

Shrinkage Assessment & Adjustment

1 April 2021 – 31 March 2022

Publication Date: July 2022
Version 1.0

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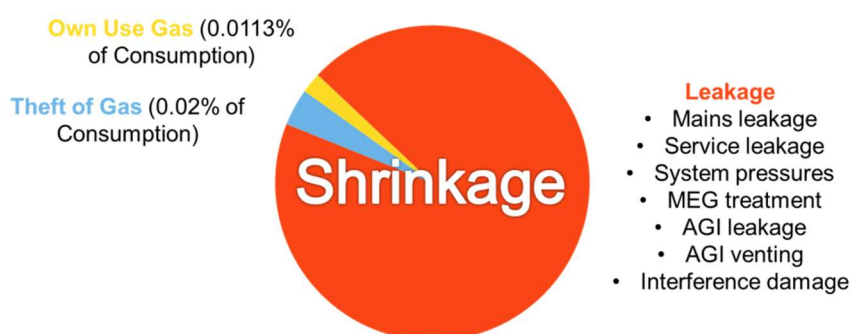
1 April 2021 – 31 March 2022

1. Executive Summary

This document presents an assessment of LDZ Shrinkage for the period 1 April 2021 – 31 March 2022, in accordance with Uniform Network Code Section N 3.3. In addition, this report provides notification of the Actual Leakage Volumes and Actual Shrinkage Volumes as required by Special Condition 4.4 Part C of the Gas Transporter licence.

Cadent's Final LDZ Shrinkage Quantity Proposal for the Formula Year 2021/22, issued 26 February 2021, proposed individual LDZ Shrinkage Quantities equating to a total annual Shrinkage Quantity of 1,100.9 GWh. The Final Proposal for the Formula Year 2021/22 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 2021/22 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 (1,088.9 GWh) is 12.0 GWh (1.1%) lower than the volume of Shrinkage purchased. The leakage assessment resulted in calculated leakage volume of 1,007.1 GWh, which is 11.1 GWh (1.1%) lower than originally estimated.

In addition to a decrease in leakage there was an decrease of 0.9 GWh in the assessed volumes for Own Use Gas and Theft of Gas.

The assessed Shrinkage volume is lower than the estimated volume, we will therefore recover monies to the value of £646,488.96 from Shippers and a further amount of £3,587.96 for Commodity Charges.

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2. Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2021/22 were proposed based on an assessment of leakage with the anticipated mains replacement being taken into account, leading to an assumed procurement of 1,018.1 GWh for leakage.

2.1.1 Assessment of 2021/22 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 2021/22 proposals by 11.1 GWh.

	ESTIMATED LEAKAGE (GWh)	ASSESSED LEAKAGE (GWh)	DIFFERENCE (GWh)
EAST ANGLIA	171.0	170.1	-0.9
EAST MIDLANDS	183.3	179.3	-3.9
NORTH LONDON	179.7	179.3	-0.5
NORTH WEST	253.5	247.4	-6.1
WEST MIDLANDS	230.6	231.0	0.4
CADENT	1,018.1	1,007.1	-11.1

Table 1. Estimated and Assessed Leakage Energy by LDZ for 2021/22

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 2021/22 in respect of Own Use Gas were based on the application of the standard factor (0.0113% of consumption) to our 2021/22 demand forecast. The actual demand in 2021/22 was lower than that used for the forecast calculation, the impact of this is a difference between estimated and assessed volumes of 0.3 GWh.

	ESTIMATED 2021/22 CONSUMPTION (GWh)	2021/22 ACTUAL CONSUMPTION (GWh)	ESTIMATED OUG (GWh)	ASSESSED OUG (GWh)	ADJUSTMENT (GWh)
EAST ANGLIA	42,588.0	43,154.0	4.8	4.9	-0.1
EAST MIDLANDS	57,314.6	57,717.0	6.5	6.5	0.0
NORTH LONDON	50,295.5	50,699.0	5.7	5.7	0.0
NORTH WEST	66,796.2	67,170.0	7.5	7.6	0.0
WEST MIDLANDS	44,501.9	45,693.0	5.0	5.2	-0.1
CADENT	261,496.3	264,433.0	29.5	29.9	-0.3

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 2021/22 in respect of Theft of Gas (TOG) were based on the application of the standard factor (0.02% of consumption) to our 2021/22 demand forecast. The impact of the difference in demand between estimated and assessed gives a volume difference of 0.6 GWh.

