Use of System Charging Methodology

Yorkshire Electricity Distribution plc

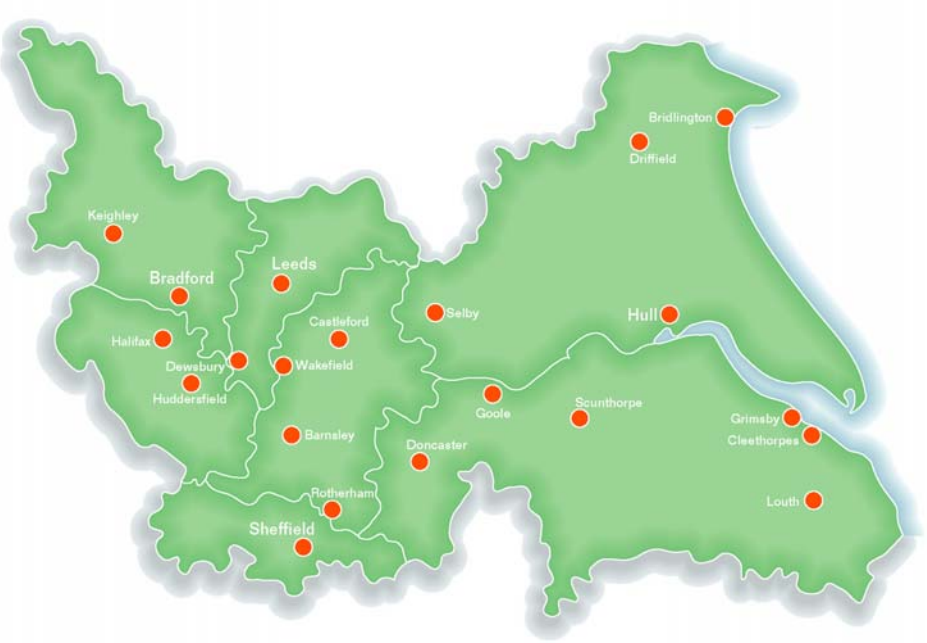
Effective from 1 ~~November 2009~~ April 2010

Version 1.9

Contents

1 About this Statement

CE Electric UK Funding Company (CE) is the UK parent company of Yorkshire Electricity Distribution plc (YEDL). YEDL is a licensed distribution business covering the area shown below.



This statement has been prepared by YEDL in accordance with the requirements of condition 13 of its electricity distribution licence ("the Licence") issued under the Electricity Act 1989, as amended by the Utilities Act 2000 ("the Act"). Words and expressions used in this statement have the definitions given to them in the Act and shall be construed accordingly.

This statement has been approved by the Gas and Electricity Markets Authority ("the Authority") and describes the methodology used in calculating the use of system (UoS) charges for demand and generation customers that are connected to YEDL's distribution system. This is one of a suite of documents that describe YEDL's charges and the methodologies behind them. The other documents that are available are:

- YEDL's Statement of Use of System Charges;
- The Miscellaneous Charging Statement;
- The Common Distribution Charging Methodology; ~~and~~
- YEDL's Connection Charging Methodology and Statement; ~~and~~
- The YEDL Losses Methodology.

These are available on our website at: www.ce-electricuk.com.

YEDL does not charge for providing copies of the statement where they are downloaded, in PDF format, from the YEDL website. Where paper copies are required, a fee of £5 may, at the discretion of YEDL, be payable for each copy provided.

YEDL's Use of System Charging Methodology from 1 April 2010

Enquiries with regard to the application of this statement should be made to:

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2 Introduction

2.1 Licence condition objectives

The Licence requires that YEDL must review its use of system charging methodology at least once every year to ensure continuing achievement of the relevant objectives as outlined below.

The Use of System Charging Methodology has the following relevant objectives set out in standard licence condition 13:

(a) that compliance with the methodology facilitates the discharge by the licensee of the obligations imposed on it under the Act and by the Licence;

(b) that compliance with the methodology facilitates competition in the generation and supply of electricity, and does not restrict, distort, or prevent competition in the transmission or distribution of electricity;

(c) that compliance with the methodology results in charges which reflect (as far as reasonably practicable), the costs incurred by the licensee in its distribution business; and

(d) that, so far as is consistent with sub-paragraphs (a), (b) and (c), the methodology, as far as is reasonably practicable (taking account of implementation costs), properly takes account of developments in the licensee's distribution business.

Following any review YEDL must make such modifications to the Use of System Methodology as may be necessary to better achieve the relevant objectives. However, before a modification can be made, a report must be issued to the Authority setting out the terms of the modification, how the modification better meets the relevant objectives and a timetable and date for implementation of the modification.

Unless the Authority has, within 28 days of receiving the licensee's report, given direction that the modification may not be made or that it intends to consult interested parties on the matter, YEDL will make the modification to the Use of System Charging Methodology.

2.2 Price control

YEDL is a licensed distribution business and is regulated by the Gas and Electricity Markets Authority (GEMA) through its support body, the Office of Gas and Electricity Markets (Ofgem). Regulation is applied via the ~~Distribution~~ Licence and the price control mechanism. The price control ~~period~~ is reviewed typically every five~~5~~ years and Ofgem prescribe the amount of revenue that YEDL is allowed to recover from its customer base annually over the five-year price control period. Use of s~~S~~ystem charges may vary year on year as YEDL sets its use of system charges to recover its allowed revenue.

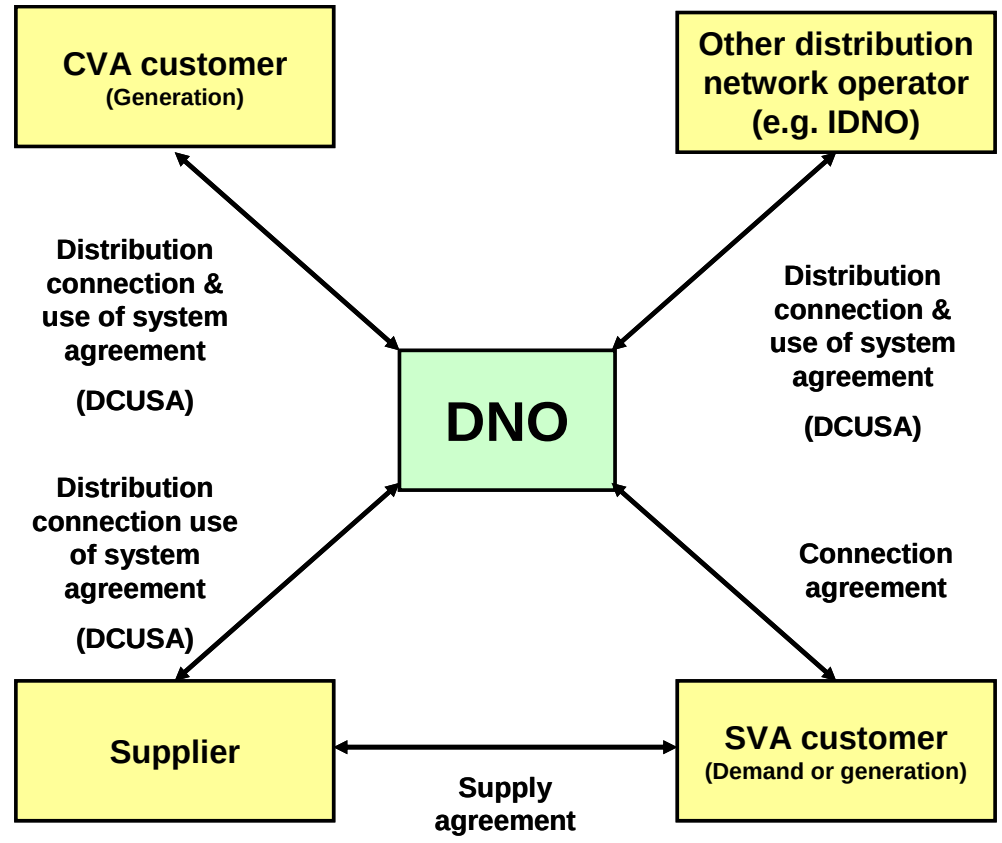
2.3 Use of system (UoS) charges and connection boundary

