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LDZ Transportation Charges For West Midlands Distribution Network

Effective from 1st October 2012

Issued 1st October 2012

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1 Introduction

This publication sets out the LDZ transportation charges that apply from 1st October 2012 for the use of the West Midlands Network, as required by Standard Special Condition A4 of the Gas Transporter Licence. This document does not override or vary any of the statutory, licence or Network Code obligations.

For more information on the charges set out below, contact the Transporter's Pricing team on **01926 655834.**

1.1 Network Code

The Uniform Network Code (UNC) is supported by an integrated set of computer systems called UK Link. The charges and formulae in this booklet will be used in the calculation of charges within UK Link, which are definitive for billing purposes.

There are a number of areas of the UNC that impact upon the cost to shippers of using the transportation network, such as imbalance charges, scheduling charges, capacity over-runs and ratchets, top-up neutrality charges and contractual liability. Reference should be made to the UNC – as modified from time to time – for details of such charges and liabilities.

The methodologies underlying the LDZ transportation charges form part of the UNC and are set out in Transportation Principal Document Section Y Part B, and are subject to alteration under the governance of UNC Modification Rules. UNC documents and Modifications can be found at www.gasgovernance.co.uk

1.2 Units

Commodity charges are expressed and billed in pence per kilowatt hour (kWh).

Capacity charges are expressed and billed in pence per peak day kilowatt hour per day.

Fixed charges are expressed and billed in pence per day.

1.3 Invoicing

Xoserve produce and issue the invoices that are derived from the transportation charges shown within this publication. To clarify this link between charging and invoicing, charge codes and invoice names are included in the tables.

For more information on invoicing, please contact Xoserve, the Invoicing Service Provider, via email at **xo_css_billing@xoserve.com**.

1.4 The distribution transportation price control formula

Transportation charges are derived in relation to a price control formula that is set by Ofgem, the gas and electricity market regulator for the transportation of gas. This formula dictates the maximum revenue that can be earned from the transportation of gas. Should more or less than the maximum permitted revenue be earned in any formula year, then a compensating adjustment is made in the following year.

Distribution revenue recovery is split between LDZ system charges and customer charges. The relative level of these charges is based on the relative level of costs allocated to these areas of activity. LDZ ECN charges pass through NTS Exit capacity costs.

1.5 Firm transportation

Transportation is provided on a firm transportation basis only. Firm distribution transportation charges comprise LDZ System capacity and commodity charges, LDZ Customer charges, LDZ ECN charges and Other charges.

1.6 Theft of gas

The licensing regime places incentives on Transporters, shippers and suppliers to take action in respect of suspected theft of gas. Certain costs associated with individual cases of theft are recovered through transportation charges with the Transporter remaining cash neutral in the process.

1.7 Isolations and Disconnections

Where a shipper has left a Supply Meter physically connected to the Transporter's network following a UNC Isolation and Withdrawal, 12 months after the effective Withdrawal, the Transporter must take action to disable the flow of gas where the shipper has not undertaken a physical disconnection of the meter. The Transporter is permitted to pass the costs incurred in undertaking the work to the last Registered User. The Transporter will calculate the charge to the shipper on a fully absorbed time and materials basis, consistent with the charging principles set out in the Transporter's 4B Connections Charging Methodology Statement.

1.8 Relationship of Charges to Price Control Maximum Allowed Revenue

For the Formula Year 2012/13, it is estimated that the Maximum Allowed Revenue (MAR) for West Midlands Network is **£298m**.

The transportation charges in place prior to April 2012 would be estimated to recover **£285m** over FY 2012/13.

In order to bring charges into line with the Maximum Allowed Revenue, charges have been increased by 4.3% on average from 1st April 2012. Forecast under-recovery (K) against MAR at 31st March 2013 is zero.

From 1st October 2012, the distribution transportation charges in respect of a typical domestic load, consuming 16,500 kWh/annum, are estimated to be **£147.25** per annum.

2 LDZ System Charges

The standard LDZ system charges comprise capacity and commodity charges, with separate functions for directly connected supply points and for Connected System Exit Points (CSEPs).

Where LDZ charges are based on functions, these functions use Supply Point Offtake Quantity (SOQ) in the determination of the charges. At daily metered (DM) firm supply points, the SOQ is the registered supply point capacity. For non-daily metered (NDM) supply points, the SOQ is calculated using the supply point End User Category (EUC) and the appropriate load factor. Details of EUCs and load factors are shown in Appendix A of this document.

For interruptible supply points the rule set out in Section 6.1.3 (Bottom-stop supply point capacity) of the Uniform Network Code – Transition Document Part IIC applies in the determination of the LDZ charges.

2.1 Directly Connected Supply Points

The unit charges and charging functions used to calculate charges to directly connected supply points are set out in Table 2.1 below.

