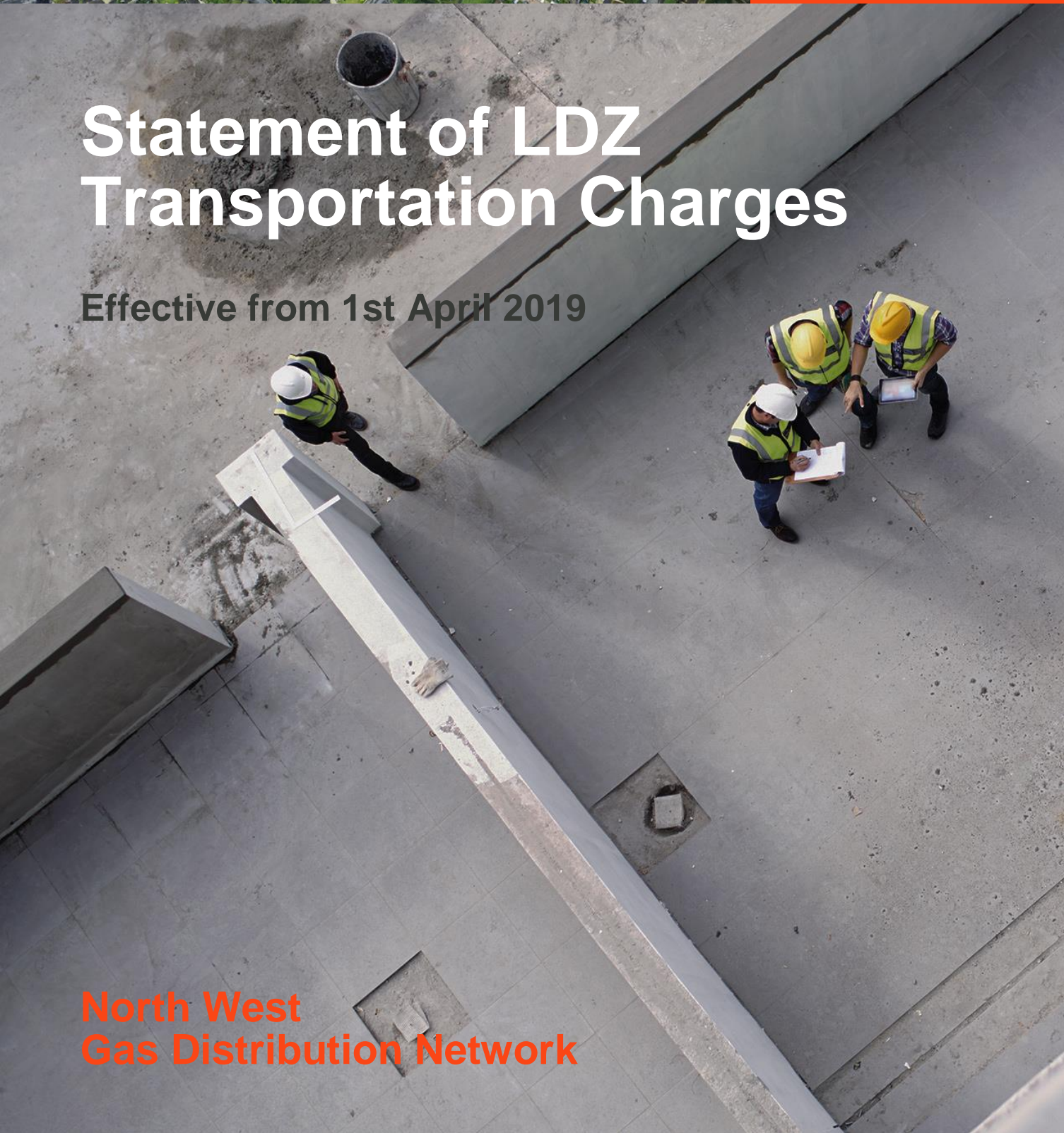




Statement of LDZ Transportation Charges

Effective from 1st April 2019



**North West
Gas Distribution Network**

Contents

Introduction	3
LDZ System Charges	6
LDZ Customer Charges	8
LDZ Exit Capacity NTS (ECN) Charges	9
DN System Entry Commodity Charge	10
Shared Supply Meter Point Arrangements	11
Charge Types and Invoice Mapping	12
Examples	13
Contact Details	16
Appendix A: Estimation of Peak Daily Load for Non-Daily Metered Supply Points	17
Appendix B: Application of Transportation Charging Methodology	19

Introduction

This publication sets out the LDZ transportation charges that apply from 1st April 2019 for the use of the North West Gas Distribution 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.

