



LDZ SHRINKAGE ASSESSMENT AND ADJUSTMENT

FOR 1 APRIL 2012 – 31 MARCH 2013

Wales & West Utilities

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Version 1

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LDZ Shrinkage Assessment and Adjustment for the Period 1 April 2012 – 31 March 2013

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2012 to 31 March 2013, in accordance with *Uniform Network Code Section N 3.3.3*

Wales & West Utilities' (WWU) Final LDZ Shrinkage Quantity Proposal for the Formula Year 2012/13, issued 1 March 2012, proposed individual LDZ Shrinkage Quantities equating to a total Distribution Network Shrinkage Quantity of 1,226,027 KWh per day. The Final Proposal for the Formula Year 2012/13 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
- WWU responsible Theft of Gas, with a single factor being applied across all LDZs

The assessment of LDZ Shrinkage for the Formula Year 2012/13 detailed within this document provides, where applicable, reasons for significant variance between the estimated and the assessed LDZ Shrinkage Quantities for the period.

Expressed as energy, the assessment of LDZ Shrinkage for the period 1 April 2012 to 31 March 2013 is 6GWh or approximately 16,941 kWh/day lower than the volume of Shrinkage purchased for the Formula Year 2012/13.

For this year's leakage assessment, Wales&West Utilitites applied v1.3 of the Leakage Model. WWU applied this model in last year's leakage assessment and no further modifications have been made. The leakage assessment resulted in an annual estimated leakage for 2012/13 of 419.6GWh for the purposes of the Shrinkage Adjustment, which is 3GWh lower than originally estimated. This equates to 421.7GWh¹ for the purposes of the Environmental Emissions Incentive (LV_{t,i} as defined in Special Condition E9 of the Distribution Gas Transporter Licences). LDZ specific values can be found in Table 1.

In addition to the reduction in leakage, there was also a reduction of 3.1 GWh in the assessed volumes for Own Use Gas and Theft of Gas, which was caused by outturn consumption being slightly lower than that assumed when setting the original shrinkage quantities. Details of this can be found in Section 2.4 Impact of Throughput Assumptions

The assessed Shrinkage leads to a financial adjustment of £133,475.34 credit to Wales&West Utilitites, and therefore debit to RbD Shippers, and an associated debit of £3,427.97to Shippers for Commodity Charges under the RbD process.

¹ Calculated using the LDZ specific Baseline CVs and reported net of any applicable caps/collars.

2 LDZ Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2012/13 were proposed based on an assessment of leakage for the formula year 2012/13 with anticipated mains replacement being taken into account, leading to a procurement requirement of 1,157,648kWh/day for leakage.

2.1.1 Assessment of 2012/13 Leakage

Wales&West Utilities applied V1.3 of the Leakage Model to carry out the assessment of leakage for the formula Year 2012/13. No further amendments have been made to the methodologies applied within the leakage model.

LDZ	2012/13 Estimated Leakage (GWh)	2012/13 Assessed Leakage (GWh)	2012/13 Estimated Leakage (kWh/Day)	2012/13 Assessed Leakage (kWh/Day)	2012/13 Assessed Leakage (LV _{i,i}) (GWh) ²
WN	54.5	53.6	149,267	146,950	54
WS	127.2	126.9	348,453	347,567	127.1
SW	240.9	239.1	659,928	655,034	240.6
WWU	422.5	419.6	1,157,648	1,149,551	421.7

Table 1 Estimated and Assessed Leakage Energy by LDZ

As shown in Table 1, above, the assessment of leakage has resulted in a decrease in energy of approximately 3GWh, equivalent to 8,097kWh per day or 0.7%.

2.2 Operational Usage

Operational Usage, also known as Own Use Gas (OUG), is gas 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.

Pre-heater fuel is the largest component of OUG and has always been determined using the output from a model that utilises the thermodynamic principles of the Joule-Thompson effect and gas volume, calorific value, pressure and temperature data. The currently accepted factor is based on a model developed by GL Noble Denton, which has been shared with the User community through the Shrinkage Forum.

For the purposes of assessment in respect of the 2012/13 Formula Year, no better information (meter readings) or calculation for actual OUG was available; therefore, the proposed factor of 0.0113% of consumption, based on the GL Noble Denton model, was used.