Table 2.1 Directly connected supply points

Charge Code	Firm Capacity
ZCA	pence per peak day kWh per day
Up to 73,200 kWh per annum	0.1642
73,200 to 732,000 kWh per annum	0.1478
732,000 kWh per annum and above	1.8131 x SOQ ^ $^{-0.2817}$
Subject to a minimum rate of	0.0161

Charge Code	Commodity
ZCO	pence per kWh
Up to 73,200 kWh per annum	0.0274
73,200 to 732,000 kWh per annum	0.0245
732,000 kWh per annum and above	0.3283 x SOQ ^ $^{-0.2911}$
Subject to a minimum rate of	0.0022

2.2 Connected Systems

LDZ System charges for transportation to Connected System Exit Points (CSEPs) are identical to those for transportation to direct loads. In the calculation of LDZ charges payable, the unit commodity and capacity charges are based on the supply point capacity equal to the CSEP peak day load for the completed development irrespective of the actual stage of development. The SOQ used is therefore the estimated SOQ for the completed development as provided in the appropriate Network Exit Agreement (NExA). For any particular CSEP, each shipper will pay identical LDZ unit charges regardless of the proportion of gas shipped. Reference needs to be made to the relevant NExA or CSEP ancillary agreement to determine the completed supply point capacity.

Table 2.2 Connected Systems

Invoice – ADC	CSEP Firm Capacity
Charge Code 891	pence per peak day kWh per day
Up to 73,200 kWh per annum	0.1642
73,200 to 732,000 kWh per annum	0.1478
732,000 kWh per annum and above	1.8131 x SOQ ^ $^{-0.2817}$
Subject to a minimum rate of	0.0161

Invoice – ADC	Commodity
Charge Code 893	pence per kWh
Up to 73,200 kWh per annum	0.0274
73,200 to 732,000 kWh per annum	0.0245
732,000 kWh per annum and above	0.3283 x SOQ ^ $^{-0.2911}$
Subject to a minimum rate of	0.0022

2.3 Optional LDZ Charge

The optional LDZ tariff is available, as a single charge, as an alternative to the standard LDZ system charges. This tariff may be attractive to large loads located close to the NTS. The rationale for the optional tariff is that, for large LDZ loads located close to the NTS or for potential new LDZ loads in a similar situation, the standard tariff can appear to give perverse economic incentives for the construction of new pipelines when LDZ connections are already available. This could result in an inefficient outcome for all system users.

The charge is calculated using the function below:

Invoice	Charge Code
ADU	881

Pence per peak day kWh per day
902 x [(SOQ)$^{\wedge -0.834}$] x D + 772 x (SOQ) $^{\wedge -0.717}$

where: (SOQ) is the Registered Supply Point Capacity, or other appropriate measure, in kWh per day and D is the direct distance, in km, from the site boundary to the nearest point on the NTS. Note that ^ means “to the power of …”

Further information on the optional LDZ tariff can be obtained from the Transporter’s Pricing team on **01926 655834**.

3 LDZ Customer Charges

For supply points with an AQ of less than 73,200 kWh per annum, the customer charge is a capacity charge.

For supply points with an AQ between 73,200 and 732,000 kWh per annum, the customer charge is made up of a fixed charge that depends on the frequency of meter reading, plus a capacity charge based on the registered supply point capacity (SOQ).

For supply points with an AQ of over 732,000 kWh per annum, the customer charge is based on a function related to the registered supply point capacity (SOQ).

Table 3 LDZ Customer charges

Up to 73,200 kWh per annum

Invoice	Charge Code
LDZ capacity	CCA

	Pence per peak day kWh per day
Capacity charge	0.0771

73,201 kWh up to 732,000 kWh per annum

Invoice	Charge Code
LDZ capacity	CFI

Fixed charge	pence per day
Non-monthly read supply points	24.3846
Monthly read supply points	25.9640

Invoice	Charge Code
LDZ Capacity	CCA

	Pence per peak day kWh per day
Capacity charge	0.0026

732,001 kWh per annum and above

Invoice	Charge Code
LDZ Capacity	CCA

	Pence per peak day kWh per day
Charging function	$0.0590 \times SOQ^{-0.2100}$

4 LDZ Exit Capacity NTS (ECN) Charges

Following changes to the National Transmission System (NTS) exit capacity regime from 1st October 2012, the Distribution Network charging methodology has changed so as to introduce a new distribution transportation charge, the LDZ Exit Capacity NTS (ECN) charge. The charge rate varies by exit zone. The exit zone for a Supply Point or CSEP is determined by its postcode. The capacity charge is applied to the Supply Point or CSEP in the same manner as for the LDZ System capacity charge.

