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Statement of LDZ Transportation Charges for North of England Distribution Network

To Apply from 1 October 2011

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1. LDZ TRANSPORTATION CHARGES EFFECTIVE FROM 1 OCTOBER 2011

1.1 Introduction

This publication sets out the LDZ transportation charges which apply from 1 October 2011 for the use of Northern Gas Networks Limited Network, as required by Standard Special Condition A4 of the Gas Transporter Licence. These are published separately from the NTS transportation charges, which can be found on the National Grid website. The charges are set to comply with the price control arrangements from 1 April 2008. This document does not override or vary any of the statutory, licence or Uniform Network Code obligations.

For more information on the charges set out below, contact Will Guest, Northern Gas Networks, 1100 Century Way, Thorpe Park Business Park, Colton, Leeds LS15 8TU.

1.1.1 Uniform 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 charges are stated in the UNC Transportation Principle Document (TPD) Section Y Part B and may be subject to alteration under the governance of UNC Modification Rules.

All UNC documents and Modifications can be found at www.gasgovernance.co.uk.

1.1.2 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.

1.1.3 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: **Css.Billing@xoserve.com**

1.1.4 The distribution transportation price control formula

Transportation charges are derived in relation to a price control formula which 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.

1.1.5 Firm transportation

Firm distribution transportation charges comprise LDZ capacity and commodity charges plus customer charges.

1.1.6 Interruptible transportation (no longer applicable)

From 1 October 2011, interruptible transportation has ceased and is no longer available. All shippers must pay firm charges from this date.

1.1.7 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.

1.1.8 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.

1.1.9 Relationship of charges to price control Allowed Revenue (AR)

It is estimated that the Allowed Revenue for the NGN network for the coming formula year (1 April 2011 – 31 March 2012) is £346.4m. This is 4.8% higher than the Allowed Revenue for the previous year.

The transportation charges in place prior to 1 April 2011 are estimated to recover £325.6m over the formula year 2011/12. Thus unit charges must be set at a level to generate an additional £20.8m over the course of the year, so that forecast recovered revenue for Formula Year 2011/12 is £346.4m. Forecast under or over recovery (K) against Allowed Revenue at 31 March 2012 is zero.

1.2 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.

For interruptible supply points the rule set out in UNC TPD Section B 4.6.5 (Bottom-stop supply point capacity) of the UNC applies in the determination of the LDZ charges. From 1 October 2011 interruptible supply points no longer exist.

1.2.1 Directly Connected Supply Points

The unit charges and charging functions used to calculate charges to directly connected supply points are set out in Table 1.2.1 below.

Table 1.2.1 Directly connected supply points

Invoice	Charge Code
LDZ Capacity	ZCA
LDZ Commodity	ZCO

	Firm Capacity	Commodity
	pence per peak day kWh per day	**pence per kWh**
Up to 73,200 kWh per annum	0.1465	0.0230
73,200 to 732,000 kWh per annum	0.1357	0.0214
732,000 kWh per annum and above	0.6439 x SOQ ^ -0.1806	0.1319 x SOQ ^ -0.2121
Subject to a minimum rate of	0.0146	0.0020
Minimum reached at SOQ of	1,275,169,558	377,707,891

1.2.2 Connected Systems

A separate charging function for transportation to Connected System Exit Points (CSEPs) was introduced from 1 October 2000. This function reflects the view that transportation to CSEP loads typically makes less use of the LDZ system than to other similar-sized 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 1.2.2 Connected Systems

Invoice	Charge Code
ADC	891
ADC	893

	Firm Capacity	Commodity
	pence per peak day kWh per day	pence per kWh
Up to 73,200 kWh per annum	0.1465	0.0230
73,200 to 732,000 kWh per annum	0.1357	0.0214
732,000 kWh per annum and above	0.6809 x SOQ ^ -0.1939	0.1259 x SOQ ^ -0.2131
Subject to a minimum rate of	0.0146	0.0020
Minimum reached at SOQ of	403,775,210	276,710,712

1.2.3 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
$902 \times [(SOQ)^{\wedge -0.834}] \times D + 772 \times (SOQ)^{\wedge -0.717}$

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.