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 publication will be used in the calculation of charges within UK Link, which are definitive for billing purposes.

There are a number of other 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 ratchet charges, 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.

For further information and details on the methodologies underlying the LDZ transportation charges please refer to the documents referenced within the Appendices and the Uniform Network Code (UNC). These methodologies are set out in the UNC, within the Transportation Principal Document Section Y Part B, and are subject to alteration under the governance of UNC Modification Rules.

All UNC documents and Modifications can be found on the Joint Office of Gas Transporters website: www.gasgovernance.co.uk

The Distribution Transportation Price Control Formula

Distribution networks set prices with the aim of recovering the level of allowed revenue permitted by the gas and electricity market regulator Ofgem, calculated in accordance with our Gas Transporter Licence. Should more or less than the maximum permitted revenue be collected in any formula year, then a compensating adjustment is made two years later.

Forecast Allowed Revenue for the Regulatory Year 2019/20

Maximum Allowed Revenue for the North West Network for the forthcoming formula year 2019/20 is estimated at £481.3m. This is an increase of 6.1% against 2018/19.

To bring charges into line with Maximum Allowed Revenue, and to take account of changes in aggregate supply point demand, transportation charges in the North West network have increased by 5.2% on average from 2018/19.

Current forecast under recovery (K) against maximum allowed revenue at 31st March 2019 for the regulatory year 2019/20 is 0.2m.

From 1st April 2019, the distribution transportation charges in respect of an example domestic load consuming 13,500 kWh per annum are on average estimated to be £140.89 per annum (NW1 Exit Zone).

Charge Types

Transportation is provided on a firm basis only. Forecast allowed revenue is collected through the charging of the following LDZ Transportation Charge types:

- LDZ System Charges
- LDZ Customer Charges
- LDZ Exit Capacity (ECN) Charges
- LDZ System Entry Commodity Charges / Credits
- Other Charges

Each charge type is described in more detail within this document.

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

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.

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.

For more information on the charges contained within this document, please contact a member of the Revenue & Pricing Team. Contact details are located on page 16 of this publication.

Invoicing

Xoserve is the third party responsible for hosting and supporting the UK Link system and act as the billing agent for the gas networks, including Cadent. They produce and issue the invoices that are derived from the transportation charges shown within this publication. Each charge levied has an associated charge code and invoice type which has been included within this publication to clarify the link between charging and invoicing and to aid better understanding of bills.

For more information on invoicing please contact Xoserve directly at the following email address: css.billing@xoserve.com

Project Nexus

The charging year 2018/19 was the first complete year under Project Nexus methodology. The key difference was that the Supply Point Offtake Quantity (SOQ), which drives the vast majority of charges, will remain fixed throughout the charging year. This should significantly reduce the amount of under/over collection previously caused by changes in SOQ in October each year. In addition, with monthly rolling AQ data becoming available, improvement to supply point demand and capacity forecasting is anticipated.

LDZ System Charges

Standard LDZ System Charge

The standard LDZ system charges comprise of capacity and commodity charges, with the same rates and functions applicable for both Directly Connected Supply Points and Connected System Exit Points (CSEPs).

Where the LDZ charges are based on functions, these functions use Supply Point Offtake Quantity (SOQ) in the determination of the charges. At daily metered (DM) 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.

Directly Connected Supply Points and CSEPs

Charge codes, unit rates and charging functions used to calculate charges to Directly Connected Supply Points and CSEPs are set out in the tables below.