Table 4 LDZ Exit Capacity NTS (ECN) Charges

Invoice	Charge Code
Exit Capacity	ECN

Exit Zone	Pence per peak day kWh per day
WM1	0.0194
WM2	0.0147
WM3	0.0174

5 Other Charges

Other Charges include administration charges at Connected System Exit Points and Shared Supply Meter Points.

5.1 Connected System Exit Points

A CSEP is a system point comprising one or more individual exit points that are not supply meter points. This includes connections to a pipeline system within the DN operated by another Gas Transporter.

The calculation of LDZ charges payable for transportation to CSEPs is explained in section 2.2.

There is no customer charge payable for transportation to connected systems exit points, however separate administration processes are required to manage the daily operations and invoicing associated with CSEPs, for which an administration charge is made.

The administration charge that applies to CSEPs containing NDM and DM sites is:

CSEP administration charge	
Charge per supply point	0.1012 pence per day

The invoice and charge codes are:

	Invoice	Charge Code
DM CSEP	ADU	883
NDM CSEP	ADC	894

5.2 Shared supply meter point allocation arrangements

An allocation service is offered for daily metered supply points with AQs of more than 58,600 MWh per annum. This allows up to four (six for VLDMCs) shippers / suppliers to supply gas through a shared supply meter point.

The allocation of daily gas flows between the shippers / suppliers can be done either by an appointed agent or by the Transporter.

The administration charges that relate to these arrangements are shown below. Individual charges depend on the type of allocation service nominated and whether the site is 'telemetered' or 'non-telemetered'.

The charges are (expressed as £ per shipper per supply point):

Invoice	Charge Code
ADU	883

Agent Service

	Telemetered	Non-telemetered
Set-up charge	£107.00	£183.00
Shipper-shipper transfer charge	£126.00	£210.00
Daily charge	£2.55	£2.96

Transporter Service

	Telemetered	Non-telemetered
Set-up charge	£107.00	£202.00
Shipper-shipper transfer charge	£126.00	£210.00
Daily charge	£2.55	£3.05

6 Examples

Notes

1. Charges produced by UK Link are definitive for charging purposes. Calculations below are subject to rounding and should be regarded as purely illustrative.

Example 1

A shipper has a daily metered customer in the WM1 Exit Zone with an annual consumption **(AQ)** of **20,000,000** kWh and a registered supply point capacity **(SOQ)**, booked directly by the shipper, of **100,000** kWh per day.

Process	Calculations Used
LDZ Capacity **Invoice:** LDZ Capacity (ZCA) **See**: Table 2.1 **Basis:** p / peak day kWh / day	**Volume:** 365 days × 100,000 **(SOQ)** = 36,500,000 **Unit Rate:** 1.8131 × 100,000 **(SOQ)** ^ $^{-0.2817}$ = 0.0708 p / pdkWh / day **Annual Charge**: **£ 25,842.00**
Plus	
LDZ Commodity **Invoice:** Commodity (ZCO) **See**: Table 2.1 **Basis:** p / kWh	**Volume:** 20,000,000 **(AQ)** **Unit Rate**: 0.3283 × 100,000 **(SOQ)** ^ $^{-0.2911}$ = 0.0115 p / kWh **Annual Charge**: **£ 2,300.00**
Plus	
Customer (Capacity) **Invoice:** LDZ Capacity (CCA) **See**: Table 3 **Basis:** p / peak day kWh / day	**Volume:** 365 days × 100,000 **(SOQ)** = 36,500,000 **Unit Rate**: 0.0560 × 100,000**(SOQ)** ^ $^{-0.2100}$ = 0.0050p / pdkWh / day **Annual Charge**: **£ 1,934.50**
Plus	
LDZ Exit (Capacity) **Invoice:** Exit Capacity (ECN) **See**: Table 4 **Basis:** p / pdkWh / day	**Volume:** 365 days × 100,000 **(SOQ)** = 36,500,000 **Unit Rate**: 0.0194 p / pdkWh / day **Charge**: **£ 7,081.00**
Equals	
Total Annual Charge	**Total annual charge = £ 37,157.50**

Example 2

A shipper has a domestic customer and the load has an **AQ** of **16,500** kWh per annum. Using the appropriate small NDM supply point load factor, it can be seen that the load factor for such a site in the WM1 Exit Zone is 30.2%. The peak daily load **(SOQ)** is therefore 16,500÷(365 × 0.302)=150 kWh.