1.3 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 which 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 1.3 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	0.0809

73,200 kWh up to 732,000 kWh per annum

Invoice	Charge Code
LDZ capacity	CFI

Fixed charge	pence per day
Non-monthly read supply points	25.4580
Monthly read supply points	27.1070

Invoice	Charge Code
LDZ Capacity	CCA

Pence per peak day kWh per day	
Capacity charge	0.0029

732,000 kWh per annum and above

Invoice	Charge Code
LDZ Capacity	CCA

Charging function	0.0617 x SOQ ^ -0.2100

1.4 Other Charges

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

1.4.1 Connected System Exit Points

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

The calculation of LDZ charges payable for shipping to CSEPs is explained in section 1.2.2.

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

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

CSEP administration charge

Charge per supply point	0.102 pence per day (£0.37 per annum)

The invoice and charge codes are:

Invoice	**Charge Code**	
DM CSEP	ADU	883
NDM CSEP	ADC	894

1.4.2 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.

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 which 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

1.5 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.

2. The examples provided refer to a customer in NE LDZ. The calculations described are applicable to loads in either Network.

Example 1

A shipper has a daily metered customer 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.

Unit Charge: Dividing the annual charge of £33,691 by the annual load of 20,000,000 kWh gives a unit charge of 0.1685 pence per kWh.

Process	Calculations Used
LDZ Capacity Invoice: LDZ Capacity (ZCA) See: Table 1.2.1 Basis: p / peak day kWh / day	Volume: 365 days × 100,000 (SOQ) = 36,500,000 Unit Rate: 0.6439 × 100,000 (SOQ) ^ $^{-0.1806}$ = 0.0805 p / pdkWh / day Annual Charge: £29,384
Plus	
LDZ Commodity Invoice: Commodity (ZCO) See: Table 1.2.1 Basis: p / kWh	Volume: 20,000,000 (AQ) Unit Rate: 0.1319 × 100,000 (SOQ) ^ -0.2121 = 0.0115 p / kWh Annual Charge: £2,300
Plus	
Customer (Capacity) Invoice: LDZ Capacity (CCA) See: Table 1.3 Basis: p / peak day kWh / day	Volume: 365 days × 100,000 (SOQ) = 36,500,000 Unit Rate: 0.0617 × 100,000(SOQ) ^ -0.2100 = 0.0055 p / pdkWh / day Annual Charge: £2,007
Equals	
Total Annual Charge	Total annual charge = £33,692

Example 2

A shipper has a domestic customer in the NE LDZ. Suppose the load has an AQ of 20,000 kWh per annum. Using the definition of end user categories table in the Appendix, this annual load places the end user in category E1101B. Using the appropriate small NDM supply points table of load factors, it can be seen that the load factor for such a site in the NE LDZ is 34.4%. The peak daily load (SOQ) is therefore 20,000 ÷ (365 × 0.344) = 159 kWh.

Unit Charge: Dividing the total annual charge of £136.57 by the annual load of 20,000 kWh gives a unit charge of 0.6828 pence per kWh.

Process	Calculations Used
LDZ Capacity Invoice: LDZ Capacity (ZCA) See: Table 1.2.1 Basis: p / peak day kWh / day	Volume: 365 days × 159 (SOQ) = 58,035 Unit Rate: 0.1465 p / pdkWh / day Charge: £85.02
Plus	
LDZ Commodity Invoice: Commodity (ZCO) See: Table 1.2.1 Basis: p / kWh	Volume: 20,000 (AQ) Unit Rate: 0.023 p / kWh Charge: £4.60
Plus	
Customer (Capacity) Invoice: Capacity (CCA) See: Table 1.3 Basis: p / peak day kWh / day	Volume: 365 days × 159 (SOQ) = 58,035 Unit Rate: 0.0809 p / pdkWh / day Charge: £46.95
Equal	
Total Annual Charge	Total annual charge = £136.57

Example 3

Suppose that instead of supplying just one domestic customer (as in Example 2) the shipper actually supplies a connected system 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.