Table 1: Charge Codes for Directly Connected Supply Points and CSEPs

Directly Connected		CSEPs	
Invoice Type	Charge Code	Invoice Type	Charge Code
Capacity (CAZ)	ZCA	Capacity (CAZ)	891
Commodity (COM)	ZCO	Commodity (COM)	893

Table 2: LDZ System Charges for Directly Connected Supply Points & CSEPs

Charge Band (kWh per annum)	LDZ Capacity (pence per peak day kWh per day)	LDZ Commodity (pence per kWh)
0 to 73,199	0.2053	0.0338
73,200 to 731,999	0.1711	0.0284
732,000 and above	$1.3498 \times \text{SOQ}^{-0.2483}$	$0.2463 \times \text{SOQ}^{-0.2586}$
Subject to a minimum rate of	0.0190	0.0030
Minimum rate applies at SOQ of	28,626,571	25,276,625

CSEP Charging

In the calculation of LDZ charges payable for CSEPs, 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.

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 Network loads located close to the NTS or for potential new Network loads in a similar situation, the standard LDZ tariff can appear to give perverse economic incentives for the construction of new pipelines when Network connections are already available. This could result in an inefficient outcome for all system users.

Table 3: Optional LDZ Charge Function

Charge Code	Pence per peak day kWh per day
881	$902 \times [(SOQ)^{0.834}] \times D + 772 \times (SOQ)^{0.717}$

Please Note:

SOQ = the Registered Supply Point Capacity, or other appropriate measure, in kWh per day.

D = the direct distance, in km, from the site boundary to the nearest point on the NTS.

^ Means "to the power of ..."

Further information on the optional LDZ tariff can be obtained by contacting the Revenue & Pricing Team (see Page 16).

LDZ Customer Charges

LDZ Customer charges apply only to Directly Connected Supply Points.

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

For supply points with an AQ between 73,200 and 731,999 kWh per annum, the customer charge is made up of a fixed element 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 732,000 kWh per annum or more, the customer charge is based on a function related to the registered supply point capacity (SOQ). The charge codes, unit rates and charging functions used to calculate customer charges to Directly Connected Supply Points are set out in the table below.

Table 4: LDZ Customer Capacity Charge Codes, Unit Rates and Charging Functions

Charge Code	CCA
Charge Band (kWh per annum)	Unit Rate (pence per peak day kWh per day)
0 to 73,199	0.0960
73,200 to 731,999	0.0029
732,000 and above	$0.0662 \times \text{SOQ}^{-0.2100}$

Table 5: LDZ Customer Fixed Charge Codes and Unit Rates

Charge Code	CFI
Fixed charge	Unit Rate (pence per day)
Non-monthly read supply points	27.2699
Monthly read supply points	29.0367

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 changed 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 Directly Connected Supply Point or CSEP is determined by its postcode.

National Grid Transmission will invoice gas Distribution Networks (DNs) for booked NTS Exit Capacity and DN's will invoice Shippers in line with DNPC06 (Proposals for LDZ Charges to Recover NTS Exit Capacity Charges).

The ECN charging methodology is covered in Section Y Part B (9) of the UNC. ECN charges are designed to recover the annual amount of exit capacity cost as defined in the Gas Transporter Licence (inclusive of lagged adjustments between allowed and actual costs) and adjustments for any under or over recovery of ECN revenue from two years previous.

The charge codes and unit rates used to calculate ECN charges for Directly Connected Supply Points and CSEPs are set out in the table below. As per the LDZ System Charge, the same unit rates apply for both Directly Connected Supply Points and CSEPs.

Table 6: LDZ Exit Capacity NTS (ECN) Charge Codes and Unit Rates

Invoice Type	Charge Code
Directly Connected	ECN
CSEPS	C04

Exit Zone	Unit Rate (pence per peak day kWh per day)
NW1	0.0198
NW2	0.0256

DN System Entry Commodity Charge

The DN System Entry Commodity Charge came into effect on the 1st April 2013 and reflects the cost of receiving gas directly into the distribution network through a LDZ System Entry Point rather than through the NTS.

The rate associated with the LDZ System Entry Commodity charge is calculated on a site by site basis and may be positive resulting in a charge, or negative resulting in a credit.