Process	Calculations Used
LDZ Capacity **Invoice:** LDZ Capacity (ZCA) **See**: Table 2.1 **Basis:** p / peak day kWh / day	**Volume:** 365 days × 150 **(SOQ)** = 54,750 **Unit Rate** 0.1642 p / pdkWh / day **Charge**: **£ 89.90**
Plus	
LDZ Commodity **Invoice:** Commodity (ZCO) **See**: Table 2.1 **Basis:** p / kWh	**Volume:** 16,500 **(AQ)** **Unit Rate**: 0.0274 p / kWh **Charge**: **£ 4.52**
Plus	
Customer (Capacity) **Invoice:** LDZ Capacity (CCA) **See**: Table 3 **Basis:** p / pdkWh / day	**Volume:** 365 days × 150 **(SOQ)** = 54,750 **Unit Rate**: 0.0771 p / pdkWh / day **Charge**: **£ 42.21**
Plus	
LDZ Exit (Capacity) **Invoice:** Exit Capacity (ECN) **See**: Table 4 **Basis:** p / pdkWh / day	**Volume:** 365 days × 150 **(SOQ)** = 54,750 **Unit Rate**: 0.0194 p / pdkWh / day **Charge**: **£ 10.62**
Equals	
Total Annual Charge	**Total annual charge = £147.25**

Example 3

Suppose that instead of supplying just one domestic customer (as in Example 2) the shipper actually supplies a connected system in the WM1 Exit Zone presently comprising 100 domestic customers and the completed connected system will comprise 150 domestic premises. Suppose that each of these premises has the same AQ of 20,000 kWh per annum.

Prevailing AQ (pre AQ)	100 houses × 20,000 (AQ) = 2,000,000 kWh
Maximum AQ (max AQ)	150 houses × 20,000 (AQ) = 3,000,000 kWh
Prevailing SOQ (pre SOQ)	2,000,000 ÷ (365 × 0.302) = 18,144 kWh
Maximum SOQ (max SOQ)	3,000,000 ÷ (365 × 0.302) = 27,216 kWh

Note that the prevailing annual and peak day loads of the connected system in effect would change over the year; however, for simplicity, these have been assumed as constant in this example.

Appendix A

Estimation of peak daily load for non-daily metered supply points

For non-daily metered (NDM) supply points, the peak daily load is estimated using a set of End User Categories (EUCs). Each NDM supply point is allocated to an EUC. In each LDZ, each EUC has an associated load factor, as published on the Joint Office for Gas Transporters site.

In the tables, 'XX' refers to the LDZ Code.

These EUCs depend upon the annual quantity (AQ) of the supply point and, in the case of monthly read sites, the ratio of winter to annual consumption where available.

Monthly read sites

It is mandatory for supply points with an annual consumption greater than 293 MWh to be monthly read; however, at the shipper's request, sites below this consumption may also be classified as monthly read.

For monthly read sites where the relevant meter reading history is available, the winter: annual ratio is the consumption from December to March divided by the annual quantity. If the required meter reading information is not available, the supply point is allocated to an EUC simply on the basis of its annual quantity.

The peak load for an NDM supply point may then be calculated as:

$$\frac{AQ \times 100}{365 \times LoadFactor}$$

Example

For a supply point in Eastern (EA) LDZ with an annual consumption of 1,000 MWh per annum:

Assume consumption December to March inclusive is 540 MWh.

Winter: annual ratio = 540 ÷ 1000 = 0.54

For a site with an annual consumption of 1,000 MWh (Table A.1 EUC Code EA:E1204), a ratio of 0.54 falls within winter: annual ratio band W03 and the site is thus within End User Category EA:E1204W03.

For a site in this category, the load factor is 29.0% and the peak daily load is therefore

$$\frac{1000 \times 100}{365 \times 29.0} = 9.447 \text{ MWh}$$

If the required meter reading information is not available to calculate the winter: annual ratio, the supply point is allocated to an EUC simply on the basis of its annual quantity, in this case EA:E1204B.

For a site in this category, the load factor is 33.0% and the peak daily load is therefore

$$\frac{1000 \times 100}{365 \times 33.0} = 8.302 \text{ MWh}$$

Notes

The term LDZ is applied in the context of its usage with reference to the Network Code daily balancing regime.

For supply points whose consumption is over 73,200 kWh and which include one or more NDM supply meter points, an end user category code can be found in the supply point offer generated by UK Link. This code may be correlated with the end user category code by means of a lookup table issued separately to shippers. Copies are available from the Xoserve Supply Point Administration Management team and can be requested via the following e-mail address externalrequests.spa@xoserve.com.

Daily metered supply points

The SOQ of daily metered sites is known and hence no load factor is required.

Supply points with annual consumptions greater than 58,600 MWh should be daily metered. However, a handful of sites remain as non-daily metered as a result of difficulties installing the daily read equipment. In such cases the end user category code XX:E1209B is used.

Firm supply points with an AQ above 73.2 MWh pa may, at the shipper's request, be classified as daily metered. All interruptible supply points are daily metered.