	ESTIMATED 2021/22 CONSUMPTION (GWh)	2021/22 ACTUAL CONSUMPTION (GWh)	ESTIMATED TOG (GWh)	ASSESSED TOG (GWh)	ADJUSTMENT (GWh)
EAST ANGLIA	42,588.0	43,154.0	8.5	8.6	-0.1
EAST MIDLANDS	57,314.6	57,717.0	11.5	11.5	-0.1
NORTH LONDON	50,295.5	50,699.0	10.1	10.1	-0.1
NORTH WEST	66,796.2	67,170.0	13.4	13.4	-0.1
WEST MIDLANDS	44,501.9	45,693.0	8.9	9.1	-0.2
CADENT	261,496.3	264,433.0	52.3	52.9	-0.6

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 2021/22 in December 2020. The volume of gas estimated to be lost was lowered in the Final Proposals published in February 2021. 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 2021. 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	184.5	183.4	-1.1	-3,052
EAST MIDLANDS	201.3	197.3	-4.1	-11,127
NORTH LONDON	195.6	195.0	-0.6	-1,695
NORTH WEST	274.5	268.3	-6.2	-16,967
WEST MIDLANDS	244.9	244.9	0.0	11
CADENT	1,100.9	1,088.9	-12.0	-32,830

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 small (1.1%). There is marginal impact from lower than forecasted demand levels, which impact Own Use Gas and Theft of Gas. The difference to the Leakage Volumes is due to differences in forecast assumptions against actual performance in the areas of Mains Replacement, Average System Pressures and MEG Treatment. System Pressures were better than our estimates, we forecasted using conservative estimates which would than offset any negative performance from factors outside of our control (for example bad weather over winter periods which cannot be forecasted with certainty).

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3. Shrinkage Adjustment

3.1 Introduction

This section advises Shippers of the Shrinkage Adjustment for Cadent operated LDZs for the period 1 April 2021 to 31 March 2022, 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 2021 to 31 March 2022.

	LDZ RECONCILIATION QUANTITY (kWh/day)
EAST ANGLIA	-3,052
EAST MIDLANDS	-11,127
NORTH LONDON	-1,695
NORTH WEST	-16,967
WEST MIDLANDS	11
CADENT	-32,830

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:

$$FA(\pounds) = \sum_{01/04/21}^{31/03/22} S_{LRQ}(kWh) \times SAP(p/kWh) / 100$$

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 2021 to 31 March 2022, 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	-3,052	£-60,100.94
EAST MIDLANDS	-11,127	£-219,119.53
NORTH LONDON	-1,695	£-33,373.09
NORTH WEST	-16,967	£-334,114.95
WEST MIDLANDS	11	£219.56
CADENT	-32,830	£-646,488.96

Table 6. LDZ Shrinkage Reconciliation for the period 1 April 2021 to 31 March 2022

The assessed Shrinkage volume is lower than the estimated volume therefore we will recover monies to the value of £646,488.96 from Shippers and a further amount of £3,587.96 for Commodity Charges.

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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 2021 to 31 March 2022.

4.2 Applicable Commodity Charges

Table 7 below, shows the Commodity Charges that applied over the period 1 April 2021 to 31 March 2022.