	AQ (no of premises x AQ per premises)	**SOQ (AQ ÷ (365 x load factor)**
Prevailing	100 houses × 20,000 (AQ) = 2,000,000 kWh	2,000,000 ÷ (365 × 0.344) = 15,929 kWh
Maximum	150 houses × 20,000 (AQ) = 3,000,000 kWh	3,000,000 ÷ (365 × 0.344) = 23,893 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.

Unit Charge: Dividing by the annual load of 2,000,000 kWh gives a unit charge of 0.2690 pence per kWh.

Process	**Calculations Used**
LDZ Capacity Invoice: ADC (891) See: Table 1.2.2 Basis: p / peak day kWh / day	Volume: 365 days × 15,929 (pre SOQ) = 5,814,085 Unit Rate: 0.6809 × 23,893 (max SOQ) ^ - 0.1939 = 0.0964 p / pdkWh / day Charge: £5,605
Plus	
LDZ Commodity Invoice: ADC (893) See: Table 1.2.2 Basis: p / kWh	Volume: 2,000,000 (pre AQ) Unit Rate: 0.1259 × 23,893 (max SOQ) ^ -0.2131 = 0.0147p / kWh Charge: £294
Plus	
CSEP Administration Invoice: ADC (894) See: Section 1.4.1 Basis: p / supply point / day	Volume: 100 houses × 365 days = 36,500 Unit Rate: Standard tariff = 0.102 p /supply point /day Charge: £37.23
Equal	
Total Annual Charge	Total annual charge = £5,936

APPENDIX A – End User Categories

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 listed in Tables 2.2 and 2.3. The data in these tables applies for the gas year 1 October 2011 to 30 September 2012.

In the tables 'XX' refers to the LDZ Code (e.g. NO).

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:

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

Example

For a supply point in NO LDZ with an annual consumption of 1,000 MWh per annum.

Assume consumption December to March inclusive is 500 MWh.

Winter: annual ratio = 500 ÷ 1000 = 0.5

For a site with an annual consumption of 1,000 MWh, a ratio of 0.5 falls within winter: annual ratio band W02 and the site is thus within End User Category NO:E1104W02.

For a site in this category, the load factor is 36.2% and the peak daily load is therefore

$$\frac{1000 \text{ x } 100}{365 \text{ x } 36.2} = 7.57 \text{ MWh}$$

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 NO:E1004B.

For a site in this category, the load factor is 32.1% and the peak daily load is therefore

$$\frac{1000 \text{ x } 100}{365 \text{ x } 32.1} = 8.53 \text{ MWh}$$

Six monthly read sites

In the case of six monthly read sites, the supply point is allocated to an EUC simply on the basis of its annual quantity.

Example

For a supply point in NE LDZ with an annual consumption of 200 MWh per annum, the EUC will be NE:E1102B.

For a site in this category, the load factor is 30.0% and the peak daily load is therefore

$$\frac{200 \times 100}{365 \times 30.0} = 1.83 \text{ MWh}$$

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 shown below by means of a lookup table issued separately to shippers. Copies are available from the xoserve Supply Point Administration Management team by emailing 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:E1109B 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 consults with the Demand Estimation Sub-Committee (a sub-committee of the Network Code Committee) before publication of its proposals

* NDM Profiling and Capacity Estimation Algorithms for 2010/11, June 2010.

Table 2.1 Definition of end user categories

The following tables define the end user category for the NGN LDZs by reference to annual consumption and winter: annual ratio, applicable from 1 October 2011 to 30 September 2012.

