LDZ Shrinkage Quantity
Initial Proposals
Formula Year 2009/10

Wales & West House
Spooner Close
Celtic Springs
Coedkernew
Newport, NP10 8FZ

www.wwutilities.co.uk

Wales & West Utilities Limited
Wales & West House, Spooner Close, Coedkernew, Newport NP10 8FZ
Registered in England and Wales: No. 5046791

1 January 2009

Version 1.1

Table of Contents

1 LDZ Shrinkage Proposals for Formula Year 2009/10

1.1 Purpose of Proposal

The purpose of this paper is to present Wales & West Utilities' proposals in respect of LDZ Shrinkage for the Formula Year 2009/10 as required under Section N of the Uniform Network Code (UNC) Transportation Principal Document (TPD).

Implementation of UNC Modification Proposal 0203V on 1 July 2008 has revised the information that each Transporter is required to publish UNC TPD Section N. Prior to 1 July 2008 the Transporter had an obligation to set a LDZ Shrinkage Factor for each of its LDZs in order to account for gas used by the Transporter in operation of the System and for gas offtaken but unaccounted for. The revised requirement has replaced the LDZ Shrinkage Factor with an LDZ Shrinkage Quantity. These Initial Proposals detail both LDZ Shrinkage Factors and LDZ Shrinkage Quantities for ease of transition and comparison.

Implementation of UNC Modification Proposal 0225 on 29 December 2008 has resulted in changes to timing of the notification and assessment processes relating to LDZ Shrinkage Quantities. Transporters are now required to publish LDZ Shrinkage Quantities in relation to the Formula Year rather than the Gas Year.

Users are now invited to issue Representations in relation to these Initial Proposals. Any such Representation should be made by no later than the 1 February 2009. A further paper will be issued by 1 March 2009 in which WWU will set out its final estimate of the LDZ Shrinkage Quantity for the Wales North, Wales South and South West LDZs.

1.2 Summary of Proposal

The LDZ Shrinkage, which is set out in the following table, reflects the losses associated with leakage, theft of gas and gas used in the operation of the system. Details of how these factors have been determined are included in this paper. The structure of the paper follows the format of a UNC Modification Report.

Fugitive emissions of gas have been calculated on an LDZ basis. Theft of gas, and gas used in the operation of the system, has been calculated using previous defined methodology. The calculations used to derive the Shrinkage and a summary of the underlying information are set out in this proposal.

The LDZ Shrinkage Quantity is to be used as the basis for WWU's LDZ Shrinkage gas procurement during the 2009/10 Formula Year.

LDZ	Proposed LDZ Shrinkage Quantity (GWh)	Proposed LDZ Shrinkage Factor 2009/10 (%)
Wales North	65.6	0.775
Wales South	156.3	0.520
South West	296.1	0.819
Combined Values	**518.0**	**0.693**

Note: The Shrinkage Factors shown in the table are expressed as a percentage of forecast LDZ demand.

1.3 Component Analysis

This section of the document presents an analysis of the components of LDZ Shrinkage Quantities that make up the estimates for the Formula Year 2009/10 proposal.

1.3.1 Leakage

Leakage represents the largest component of the LDZ Shrinkage Quantity.

For the purpose of analysis, leakage is split into three categories which are:

- Distribution Mains (including service pipes);
- Above Ground Installations (AGIs); and,
- Other losses.

Distribution mains and service leakage is a feature of normal system operation.

AGI leakage includes the routine venting of control equipment.

Other losses include gas lost as a result of interference damage and broken mains. These losses are not continuous; they are caused by specific events.

1.3.2 Distribution Mains (and Services) Leakage

The leakage of gas from the Distribution mains system (which includes service pipe leakage) is calculated by applying the results of the 2002/3 National Leakage Testing programme to the following network[1] specific information:

- Projected (financial year end 2009/10) records of pipe asset;
- The annual average system pressure in each network[1] for calendar year 2008

The table below shows the Low Pressure leakage on an LDZ basis

LDZ	Low Pressure Leakage (GWh)
Wales North	36.8
Wales South	114.2
South West	228.9
Total	**379.9**

[1] Network in this context relates to physical interconnected pipe systems, not administrative structure.

The table below shows the Medium Pressure leakage on an LDZ basis

LDZ	Medium Pressure Leakage (GWh)
Wales North	3.8
Wales South	10.5
South West	22.7
Total	**37.0**

1.3.3 AGI Emissions

The figures for leakage from Above Ground Installations have been taken from the findings of the 2003 Above Ground Installation Leakage Test programme.

The table below shows AGI Leakage on an LDZ basis

LDZ	AGI Emissions[2] (GWh)
Wales North	22.3
Wales South	22.3
South West	33.2
Total	**77.8**

[2] Includes leakage and routine equipment venting

1.3.4 Other Losses

Gas may be lost from LDZ equipment as a result of specific events, namely broken mains and interference damage to plant, in addition to ongoing leakage. These losses are known collectively as "other losses".