The level of charge / credit will vary according to the amount of gas entering the network system, the pressure tier at which the gas enters the system and the operational costs associated with the entry point.

The charge / credit is made up of the following three elements and is an adjustment to the full transportation charge:

- **Operational Costs:** the Shipper will be charged for operational costs incurred by the Distribution Network in maintaining the entry point connection to the system
- **Exit Capacity Credit:** the Shipper will receive a credit in respect of exit capacity charges as the gas has not entered the Distribution Network via the National Transmission System in the traditional way.
- **System Credit:** the Shipper will receive a level of credit depending on the pressure tier at which the entry point connects. This is to reflect lower overall system usage than gas that enters the network via the National Transmission System. Sites connected at the Local Transmission Network (LTS) receive no credit.

The table below provides details on LDZ System Entry unit rates for all sites with accepted connection offers that are expected to be in operation during 2018/19. As and when connection offers are accepted for additional sites expected to come into operation during the year, unit prices will be notified under the 'Notice of Charges' section of the Joint Office of Gas Transporters website.

Table 7: LDZ System Entry Unit Rates

Charge Code	LEC	
DN Entry Point (Site Name)	Charge / Credit	Unit Rate (pence per kWh)
Bredbury Park, Stockport	Charge	0.0099
Crowland Street	Credit	-0.0840
Davyhulme, Urmston	Credit	-0.0639
Ellesmere Port	Credit	-0.0160
Garth Road	Credit	-0.0744
Granox, Widnes	Credit	-0.0771

Shared Supply Meter Point Arrangements

An allocation service is available for daily metered supply points with AQs of more than 58,600 MWh per annum. This allows up to four (six for Very Large Daily Metered Customers (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 in the tables below. Individual charges depend on the type of allocation service nominated and whether the site is 'telemetered' or 'non telemetered' and are expressed as £ per Shipper per supply point.

Table 8: Charge code and unit rates for shared supply meter points

Service	Agent Service		Transporter Service	
	Telemetered	Non Telemetered	Telemetered	Non Telemetered
Charge Code - 883				
Set-up Charge	£107.00	£183.00	£107.00	£202.00
Shipper-Shipper Transfer Charge	£126.00	£210.00	£126.00	£210.00
Daily Charge	£2.55	£2.96	£2.55	£3.05

Charge Types and Invoice Mapping

The following list presents the core invoice types and charge codes reflected in this document, which are billed by Xoserve on our behalf.

A full list of current invoice types and charge codes is available through the Xoserve Shared Area.

Table 9: Invoice Types and Charge Codes

	Invoice Type	Charge Codes
LDZ Capacity		
Supply Point LDZ Capacity	CAZ	ZCA
CSEP LDZ Capacity	CAZ	891
Unique Sites LDZ Capacity Charge	CAZ	871
LDZ Optional Tariff	CAZ	881
Customer Capacity		
Customer LDZ Capacity	CAZ	CCA
Customer Capacity fixed Charge	CAZ	CFI
Unique Sites Customer Capacity	CAZ	872
Commodity		
LDZ Commodity	COM	ZCO
CSEP Commodity	COM	893
Unique Sites Commodity	COM	878
LDZ System Entry Commodity Charge	COM	LEC
Exit Capacity		
LDZ Exit Capacity	CAZ	ECN
CSEP Exit Capacity	CAZ	C04
Unique Sites Exit Capacity	CAZ	901
Other Charges		
LDZ Shared Supply Admin Charge	CAZ	883
CSEP Admin Charge	CAZ	894

Examples

This section provides illustrative examples of how transportation charges are used to calculate a bill for different load bands. However, as these calculations are subject to rounding they should only be regarded as purely illustrative. The commodity charges in these examples are also based on a supply point AQ, but the actual charges would vary depending on the actual consumption of the supply point for that period.

Charges produced by UK Link are definitive for charging purposes and take precedence to any examples listed within this section.