EUC Code	Annual Load (MWh)	Winter Annual Ratios (WAR)			
		W01	W02	W03	W04
xx:E1101W0y	0 to 73.2	-	-	-	-
xx:E1102W0y	73.2 to 293	-	-	-	-
xx:E1103W0y	293 to 732	0.00 - 0.48	0.48 - 0.57	0.57 - 0.67	0.67 - 1.00
xx:E1104W0y	732 to 2,196	0.00 - 0.48	0.48 - 0.57	0.57 - 0.67	0.67 - 1.00
xx:E1105W0y	2,196 to 5,860	0.00 - 0.44	0.44 - 0.52	0.52 - 0.61	0.61 - 1.00
xx:E1106W0y	5,860 to 14,650	0.00 - 0.38	0.38 - 0.47	0.47 - 0.57	0.57 - 1.00
xx:E1107W0y	14,650 to 29,300	0.00 - 0.36	0.36 - 0.40	0.40 - 0.53	0.53 - 1.00
xx:E1108W0y	29,300 to 58,600	0.00 - 0.36	0.36 - 0.39	0.39 - 0.48	0.48 - 1.00
xx:E1109W0y	> 58,600	-	-	-	-

Table 2.2 Small NDM Supply Points (Up to 2,196 MWh per annum)

xx: = LDZ =	NE	NO
xx:E1101B	34.4%	32.4%
xx:E1102B	30.0%	30.3%
xx:E1103B	30.9%	31.2%
xx:E1103W01	51.1%	54.3%
xx:E1103W02	40.7%	36.2%
xx:E1103W03	29.1%	25.8%
xx:E1103W04	21.8%	20.3%
xx:E1104B	34.6%	32.1%
xx:E1104W01	51.1%	54.3%
xx:E1104W02	40.7%	36.2%
xx:E1104W03	29.1%	25.8%
xx:E1104W04	21.8%	20.3%

Table 2.3 Large NDM Supply Points (2,196 and above MWh per annum)

xx: = LDZ =	NE	NO
xx:E1105B	37.1%	35.5%
xx:E1105W01	61.4%	60.7%
xx:E1105W02	45.1%	43.4%
xx:E1105W03	33.1%	30.5%
xx:E1105W04	23.4%	20.4%
xx:E1106B	45.9%	42.4%
xx:E1106W01	73.9%	75.8%
xx:E1106W02	54.5%	52.8%
xx:E1106W03	38.7%	37.8%
xx:E1106W04	25.5%	24.1%
xx:E1107B	52.9%	49.0%
xx:E1107W01	85.6%	85.6%
xx:E1107W02	65.9%	63.8%
xx:E1107W03	47.3%	44.2%
xx:E1107W04	30.0%	27.0%
xx:E1108B	64.6%	57.9%
xx:E1108W01	89.5%	89.4%
xx:E1108W02	73.1%	71.4%
xx:E1108W03	58.2%	55.0%
xx:E1108W04	34.7%	31.5%
xx:E1109B	62.1%	59.2%

Appendix B – Application of the LDZ charges methodology

1. Introduction

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

1.1 Price Control Formulae

With effect from 1 June 2005 NGN has had its own Licence for the Northern GDN which set out the price controls and incentives which determine the maximum revenue that the licensee may derive from gas transportation activities in a formula year; that is 1 April to 31 March.

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

- the Core Allowed Revenue for 2011/12 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 Prices Index;
- the Gas Transporter is subject to a range of incentives as described by Special Condition 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).

1.2 Objectives of the Charging Methodology

The transportation charging methodology has to comply with objectives set out in the Licence under Standard Special Condition A5 paragraph 5. These are:

- Compliance with the charging methodology results in charges which reflect the costs incurred by the licensee in its transportation business, and, so far as is consistent with this,
- That compliance with the charging methodology facilitates effective competition between gas shippers and between gas suppliers; and
- That the charging methodology properly takes account of developments in the transportation business;

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

- Promote efficient use of the distribution system;
- Generate stable charges;
- 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.

