



**LDZ SHRINKAGE ASSESSMENT
FOR GAS YEAR 2005/06**

National Grid

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CONTENTS

	Page
1 Executive Summary	1
2 LDZ Shrinkage Factor Assessment	2
2.1 Leakage	2
2.1.1 Assessment of 2005/06 Leakage	2
2.2 Operational Usage	3
2.3 Theft of Gas	4
2.4 LDZ Specific Shrinkage Factors	5
2.4.1 Reasons for Differences	5

LDZ Shrinkage Assessment for the Gas Year 2005/06

1 Executive Summary

The purpose of this document is to present an assessment of LDZ Shrinkage for the Gas Year 2005/06, in accordance with *Uniform Network Code Section N 3.3.3*.

National Grid's final LDZ Shrinkage Factor proposal for the Gas Year 2005/06, issued 1 September 2005, proposed individual LDZ Shrinkage Factors equating to a national factor of 0.62% of LDZ throughput. The final proposal for the Gas Year 2005/06 was not subject to Condition 7(4) disapproval and, as a result, the proposed LDZ Shrinkage Factors were applied in accordance with *Uniform Network Code Section N 3.1.8*.

LDZ Shrinkage Factors are comprised of three main components:

- Leakage with factors applied at LDZ level.
- Operational Usage with a factor applied at a national level.
- National Grid responsible Theft of Gas with a factor applied at a national level.

The LDZ Shrinkage Factors proposed for the Gas Year 2005/06 were derived using the methodology and data sources as stated in the proposal document. Table 1 shows the date range for the information used as the basis of the proposed and assessed factors for the Gas Year 2005/06:

Table 1. Date Range of Data Used for LDZ Shrinkage Factor Proposal and Assessment 2005/06

LDZ Shrinkage Component	Basis of Proposed LDZ Shrinkage Factor 2005/06	Basis of Assessed LDZ Shrinkage Factor 2005/06
Leakage	Assessment of actual leakage for the calendar year 2004.	Assessment of leakage for the calendar year 2005 ¹ .
Operational Usage	Interim factor applied in 2005.	Results of the Advantica OUG Model
Theft of Gas	Assessment for the calendar year 2004.	Assessment for the year 2005/06.

The assessment of LDZ Shrinkage for the Gas Year 2005/06 detailed within this document provides, where applicable, reasons for significant variance between the estimated and the assessed LDZ Shrinkage Factors for the period.

Expressed as energy, the assessment of LDZ Shrinkage for 2005/06 is approximately 75,914 MWh lower than the amount of Shrinkage purchased for the Gas Year 2005/2006.

The main reason for this difference is the decrease in OUG energy, from 115,523 MWh to 39,608 MWh, associated with a reduction in OUG Factor.

¹ For the purposes of the Assessment process, the assessment of Leakage has been restricted to changes in Average System Pressure, in accordance with the agreement at the LDZ Shrinkage Forum held 8 June 2004 at Buckingham Gate.

2 LDZ Shrinkage Factor Assessment

This section of the report provides a detailed breakdown of the assessment for individual LDZs operated by National Grid for the Gas Year 2005/06.

2.1 Leakage

For the Gas Year 2005/06, LDZ specific Shrinkage Factors were proposed based on overall leakage energy of 1,877 GWh. This was based on an assessment of leakage for the calendar year 2004.

2.1.1 Assessment of 2005/06 Leakage

The assessment of leakage for the Gas Year 2005/06 applied the same methodology as used to derive National Grid's original estimate of leakage (all categories) of 1,877 GWh for that year. In accordance with the agreement established at the LDZ Shrinkage Forum held 8 June 2004, the leakage applicable to the 2005/06 Gas Year Assessment has been calculated such that it reflects changes to Average System Pressure only with all other inputs being those used for the 2004 Leakage Assessment, i.e. that used to derive the 2005/06 Gas Year applied Shrinkage Factors.

Estimated and assessed leakage quantities for each LDZ are shown in Table 2.

Table 2. Estimated and Assessed Leakage Energy by LDZ

LDZ	2005/06 Estimated Leakage (GWh)	2005/06 Assessed Leakage (GWh)
EA	274.3	273.4
EM	354.0	355.9
NT	373.9	367.6
NW	468.5	488.1
WM	406.2	393.3
National Grid	1,877.1	1,878.3

As shown in Table 2, the assessment of leakage has resulted in an increase in energy of approximately 1.2 GWh.