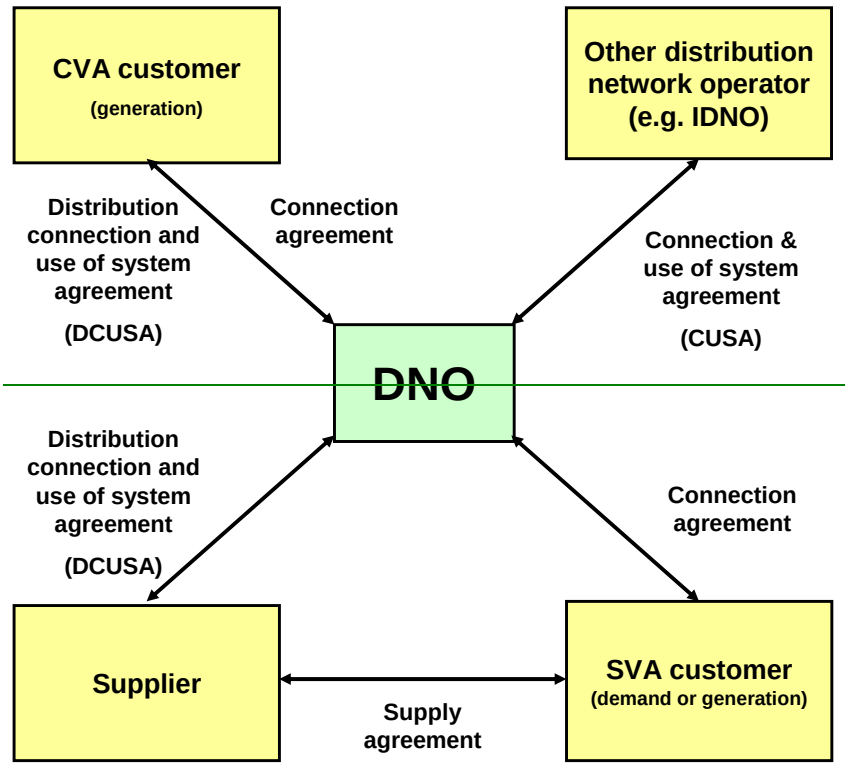
YEDL will levy UoS charges for utilisation of its network for the supply of electricity to end users and/or the transportation of electricity across its network from entry points. YEDL's UoS tariffs are published in our l~~L~~icence c~~C~~ondition 14 u~~U~~se of s~~S~~ystem charging statement.

In order to calculate UoS charges, YEDL must apportion the recovery of costs between connection to the distribution network and ongoing use of system charges for utilisation of the network. This boundary point is common for both demand and generation customers and the apportionment methodology utilised is described in YEDL's Connection Charging Methodology and Statement.

2.4 Contractual framework for the application of UoS charges

The following flowchart shows the UoS contractual framework for a customer trading in either supplier volume allocation (SVA), or central volume allocation (CVA) settlements process.





YEDL's Use of System Charging Methodology from 1 April 2010

The majority of customers will be connected in the SVA traded environment where both demand and generation customers will be required to appoint an authorised supplier. Any other licensed distribution network operator~~s~~ (~~e.g. IDNOs~~LDNO) or customers trading in CVA contract directly with YEDL.

Persons entitled to use YEDL's distribution system are those who are authorised by licence, or by exemption, under the Act to transmit, supply, distribute or generate electricity ("Authorised Electricity Operators (AEO)"). In order to protect all users of the system, YEDL will require evidence of authorisation before agreeing terms for use of its system.

Any party seeking to use the distribution system will be required, prior to using the system, to accede to the distribution connection and use of system agreement (DCUSA), or a connection and use of system agreement (CUSA)~~,~~ with YEDL, setting out the obligations of all parties. The party seeking use of the distribution system may be required, amongst other things, to:

- pay all and any charges due in respect of use of the distribution system as described in the statement of use of system charges and the accompanying schedules;
- be a party to the Master Registration Agreement (MRA) for the provision of metering point administration services;
- be a party to the Balancing and Settlement Code (BSC);
- be a party to National Grid Electricity Transmission (NGET) Connection and Use of System Code and any necessary supplemental agreement, governing connections to and use of the ~~NGET~~ transmission system, unless YEDL is informed by NGET that this is not required in any particular case; and
- comply with the provisions of the Distribution Code (a copy of which is located on the Ofgem website at www.ofgem.gov.uk) as approved from time to time by the Authority.

If the applicant and YEDL within a reasonable time fail to agree contractual terms, or any variation of contractual terms proposed by either party, either party may request settlement by:

The Gas & Electricity Markets Authority (GEMA)
9 Millbank
London
SW1P 3GE

Tel: 020 7901 7000

While the terms and conditions in the agreement will be consistent with those in this statement, the agreement will take precedence. Where an ~~authorised electricity operator~~AEO, having entered into an agreement for use of YEDL's distribution system, ceases for whatever reason to be an ~~authorised electricity operator~~AEO with respect to that use of the system, the entitlement to use of the system will cease forthwith. The operator will continue to be liable under the agreement unless and until the agreement is terminated. In order to avoid any liability in this regard, and unless agreed otherwise, an ~~authorised electricity operator~~AEO wishing to notify a change should give YEDL no less than 28 days' notice. Any notice of a wish to terminate should be in accordance with the terms of the agreement.

Terms and conditions for connection of premises, or other electrical systems, to YEDL's electricity distribution system are set out in its licence condition 14 document titled "YEDL's Connection Charging Methodology and Statement" which is available from the ~~YEDL~~

website, www.ce-electricuk.com. Persons seeking use of the system with respect to a new supply must apply for connection in accordance with the terms and conditions described in that statement.

Where a person requires a connection pursuant to section 16 (1) of the Act, the provisions of this statement are without prejudice to the provisions of sections 16 to 24 of the Act. Those sections deal with the rights, powers and duties of YEDL in respect of:

- providing a connection to any premises; or
- providing a connection to distribution systems of other authorised distributors. (For the purpose of this statement 'authorised distributor' means a person authorised either by a licence granted under Section 6, paragraph 1(c) of the Act, or by an exemption, to distribute electricity).

2.5 Principles and basis of charges for uUse of sSystem

The following numbered paragraphs relate to:

- the transportation of electricity on YEDL's distribution system by licensed suppliers and licensed distributors to exit points from that system;
- the transportation of electricity over the system for supply to A~~uthorised Electricity Operators~~EOs; and
- generators, including customers with on-site generation.

1. Where a supply of electricity is provided over electric lines or through electrical plant comprising a part of YEDL's distribution system, a charge for use of the system will be levied on the supplier of the electricity or the embedded distributor concerned. The relevant charges are described in the "Statement of Use of System Charges", and are payable by reference to the characteristics of the supply, in accordance with the categories of supply described in the schedules.
2. The charges for each category of supply depend upon the criteria that determine eligibility for that category, such criteria to include the voltage of connection to the distribution system, the characteristics of the load and the provision of the type of metering necessary to establish those characteristics.
3. The charges for use of the distribution system reflect:
   - the costs to YEDL of providing, operating and maintaining the system to the standards prescribed by the Act and the Licence, other than those costs thatwhich are recovered through charges paid to YEDL in respect of connection to the system, such that electricity can be transported efficiently through the system to exit points; and
   - the costs to YEDL of providing services and performing functions for Authorised Electricity Operators, on terms thatwhich YEDL is under a duty to offer to such persons under the Licence, in order to support the operations of a fully competitive supply market in its distribution services area.

   All charges for use of the distribution system include a reasonable return on the relevant assets. The revenues arising from the charges are subject to regulation in accordance with the terms of the Licence.
4. Charges for use of the distribution system are evaluated as if from YEDL's gGrid sSupply pPoints. These charges reflect real electrical flows on the system and the need to provide adequate capacity at all voltage levels to protect the security of the system.

Paragraph 12 below may also be relevant. However, as indicated in paragraph five~~5~~ below, charges are applied to the electricity as measured at the exit points.