1.3 Structure of Charges

Under the existing structure Network LDZ charges are split between charges which reflect system costs and those which reflect customer related costs. The table below shows that, based on national activity based costing (ABC) analysis, system related costs accounted for about 70% of network costs and customer related costs the remaining 30% in recent years.

Table 3.1.3: Network Cost Breakdown based on national ABC model

Year	System	Customer	Total
	%	%	%
2002	70.9	29.1	100
2003	71.8	28.2	100

Charges are therefore set to recover approximately 70% of the revenue from the system related charges and 30% of the revenue from the customer related charges.

Having established the target revenue to be derived from each main category of charge, the next step is to structure the charges within each of these charge categories across the load bands such that they reasonably reflect the costs imposed on the system by different sizes of loads. The methodologies used to do this are described in the following sections.

2. LDZ System Charges Methodology

2.1 Introduction

The LDZ charges effective from 1 April 2009 are based on the national methodology fully described in Transco's Pricing Consultation paper PC68 - Review of LDZ Transportation Charges. This methodology is based on an analysis of costs and system usage at a national level. The distribution networks contain a series of pipe networks split into four main pressure tiers:

Table 2.1a Network 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

Each Network has a similar proportion of LTS, MPS and LPS pipelines but some Networks contain less IPS pipelines. The Low Pressure System itself accounts for 223,000 km out of the total 273,000 km of Network pipeline. In order to provide a more cost reflective basis for charging, the LPS is sub-divided on the basis of pipe diameter into six sub-tiers as shown below.

Table 2.1b LPS Sub Tiers

Pipe Diameter
>355mm
250- 355mm
180-250mm
125-250mm
90-125mm
<=90mm
Total

The principle underlying the LDZ 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.

2.2 Outline of Methodology

The methodology calculates the average cost of utilisation for each of the main pressure tiers of the distribution 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 distribution 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 2001.

2.3 Determination of Costs

The costs related to each pressure tier were derived from the Activity Based Cost (ABC) model. These costs are split into capacity and commodity elements under PC68.

The calculations carried out under PC68 were based upon a 50:50 Capacity - Commodity split of LDZ System revenue, which was applicable at that time. From 1 October 2008 LDZ System charges have been scaled such that 95% of the target revenue will be recovered by the LDZ System Capacity charges and 5% will be recovered from the LDZ System Commodity charges. DNPC03 gives full details of the charging methodology revision. The calculations carried out under PC68 are being reviewed and will be updated in due course.

Table 2.3a Determination of Tier Costs

Pressure		% Total ABC	Cost (£M)	
Tier	**LPS Sub Tier**		**Total**	**Capacity (50%)**
LTS		15.7%	196.3	98.1
IPS		5.4%	66.9	33.5
MPS		16.2%	201.4	100.7
LPS		62.7%	782.4	391.2
TOTAL		100.0%	1247.0	623.5

The split of LPS costs down to sub-tier level is based on year 2000 replacement cost data.

Table 2.3b Determination of LPS Costs

	% Total 2000 Replacement Cost	Cost (£M)	
LPS Sub Tier		**Total**	**Capacity (50%)**
LP1 >355mm	12.3%	96.2	48.1
LP2 250-355mm	12.7%	99.4	49.7
LP3 180-250mm	10.5%	82.2	41.1
LP4 125-180mm	15.8%	123.6	61.8
LP5 90-125mm	26.1%	204.2	102.1
LP6 <90mm	22.6%	176.8	88.4
TOTAL	100%	782.4	391.2

2.4 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 distribution 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 pipeline system in conjunction with the results of network analysis.