Consultation on end user categories

Section H of the Network Code requires the Transporter to publish, by the end of June each year, its demand estimation proposals for the forthcoming supply year. These proposals comprise end user category definitions, NDM profiling parameters (ALPs and DAFs), and capacity estimation parameters (EUC load factors). Analysis is presented to users and the Demand Estimation Sub-Committee (a sub-committee of the Network Code Committee) is consulted before publication of the proposals.

Appendix B

Application of Transportation Charging Methodology

1 Introduction

Standard Special Condition A4 of the Transporter's Gas Transporter (GT) Licence requires the Transporter to establish a charging methodology and to set out the application of the methodology, showing the methods and principles on which the transportation charges are based. The present charging methodology was introduced in 1994 and has been modified from time to time in accordance with the GT Licence.

2 Price Control Formulae

The Maximum Allowed Revenue under the transportation controls is determined by a number of factors including:

- the Core Allowed Revenue was determined through the Price Control Review and remains fixed for the period;
- the indexation factor - under the distribution formula, allowed revenue is adjusted each year by a factor equal to the rate of inflation, measured on a prescribed historical basis by reference to the Retail Price Index;
- the Gas Transporter is subject to a range of incentives as described by Special Condition Part E of its Licence;
- any under- or over-recovery brought forward under the control from the previous formula year (expressed by means of a separate "K" factor within each control).

The "K" correction factor is necessary because the level of charges set under the control depends on forecasts of some of the above elements. Outturn will inevitably differ from forecast, thus giving rise to variances between the amount of revenue generated (on an accruals basis) and that allowed under the control. The K factor enables correction for these variances by adjusting either upwards or downwards the maximum level of revenue allowed in the following formula year (taking interest into account).

3 Objectives of the Charging Methodology

The transportation charging methodology has to comply with objectives set out in the Licence under Standard Special Condition A5. These are to:

- reflect the costs incurred by the Transporter and, subject to this principal consideration;
- facilitate competition between gas shippers and between gas suppliers; and
- take account of developments in the transportation business.

In addition to these Licence objectives, the Transporter has its own objectives for the charging regime. These are that the transportation charging methodology should:

- promote efficient use of the transportation system;
- generate stable charges; and
- be easy to understand and implement.

Before the Transporter makes any changes to the methodology, it consults with the industry in accordance with Standard Special Condition A5 of the Licence. Ofgem has the right to veto any proposed changes to the methodology.

4 Structure of Charges

The structure of the Transporter's transportation charges reflects the revised price control arrangements that came into effect from 1st April 2008. The LDZ charges are split between system related activities and customer related activities.

While total LDZ revenue is determined by the relevant price control, the share of this revenue to be recovered from the LDZ system charges and the LDZ customer charges respectively is based on the relative cost of each area of activity as defined in DNPC05.

The cost breakdown used as the basis for the LDZ charges is set out below:

Table 4.1 LDZ Cost Breakdown %

LDZ System	LDZ Customer	Total LDZ
74.0%	26.0%	100

Having established by the above methods the target revenue to be derived from each main category of charge, the next stage is to set the charges within each of these charge categories. The methodology used to do this is described in the appropriate sections below.

5 LDZ System Charging Methodology

5.1 Introduction

The Standard LDZ System charges effective from 1st April 2012 are based on the methodology fully described in consultation paper DNPC08 - Review of Standard LDZ System Charges. The information shown relates to the DN information utilised for DNPC08. The DN networks contain a series of pipe networks split into four main pressure tiers:

Table 5.1a LDZ Pressure Tiers

Pressure Tier	Operating Pressure
Local Transmission System (LTS)	7 - 38 bar
Intermediate Pressure System (IPS)	2 - 7 bar
Medium Pressure System (MPS)	75 mbar - 2 bar
Low Pressure System (LPS)	Below 75 mbar

The Low Pressure System itself accounts for the majority of the LDZ pipeline system. In order to provide a more cost reflective basis for charging, the LPS is sub-divided on the basis of pipe diameter into eight sub-tiers as shown below.

Table 5.1b LPS Sub Tiers

Pipe Nominal Internal Diameter (inches)
>24
>18-24
>12-18
10-12
8-9
6-7
4-5
<=3

The principle underlying the LDZ System charging methodology is that charges should reflect the average use of the network made by customers of a given size, rather than the actual use made by a particular customer. The latter methodology would be too complex to be a practical basis of charging. Analysis has shown that there is a good correlation between customer size and offtake tier. Large customers are typically supplied from higher-pressure tiers and small customers from lower pressure tiers. Such an approach avoids inconsistencies that may arise if neighbouring sites of similar size are actually connected to different pressure tiers.