Example 1

A Shipper has a daily metered customer in the NW1 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		
LDZ Capacity		→	LDZ Capacity		
Invoice:	LDZ Capacity (ZCA)		Volume:	366 days x 100,000 (SOQ)	36,600,000
See:	Table 2		Unit Rate:	1.3498 x 100,000 (SOQ) ^ -0.2483	0.0774
Basis:	pence / peak day kWh / day		Annual Charge:	Volume x Unit Rate	£28,328.40
+					
LDZ Commodity		→	LDZ Commodity		
Invoice:	LDZ Commodity (ZCO)		Volume:	20,000,000 (AQ)	20,000,000
See:	Table 2		Unit Rate:	0.2463 x 100,000 (SOQ) ^ -0.2586	0.0125
Basis:	pence / kWh		Annual Charge:	Volume x Unit Rate	£2,500.00
+					
LDZ Customer (Capacity)		→	LDZ Customer (Capacity)		
Invoice:	LDZ Capacity (CCA)		Volume:	366 days x 100,000 (SOQ)	36,600,000
See:	Table 4		Unit Rate:	0.0662 x 100,000 (SOQ) ^ -0.2100	0.0059
Basis:	pence / peak day kWh / day		Annual Charge:	Volume x Unit Rate	£2,159.40
+					
LDZ Exit Capacity		→	LDZ Exit Capacity		
Invoice:	Exit Capacity (ECN)		Volume:	366 days x 100,000 (SOQ)	36,600,000
See:	Table 6		Unit Rate:	0.0198 pence / peak day kWh / day	0.0198
Basis:	pence / peak day kWh / day		Annual Charge:	Volume x Unit Rate	£7,246.80
=					
Total Annual Charge			£40,234.60		

Example 2

A Shipper has a domestic customer and the load has an AQ of 13,500 kWh per annum. This annual load places the end user in category E1801B for small NDM supply points. The load factor for such a site in the NW1 Exit Zone is 31.8%. The peak daily load (SOQ) is therefore $13,500 \div (366 \times 0.318) = 116$ kWh.

PROCESS		CALCULATIONS		
LDZ Capacity		LDZ Capacity		
Invoice:	LDZ Capacity (ZCA)	Volume:	$(13500 \text{ (AQ)} / 366 \text{ days} / 31.8\%) \times 366$	42,456
See:	Table 2	Unit Rate:	0.2053 pence / peak day kWh / day	0.2053
Basis:	pence / peak day kWh / day	Annual Charge:	Volume x Unit Rate	£87.16
+				
LDZ Commodity		LDZ Commodity		
Invoice:	LDZ Commodity (ZCO)	Volume:	13500 (AQ)	13,500
See:	Table 2	Unit Rate:	0.0338 pence per kWh	0.0338
Basis:	pence / kWh	Annual Charge:	Volume x Unit Rate	£4.56
+				
LDZ Customer (Capacity)		LDZ Customer (Capacity)		
Invoice:	LDZ Capacity (CCA)	Volume:	$(13500 \text{ (AQ)} / 366 \text{ days} / 31.8\%) \times 366$	42,456
See:	Table 4	Unit Rate:	0.096 pence / peak day kWh / day	0.0960
Basis:	pence / peak day kWh / day	Annual Charge:	Volume x Unit Rate	£40.76
+				
LDZ Exit Capacity		LDZ Exit Capacity		
Invoice:	Exit Capacity (ECN)	Volume:	$(13500 \text{ (AQ)} / 366 \text{ days} / 31.8\%) \times 366$	42,456
See:	Table 6	Unit Rate:	0.0198	0.0198
Basis:	pence / peak day kWh / day	Annual Charge:	Volume x Unit Rate	£8.41
=				
Total Annual Charge		£140.89		

Example 3

Suppose that instead of supplying just one domestic customer (as in Example 2) the Shipper actually supplies a connected system in the NW1 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 15,000 kWh per annum.

Annual Quantity (AQ) = Number of premises x AQ per premise	Prevailing AQ (pre AQ)	100 houses x 15,000 (AQ) = 1,500,000 kWh
	Maximum AQ (max AQ)	150 houses x 15,000 (AQ) = 2,250,000 kWh
Supply Point Offtake Quantity (SOQ) = AQ ÷ (365 x Load Factor)	Prevailing SOQ (pre SOQ)	1,500,000 ÷ (366 x 0.318) = 12,888 kWh
	Maximum SOQ (max SOQ)	2,250,000 ÷ (366 x 0.318) = 19,332 kWh

Note: 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.