5. In accordance with the schedules in the s~~S~~tatement of u~~U~~se of s~~S~~ystem c~~C~~harges and depending on the criteria stated, the charges for use of the distribution system may include some or all of the following elements. ~~, which form YEDL's generic tariff structure for all UoS charges:~~ A~~A~~ny changes to this structure will be communicated via the modification process. The following table indicates the generic elements apply to demand and generation~~, which could be included in a~~ charges.~~, however the details of which elements apply can be found in the Statement of Use of System Charges.~~

~~Market~~	~~Daily Fixed Charge~~	~~Unit Charge 1~~	~~Unit Charge 2~~	~~Unit Charge 3~~	~~Availability Charge~~
~~NHH - Demand~~	~~p/MPAN/Day~~	~~p/kWh~~	~~p/kWh~~	~~N/A~~	~~p/kVA/Day~~
~~HH - Demand~~	~~p/Site/Day~~	~~p/kWh~~	~~p/kWh~~	~~p/kWh~~	~~p/kVA/Day~~
~~NHH and HH Generation~~	~~p/MPAN/Day~~	~~p/kWh~~	~~p/kWh~~	~~p/kWh~~	~~N/A~~
~~EHV – Demand~~	~~p/Site/Day~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
~~EHV - Generation~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~	~~p/kVA/Day~~
~~Comments~~	~~A charge which does not vary with the extent to which the supply is taken up~~	~~A charge per kWh (unit) delivered to the exit point from the system, designed to reflect utilisation of the system at all relevant voltage levels and times of day~~ ~~Units for metered supplies are based on actual meter readings or profiled consumption based on actual meter readings and/or estimated annual advances. Units for unmetered supplies are based on the certified estimated annual consumption of an inventory of unmetered equipment~~		~~A charge per kVA for system capacity at each voltage level which is attributed to the supply~~ ~~Availability charges provide an incentive to customers to improve their power factor, analogous to reactive power charges.~~	

Market	Daily Fixed Charge	Unit Charge 1	Unit Charge 2	Unit Charge 3	Capacity Charge	Excess Capacity Charge	Reactive Power Charge
EHV – Demand	p/Site/Day	N/A	N/A	N/A	N/A	N/A	N/A
EHV - Generation	N/A	N/A	N/A	N/A	p/kVA/Day	N/A	N/A

In addition to the generic tariff structure above, YEDL may levy transaction charges for certain services provided on an individual basis when requested by licensed suppliers.

Examples of these charges are:-

- Post-~~-~~connection visits to energise/re-energise/de-energis~~e~~ation a supply; and

- Disconnection at the request of a supplier.

An indication of these charges is included in the "Miscellaneous Charging Statement"~~:~~ , however, most charges will be individually quoted.

6. Charges for use of the distribution system referred to in paragraph five~~5~~ above may include amounts to reflect:
   - the cost of the service cable to the premises and its termination, except as recovered within the connection charge;
   - contribution~~s~~ to the costs of the local network except as recovered within the connection charge; and
   - the cost of data processing, maintaining customer records, billing and collection and some other administrative and system costs.
7. In cases where a supply, by virtue of its characteristics, may be eligible for more than one category of charge~~s~~ for use of the distribution system and one of the categories has been selected, that supply will not normally be eligible within twelve calendar months to use the distribution system under an alternative category of charges except with YEDL's agreement. However, YEDL will recognise any relevant change in circumstances, including a change to the terms and charges for use of the system, in considering such an application.
8. In cases where charges for use of the distribution system include a component relating to the capacity of the supply, that supply will not normally qualify within fifteen calendar months for another level of capacity to be applied to it except with YEDL's agreement. Such use without YEDL's agreement may be reflected in billing, but this will in no way whatsoever indicate a right to use the system at such other level. However, YEDL will recognise any relevant change in circumstances in considering an application to use the system at another level of capacity.
9. Charges for use of system will normally be payable on demand, in accordance with the billing period and payment terms agreed with the party using the system. YEDL reserves the right to require appropriate security in respect of the charges estimated to arise, depending on the circumstances of the supply and on the basis of the agreed payment terms. Interest payments may be applied to late payments.
10. Where a supply is to be provided wholly or partly over YEDL's distribution system to an exit point from that system, the supplier or embedded distributor concerned must demonstrate that, at all times, the quantity of electricity entering the system for the purposes of providing that supply equals the metered quantity delivered from the system to that exit point plus the amount of electrical losses appropriate both to the voltage at which the supply is delivered and to the source of the supply. Relevant metering information or evidence of being a party to the BSC will be considered to be adequate demonstration.
11. The total electrical losses on YEDL's distribution system are regulated in accordance with the price control set out in the Licence~~:~~; suppliers should refer to the schedule of loss adjustment factors, in the Statement of Use of System Charges, to calculate the amount of electricity that they must provide. The same loss adjustment factors are reflected automatically in the settlement system.
12. Where the supply is to be provided over YEDL's distribution system on either an intermittent or continuing basis to any premises with their~~its~~ own generation, charges for use of the system will be levied with regard both to the system capacity provided to meet

the maximum power required as requested by the party seeking use of the system and to the extent to which that capacit~~suppl~~y is taken up.

13. Where YEDL, after evaluation of the characteristics of the requested use of the distribution system, determines that none of the categories of charges in the schedules attached to the Statement of Use of System Charges is appropriate, or where the supply is provided at extra high voltage (EHV), YEDL will levy charges in line with the methodology set out in section four~~4~~. In general YEDL will make its offer of terms within 28 days of receiving the application. The charge will include appropriate allocation of costs for the provision, operation and maintenance of identified assets required in order to provide a supply of electricity to an extra high voltage customer.

14. The level of charge will depend upon factors including the configuration and characteristics of the distribution network; the customer's consumption characteristics and requirements; any connection charge paid; and the level of risk associated with the investment and regulatory parameters. Charges include an allowance for ~~NGC~~transmission system connection point charges, which are allocated in relation to the customer's contribution to total demand at specific g~~G~~rid s~~S~~upply p~~P~~oints.

15. Where use of the distribution system is sought at a standard of security different from that referred to in the Distribution Code, YEDL may consider special arrangements with regard to that supply. Where the power factor of the supply is less than 0.9, it will normally be possible for YEDL to offer use of system. However, in such cases specially assessed loss adjustment factors may apply at YEDL's discretion.

16. In the majority of~~all~~ cases, UoS charges include a contribution towards recovery of ~~NGC~~transmission system connection point charges calculated according to the required capacity as measured by expected peak demands on the distribution system.

Charges/credits to generators for use of YEDL's distribution system will be made for use of the system in respect of electricity that the generator imports from and exports to the system. The generator will be charged/credited for use of the system in respect of such imports or exports in accordance with paragraphs 1 to 16 above.

This document provides the detailed methodologies for EHV demand and generation charges and a link to the Common Distribution Charging Methodology (CDCM) which is now approved by Ofgem and utilised by the 14 distribution companies. The common methodology for EHV demand and generation charges is currently under development.

3 Methodology for calculating general LV & HV demand, generation and embedded network charges

3.1 Background to common distribution charging methodology

Charges for HV and LV connected demand, generation and embedded networks are set in accordance with the new common distribution charging methodology (CDCM). ~~-~~ Charges for EHV demand and generation are calculated as laid down in sections 4 & 5 of this document.

Charges are set to recover total allowed revenue. This is the combined demand and generation revenue we are allowed to recover in any given year. If any other charging methodology is used alongside the CDCM (e.g. for EHV demand and generation users) the forecast revenues from these charges are deducted from the total allowed revenue, leaving the balance to be recovered from the CDCM.

YEDL propose to continue to utilise the approved methodologies for EHV demand and generation as detailed in sections 4 & 5 of this methodology statement. Charges for EHV customers are individual to each customer and calculated on a site-specific basis, therefore no scaling is applied.

