LDZ SHRINKAGE ASSESSMENT AND ADJUSTMENT

FOR 1 APRIL 2013 – 31 MARCH 2014

Wales & West Utilities

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Version 1

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LDZ Shrinkage Assessment and Adjustment for the Period 1 April 2013 – 31 March 2014

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the period 1 April 2013 to 31 March 2014, in accordance with *Uniform Network Code Section N 3.3.3*

Wales & West Utilities' (WWU) Final LDZ Shrinkage Quantity Proposal for the Formula Year 2013/14, issued 1 March 2013, proposed individual LDZ Shrinkage Quantities equating to a total Distribution Network Shrinkage Quantity of 1,127,998.04 KWh per day. The Final Proposal for the Formula Year 2013/14 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 2013/14 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 2013 to 31 March 2014 is 9GWh or approximately 25,934 kWh/day higher than the volume of Shrinkage purchased for the Formula Year 2013/14.

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 2013/14 of 401.8GWh for the purposes of the Shrinkage Adjustment, which is 9GWh higher than originally estimated. In addition to the increase in leakage, there was also an increase of 0.4 GWh in the assessed volumes for Own Use Gas and Theft of Gas, which was caused by outturn consumption being slightly higher 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 £208,075.25 debit to Wales&West Utilitites, and therefore credit to RbD Shippers, and an associated credit of £5,880.90 to Shippers for Commodity Charges under the RbD process.

2 LDZ Shrinkage Quantity Assessment

2.1 Leakage

LDZ specific Shrinkage Quantities for 2013/14 were proposed based on an assessment of leakage for the formula year 2013/14 with anticipated mains replacement being taken into account, leading to a procurement requirement of 1,100,917 kWh/day for leakage.

2.1.1 Assessment of 2013/14 Leakage

Wales&West Utilities applied V1.3 of the Leakage Model to carry out the assessment of leakage for the formula Year 2013/14. No further amendments have been made to the methodologies applied within the leakage model.

LDZ	2013/14 Estimated Leakage (GWh)	2013/14 Assessed Leakage (GWh)	2013/14 Estimated Leakage (kWh/Day)	2013/14 Assessed Leakage (kWh/Day)
WN	50.9	51.8	139,397	141,842
WS	113.7	117.8	311,452	322,729
SW	228.2	232.3	625,096	636,346
WWU	392.7	401.8	1,075,945	1,100,917

Table 1 Estimated and Assessed Leakage Energy by LDZ

As shown in Table 1, above, the assessment of leakage has resulted in an increase in energy of approximately 9GWh, equivalent to 24,972kWh per day or -2.3%.

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 2013/14 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 2013/14 (GWh)	Applied OUG Factor 2013/14	Daily OUG Quantity (kWh)
WN	6,485	0.011%	1,954
WS	26,371		7,948
SW	29,564		8,910
WWU	62,420		18,812

Table 2 Assessment of OUG

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 2013/14 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 2013/14 (GWh)	Applied ToG Factor 2013/14	Daily ToG Quantity (kWh)
WN	6,485	0.02%	3,553
WS	26,371		14,450
SW	29,564		16,199
WWU	62,420		34,203

Table 3 Assessment of ToG

2.4 Impact of Throughput Assumptions

The Shrinkage volumes procured in 2013/14 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 2013/14 from the 2013 Demand Statements. However throughput in 2013/14 proved to be higher than estimated in the 2013 demand statement due to unforeseen reductions in industrial demand in South Wales.

LDZ	Est 2013/14 Consumption (2013 Demand Statements) (GWh)	2013/14 Actual Consumption (GWh)	Combined OUG/ToG Factor	Estimated OUG/ ToG (GWh)	Outturn OUG/ToG (GWh)	Adjustment (GWh)
WN	6,344	6,485	0.031%	2.0	2.0	0.0
WS	26,875	26,371		8.4	8.2	-0.2
SW	27,702	29,564		8.6	9.2	0.6
WWU	60,921	62,420		19.0	19.4	0.4

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 2013/14 in January 2013, with the quantities being reduced by 0.6 GWh 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 2013. The proposed (applied) LDZ Shrinkage Quantities are shown in Table 5, along with the Assessed LDZ specific Shrinkage Quantities for 2013/14 produced in the method detailed within this document.