PROCESS		CALCULATIONS		
LDZ Capacity		LDZ Capacity		
Invoice:	LDZ Capacity (891)	Volume:	12888 (pre SOQ) x 366 days	4,717,008
See:	Table 2	Unit Rate:	1.3498 x 19332 (max SOQ) x -0.2483	0.1164
Basis:	pence / peak day kWh / day	Annual Charge:	Volume x Unit Rate	£5,490.60
+				
LDZ Commodity		LDZ Commodity		
Invoice:	LDZ Commodity (893)	Volume:	1500000 (AQ)	1,500,000
See:	Table 2	Unit Rate:	0.2463 x 19332 (max SOQ) x -0.2586	0.0192
Basis:	pence / kWh	Annual Charge:	Volume x Unit Rate	£288.00
+				
LDZ Exit Capacity		LDZ Exit Capacity		
Invoice:	Exit Capacity (C04)	Volume:	12888 (pre SOQ) x 366 days	4,717,008
See:	Table 6	Unit Rate:	0.0198	0.0198
Basis:	pence / peak day kWh / day	Annual Charge:	Volume x Unit Rate	£933.97
=				
Total Annual Charge		£6,712.57		

Contact Details

If you have any questions in relation to this document, please contact a member of the Revenue & Pricing team.

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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.

A full list of the latest End User Categories, WAR bands and Load Factors for the North West network are available electronically via the Xoserve secure internet site: <http://www.xoserve.com/index.php/our-systems/extranet-secured-sites/>.

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:

$$\frac{AQ \times 100}{366 \times \text{Load Factor}}$$

Example

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

Assume consumption December to March inclusive is 440 MWh.

Winter: annual ratio = $440 \div 1000 = 0.44$

For a site with an annual consumption of 1,000 MWh (EUC Code NW:E1804), a ratio of 0.44 falls within winter: annual ratio band W02 and the site is thus within End User Category NW:E1804BW02.

For a site in this category, the load factor is 41.7% and the peak daily load is therefore:

$$\frac{1000 \times 100}{366 \times 43.9\%} = 6.22 \text{ Mwh}$$

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 NW:E1804B. For a site in this category, the load factor is 34.2% and the peak daily load is therefore:

$$\frac{1000 \times 100}{366 \times 34.2\%} = 7.99 \text{ Mwh}$$

Six Monthly Read Sites

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

Note

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 NW:E1809B is used.

Supply points with an AQ above 73.2 MWh pa may, at the Shipper's request, be classified as 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.

Please note that following implementation of Project Nexus, the impact of revisions to End User Categories on chargeable SOQs applies from the start of the following formula year commencing 1st April.

Appendix B: Application of Transportation Charging Methodology

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.

Price Control Formulae

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

- The Core (Base) Allowed Revenue determined through the RIIO GD1 Price Control.
- The indexation factor - under the distribution formula, allowed revenue is adjusted each year by a factor equal to the forecast rate of inflation, with a subsequent true-up for actual inflation, measured by reference to the Retail Price Index.
- The Gas Transporter is subject to a range of incentives and revenue adjustments as described in its Licence.
- Any under- or over-recovery, lagged by two years (brought forward under the control from two years prior to the 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 subsequent formula years (taking interest into account).

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 that:

- Compliance with the charging methodology results in charges which reflect the cost incurred by the transporter in its transportation business
- Facilitates competition between gas shippers and between gas suppliers
- Takes account of developments in the transportation business

In addition to these Licence objectives, Cadent 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
- Be easy to understand and implement

Before the Transporter makes any changes to the methodology, it would raise a UNC modification proposal in line with the UNC procedures and consult 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.

Structure of LDZ System and Customer Charges

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. The current split is set out in the below:

Table B.1 Split of LDZ System and Customer charges (%)

LDZ System	LDZ Customer	Total
73.7%	26.3%	100%

Having established by the above methods 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 size loads. The methodology used to do this is described in the appropriate sections below.