~~[Subject to non-veto by the Authority]~~

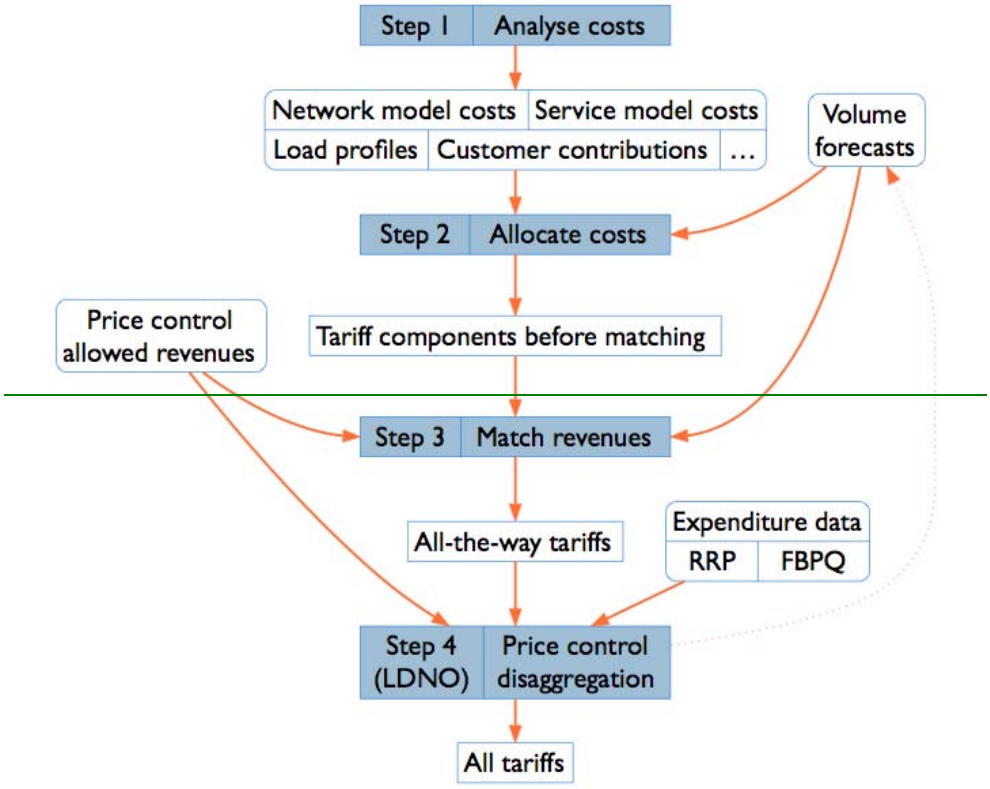
The CDCM has been developed to deliver a common charging methodology for HV and LV users including other, l~~L~~icensed d~~D~~istribution n~~N~~etwork o~~O~~perators (LDNOs).

CE Electric, Central Networks, EDF Energy Networks, Electricity North West, SP Energy Networks, SSE Power Distribution and Western Power Distribution jointly developed the CDCM on behalf of the 14 entities licensed as Distribution Services Providers[1]

~~Overview of the main steps in the methodology:~~

[1] The Distribution Services Providers are Central Networks East Plc, Central Networks West Plc, EDF Energy Networks (EPN) Plc, EDF Energy Networks (LPN) PLC, EDF Energy Networks (SPN) PLC, Electricity North West Limited, Northern Electric Distribution Ltd, Scottish Hydro Electric Power Distribution Plc, Southern Electric Power Distribution Plc, SP Distribution Limited, SP Manweb Plc, Western Power Distribution (South Wales) Plc, Western Power Distribution (South West) Plc, and Yorkshire Electricity Distribution p~~P~~lc.

YEDL's Use of System Charging Methodology from 1 April 2010

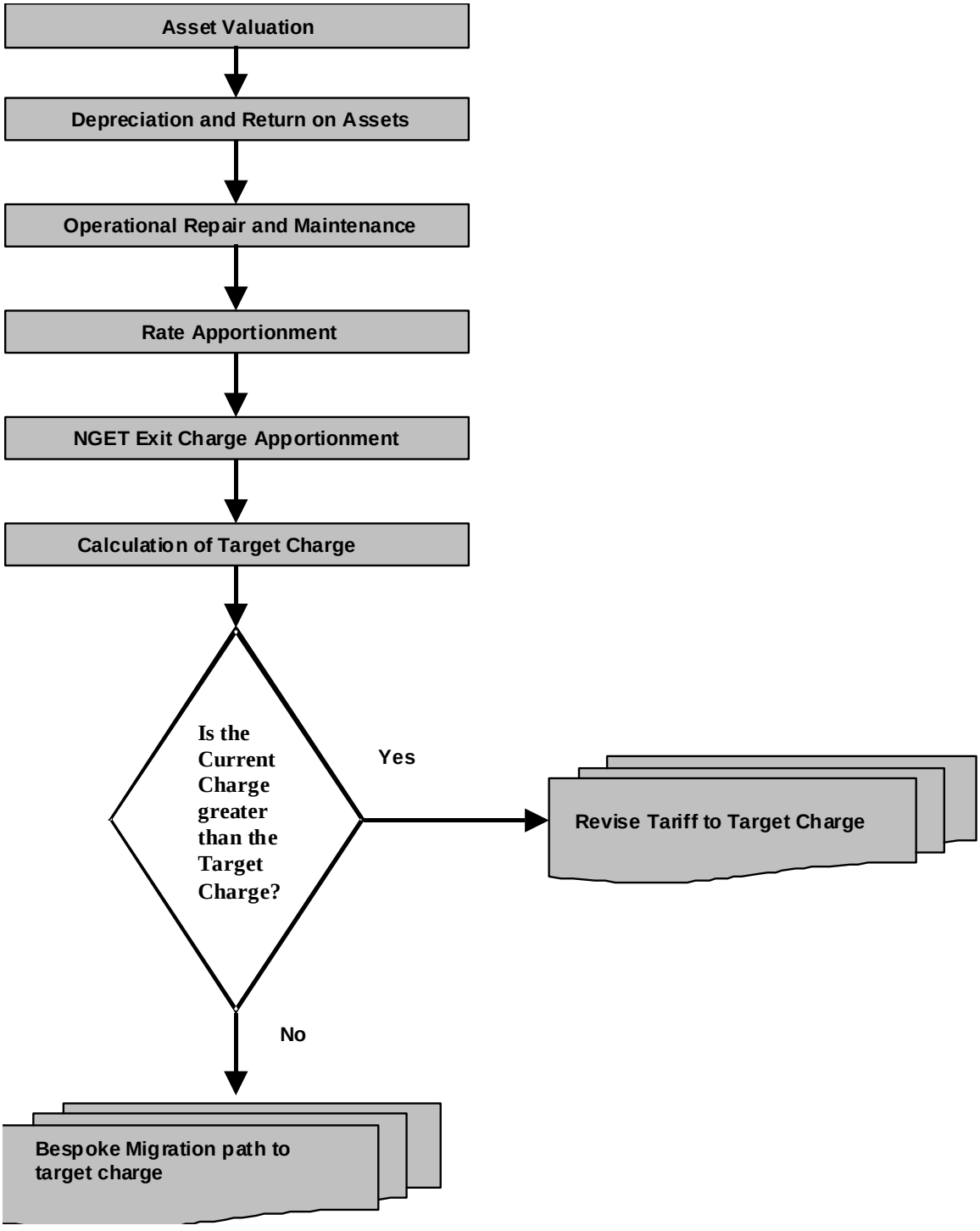


This methodology can be found at http://2009.energynetworks.org/structure-of-charges/ and is subject to governance as set out in standard c~~C~~ondition 50 of the ~~standard distribution~~ licence, which came into force on 1 July 2009.

4 Methodology for calculating site-specific EHV demand charges

4.1 Basis of charges for EHV customers

The following flowchart shows the charge-setting process for site-specific EHV demand customers, which is described in the following sections.



The following approach to calculating EHV charges applies to demand customers.

Site-~~-~~specific charges will be offered where, after evaluation of the characteristics of the request for connection to the distribution system, it is determined that the supply is to be provided at EHV (~~greater than~~ at 22,000 volts or above).

The charge will include appropriate allocation of costs for the provision, operation and maintenance of identified assets required in order to provide a supply of electricity for the customer, and may vary from location to location.

Due to the nature of EHV charges, and the fact that there is no generic tariff, we will endeavour to provide illustrative UoS charges at the time of the connection offer, in order to enable any person to make a reasonable estimate of the charges to which he would become liable.

The level of charge will depend upon a number of factors including:

- the configuration and characteristics of the distribution network;
- the location of the connection;
- the customer's consumption characteristics and requirements;
- depreciation period and rate of return on the assets;
- an allowance for ~~NGC~~transmission system connection point charges;
- an allowance for rates; and
- any contribution paid in the connection charge.

4.2 Principles of the EHV charging model

The following explains the principles used in the EHV charging model to calculate site-specific UoS charges.

The calculation of EHV income to be recovered through UoS is based on the costs incurred by YEDL in the connection of the EHV site. This includes expenditure on:

- all speculative development costs; and
- YEDL's proportion of the shared-use assets, the actual value of which is determined via the connection charge apportionment rules. (See YEDL's Connection Charging Methodology and Statement).