LDZ	Leakage	OUG	ToG	Assessed Shrinkage Quantities 2013/14	Applied Shrinkage Quantities 2013/14	Difference Between Assessed & Applied Quantities
WN	141,842	1,954	3,553	147,350	144,877	2,473
WS	322,729	7,948	14,450	345,126	334,464	10,662
SW	636,346	8,910	16,199	661,455	648,657	12,799
WWU	1,100,917	18,812	34,203	1,153,932	1,128,998	25,934

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 25,934 kWh/day or a 2.3% increase. This is due to an increase in leakage equivalent to 24,972kWh per day and actual throughput being higher than estimated leading to higher OUG and ToG equivalent to 962kWh/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 2013 to 31 March 2014, 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:

$$S_{LRQ} = \left(S_{LAQ} - S_{LPQ}\right)$$

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 2013 to 31 March 2014[1].

LDZ	**LDZ Shrinkage Reconciliation** Quantity **(kWh/day)**
WN	2,473
WS	10,662
SW	12,799
WWU	25,934

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 2013 to 31 March 2014

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, summating 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 2013 to 31 March 2014, calculated on a daily basis in line with the methodology indicated above.

[1] See Table 5 LDZ Specific Shrinkage Quantities (kWh/day)

LDZ	LDZ Shrinkage Reconciliation Quantity (kWh/day)	Adjustment Value due to Changes to Shrinkage Quantities
WN	2,473	£19,841.73
WS	10,662	£85,546.04
SW	12,799	£102,687.47
WWU	25,932	£208,075.25

Table 7 LDZ Shrinkage Reconciliation for the period 1 April 2013 to 31 March 2014

The overall financial value for the Energy Adjustment of £208,075.25 is therefore a debit 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 credit of £208,075.25.

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 2013 to 31 March 2014. 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 2013 to 31 March 2014.

Commodity (£)		Period of Application		
		01/04/13 to 30/09/13	01/10/2013 to 31/01/14	01/02/2014 to 31/03/14
NTS Commodity		0.000288	0.000368	0.00029
LDZ System Commodity Charge	WN	0.000306	0.000306	0.000306
	WS	0.000306	0.000306	0.000306
	SW	0.000306	0.000306	0.000306

Table 8 Applicable Commodity Charges 1 April 2013to 31 March 2014

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	01/04/13 to 30/09/13	01/10/2013 to 31/01/14	01/02/2014 to 31/03/14
WN	902,640	452,556	304,177	145,906
WS	3,891,658	1,951,160	1,311,435	629,063
SW	4,671,455	2,342,127	1,574,216	755,112
WWU	**9,465,753**	**4,745,843**	**3,189,829**	**1,530,081**

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:

$$\left[\sum_{SW}^{WN} FA_{cc}(£) = \sum_{1/4/13}^{30/9/13} LRQ(kWh) \times CC_1(£/kWh) + \sum_{1/10/13}^{31/1/14} LRQ(kWh) \times CC_2(£/kWh) + \sum_{1/2/14}^{31/3/14} LRQ(kWh) \times CC_3(£/kWh)\right.$$

Where:

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

LRQ (kWh) = LDZ Shrinkage Reconciliation Quantity

CC_1 (£/kWh) = Commodity Charge applicable to the period 1 April 2013 to 30 September 2013

CC_2 (£/kWh) = Commodity Charge applicable to the period 1 October 2013 to 31 January 2014

CC_3 (£/kWh) = Commodity Charge applicable to the period 1 February 2013 to 31 March 2014

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
	01/04/13 to 30/09/13	01/10/2013 to 31/01/14	01/02/2014 to 31/03/14	01/04/13 to 30/09/13	01/10/2013 to 31/01/14	01/02/2014 to 31/03/14	01/04/13 to 31/03/14
	Total Volume (kWh)	Total Volume (kWh)	Total Volume (kWh)	Total Adjustment	Total Adjustment	Total Adjustment	Total Adjustment
WN	452,556	304,177	145,906	£268.82	£205.02	£86.96	£560.79
WS	1,951,160	1,311,435	629,063	£1,158.99	£883.91	£374.92	£2,417.82
SW	2,342,127	1,574,216	755,112	£1,391.22	£1,061.02	£450.05	£2,902.29
WWU	**4,745,843**	**3,189,829**	**1,530,081**	**£2,819.03**	**£2,149.94**	**£911.93**	**£5,880.90**

Table 10 Financial Adjustment by LDZ for the period 1 April 2013 to 31 March 2014

The overall financial value for the Commodity Charge Adjustment is therefore £5,880.90, a credit to Domestic Shippers under the RbD process.