2.2 Operational Usage

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

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.

During the 2005/06 Shrinkage Factor proposal process, National Grid, in conjunction with the other Distribution Network owners, put forward an OUG factor based on a report produced by Advantica. The report identified a number of erroneous assumptions that had resulted in a significantly inflated estimated OUG figure in previous years. The Advantica report presented the results of a new model that addressed many of the erroneous assumptions that were in the old model and these results formed the basis of National Grid's proposal for the 2005/06 Gas Year. However, the OUG factor applied in respect of the 2005/06 Gas Year was an interim value of 0.035% of throughput. National Grid accepted the application of the interim value on the understanding that the results of the Advantica model could be used following further demonstration of the robustness of the Advantica model. A presentation was made to the June 2006 Shrinkage Forum detailing further work carried out by Advantica to demonstrate the robustness of the model. The results of this model were used for the 2006/07 Shrinkage Factor proposal, which was unchallenged by the Shipper community through the Shrinkage Factor proposal process. National Grid believes that the robustness of the Advantica model has been demonstrated and has applied the results in its assessment of the 2005/06 Gas Year.

The energy values associated with the change in OUG Factor are given in Table 3.

Table 3. Estimated and Assessed OUG Energy by LDZ

LDZ	Estimated OUG Energy (MWh)	Assessed OUG Energy (MWh)
EA	17,617	6,040
EM	25,549	8,760
NT	23,165	7,942
NW	29,025	9,951
WM	20,168	6,915
National Grid	115,523	39,608

Table 3 indicates an assessed over procurement of energy associated with OUG of 75,915 MWh.

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 previous years, unidentified theft was estimated to be 0.3% of throughput, of which 10% was deemed the Transporters' responsibility. In respect of the 2005/06 Gas Year, a National Factor of 0.02% of throughput, equating to a deemed Transporter responsibility of 6.67% of assumed theft, was applied; analysis of actual identified theft had consistently indicated the deemed 10% Transporter responsibility as an over estimate.

Confirmed Theft incidents reported to National Grid's Theft of Gas team have been confirmed for 2005/06 and are shown in Table 4.

Table 4. Confirmed Theft of Gas Incidents Reported to National Grid for 2005/06

Responsibility	2005/06 Cases		2005/06 Energy (kWh)	
	No	%	Volume	%
Shipper	1263	96.0%	35947459	97.4%
National Grid	53	4.0%	954296	2.6%

The statistics of confirmed Theft of Gas incidents reported to National Grid, above, suggest that the 6.67% National Grid proportion is still an overestimate. However, issues exist around the information available for the assessment of Theft of Gas, and National Grid is continuing to work with the shipping community with regard to participation in the Theft of Gas process, resolving outstanding cases and to obtain data on the energy quantities for each theft case.

The assessment of the 2005/06 Gas Year applied the 0.02% Theft of Gas factor.

2.4 LDZ Specific Shrinkage Factors

National Grid initially proposed LDZ specific Shrinkage Factors for the Gas Year 2005/06 in July 2005, with the same factors again being included within the final proposal. National Grid's proposal was not subject to Ofgem disapproval under Licence Condition 7 (4), with the proposed LDZ specific Shrinkage Factors being applied with effect from the 1 October 2005. The proposed (applied) LDZ Shrinkage Factors are shown in Table 5, along with the Assessed LDZ specific Shrinkage Factors for 2005/06 produced in the method detailed within this document.

Table 5. LDZ Specific Shrinkage Factors

LDZ	Applied Factors 2005/06	Assessed Shrinkage Factors 2005/06	Difference Between Assessed & Applied Factors
Eastern	0.60%	0.5751%	-0.0249%
East Midlands	0.54%	0.5196%	-0.0204%
North Thames	0.62%	0.5874%	-0.0326%
North West	0.62%	0.6206%	0.0006%
West Midlands	0.76%	0.7145%	-0.0455%
Weighted Average	0.62%	0.6010%	-0.0190%

Note: i) Shrinkage Factors are expressed as a percentage of national LDZ throughput and should be considered in context with the actual throughput number used to derive them.

2.4.1 Reasons for Differences

The main difference between National Grid's estimated and assessed LDZ Shrinkage Factors is the decrease in OUG Factor from 0.035% to 0.012%, resulting in a reduction in OUG energy, from 115,523 MWh to 39,608 MWh.