5.2 Outline of Methodology

The methodology calculates the average cost of utilisation for each of the main pressure tiers of the LDZ system. Combining this with the probability of loads within a consumption band using that pressure tier generates a tier charge for an average load within that band. The summation of these tier charges gives the total charge for a load within the consumption band to use the LDZ system. The methodology uses average costs rather than marginal costs to reflect the total costs of using the system. The detail below describes the derivation of the capacity charge function and is therefore based on peak daily flows. A similar calculation, based on annual flows, is carried out to determine the commodity charge function. The data used is that from the most recent review carried out in 2010.

5.3 Determination of Costs

The costs related to each pressure tier were derived from the split of DN costs undertaken as part of DNPC05, with further analysis to allocate the LDZ System costs across the pressure tiers and sub-tiers. These costs are split 95:5 into capacity and commodity elements in line with the methodology established by DNPC03.

Table 5.3a Determination of Tier Costs

Pressure Tier	% Total Cost	Cost (£M)	
		Total	Capacity (95%)
LTS	11.5%	23.3	22.2
IPS	2.6%	5.3	5.0
MPS	17.6%	35.7	33.9
LPS	68.2%	138.2	131.3
Total	100.0%	202.5	192.4

The split of LPS costs down to sub-tier level is based on replacement cost data.

Table 5.3b Determination of LPS Costs

LPS Sub Tier	Nominal internal diameter (inches)	% Total Replacement Cost	Cost (£M) Capacity (95%)
LP8	>24	1.3%	1.8
LP7	>18-24	2.2%	2.8
LP6	>12-18	8.4%	11.0
LP5	10-12	17.9%	23.5
LP4	8-9	11.3%	14.8
LP3	6-7	14.8%	19.4
LP2	4-5	27.5%	36.1
LP1	<=3	16.8%	22.0
Total		100%	131.3

5.4 Probability of Pressure Tier / Sub Tier Usage

The probability of a unit of gas, supplied to a customer of given size, having passed through the various pressure tiers / sub tiers within the LDZ network is estimated. This estimation is based on the results from a survey of the pressure tier / sub tier at which individual supply points are attached to the Transporter's pipeline system in conjunction with the results of network analysis.

Table 5.4 System Usage Probability Matrix

	LDZ Tiers			LPS Sub Tiers							
Consumption Band (MWh)	**LTS**	**IP**	**MP**	**LP8**	**LP7**	**LP6**	**LP5**	**LP4**	**LP3**	**LP2**	**LP1**
0-73.2	98.3%	41.7%	99.6%	14.5%	22.5%	44.2%	75.2%	79.1%	76.0%	59.3%	19.5%
73.2 - 146.5	98.3%	41.7%	99.6%	15.3%	23.7%	45.6%	72.3%	70.6%	64.2%	46.6%	17.0%
146.5 – 293	98.3%	41.7%	99.6%	15.1%	23.4%	45.0%	71.2%	68.1%	61.0%	45.9%	18.7%
293 – 439	98.3%	41.7%	99.6%	15.0%	23.3%	43.9%	70.2%	64.6%	59.1%	45.9%	16.4%
439 – 586	98.3%	41.8%	99.3%	14.2%	22.0%	42.9%	69.7%	65.2%	63.4%	50.2%	14.4%
586 – 732	98.3%	41.9%	99.2%	14.1%	21.8%	42.2%	67.4%	67.2%	65.4%	49.1%	12.9%
732 - 2,931	98.3%	41.8%	99.4%	13.6%	21.2%	41.2%	65.2%	63.2%	57.4%	39.6%	7.2%
2,931 - 14,654	98.3%	42.2%	98.6%	10.9%	16.7%	29.9%	45.2%	38.7%	31.2%	10.3%	1.2%
14,654-58,614	98.3%	43.2%	97.0%	7.1%	8.3%	16.4%	24.2%	12.6%	5.1%	1.7%	0.0%
58,614-293,071	98.4%	46.4%	91.4%	0.9%	1.4%	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%
>293,071	100.0%	51.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 5.4 shows that for the 0-73.2MWh consumption band 98.3% (269.8 GWh from Table 5.5) of the total peak offtake for this consumption band (274.6 GWh) goes through the LTS, 41.7% goes through the IPS, and 99.6% through the MPS.

5.5 Pressure Tier / Sub Tier Usage Volumes

The application of usage probabilities to the LDZ peak day offtake volumes provides an estimate of the extent to which the different load bands make use of capacity across the pressure tiers.