Table 2.4 System Usage Probability Matrix

Consumption Band	Network Tiers			LPS Sub Tiers					
(MWh)	LTS	IPS	MPS	LP1	LP2	LP3	LP4	LP5	LP6
0-73.2	97.8%	44.7%	94.4%	56.3%	76.7%	83.7%	77.5%	54.7%	17.1%
73.2 - 146.5	97.7%	44.6%	94.6%	55.5%	73.7%	76.7%	66.7%	42.7%	15.4%
146.5 – 293	97.8%	44.7%	94.2%	59.0%	78.2%	79.8%	67.8%	43.8%	17.2%
293 – 439	97.6%	45.0%	94.0%	52.8%	70.5%	72.8%	61.4%	40.0%	16.6%
439 – 586	97.6%	44.9%	94.1%	52.9%	70.3%	72.3%	61.4%	40.2%	16.8%
586 – 732	97.7%	44.6%	94.6%	55.0%	73.2%	73.9%	62.3%	43.1%	16.9%
732 - 2,931	97.5%	45.3%	93.7%	50.4%	66.8%	68.3%	57.2%	36.2%	13.4%
2,931 - 14,654	97.2%	44.6%	94.3%	43.1%	56.8%	54.9%	41.4%	20.9%	6.9%
14,654 - 58,614	96.7%	45.7%	91.3%	24.8%	31.8%	26.1%	15.2%	6.8%	0.0%
58,614 - 293,071	96.5%	50.0%	78.0%	10.3%	12.4%	6.5%	6.8%	4.1%	1.4%
>293,071	97.5%	49.1%	41.1%	1.2%	1.7%	1.6%	1.3%	1.0%	1.0%

Table 2.4 shows that for the 0-73.2MWh consumption band 97.8% (3,117 GWh from Table 2.5) of the total peak offtake for this consumption band (3,191 GWh) goes through the LTS, 44.7% goes through the IPS, and 94.4% through the MPS.

2.5 Pressure Tier / Sub Tier Usage Volumes

The application of usage probabilities to the network 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 2.5 Peak Daily Capacity Utilisation (GWh)

Consumption Band	Network Tiers			LPS Sub Tiers					
(MWh)	LTS	IPS	MPS	LP1	LP2	LP3	LP4	LP5	LP6
0-73.2	3,117	1,425	3,010	1,794	2,446	2,668	2,472	1,745	545
73.2 - 146.5	178	81	172	101	134	140	122	78	28
146.5 - 293	159	73	153	96	127	130	110	71	28
293 - 439	82	38	79	44	59	61	52	34	14
439 - 586	64	29	62	35	46	47	40	26	11
586 - 732	53	24	51	30	40	40	34	23	9
732 - 2,931	191	89	184	99	131	134	112	71	26
2,931 - 14,654	183	84	177	81	107	103	78	39	13
14,654 - 58,614	123	58	116	32	41	33	19	9	0
58,614 - 293,071	87	45	70	9	11	6	6	4	1
>293,071	69	35	29	1	1	1	1	1	1
Total	**4,306**	**1,981**	**4,104**	**2,322**	**3,143**	**3,364**	**3,046**	**2,101**	**676**

2.6 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 3.2.2, 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 2.6 Cost per Unit of Capacity Utilised

.	Network Tiers			LPS Sub Tiers					
.	**LTS**	**ITS**	**MPS**	**LP1**	**LP2**	**LP3**	**LP4**	**LP5**	**LP6**
Capacity Cost (£m)	98.1	33.5	100.7	48.1	49.7	41.1	61.8	102.1	88.4
Capacity Utilised (PD GWhs)	4,306	1,981	4,104	2,322	3,143	3,364	3,046	2,101	676
Unit Cost (p / pdkWh / pa)	2.28	1.69	2.45	2.07	1.58	1.22	2.03	4.86	13.08

2.7 Average Cost of Utilisation

The costs calculated in Table 2.6 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 2.7a below for the MPS.