LDZ	Consumption 2012/13 (GWh)	Applied OUG Factor 2012/13	Daily OUG Quantity (kWh)
WN	7,440	0.0113%	2,303
WS	28,357		8,779
SW	33,629		10,411
WWU	69,427		21,494

Table 2 Assessment of OUG

² This is the leakage estimation used for the purposes of the Environmental Emissions Incentive. It differs from that used for the Shrinkage Adjustment in that it is calculated using the LDZ specific Calorific Values that were used to determine the EE Incentive baselines; the leakage for the Shrinkage Adjustment being calculated using the average actual LDZ specific CVs. In addition, the EE Incentive is subject to a 10% cap and collar regime; the values have been quoted without the application of the cap/collar.

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 consumer”.

In respect of the 2012/13 Gas Year, a National Factor of 0.02% of throughput, equating to a deemed Transporter responsibility of 6.67% of assumed theft, was applied.

LDZ	Consumption 2012/13 (GWh)	Applied ToG Factor 2012/13	Daily ToG Quantity (kWh)
WN	7,440	0.02%	4,077
WS	28,357		15,538
SW	33,629		18,427
WWU	69,427		38,042

Table 3 Assessment of ToG

2.4 Impact of Throughput Assumptions

The Shrinkage volumes procured in 2012/13 in respect of Own Use Gas and Theft of Gas were based on the application of the agreed factors (0.031%, combined, of consumption) to the 17-year seasonal normal demand for 2012/13 from the 2012 Demand Statements. However throughput in 2012/13 proved to be lower than estimated in the 2012 demand statement due to unforeseen reductions in industrial demand in South Wales.

LDZ	Est 2012/13 Consumption (2012 Demand Statements) (GWh)	2012/13 Actual Consumption (GWh)	Combined OUG/ToG Factor	Estimated OUG/ ToG (GWh)	Outturn OUG/ToG (GWh)	Adjustment (GWh)
WN	7,336	7,440	0.0313%	2.3	2.3	0.1
WS	41,617	28,357		12.9	8.9	-4.0
SW	31,231	33,629		9.7	10.5	0.8
WWU	80,184	69,427		24.9	21.7	-3.1

Table 4 Assessment of the Impact of Throughput Assumptions

2.5 LDZ Specific Shrinkage Quantities

Wales&West Utilities initially proposed LDZ specific Shrinkage Quantities for the Formula Year 2012/13 in January 2012, with the same quantities again being included within the Final Proposal. Wales&West Utilities 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 2012. The proposed (applied) LDZ Shrinkage Quantities are shown in Table 5, along with the Assessed LDZ specific Shrinkage Quantities for 2012/13 produced in the method detailed within this document.

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2012/13	Applied Shrinkage Quantities 2012/13	Difference Between Assessed & Applied Quantities
WN	146,950	2,303	4,077	153,330	155,616	-2,287
WS	347,567	8,779	15,538	371,884	383,836	-11,951
SW	655,034	10,411	18,427	683,873	686,575	-2,703
WWU	1,149,551	21,494	38,042	1,209,087	1,226,027	-16,941

Table 5 LDZ Specific Shrinkage Quantities (kWh/day)

2.5.1 Reasons for Differences

The difference between Wales&West Utilities' estimated and assessed LDZ Shrinkage Quantities is - 16,941kWh/day or a 1.4% decrease. This is due to a decrease in leakage equivalent to 8,097kWh per day and actual throughput being lower than the estimated 17-year seasonal normal leading to lower OUG and ToG equivalent to 8,565kWh/day.

3 LDZ Shrinkage Adjustment

3.1 Introduction

This Section advises Shippers of the Shrinkage Adjustment for Wales&West Utilities operated LDZs for the period 1 April 2012 to 31 March 2013, as referred to in *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 (S_{LRQ}) is calculated as the difference between the Assessed and Procured LDZ Shrinkage Quantities. This reconciliation quantity is the amount that Wales&West Utilities 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 6 below, shows the LDZ Reconciliation Quantities for the Shrinkage Adjustment for the period 1 April 2011 to 31 March 2012³.