		PERIOD OF APPLICATION	
		01/04/2021 to 30/09/2021	01/10/2021 to 31/03/2022
LDZ SYSTEM COMMODITY CHARGE (p/kWh)	EAST ANGLIA	0.0283	0.0283
	EAST MIDLANDS	0.0283	0.0283
	NORTH LONDON	0.0331	0.0331
	NORTH WEST	0.0310	0.0310
	WEST MIDLANDS	0.0312	0.0312

Table 7. Applicable Commodity Charges 1 April 2021 to 31 March 2022



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	01/04/2021 to 30/09/2021	01/10/2021 to 31/03/2022
EAST ANGLIA	-1,113,998	-558,525	-555,473
EAST MIDLANDS	-4,061,478	-2,036,303	-2,025,175
NORTH LONDON	-618,585	-310,140	-308,445
NORTH WEST	-6,192,969	-3,104,968	-3,088,001
WEST MIDLANDS	4,070	2,040	2,029
CADENT	-11,982,960	-6,007,895	-5,975,065

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.

$$\sum_{EA}^{WM} FA_{cc}(\pounds) = \sum_{01/04/21}^{30/09/21} LRQ(kWh) \times CC_1(\pounds / kWh) + \sum_{01/10/21}^{31/03/22} LRQ(kWh) \times CC_2(\pounds / kWh)$$

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 2021 to 30 September 2021

$CC_2(\pounds/kWh)$ = Commodity Charge applicable to the period 1 October 2021 to 31 March 2022

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		
	01/04/2021 to 30/09/2021	01/10/2021 to 31/03/2022	01/04/2021 to 30/09/2021	01/10/2021 to 31/03/2022	
EAST ANGLIA	-558,525	-555,473	-£158.06	-£157.20	-£315.26
EAST MIDLANDS	-2,036,303	-2,025,175	-£576.27	-£573.12	-£1,149.40
NORTH LONDON	-310,140	-308,445	-£102.66	-£102.10	-£204.75
NORTH WEST	-3,104,968	-3,088,001	-£962.54	-£957.28	-£1,919.82
WEST MIDLANDS	2,040	2,029	£0.64	£0.63	£1.27
CADENT	-6,007,895	-5,975,065	-£1,798.90	-£1,789.07	-£3,587.96

Table 9. Financial Adjustment by LDZ for the period 1 April 2021 to 31 March 2022

The overall financial value for the Commodity Charge Adjustment is therefore £3,587.96, a recovery of monies from Domestic Shippers.

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5. Actual Leakage Volume and Actual Shrinkage Volume

5.1 Introduction

This section provides the Actual Leakage Volumes and Actual Shrinkage Volumes.

Special Condition 4.4 Part C of the Gas Transporter licence requires that:

The licensee must, by 31 July in each Regulatory Year, make publicly available and provide to the Authority a report that sets out:

- a) *Actual Leakage Volumes; and*
- b) *Actual Shrinkage Volumes as calculated in accordance with the Shrinkage and Leakage Model for each Distribution Network for the preceding Regulatory Year.*

5.2. Actual Leakage Volumes and Actual Shrinkage Volumes for the 2021/22 Formula Year

Table 10 provides the Actual Leakage Volume and Actual Shrinkage Volume for the 2021/22 formula year by LDZ and indicates the calorific value assumptions used to calculate these.

	ACTUAL LEAKAGE VOLUME	OUG	TOG	ACTUAL SHRINKAGE VOLUME	ASSUMED CALORIFIC VALUE (MJ/m ³)
EAST ANGLIA	170.1	4.8	8.5	183.4	39.2
EAST MIDLANDS	179.3	6.5	11.5	197.3	39.3
NORTH LONDON	179.3	5.7	10.0	195.0	39.2
NORTH WEST	247.4	7.6	13.4	268.3	39.7
WEST MIDLANDS	231.0	5.0	8.9	244.9	39.4
CADENT	1,007.1	29.6	52.3	1,088.9	39.4

Table 10. 2021/22 Actual Leakage and Actual Shrinkage volumes (GWh)

Table 11 below provides the Actual Leakage Volume and Actual Shrinkage Volume for the 2021/22 formula year by Network.

	ACTUAL LEAKAGE VOLUME	ACTUAL SHRINKAGE VOLUME
EAST of ENGLAND	394.4	380.7
NORTH LONDON	179.3	195.0
NORTH WEST	179.3	268.3
WEST MIDLANDS	247.3	244.9
CADENT	1,007.1	1,088.9

Table 11. 2021/22 Actual Leakage and Actual Shrinkage volumes (GWh)