Table 5.5 Peak Daily Capacity Utilisation (GWh)

	LDZ Tiers			LPS Sub Tiers							
Consumption Band (MWh)	**LTS**	**IP**	**MP**	**LP8**	**LP7**	**LP6**	**LP5**	**LP4**	**LP3**	**LP2**	**LP1**
0-73.2	269.8	114.4	273.5	39.8	61.8	121.3	206.6	217.3	208.7	162.9	53.5
73.2 - 146.5	11.9	5.1	12.1	1.9	2.9	5.5	8.8	8.6	7.8	5.7	2.1
146.5 – 293	12.6	5.3	12.8	1.9	3.0	5.8	9.1	8.7	7.8	5.9	2.4
293 – 439	9.0	3.8	9.2	1.4	2.1	4.0	6.5	5.9	5.4	4.2	1.5
439 – 586	6.6	2.8	6.7	1.0	1.5	2.9	4.7	4.4	4.3	3.4	1.0
586 – 732	5.5	2.3	5.5	0.8	1.2	2.3	3.7	3.7	3.6	2.7	0.7
732 - 2,931	34.1	14.5	34.4	4.7	7.3	14.3	22.6	21.9	19.9	13.7	2.5
2,931 - 14,654	23.2	10.0	23.3	2.6	4.0	7.1	10.7	9.1	7.4	2.4	0.3
14,654-58,614	22.5	9.9	22.2	1.6	1.9	3.8	5.5	2.9	1.2	0.4	0.0
58,614-293,071	16.5	7.8	15.3	0.2	0.2	0.5	0.0	0.0	0.0	0.0	0.0
>293,071	9.5	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**421.2**	**180.8**	**415.0**	**55.8**	**86.0**	**167.5**	**278.2**	**282.5**	**266.0**	**201.3**	**64.0**

5.6 Cost per Unit of Capacity Utilised

The cost of providing capacity utilised on the peak day within each pressure tier / sub tier per unit of capacity is calculated by the division of capacity related costs, set out in section 5.2, by the volume of capacity utilised. In these calculations the LPS is not treated as a single entity but rather as individual sub tiers.

Table 5.6 Cost per Unit of Capacity Utilised

	LDZ Tiers			LPS Sub Tiers							
	LTS	**IP**	**MP**	**LP8**	**LP7**	**LP6**	**LP5**	**LP4**	**LP3**	**LP2**	**LP1**
Capacity Cost (£m)	22.2	5.0	33.9	1.8	2.8	11.0	23.5	14.8	19.4	36.1	22.0
Capacity Utilised (PD GWh)	421.2	180.8	415.0	55.8	86.0	167.5	278.2	282.5	266.0	201.3	64.0
Unit Cost (p/pdkWh/d)	0.0144	0.0076	0.0224	0.0086	0.0091	0.0180	0.0231	0.0143	0.0200	0.0491	0.0942

5.7 Average Cost of Utilisation

The costs calculated in Table 5.6 represent the cost per unit of capacity utilised within each pressure tier / sub tier. Charging however is based on the average expected use made of each tier of the pipeline system. The average cost, for customers in each load band, of utilising a particular pressure tier / sub tier, is calculated by multiplying the unit cost of utilising the tier by the probability that the tier is utilised by customers in the load band. This is illustrated in Table 5.7a below for the MP.

Table 5.7a Example - Average Cost (p / pd kWh / day) of Utilisation of MP by Load Band

Consumption Band (MWh)	Utilisation Cost	Probability of Use %	Average Cost
0-73.2	0.0224	99.6%	0.0223
73.2 - 146.5	0.0224	99.6%	0.0223
146.5 - 293	0.0224	99.6%	0.0223
293 - 439	0.0224	99.6%	0.0223
439 - 586	0.0224	99.3%	0.0222
586 - 732	0.0224	99.2%	0.0222
732 - 2,931	0.0224	99.4%	0.0223
2,931 - 14,654	0.0224	98.6%	0.0221
14,654 - 58,614	0.0224	97.0%	0.0217
58,614 - 293,071	0.0224	91.4%	0.0205
>293,071	0.0224	0.0%	0.0000

Table 5.7b below summarises the average cost, by consumption band, of using the complete DN system.