LDZ System Charging Methodology

The Standard LDZ System charges effective from 1st April 2013 are based on the methodology fully described in consultation paper DNPC08 - Review of Standard LDZ System Charges. This methodology is described below and was based on an analysis of Network costs and usage and a 95:5 capacity/commodity split.

The distribution network contains a series of pipe networks split into four main pressure tiers:

Table B.2 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 B.3 Low Pressure System 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.

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 2010.

Determination of Costs

The costs related to each pressure tier were derived from the split of distribution network 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 B.4 Determination of Tier Costs

Pressure Tier	% Total Cost	Cost (£M)	
		Total	Capacity (95%)
LTS	9.7%	24.9	23.6
IPS	2.3%	6.0	5.7
MPS	17.3%	44.1	41.9
LPS	70.6%	180.5	171.4
Total	100.0%	255.5	242.7

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

Table B.5 Determination of LPS Costs

LPS Sub Tier	Nominal internal diameter (inches)	% Total Replacement Cost	Cost (£M) Capacity (95%)
LP8	>24	1.3%	2.2
LP7	>18-24	2.5%	4.3
LP6	>12-18	5.7%	9.8
LP5	10-12	13.0%	22.3
LP4	8-9	8.1%	13.8
LP3	6-7	15.5%	26.6
LP2	4-5	29.2%	50.0
LP1	<=3	24.8%	42.5
Total		100.0%	171.4

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 B.6 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	99.8%	45.9%	93.0%	6.1%	8.2%	18.6%	50.2%	65.9%	80.4%	70.8%	28.9%
73.2 - 146.5	99.8%	45.8%	93.1%	8.7%	11.3%	22.4%	50.6%	57.8%	65.1%	49.3%	20.3%
146.5 – 293	99.8%	45.7%	93.2%	9.9%	12.8%	23.5%	48.7%	53.4%	59.9%	45.3%	21.5%
293 – 439	99.8%	45.7%	93.2%	9.8%	12.4%	21.9%	47.2%	54.3%	62.1%	48.0%	16.4%
439 – 586	99.8%	45.6%	93.4%	9.2%	11.7%	19.9%	46.9%	55.3%	65.3%	49.8%	16.7%
586 – 732	99.8%	45.5%	93.5%	9.5%	12.7%	19.8%	46.7%	52.1%	61.5%	46.6%	11.9%
732 - 2,931	99.8%	45.4%	93.7%	7.6%	9.5%	19.2%	43.8%	52.2%	59.7%	40.2%	5.3%
2,931 - 14,654	99.8%	45.2%	94.1%	7.8%	9.0%	15.7%	31.3%	31.8%	29.5%	11.8%	0.7%
14,654-58,614	99.9%	44.8%	87.6%	3.6%	5.0%	8.1%	12.7%	10.4%	1.2%	0.1%	0.0%
58,614-93,071	99.9%	58.7%	57.8%	0.5%	0.7%	1.6%	4.8%	1.8%	0.0%	0.0%	0.0%
>293,071	99.9%	58.5%	54.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table B.6 shows that for the 0-73.2MWh consumption band 99.8% (342.6 GWh from Table B.7) of the total peak offtake for this consumption band (343.2 GWh) goes through the LTS, 45.9% goes through the IPS, and 93.0% through the MPS.

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 B.7 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	342.6	157.4	319.1	20.8	28.2	63.9	172.3	226.3	275.8	243.1	99.3
73.2 - 146.5	15.7	7.2	14.7	1.4	1.8	3.5	8.0	9.1	10.3	7.8	3.2
146.5 – 293	15.3	7.0	14.3	1.5	2.0	3.6	7.5	8.2	9.2	7.0	3.3
293 – 439	9.7	4.4	9.1	1.0	1.2	2.1	4.6	5.3	6.0	4.7	1.6
439 – 586	7.6	3.5	7.1	0.7	0.9	1.5	3.6	4.2	5.0	3.8	1.3
586 – 732	6.0	2.8	5.7	0.6	0.8	1.2	2.8	3.2	3.7	2.8	0.7
732 - 2,931	35.6	16.2	33.4	2.7	3.4	6.9	15.6	18.6	21.3	14.3	1.9
2,931 - 14,654	28.3	12.8	26.6	2.2	2.6	4.5	8.9	9.0	8.4	3.3	0.2
14,654-58,614	32.5	14.6	28.5	1.2	1.6	2.6	4.1	3.4	0.4	0.0	0.0
58,614-293,071	38.5	22.6	22.3	0.2	0.3	0.6	1.8	0.7	0.0	0.0	0.0
>293,071	15.1	8.8	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	547.0	257.3	489.0	32.2	42.7	90.5	229.2	288.0	340.1	286.9	111.5