  The customer as part of the connection charge will pay for all sole-use, or dedicated, assets.

Once the above costs have been identified then the actual EHV income to be recovered is based on the following elements:

4.2.1 Asset valuation

The asset valuation calculation is based on a three-year rolling average of the estimated capital cost of replacing the asset. The rationale behind this is to provide stability and consistency and limit any significant step-~~-~~changes in the calculation.

This calculation is only undertaken for assets that~~which~~:

- were not paid for by the customer;
- are not fully depreciated (i.e. less than 20 years old); and
- are not for sole use.

The apportioned gGross aAsset vValue (GAV) is calculated by taking the sum of the following calculation for each individual asset utilised in the connection:

$$\textbf{Estimated capital cost of the asset (based on a three-year rolling average)} \times \frac{\textbf{Customer aAgreed cCapacity}}{\textbf{The rating of the aAsset}} \times \textbf{Number or lLength of the aAsset}$$

The following matrix shows how these elements are calculated.

Asset Type	Estimated Capital Cost (£)	No/length	Rating of Asset	Apportioned Gross Asset Value (£)
AT_1	ECC_1	NL_1	AR_1	$AGAV_1 = ECC_1 * B / AR_1 * NL_1$
⋮	⋮	⋮	⋮	⋮
AT_n	ECC_n	NL_n	AR_n	$AGAV_n = ECC_n * B / AR_n * NL_n$
Total				**C**

Where

Parameter	Definition	Calculation
n	The total number of assets deployed in the connection	
B	Customer agreed capacity	
AT	Assets utilised in customer connection	
ECC	Estimated replacement capital cost (3--year -rolling average)	
NL	Number of assets installed or the length of the assets	
AR	Rating of the asset	
AGAV	Apportioned gross asset value	**= ECC * B / AR * NL**
C	Total gross asset value	**= $AGAV_1$ + . . . + $AGAV_n$**

4.2.2 Depreciation and return on assets

This recovers costs on a fixed, annuity-type calculation, and represents a 6.9% return on the tTotal gGross aAsset vValue ("C" from section 4.2.1 above) over the 20-year asset life.

The following matrix shows how these elements are calculated.

Source	Calculation
Total gross asset value	C
Rate of return	D
Depreciation period	E
Annuity charge	**F = Annuity (C,E,D)**

4.2.3 Operational repair and maintenance (OR&M)

Operational repair and maintenance charges are calculated based on a three-year rolling average cost basis. Again the rationale behind this is to provide stability and consistency and limit any significant step--changes in the calculation. As a proxy this equates to approximately 1% of the apportioned gross asset replacement cost.

This charge only applies where the customer has not paid capitalised OR & M charges as part of the connection charge.

The OR&M charge is calculated by taking the sum of the following calculation for each individual asset utilised in the connection.

$$\textbf{Estimated OR\&M charge (based on a three-year rolling average)} \times \frac{\textbf{Customer agreed capacity}}{\textbf{The rating of the asset}} \times \textbf{Number or length of the asset}$$

The following matrix shows how these elements are calculated.

Asset Type	Estimated O R & M charge (£)	No/length	Rating of Asset	Allocated OR & M charges(£)
AT_1	$ORMC_1$	NL_1	AR_1	$AORM_1 = ORMC_1 * B / AR_1 * NL_1$
⋮	⋮	⋮	⋮	⋮
AT_n	$ORMC_n$	NL_n	AR_n	$AORM_n = ORMC_n * B / AR_n * NL_n$
Total				**G**

Where

Parameter	Definition	Calculation
n	The total number of assets deployed in the connection	
B	Customer agreed capacity	
AT	Assets utilised in customer connection	
ORMC	Estimated OR&M charge (3--year rolling average)	
AR	Rating of asset	
NL	Number of assets installed or the length of the assets	
AORM	Allocated OR&M charge	**= ORMC * B / AR * NL**
G	Total OR&M charge	**= $AORM_1$ + . . . + $AORM_n$**

4.2.4 Rates apportionment

This is a contribution towards the cost of the annual operational local authority rates bill. It represents a £/per/MVA of site capacity charge and is calculated based on:

$$\textbf{Total annual rates} \times \frac{\textbf{Site agreed capacity}}{}$$

Total system firm capacity

The following matrix shows how these elements are calculated.

Source	Calculation
Total annual rates bill (£)	H
Network firm capacity MVA	I
Rates per MVA of capacity	J = H / I
Site agreed capacity MVA	B
Rates c~~C~~harge (£)	**K = J * B**

4.2.5 Exit charges

This is a contribution towards the cost of the appropriate ~~NGC~~transmission system (TS) exit point supplying the EHV site~~s~~ and is calculated based on:

Total ~~NGC~~TS exit charge per GSP **X** $\frac{\text{Site agreed capacity}}{\text{GSP firm capacity}}$

The following matrix shows how these elements are calculated

Source	Calculation
Total ~~NGC~~TS exit charge for GSP (£)	L
GSP firm capacity MVA	A
Site agreed capacity MVA	B
Allocated exit charge (£)	**M = L* B / A**

4.2.6 Calculation of actual income to be recovered from the EHV charge

The total amount of income to be recovered from an EHV charge is the sum of the elements detailed above.

The following matrix shows how the total income to be recovered is calculated

Source	Calculation
Depreciation & rate of return charge (£)	F
Operational repair & maintenance (OR&M) charge (£)	G
Rates charge (£)	K
Allocated exit charge (£)	M
Actual EHV income to be recovered (£)	**N = F + G + K + M**

4.3 Key outputs of EHV charging model

The key output of the EHV charging model is a target UoS charge, which will be levied on a pence/site/day basis. In addition, on request, a forecast of future charges can be generated based on the current network configuration and some high-level assumptions on future costs.

~~From April 2007 the charge levied on all EHV sites will match the target charge generated from the locational EHV yardstick models.~~

4.3.1 Structure of the tariff

The site-specific EHV charges could contain any, or all, of the charging elements contained in YEDL's generic charge structure~~:~~ however, the current convention is where possible to operate within the structure shown below. The following should be read in conjunction with the Statement of Charges for the Use of System.

Market	Daily fixed charge
HH	p / Site / Day
Comments	A charge that~~which~~ does not vary with the extent to which the supply is taken up

4.4 Data required to calculate charges

The following is a list of data required to calculate UoS charges:

- Existing tariff / LLFC;
- ~~NGC~~Transmission system exit charges by GSP
- Annual l~~L~~ocal a~~A~~uthority rates bill
- Depreciation period
- Rate of return
- Site agreed capacity
- GSP firm capacity
- Network firm capacity
- Capital replacement cost of assets (based on a 3-year rolling average)
- OR&M costs for assets (based on a 3-year rolling average)
- Details of assets utilised in the connection (age, number, length etc)

All the above data is reviewed on an annual basis and the details of any recent or planned network changes and potential new connectees are taken into account.

4.5 Worked example of calculations

The following is a theoretical example of the way in which the EHV demand tariffs are calculated, based on the principles set out in section 4.2 above. All figures are for illustrative purposes only and are based on a site with agreed capacity of 30 MVA.

4.5.1 Asset valuation

Asset type	Estimated capital cost (£)	No/length	Rating of asset	Apportioned gross asset value (£)
AT_1	669,755	2	105	382,717
AT_2	44,038	10	60	220,188
AT_3	44,038	15	60	330,282
⋮	⋮	⋮	⋮	⋮
AT_n	184,132	1	60	92,066
Total				**1,025,2~~0~~53**

4.5.2 Depreciation and return on assets

Source	Calculation
Total gross asset value (£)	**1,025,053**
Rate of return (%)	6.9~~5~~%
Depreciation period (years)	20
Annuity c~~C~~harge (£)	**96,026~~3,048~~**

4.5.3 Operational repair and maintenance (OR&M)

Asset type	Estimated OR&M charge (£)	No/length	Rating of asset	Allocated OR&M charges (£)
AT_1	3,786	2	105	2,163
AT_2	1,041	10	60	5,204
AT_3	1,041	15	60	7,807
⋮	⋮	⋮	⋮	⋮
AT_n	908	1	60	454
Total				**15,628~~30,650~~**

4.5.4 Rates apportionment

Source	Calculation
Total annual rates bill (£)	22,120,001
Network firm capacity MVA	8,173
Rates per MVA of capacity	2,706
Site agreed capacity MVA	30