Statistics in respect of the number of broken mains and damages are used in conjunction with calculations on the amount of gas lost through each type of incident to derive the total amount of gas lost as a result of these events (for the purpose of this paper the numbers of events in 2007 have been used for the analysis).

The table below shows the amount of gas lost as a result of other losses for the WWU LDZs.

LDZ	Other Losses (GWh)
Wales North	0.1
Wales South	0.5
South West	1.3
Total	**1.9**

1.3.5 Total Leakage

The table below shows the total amount of predicted leakage for Formula Year 2009/10 on an LDZ basis with the leakage expressed in GWh and as a percentage of forecast LDZ demand.

LDZ	Leakage	
	Quantity (GWh)	Factor (% of forecast LDZ demand)
Wales North	62.9	0.744
Wales South	146.9	0.488
South West	284.8	0.788
Total / Weighted Average	**494.6**	**0.662**

1.4 Own Use Gas

Natural gas is a compressible fluid; as a direct result of this property, it experiences a drop in temperature when it undergoes an isenthalpic expansion. When gas has its pressure reduced (at an NTS Offtake or Local Transmission System PRI) the gas on the downstream side of the pressure reduction apparatus is colder than the gas on the upstream side. To avoid the gas leaving a site at below freezing point of water, and causing damage to the downstream pipeline, pre-heating may be applied. Pre-heating is only needed to maintain gas above 0°C and if the gas enters the site at a sufficiently high temperature, e.g. during the summer, or if the pressure reduction is small, then pre-heating may not be required.

Pre-heating requires a small proportion of the gas passing through the site to fuel the pre-heating equipment. The amount of fuel required for pre-heating is estimated by applying industry standard thermodynamic equations, LDZ throughput and system pressures together with assumptions about the efficiency of the pre-heating equipment.

Routine venting of gas by control equipment at AGIs could also be said to be Own Use Gas, however for the purpose of this paper it is included within AGI leakage.

WWU have a planned 5 year replacement programme for water bath heaters. On completion of this programme WWU intends to use actual, metered gas consumed for AGI pre-heating rather than a calculated factor. Until completion of this programme, WWU propose to apply the factor of 0.011% to its forecast LDZ demand following studies carried out by Advantica and reported to the Shrinkage Forum.

For the Formula Year 2009/10 the factor for Own Use Gas is proposed as 0.011% of forecast LDZ demand.

1.5 Theft of Gas

UNC Section N 1.3.2 states that LDZ Shrinkage shall include, and WWU is therefore responsible for, gas illegally taken upstream of the customer control valve and downstream where there is no shipper contract with the end-user.

There is a current consensus agreement that unidentified theft is assumed to be 0.2% of forecast LDZ demand, of which 10% is deemed to be Transporters responsibility, resulting in a theft of gas factor of 0.02%.

WWU propose that the Theft of Gas factor be set at 0.02% for the Formula Year 2009/10.

1.6 LDZ Shrinkage Summary

1.6.1 LDZ Shrinkage Quantity Summary

The proposed LDZ Shrinkage Quantities for the Formula Year 2009/10 are presented in the following table.

LDZ	Leakage (GWh)	Own Use Gas (GWh)	Theft of Gas (GWh)	Proposed Shrinkage Quantity 2009/10 (GWh)
Wales North	62.9	1.0	1.7	65.6
Wales South	146.9	3.4	6.0	156.3
South West	284.8	4.1	7.2	296.1
Total	**494.6**	**8.5**	**14.9**	**518.0**

1.6.2 LDZ Shrinkage Factor Summary

The proposed LDZ Shrinkage Quantities for the Formula Year 2009/10 are presented in the following table.

LDZ	Leakage (%)	Own Use Gas (%)	Theft of Gas (%)	Proposed Shrinkage Factor 2009/10 (%)
Wales North	0.744	0.011	0.020	0.775
Wales South	0.488	0.011	0.020	0.520
South West	0.788	0.011	0.020	0.819
Weighted Average	**0.662**	**0.011**	**0.020**	**0.693**

Note: All factors are expressed as percentages of forecast LDZ demand.

1.7 Detailed Analysis

1.7.1 Leakage

In May 2003, Advantica, on behalf of Transco, completed an extensive programme of Leakage Tests. The results of the leakage testing programmes have been used in conjunction with our mains and other plant records, measurements of MEG concentration and system pressures to derive total leakage by LDZ. The nature of theses tests and their findings were described in previous proposals, and will not be included in this paper.

1.7.2 Own Use Gas

The 2009/10 proposals utilise the methodology applied in previous years and incorporating the conclusions of studies carried out by Advantica, whereby Own Use Gas is indicated as being 0.011% of forecast LDZ demand.

1.7.3 Theft of Gas

As a result of previous discussions at The Shrinkage Forum, it was concluded that 0.2% of forecast LDZ demand would be used as the overall level of theft until better information becomes available.

Transco statistics confirm the 90:10 – Shipper: Transporter split in responsibility for theft of gas. We believe that it is appropriate that WWU should assume responsibility for Theft of Gas equal to 0.02% of forecast LDZ demand.