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 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 B.8 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)	23.63	5.69	41.92	2.17	4.31	9.81	22.27	13.82	26.55	49.99	42.52
Capacity Utilised(PD GWh)	547.0	257.3	489.0	32.2	42.7	90.5	229.2	288.0	340.1	286.9	111.5
Unit Cost (p/pdkWh/d)	0.0118	0.0061	0.0235	0.0184	0.0277	0.0297	0.0266	0.0131	0.0214	0.0477	0.1045

Average Cost of Utilisation

The costs calculated in Table B.8 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 B.9 below for the MP.

Table B.9 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	0.0235	93.0%	0.0219
73.2 - 146.5	0.0235	93.1%	0.0219
146.5 - 293	0.0235	93.2%	0.0219
293 - 439	0.0235	93.2%	0.0219
439 - 586	0.0235	93.4%	0.0219
586 - 732	0.0235	93.5%	0.0220
732 - 2,931	0.0235	93.7%	0.0220
2,931 - 14,654	0.0235	94.1%	0.0221
14,654 - 58,614	0.0235	87.6%	0.0206
58,614 - 293,071	0.0235	57.8%	0.0136
>293,071	0.0235	54.4%	0.0128

Table B.10 below summarises the average cost, by consumption band, of using the complete DN system.

Table B.10 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	0.0118	0.0028	0.0218	0.0011	0.0023	0.0055	0.0134	0.0087	0.0172	0.0338	0.0302	0.1486
73.2 - 146.5	0.0118	0.0028	0.0219	0.0016	0.0031	0.0067	0.0135	0.0076	0.0139	0.0235	0.0213	0.1276
146.5 – 293	0.0118	0.0028	0.0219	0.0018	0.0035	0.0070	0.0129	0.0070	0.0128	0.0216	0.0224	0.1257
293 – 439	0.0118	0.0028	0.0219	0.0018	0.0034	0.0065	0.0126	0.0071	0.0133	0.0229	0.0172	0.1213
439 – 586	0.0118	0.0028	0.0219	0.0017	0.0032	0.0059	0.0125	0.0073	0.0140	0.0238	0.0174	0.1222
586 – 732	0.0118	0.0028	0.0220	0.0017	0.0035	0.0059	0.0124	0.0069	0.0132	0.0223	0.0124	0.1148
732 - 2,931	0.0118	0.0028	0.0220	0.0014	0.0026	0.0057	0.0116	0.0069	0.0128	0.0192	0.0056	0.1024
2,931 - 14,654	0.0118	0.0027	0.0221	0.0014	0.0025	0.0047	0.0083	0.0042	0.0063	0.0056	0.0007	0.0705
14,654-58,614	0.0118	0.0027	0.0206	0.0007	0.0014	0.0024	0.0034	0.0014	0.0003	0.0001	0.0000	0.0447
58,614-293,071	0.0118	0.0036	0.0136	0.0001	0.0002	0.0005	0.0013	0.0002	0.0000	0.0000	0.0000	0.0312
>293,071	0.0118	0.0035	0.0128	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0281

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.

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 B.10 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.

LDZ Customer and Other Charges Methodology

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

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 B.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 the section Outline of Methodology (operating costs plus an asset-based adjustment), the customer cost pool is sub-divided into the following cost pools:
 - a. service pipes
 - b. 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.

Charging for Connected Systems (CSEPs)

The standard customer charge is not levied in respect of supply points within CSEPs.

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).