Rates charge (£)	**81,194**

4.5.5 Exit charges

Source	Calculation
Total ~~NGC~~NGET exit charge for GSP (£)	943,623
GSP firm capacity MVA	835
Site agreed capacity MVA	30
Allocated exit charge (£)	**33,903**

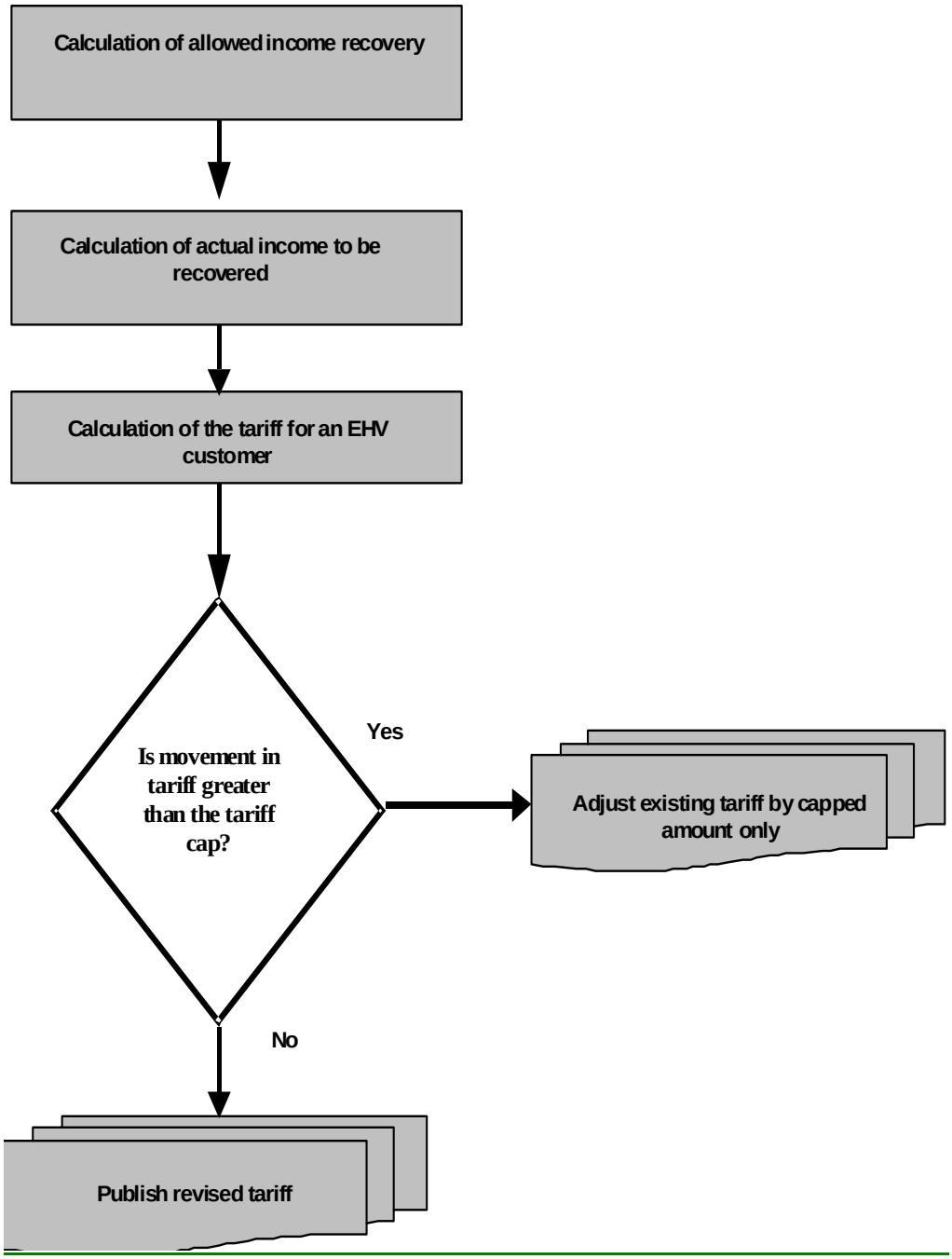
4.5.6 Calculation of actual income to be recovered from the EHV charge

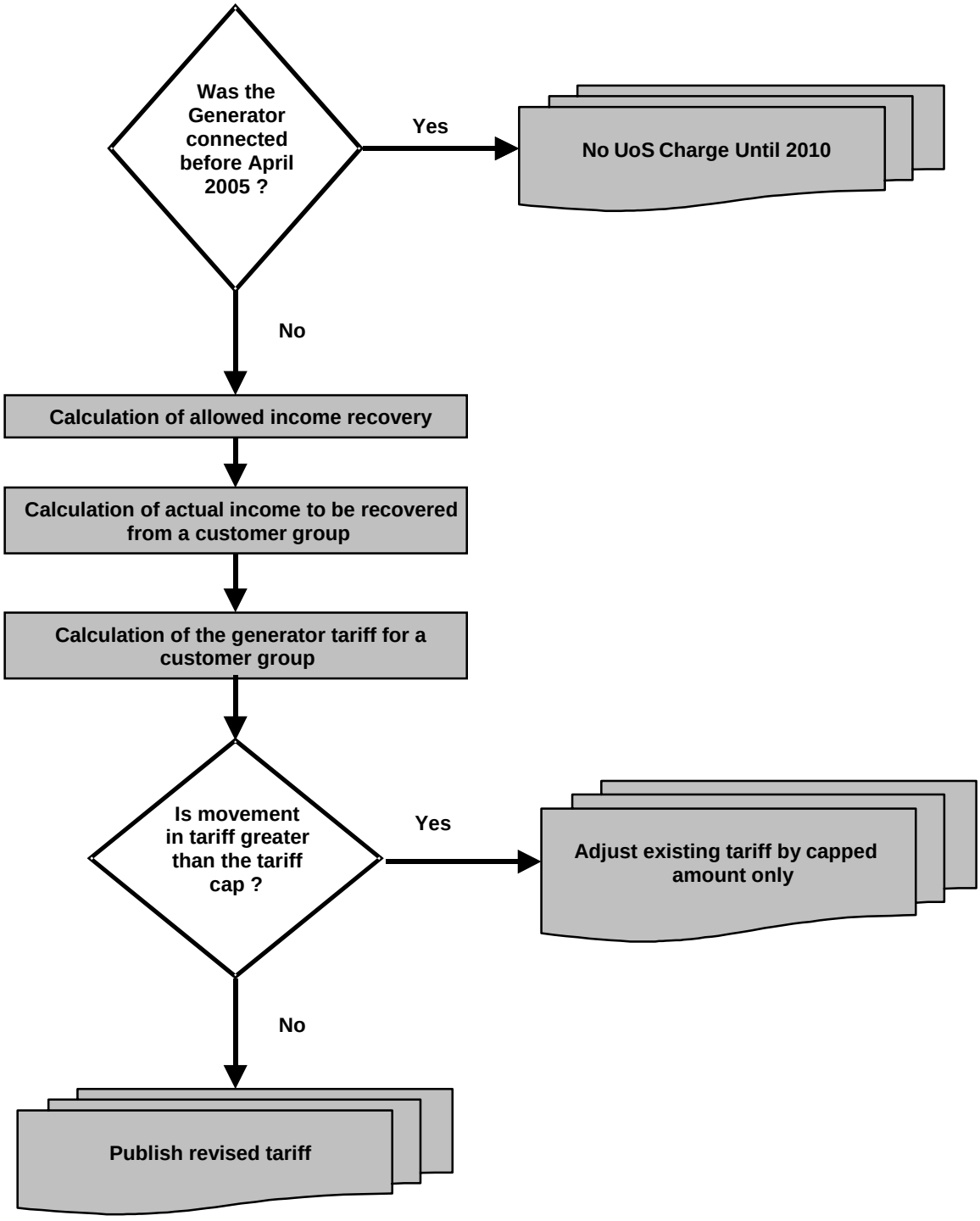
Source	Calculation
Depreciation & rate of return charge (£)	96.026~~93,048~~
Operational repair & maintenance (OR&M) charge (£)	15,628~~30,650~~
Rates charge (£)	**81,194**
Allocated exit charge (£)	**33,903**
Actual EHV income to be recovered (£)	226,751~~238,795~~

5 Methodology for calculating EHV generation charges

5.1 Basis of charges for EHV generation customers

The following flowchart shows the charge-setting process for calculating EHV generation customers, which is described in the following sections.





