/04/2019 to 31/03/2020
EAST ANGLIA	-1,896,798	-1,896,798	-£1,280.34	-£1,280.34	-£2,490.50
EAST MIDLANDS	3,324,563	3,324,563	£2,244.08	£2,244.08	£4,365.15
NORTH LONDON	-1,575,061	-1,575,061	-£1,135.62	-£1,135.62	-£2,212.96
NORTH WEST	1,915,406	1,915,406	£1,384.84	£1,384.84	£2,698.81
WEST MIDLANDS	-793,762	-793,762	-£569.92	-£569.92	-£1,110.47
CADENT	974,347	974,347	£643.04	£643.04	£1,250.03

Table 9. Financial Adjustment by LDZ for the period 1 April 2019 to 31 March 2020

The overall financial value for the Commodity Charge Adjustment is therefore £1,250.03, a return of monies to Domestic Shippers.



Assessment & Adjustment

1 April 2019 – 31 March 2020

5. Leakage Volume (LVt) and Shrinkage Volume (ASVt)

5.1 Introduction

This section provides the LVt and ASVt values to be used for revenue incentive calculations.

Special Condition 1F.14 of the Gas Transporter licence requires that “The Licensee must, by 31 July in each Formula Year, make publicly available and provide to the Authority a report that sets out the actual Leakage volume (LVt) and actual Shrinkage volume (ASVt) as calculated in accordance with the Shrinkage and Leakage Model for each Distribution Network for the preceding Formula Year.”

Shrinkage and Leakage volumes used for incentive purpose are calculated using the same calorific value assumptions used to determine the Shrinkage and Leakage Incentive volume allowances provided in Appendix 2 and Appendix 3 of Special Condition 1F.14 of the Gas Transporter licence. This is to avoid potential windfall gains and losses arising as a result of outturn calorific values, which are out of the control of the GDNs, being different from those underpinning the incentive targets.



5.2. LVt and ASVt for the 2019/20 Formula Year

Table 10 provides the LVt and ASVt values for the 2019/20 formula year by LDZ and indicates the calorific value assumptions used to calculate these.

	LEAKAGE VOLUME (LVt)	OUG	TOG	SHRINKAGE VOLUME (ASVt)	ASSUMED CALORIFIC VALUE (MJ/m ³)
EAST ANGLIA	182.3	4.9	8.6	195.8	39.07
EAST MIDLANDS	198.0	6.5	11.5	216.0	39.37
NORTH LONDON	190.7	5.7	10.1	206.6	39.24
NORTH WEST	274.4	7.6	13.4	295.4	39.48
WEST MIDLANDS	244.7	5.2	9.1	259.0	39.23
CADENT	1,090.1	29.9	52.9	1,172.8	39.28

Table 10. 2019/20 LDZ LVt and ASVt (GWh)

Table 11 below provides the LVt and ASVt values for the 2019/20 formula year by Network.

	LEAKAGE VOLUME (LVt)	SHRINKAGE VOLUME (ASVt)
EAST of ENGLAND	380.3	411.8
NORTH LONDON	190.7	206.6
NORTH WEST	274.4	295.4
WEST MIDLANDS	244.7	259.0
CADENT	1,090.1	1,172.8

Table 11. 2019/20 Network LVt and ASVt (GWh)