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)
WN	-2,287
WS	-11,951
SW	-2,703
WWU	-16,941

Table 6 LDZ Shrinkage Reconciliation Quantity (kWh/day)

3.3 Financial Adjustment

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

$$FA(£) = \sum_{1/4/12}^{31/3/13} S_{LRQ} (kWh) \times SAP(p/kWh) / 100$$

Where:

FA (£) = Financial Adjustment

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

SAP = Daily System Average Price for the period 1 April 2012 to 31 March 2013

³ See Table 5 LDZ Specific Shrinkage Quantities (kWh/day)

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 RbD affected portfolio in each LDZ for each month.

Table 7, below, shows the financial adjustment by LDZ for the period 1 April 2012 to 31 March 2013, 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
WN	-2,287	-£18,016.52
WS	-11,951	-£94,163.66
SW	-2,703	-£21,295.16
WWU	-16,941	-£133,475.34

Table 7 LDZ Shrinkage Reconciliation for the period 1 April 2012 to 31 March 2013

The overall financial value for the Energy Adjustment, -£133,475.34 is therefore a credit to Wales&West Utilities. Under the rules of Reconciliation by Difference, this is an adjustment of equal and opposite value to Domestic Shippers, i.e. a debit of £133,475.34.

4 LDZ Shrinkage Commodity Charge Adjustment

4.1 Introduction

This section advises Shippers of the Commodity Charge associated with the Wales&West Utilities operated LDZ Shrinkage Adjustment for the period 1 April 2012 to 31 March 2013. The Commodity Charge Adjustments have been calculated in accordance with the LDZ Shrinkage Adjustments Methodology Version 2.0.

4.2 Applicable Commodity Charges

Table 8 below shows the Commodity Charges that applied over the period 1 April 2012 to 31 March 2013.

Commodity (£)		Period of Application	
		01/04/12 to 30/09/12	01/10/12 to 31/03/13
NTS Commodity		0.000242	0.000323
LDZ System Commodity Charge	WN	0.000272	0.000272
	WS	0.000272	0.000272
	SW	0.000272	0.000272

Table 8 Applicable Commodity Charges 1 April 2012 to 31 March 2013

4.3 LDZ Shrinkage Reconciliation Quantities

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

LDZ (kWh)	Total over Period	01/04/12 to 30/09/12	01/10/12 to 31/03/13
WN	-834,627	-418,457	-416,170
WS	-4,362,193	-2,187,072	-2,175,121
SW	-986,512	-494,607	-491,905
WWU	-6,183,332	Error! Not a valid link.	-3,083,196

Table 9 LDZ Shrinkage Reconciliation Quantities

4.4 Financial Adjustment

The Financial Adjustment (FA) due for Commodity Charge reconciliation is calculated, as a sum for each LDZ, as shown below:

$$\sum_{SW}^{WN} FA_{cc} (£) = \sum_{1/4/12}^{30/9/12} LRQ(kWh) \times CC_1 (£/kWh) + \sum_{1/10/12}^{31/3/13} LRQ(kWh) \times CC_2 (£/kWh)$$

Where:

FA_{cc} (£) = Financial Adjustment associated with the Commodity Charge

LRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

CC₁ (£/kWh) = Commodity Charge applicable to the period 1 April 2012 to 30 September 2012

CC₂ (£/kWh) = Commodity Charge applicable to the period 1 October 2012 to 31 March 2013

Table 10 below, shows the financial adjustment, calculated on a daily basis in line with the methodology indicated above.

Transportation Charges					
LDZ	Pricing Period		Pricing Period		Assessment Period
	01/04/12 to 30/09/12	01/10/12 to 31/03/13	01/04/12 to 30/09/12	01/10/12 to 31/03/13	01/04/12 to 31/03/13
	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment
WN	-418,457	-416,170	-£215.09	-247.62	-462.71
WS	-2,187,072	-2,175,121	-£1,124,.16	-1,294.20	-2,418.35
SW	-494,607	-491,905	-£254.23	-292.68	-546.91
WWU	-3,100,136	-3,083,196	-£1,593.47	-£1,834.50	-3,427.97

Table 10 Financial Adjustment by LDZ for the period 1 April 2012 to 31 March 2013

The overall financial value for the Commodity Charge Adjustment is therefore -£3,427.97, a debit to Domestic Shippers under the RbD process.