The actual published charges will be based on charging methodologies for EHV generators, which at a simple level are based on agreed capacity (kVA), as this provides an appropriate proxy for costs on the network. ~~harges at higher voltages will be more location-specific, (i.e. site-specific charges for EHV generators).~~

The following approach is applicable for the calculation ~~of LV, HV and~~ EHV generation charges~~. LV and HV charges will be calculated on an average basis, across the Licence area, with EHV charges being calculated on a locational basis. Both~~ and will be charged on a p/kVA/day basis.

Due to the nature of generator EHV charges, and the fact that there is no generic tariff, we will endeavour to provide illustrative UoS charges at the time of the connection offer, in order to enable any person to make a reasonable estimate of the charges to which he would become liable.

The charges will include appropriate allocation of costs for the provision, operation and maintenance of identified generation assets required in order to provide a supply of electricity for the customer. These total charges may vary from site to site depending on the agreed capacity and characteristics~~: however, other than for EHV customers, the tariff will not normally vary from location to location within the Licence area~~.

The level of charge will depend upon a number of factors including: -

- the configuration and characteristics of the distribution network;
- the customer's consumption/generation characteristics and requirements;
- depreciation period and rate of return on the assets;
- the cost of the service cable to the premises and its termination except as recovered within the connection charge;
- contributions to the costs of the local network except as recovered within the connection charge;
- a possible contribution towards recovery of ~~NGC~~transmission system connection point charges; and
- the cost of data processing, maintaining customer records, billing and collection and some other administrative and system costs.

If the generator is also importing electricity from, or supplying electricity to exit points from, YEDL's distribution system, he will be charged for use of the system in respect of such imports or supplies. This will be in accordance with the condition laid out in the s~~S~~tatement of c~~C~~harges for the u~~U~~se of s~~S~~ystem.

Whether or not a UoS charge is levied is dependent on when the generation site is connected.

5.1.1 Generators connected prior to April 2005

In general, these sites will have paid a higher connection charge to cover the deeper connection assets and hence no separate UoS charge will be made in respect of electricity that the generator exports to the system until April 2010, unless a generator chooses to opt-in. The specific terms and charges of such a decision will be dealt with on an individual basis as they arise.

The situation post-2010 is still under review and no decision has yet been taken.

5.2 Principles of the generation UoS charging model

The following section explains the principles used in the generation UoS charging model to calculate the charges that we levy.

5.2.1 Calculation of base allowed income recovery

The amount of allowances generated and therefore the amount of income that can be recovered from g~~C~~enerators is ~~prescribed in Special Condition D2 of~~as defined in the ~~Distribution~~ Licence. The income to be recovered through UoS as part of this mechanism consists of the following elements;

- **Annuity pass-through calculation** – a calculation incorporating a proportion of the costs of connecting generators, depreciation and a rate of return.
- **OR&M** – based on an allowance for each kW of installed generation capacity; and
- **Revenue d~~D~~river** – based on an allowance for each kW of installed generation capacity
- **~~NGC~~Transmission system ~~Exit~~exit charges** – a proportionate share of the ~~NGC~~ e~~E~~xit charges apportioned on an agreed capacity basis.

~~Initially~~Currently, ~~NGC~~NGET ~~Exit~~exit c~~C~~harges are not being factored into the calculation of generator UoS c~~C~~harges, as, in general, these assets have been installed to supply demand customers. In future situations where generators make majority use of ~~NGC~~transmission system connection assets, an element of ~~NGC~~these ~~Exit~~ c~~C~~harges (calculated on the same basis as that used for demand customers) will be recovered through a combination of generator UoS and connection charges.

5.2.2 Generation tariffs

~~As part of the interim arrangements from April 2005 a number of allowed income models are maintained, whether or not a charge is levied. Where possible we will try to operate within the categories listed below in order to provide consistency.~~

~~–~~EHV generation sites – one model per ~~EHV~~ site, providing a locational charge.

- ~~**HH HV generation sites –** A combined aggregate model for all qualifying sites, providing an average charge~~
- ~~**HH LV generation sites** – A combined aggregate model for all qualifying sites, providing an average charge~~
- ~~**NHH generation sites >16A**[2] – A combined aggregate model for all qualifying sites, providing an average charge~~
- ~~**NHH generation sites <16A**[2] – A combined aggregate model for all qualifying sites, providing an average charge~~

5.2.3 Calculation of actual income to be recovered from an EHV generation customer ~~group~~

Our EHV generator UoS charges are set to recover the total anticipated allowed revenue associated with EHV generation, ~~which will initially~~and are ~~be~~ based on forecasts of the level of allowed income described in section 5.2.1 above.

[2] Until the level of penetration increases no charge will be levied on customers in the NHH market. However, models utilising the methodology detailed in this document will be maintained in order to monitor the cost that such customers are imposing on the development and reinforcement of the network. Any changes to this position on NHH tariffs will be communicated via the modification process.

EHV g~~G~~eneration UoS income is only recovered via the EHV generator tariffs, hence the total base allowed income need only ~~to~~ be adjusted for any under/over-recovery in the previous year in order to determine the income to be recovered from the generator tariffs.

The matrix below shows how this allocation is calculated.

Income Source	Cost Recovery (£m)
Base allowed income for the EHV ~~a~~ customer ~~group~~	**A**
Under/Over ~~-~~ recovery from the previous year + interest	**B**
Total income to be recovered from EHV generator tariffs	**C = A + B**

~~This is repeated for each customer group~~

~~6.2.4~~Calculation of the generator tariff for a customer group

~~Once the amount of income to be recovered has been established ("C" in section 5.2.3 above) then the calculation of the tariff to be published is relatively simple, provided that the agreed capacity, since April 2005, is known.~~

~~The calculations used to determine the published tariff are shown in the matrix below:~~

~~Income Source~~	~~Cost Recovery~~
~~Total Income to be recovered from generator tariff(s) (£)~~	~~D = C *1,000,000~~
~~Total agreed capacity from April 2005 (kVA)~~	~~E~~
~~LV & HV Daily Generator UoS charge (p/kVA/Day)~~	~~F = D / E / 365 *100~~

~~This is repeated for each customer group~~

~~5.2.5~~5.2.4 Charge capping

In the initial years of EHV generator UoS, there are a number of reasons why tariffs could be volatile, including:

- large variability in costs and revenue entitlements spread across a small population;
- generators connect in unexpected locations, causing costs to vary from those expected;
- estimates used in setting charges prove to be proportionately very inaccurate;
- relatively small changes in generator connections leading to substantial changes in forward-looking cost estimates; and
- the structure of the tariff-setting model proves flawed.

Hence, particularly in the early stages of the introduction of generator tariffs, account must be taken of potential disturbance to customers due to the volatility of tariffs.

Given that the initially published charge is established based on forecast information, it is not unreasonable to expect values to change once actual information is available. Given that this is the case, the impact of replacing forecast with actual information on any over/under-recovery ~~+,~~ plus interest will be carried forward into the following year. In order to reduce price disturbance and provide some form of stability and predictability, the charge will only be allowed to move within a range of~~by~~ ~~[~~+10%~~]~~ or ~~[~~–10%~~]~~, in any one year.

5.3 Key outputs of the generation UoS charging model

The key output of the generation charging model is a UoS charge, which will be levied in accordance with the tariff structure~~s~~ described below.~~.~~ In addition, on request, a forecast of potential future charges can be generated based on the current network reinforcement and some high-level assumptions on future costs.

5.3.1 Structure of the tariffs

The generation tariffs could contain any, or ~~all~~ all, of the charging elements contained in NEDL's generic charge structure~~;~~, however, the current convention is where possible to operate within the structure shown below. The following should be read in conjunction with the statement of use of system charges.

Market	Availability charge
HH	p/kVA/Day
Comments	A charge per kVA for system capacity at each voltage level that is attributed to the supply

5.4 Network access refund

Where a network access refund is required for EHV and HV generator customers connected post-April 2005, the arrangement will be via a bilateral agreement between the licensee and the relevant agents for the relevant generators. The arrangements for LV generators will be through normal mass market trading arrangements.

The applicability of any refund will be assessed on:

- the technical standard of the connection; and
- any terms and conditions quoted in a connection agreement.