Table 5.7b Average Cost of DN Utilisation by Consumption Band

	Pence/peak day kWh/day											
Consumption Band (MWh)	**LTS**	**IP**	**MP**	**LP8**	**LP7**	**LP6**	**LP5**	**LP4**	**LP3**	**LP2**	**LP1**	**Total**
0-73.2	0.0142	0.0032	0.0223	0.0012	0.0020	0.0079	0.0174	0.0113	0.0152	0.0291	0.0184	**0.1423**
73.2 - 146.5	0.0142	0.0032	0.0223	0.0013	0.0021	0.0082	0.0167	0.0101	0.0128	0.0229	0.0160	**0.1298**
146.5 – 293	0.0142	0.0032	0.0223	0.0013	0.0021	0.0081	0.0165	0.0098	0.0122	0.0225	0.0176	**0.1298**
293 – 439	0.0142	0.0032	0.0223	0.0013	0.0021	0.0079	0.0162	0.0093	0.0118	0.0225	0.0154	**0.1262**
439 – 586	0.0142	0.0032	0.0222	0.0012	0.0020	0.0077	0.0161	0.0093	0.0126	0.0246	0.0135	**0.1268**
586 – 732	0.0142	0.0032	0.0222	0.0012	0.0020	0.0076	0.0156	0.0096	0.0130	0.0241	0.0122	**0.1249**
732 - 2,931	0.0142	0.0032	0.0223	0.0012	0.0019	0.0074	0.0151	0.0091	0.0114	0.0195	0.0068	**0.1120**
2,931 - 14,654	0.0142	0.0032	0.0221	0.0009	0.0015	0.0054	0.0105	0.0055	0.0062	0.0050	0.0011	**0.0757**
14,654-58,614	0.0142	0.0033	0.0217	0.0006	0.0008	0.0030	0.0056	0.0018	0.0010	0.0008	0.0000	**0.0528**
58,614-293,071	0.0142	0.0035	0.0205	0.0001	0.0001	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0389**
>293,071	0.0144	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0184**

5.8 CSEPs

Analysis contained within the DNPC08 consultation paper indicated that it is appropriate to use the same charging functions for CSEPs as for direct loads. The analysis for determining the LDZ System charging functions is based on data that includes both direct and CSEP loads.

5.9 Setting the Charging Functions

To provide a workable basis for charging individual customers of differing sizes the total average costs of utilising each tier of the LDZ network are plotted. For the capacity charges for directly connected supply points these costs are the total costs detailed in 5.7b above. Functions are fitted to the data points such that the error term is minimised. The functions found to best fit the underlying average cost data are in the form of a power of the peak daily load (SOQ) with straight-line elements for the domestic (<73.2 MWh / annum) consumption band and the small I&C consumption band (73.2 to 732 MWh / annum). These functions must then be scaled so that when applied to all supply points connected to the Transporter network they are expected to generate the desired target revenue

6 LDZ Customer and Other Charges Methodology

Customer charges reflect supply point costs, namely costs relating to service pipes and emergency work.

6.1 Customer Charge Methodology

The customer charge methodology is based on an analysis of the extent to which service pipe and emergency service costs vary with supply point size. This analysis is used to determine the allocation of the recovery of the target revenue (based on Table 4.1 - LDZ Cost Breakdown) from supply points grouped in broad load bands. This is described in more detail below.

1. Using a methodology similar to that described in section 5.3 (operating costs plus an asset-based adjustment), the customer cost pool is sub-divided into the following cost pools:
   i. service pipes
   ii. emergency work
2. Each cost pool is then divided among a number of consumption bands based on weighted consumer numbers by consumption band. The consumption bands are based on the annual quantity of gas consumed. The weightings are derived from an analysis of how the costs of providing each of the services listed in 1. above vary with consumption size.
3. For each cost pool, an average cost per consumer is then calculated for each consumption band by dividing by the number of consumers in that consumption band.
4. A total average cost per consumer is then calculated for each consumption band by adding the unit costs of each service, that is, service pipes and emergency work.
5. Finally, using regression analysis, functions are developed that best fit the relationship between consumption size and total average cost per consumer.

Charges for supply points consuming below 73,200kWh (mainly domestic) consist of just a capacity-related charge. Charges for smaller I&C supply points, consuming between 73,200 and 732,000 kWh per annum, are based on a capacity-related charge and a fixed charge which varies with meter-reading frequency. Charges for larger I&C supply points are based on a function that varies with supply point capacity.

6.2 Charging for Connected Systems (CSEPs)

The standard customer charge is not levied in respect of supply points within CSEPs. However, a CSEP administration charge is levied to reflect the Transporter's administration costs related to servicing these loads. The methodology for setting this charge was established in 1996 and is based on the same methodology described in 6.3 below for setting Other Charges.

6.3 Other Charges

There are other charges applied to services which are required by some shippers but not by all, for example special allocation arrangements. It is more equitable to levy specific cost reflective charges for these services on those shippers that require them. Income from these charges is included in the regulated transportation income. These charges include charges for the administration of allocation arrangements at shared supply meter points.

The methodology used to calculate the appropriate level of these charges is based on an assessment of the direct costs of the ongoing activities involved in providing the services. The costs are forward looking and take into account anticipated enhancements to the methods and systems used. A percentage uplift based on the methodology described in the Transporter's background paper "Charging for Specific Services - Cost Assignment Methodology" (May 1999) is added to the direct costs to cover support and sustaining costs. The latest level of the uplift was published in PD16, Section 5, (November 2002).