Table 2.7a Example - Average Cost (pence/peak day kWh/year) of Utilisation of MPS by Load Band

Consumption Band (MWh)	Utilisation Cost	Probability of Use %	Average Cost
0-73.2	2.45	94.4%	2.32
73.2 – 146.5	2.45	94.6%	2.32
146.5 – 293	2.45	94.2%	2.31
293 – 439	2.45	94.0%	2.31
439 – 586	2.45	94.1%	2.31
586 – 732	2.45	94.6%	2.32
732 - 2,931	2.45	93.7%	2.30
2,931 – 14,654	2.45	94.3%	2.31
14,654 - 58,614	2.45	91.3%	2.24
58,614 - 293,071	2.45	78.0%	1.91
>293,071	2.45	41.1%	1.01

Table 2.7b below summarises the average cost, by consumption band, of using the complete network system.

Table 2.7b Average Cost of Network Utilisation by Consumption Band

Consumption Band (MWh)	Pence / peak day kWh / Annum									
	LTS	IPS	MPS	LP1	LP2	LP3	LP4	LP5	LP6	Total
0-73.2	2.23	0.75	2.32	1.17	1.21	1.02	1.57	2.66	2.23	15.17
73.2-146.5	2.23	0.75	2.32	1.15	1.17	0.94	1.35	2.08	2.01	14.00
146.5-293	2.23	0.76	2.31	1.22	1.24	0.98	1.38	2.13	2.25	14.49
293-439	2.22	0.76	2.31	1.10	1.11	0.89	1.25	1.95	2.18	13.76
439-586	2.22	0.76	2.31	1.10	1.11	0.88	1.25	1.95	2.20	13.79
586-732	2.23	0.75	2.32	1.14	1.16	0.90	1.26	2.09	2.22	14.07
732-2,931	2.22	0.76	2.30	1.04	1.06	0.83	1.16	1.76	1.75	12.89
2,931-14,654	2.22	0.75	2.31	0.89	0.90	0.67	0.84	1.02	0.90	10.50
14,654-58,614	2.20	0.77	2.24	0.51	0.50	0.32	0.31	0.33	0.00	7.19
58,614-293,071	2.20	0.85	1.91	0.21	0.20	0.08	0.14	0.20	0.18	5.96
>293,071	2.22	0.83	1.01	0.02	0.03	0.02	0.03	0.05	0.13	4.33

2.8 CSEPs

It has been suggested that CSEPs may use less of the distribution system when compared with standard supply points of the same peak daily consumption, and hence separate charging functions have been generated. CSEP specific connection data is used to compile a CSEP connection probability matrix in place of Table 2.4.

The costs calculated earlier in Table 2.6 represent the cost per unit of capacity utilised within each pressure tier / sub tier of the network by all loads. CSEP charging is based on the average expected cost, in each consumption band, for a CSEP utilising a particular pressure tier / sub tier. It is calculated by multiplying the unit cost of utilising each tier (Table 2.6) by the probability that the tier is utilised by CSEPs within a consumption band (CSEP replacement table for Table 2.4). The summation of each of these tier / sub-tier costs gives a total network cost as in Table 2.7b.

2.9 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 distribution network are plotted. For the capacity charges for directly connected supply points these costs are the total costs detailed in 2.7b 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 distribution network they are expected to generate the desired target revenue. For CSEPs and standard supply points less than 732 MWh / annum, the functions for capacity charges are the same as are the functions for commodity charges.

3. LDZ Customer and Other Charges Methodology

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

3.1 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 1.3 - Network Cost Breakdown) from supply points grouped in broad load bands. This is described in more detail below.

1. Using ABC cost analysis, 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.
6. 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.

3.2 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 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 3.3 below for setting Other Charges.

3.3 Other Charges

There are other charges applied to services which are required by some shippers but not by all, for example charges for the administration of special allocation arrangements at shared supply meter points and Interconnectors. 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.

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 Transco'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).