The value of the rebate will be calculated in accordance with Special Condition D2.

Network access refunds will not apply under certain circumstances. It is currently envisaged that these circumstances will be where:

- Customers are connected on single-circuit security;
- Third parties (e.g. NGET~~C~~) have imposed network constraints on YEDL;
- Customer driven network modifications are being carried out; and
- Force Majeure conditions apply.

As greater experience and knowledge of the application of network access refunds is gained these exclusions will be reviewed and any amendments will be approved via the formal modification process.

6 Glossary

The following definitions are intended to assist the reader's understanding of this document.

"the Licence"	The electricity distribution licence granted to YEDL under Section 6(1)(c) of the Act.
"the Act"	The Electricity Act 1989 as amended by the Utilities Act 2000.
"the Authority"	The Gas and Electricity Markets Authority (GEMA) – the regulatory body for the gas and electricity industries established under Section 1 of the Utilities Act 2000.
"Ofgem"	The Office of Gas and Electricity Markets, the support office for GEMA.
"Standard Licence Condition 13"	Condition 13. Charging Methodologies for Use of System and Connection 13.1 The licensee must at all times have in force: (a) a Use of System Charging Methodology which the Authority has approved on the basis that it achieves the Relevant Objectives; and (b) a Connection Charging Methodology which the Authority has approved on the basis that it achieves the Relevant Objectives (each, separately, "the Charging Methodology"), and, except with the consent of the Authority, must comply with the Charging Methodology as modified from time to time in accordance with this condition.
"Standard Licence Condition 14"	Condition 14. Charges for Use of System and Connection Charging Statements to be always available 14.1 The licensee must ensure that Charging Statements prepared by it that separately set out the basis on which charges will be made for: (a) Use of System ("the Use of System Charging Statement"); and (b) the provision of connections ("the Connection Charging Statement"), are at all times available in a form approved by the Authority.
"Standard Licence Condition 50"	Collective Licence Modification intended to deliver the electricity distribution charges project at lower voltages.
"Special Condition D2"	Calculation of charge restriction adjustments arising from the incentive schemes for distributed generation and registered power zones.
"UoS charges"	Use of system charges for demand and generation customers who are connected to YEDL's distribution system.

"Distribution Code"	The Distribution Code of the licensed distribution network operators (DNOs) of Great Britain; produced in accordance with Condition 21~~9~~ of the Licence and approved by the Authority to define the technical aspects and planning criteria of the working relationship between the DNO and all those connected to its distribution system.
"DCUSA"	The distribution connection and use of system agreement established in compliance with standard licence condition 22~~9B~~ of the licence.
"CUSA"	A bilateral agreement between YEDL and another licensed distribution network operator (LDNO), or a CVA registered customer, that sets out the terms for the use of YEDL's network.
"IDNO"	Independent distribution network operator.
"MRA"	Master Registration Agreement - The MRA is the multi-party agreement that all licensed suppliers and distributors enter into and that governs the essential interactions between them.
"BSC"	The Balancing and Settlement Code (BSC) sets out the rules and governance arrangements for the balancing mechanism and imbalance settlement processes which were established under the new arrangements to ensure that supply and demand for electricity is balanced and that subsequent payments are reconciled.~~Balancing and Settlement Code - wholesale electricity trading arrangements introduced in England and Wales in 2001 are designed to provide greater competition, while maintaining a secure and reliable electricity system.~~
"NGET"	National Grid Electricity Transmission - owns and operates the high-voltage electricity transmission network in England and Wales
"LV"	Low voltage - 230 volts plus 10% or minus 6% measured between the neutral conductor and any phase conductor.
"HV"	High voltage - 6,600 volts or 11,000 volts plus or minus 6% measured between any two-phase conductors.
"EHV"	Extra high voltage – 22,000 volts or higher voltage.
"p/MPAN/day"	A daily charge calculated in pence per MPAN per day applicable to non-half hourly metering points.
"p/site/day"	A daily charge, calculated in pence per site per day applicable to half-hourly metering points. ~~,~~ This is a single charge regardless of the number of MPANs.
"p/kWh"	Charges per kWh (unit) delivered to the exit point from the system, designed to reflect utilisation of the system at all relevant voltage levels and times of day.

"P/kVA"	A charge per kVA for system capacity at each voltage level that is attributed to the supply.
"£/per/MVA"	This is a component of site-specific charges and is calculated as a proportion of the total annual rates bill, using a ratio of site agreed capacity to total system firm capacity.~~.~~
"Authorised electricity operator"	Person who is authorised by licence or by exemption under the Act to transmit, supply, distribute or generate electricity and is hence entitled to use YEDL's distribution system.
"GDUoS"	Generation distribution use of system
"half-hourly (HH)"	Each day's consumption data for each meter and consumption type is~~are~~ sent from the s~~S~~uppliers' nominated data collector (DC) and received by YEDL in a D0275 data flow. The D0275 flow(s) are actual, validated half-hourly (HH) advances, and the half-hourly consumption values are used in supplier and distributor DUoS billing where the HH periods are specified in co-ordinated universal time (UTC).
"non-half hourly (NHH)"	Non-half hourly (NHH) data is profiled and settled according to profile class, standard settlement class & meter time-switch code.
"RPI"	Retail prices index.
"GSP"	Grid supply point.
MPAN	Metering point administration number is a unique number allocated to the point of connection.
MPRS	Metering point registration service – MPANs are requested by suppliers and registered in a centralised database.
"SVA"	Supplier Volume Allocation – relates to units that enter settlements and have an MPAN registered in MPRS.
"CVA"	Central volume allocation - centrally registered metering point with no MPAN allocated and not registered in MPRS.
~~"SVAA"~~	~~Supplier volumes allocation agent.~~
"DG"	Distributed generation.
"OR&M charges"	Operational repair and maintenance (OR&M) charges are calculated on a three-year rolling average cost basis. The rationale behind this is to provide stability and consistency and limit any significant step-changes in the calculation.
"Transmission system"	The super-grid transmission networks that connections DNO networks at EHV

"Non-standard connection agreement"	Any connection agreement directly between YEDL and an end user, that does not include connection agreements or terms procured by suppliers, rights obtained for distributors by suppliers under the Contracts (Rights of Third Parties) Act 1999, or rights obtained through legal transfer schemes implemented under Schedule 7 of the Utilities Act 2000.
~~"Installed generation capacity"~~	~~The highest active electrical power that can be generated (as defined in the October 2004 version of the regulatory instructions & guidance (RIGs) document)~~

7 Version Control

Version	Date	Revision Details	Author
1.9	~~04/09/09~~26/1/10	Housekeeping change to amend references to: • reflect the move to the common distribution charging methodology (CDCM) for LV and HV demand and generation customers; • the standard licence conditions of the electricity distribution licence; • removal of section 6 - Application of use of system charges; and removal of Appendix 1 - Losses methodology~~Housekeeping change to amend references to~~ ~~•the Standard Licence Conditions of the Electricity Distribution Licence;~~ ~~•reference to CDCM for HV & LV UoS charges;~~ ~~•removal of section 6 - Application of Use of System charges; and~~ • ~~removal of Appendix 1 - Losses methodology~~	Pat Wormald/ Andy Jenkins
1.8	27/04/07	Updated to reflect revised treatment of operating costs within the unmetered supplies customer group in section 3.2.4.2	Pat Wormald /Andy Jenkins
1.7	20/11/06	Updated to reflect revised EHV migration strategy section 4.3; and Updated to reflect revised contractual arrangements sections 2.4 and 7.	Andy Jenkins
1.6	20/10/06	Updated section 3 - Methodology for calculating general LV and HV demand charges	Pat Wormald / Andy Jenkins
1.5	01/04/06	Updated to include losses methodology	Pat Wormald
1.4	22/11/05	Updated to reflect revised EHV migration strategy section 4.3	Pat Wormald
1.3	30/03/05	Updated to reflect revised EHV migration strategy section 4.3	Pat Wormald
1.2	18/02/05	Updated to reflect revised EHV migration strategy	Pat Wormald
1.1	13/01/05	Updated to reflect conditions detailed by Ofgem, namely: Reference to special arrangements removed in Principles section 13 & section 4.1 Reference to recovery of rates removed from section 5.1	Pat Wormald
1.0	26/11/04	UoS Charging Methodology Statement for approval by Ofgem.	Andy Jenkins / Pat Wormald