1.8 Extent to which the Proposal would better facilitate the relevant objectives

This proposal provides an estimate of LDZ Shrinkage for the Formula Year 2009/10. Gas usage and loss in transportation within the LDZs will be reflective of actual conditions. This in turn facilitates the achievement of efficient and economic operation of the system through effective targeting of costs.

It will also lead to accurate targeting of costs to Users through the Reconciliation by Difference process and this is consistent with securing effective competition.

1.9 The implications for Wales & West Utilities of implementing the Proposal including:

a) Implications for operation of the System:

We are not aware of any such implications that would result from implementing this proposal.

b) Development and capital cost and operating cost implications:

The proposed LDZ Shrinkage Quantities (which have been prepared without Pressure and Temperature correction) lead to a fair allocation of operating costs between LDZ systems.

c) Extent to which it is appropriate for Wales & West Utilities to recover the costs, and proposal for the most appropriate way for Wales & West Utilities to recover the costs:

It is appropriate for each LDZ to incur a share of the overall Shrinkage cost dependant upon the actual shrinkage in that LDZ.

d) Analysis of the consequences (if any) this proposal would have on price regulation

We are not aware of any such implications that would result from implementing this proposal.

1.10 The implications of implementing the Proposal for Users

This proposal improves the equitability and accuracy of cost targeting across all Users.

1.11 Analysis of any advantages or disadvantages on implementation of the Proposal

- **Advantages:** Good representation of the actual system usage and losses leading to improved cost targeting.
- **Disadvantages:** WWU are not aware of any disadvantages.

1.12 Summary of the representations (to the extent that the import of those representations are not reflected elsewhere in the Proposal)

This paper outlines our initial proposals. We appreciate hearing the views of Ofgem and Users; these views will help inform our final proposals that are due to be published no later than 1 March 2009.

It would be appreciated if Users could let us have any feedback that they would like to share with us by 1 February 2009 in order for views to be considered prior to the notification of our LDZ Shrinkage Quantity final estimates.

1.13 Programme of works required as a consequence of implementing the Proposal

The only required modification is to the LDZ Shrinkage Quantities that will be entered into the UK Link systems.

1.14 Proposed implementation timetable (including timetable for any necessary information system changes

When we publish our final proposals Users will have until 15 March 2009 to request that Ofgem issues a Condition A11(18) Disapproval of this proposal. This provision is contained within UNC TPD Section N 3.1.8.

If no disapproval notice is issued beforehand, it will be our intention to implement revised LDZ Shrinkage Quantities from 06:00 hrs on 1 April 2009.

1.15 Recommendation concerning the implementation of the Proposal

We recommend the proposed LDZ Shrinkage Quantities be implemented with effect from 06:00 hrs on 1st April 2009.

1.16 Wales & West Utilities Proposal

This report contains our proposal for LDZ Shrinkage Quantities for the Formula Year 2009/10

Appendix 1

LP Pipe and Service Leakage Analysis 2007 to 2008

This section of the document provides a comparison of the assessed levels of LP pipe and service leakage by LDZ.

Details of leakage quantities in tonnes and energy quantities, annual average system pressures (ASP) and Monoethylene Glycol (MEG) levels are presented for 2008 with 2007 for comparison purposes. The levels quoted are only those attributable to low pressure mains and service leakage.

We have supplied information relating to the average pressure that is experienced by networks that contain metallic pipes and which excludes the all PE networks that often operate at higher pressures but which have very low leakage as a result of their superior performance. This will allow Users to compare the effective operating pressures of the different LDZs.

Table 1 Wales North LDZ

	2007	2008
Leakage (GWh)	40.5	36.8
Annual Average System Pressure mbarg	41.79	39.32
ASP (All-PE systems excluded) mbarg	41.13	38.51
MEG Saturation Level	0%	0%

Table 2 Wales South LDZ

	2007	2008
Leakage (GWh)	119.6	114.2
Annual Average System Pressure mbarg	33.74	34.55
ASP (All-PE systems excluded) mbarg	34.27	33.56
MEG Saturation Level	0%	0%

Table 3 South West LDZ

	2007	2008
Leakage (GWh)	247.9	228.9
Annual Average System Pressure mbarg	33.65	31.99
ASP (All-PE systems excluded) mbarg	32.90	31.17
MEG Saturation Level	0%	0%

Appendix 2

Flow-weighted Average Calorific Values (CVs) for each LDZ for 2007 & 2008

The daily flow weighted average calorific Values for each LDZ, determined in accordance with the gas (Calculation of Thermal Energy) Regulations, have been used to determine flow-weighted averages for 2008. These values have been applied to convert leakage estimates in volume terms to energy quantities for each LDZ. The values are presented in the table below with 2007 for comparison purposes.

LDZ	Average Calorific values (MJ/m^3)	
	2007	2008
Wales North	39.40	39.40
Wales South	39.20	39.20
South West	39.20	39.20