I

DRAFT DISTRIBUTION NETWORKS PRICING CONSULTATION PAPER DNPC08

Review of Standard LDZ System Charges
A consultation paper on behalf of all Distribution Networks

1. Introduction

In October 2001, Transco reviewed its LDZ System charges and put forward proposals[1] to improve the cost reflectivity of its LDZ System charges. The proposals defined the structure of the standard LDZ System charges such that supply points, including CSEPs, with AQs of 0MWh/a - 73.2.MWh/a and 73.2MWh/a – 732 MWh/a were based on a fixed unit rates and loads consuming in excess of 732 MWh/a were based on a unit rate determined by the peak day capacity of the supply point (SOQ) applied to a power function. There were separate power functions for directly connected loads and for CSEPs.

The 2001 review was carried out when charges were set at a national level and the underlying analysis used to define the structure of LDZ System charges was also based on a national sample. Following Network Sales in 2005 the LDZ System charges have been scaled to DN specific allowed revenues and load characteristics[2]but the structure of the LDZ System charges and the relative difference in charges between supply points of different sizes have remained consistent since the 2001 review.

Following the implementation of DNPC05 which reviewed the split of DN costs between System costs and Customer costs the DNs are now in a position to update the joint Charging Methodology with more up to date and cost reflective LDZ System charging functions on a DN specific basis.

The LDZ System Charging Methodology reflects the typical costs of supply points within each Load Band, relative to all other users on the network, for their relative utilisation of the network, from the NTS Offtake, to their average point of connection on the Distribution system. The average connection point method ensures that end customers in the same DN, with similar load characteristics but physically connected to different tiers of the distribution system are charged consistently. The DNs believe that the benefits that led to the introduction of the current LDZ System Charging Methodology remain fit for purpose at this time.

Consequently this review is primarily an update to the application of the current LDZ System Charging Methodology on a DN basis with the inclusion of more recent costs and connection point analysis.

For the purposes of this paper we have shown results for Capacity based charges only scaled to the forecast revenue targeted by April 2010 LDZ System charges. Commodity based charges can be provided if necessary depending the outcome of DNPC07, the proposed move to 100% capacity-based charges.

[1] PC68 Review of LDZ Transportation Charges
http://www.nationalgrid.com/uk/Gas/Charges/consultations/archive_consultation_papers/

[2] PC80 Introduction of Different Levels of LDZ Charges between Networks
http://www.nationalgrid.com/uk/Gas/Charges/consultations/archive_consultation_papers/

2. Methodology Update and Analysis

Since network sale in 2005 the DNs have set network charges based on DN specific allowed revenues and recent Methodology changes have centered on enhancing cost reflective charging at a network level while maintaining a common approach across all DNs. The DNs are proposing to update of the LDZ System Structure of Charges through a common Methodology to further enhance the cost reflectivity in DN charges.

The LDZ System Structure of Charges was last reviewed on a national basis by Transco in 2001 and consulted upon in PC68. The current Methodology remains unchanged from the Methodology established at that time.

The analysis now undertaken by the DNs has followed the same process undertaken during Transco's 2001 review. An overview of the Methodology is given in Appendix 2. The following describes the improvements made to the Methodology to derive the LDZ System Charging Structure:

2.1 Connection Probability Analysis

- The DN networks are comprised of 4 overlapping pressure systems including a Local Transmission System (LTS), Intermediate and Medium Pressure Systems (IP and MP) and a Low Pressure (LP) System. The LP System accounts for the majority of network costs (e.g. West Midlands LP ~ 68%) and supply point connections (>99%). To provide a greater level of cost reflectivity in the original analysis the LP System was sub-divided into 6 sub-tiers, based on pipe diameter bands. The 6 sub-tiers were selected to coincide with the Ofgem matrix of replacement cost diameter bands. In the new analysis the LP System is sub-divided into 8 sub-tiers in accordance with the 8 pipe diameter bands currently used by Ofgem in their replacement cost matrix.

- In PC68 and previous related consultations the sampling was identified as a concern by some respondents. Respondents raised concerns about the potential bias toward one LDZ and whether the sample was truly representative for all Load Bands. Respondents also questioned the quality of data for CSEP connections. This led Transco to enhance its sample size and review the CSEP data held at that time. The samples used in this review are specific to each network which removes any bias towards a particular LDZ. Given the relatively low number of connections to the LTS, IP and MP Systems the data includes 100% of connections for both directly connected and CSEPs to these tiers.

- In the previous review the LP System sample was selected to achieve a 95% confidence level, or greater, over the LP System connections in aggregate. Samples were selected separately for directly connected and CSEP connections. In this review samples have been selected to achieve a 95% confidence level, or greater, for each Load Band within the LP System. This approach ensures that the new samples are representative of larger and smaller Load Bands. We consider this to be a significant improvement upon the application of the Methodology with regard to supply point representation. As a result, the LP samples use in excess of 50% of all CSEPs in each network (100% of LTS, IP and MP and in excess of 10,000 LP CSEPs) and between 15% and 20% of directly connected LP Loads in each network (100% of LTS, IP and MP and in excess of 3m low pressure directly connected loads).

2.2 Gas Flow Analysis

The probability of connection analysis gives the statistical profile of how supply points of different load sizes typically connect to each network. The second stage of the analysis

is to identify the use made of upstream pipes and pressure tiers in transporting gas to a supply point of a given size, on average.

In 2001 the gas flow analysis used was done for one sample network. For the purposes of this review the gas flow analysis was done individually by each DN. 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 was estimated using network design peak gas flow modeling analysis. The results of the analysis should therefore be appropriate to each DN.

This analysis, combined with the Connection Probability analysis described above, allows the utilization of all tiers of the system, on average, by supply points in different Load Bands to be calculated. The process is described more fully in Appendix 2.

2.3 Cost Analysis

DNPC05, implemented on 1 April 2009, reviewed the split of DN costs between System costs and Customer costs on an individual DN basis. The DNs carried out further analysis of the System costs to allocate them across the tiers and sub-tiers of the system used in the Connections and Gas Flow analyses. This determination of costs by tier and sub-tier allowed the DNs to determine the cost of the utilization of the tiers and sub-tiers on a unit cost (p/pdkWh/day) basis. The process is described more fully in Appendix 2.

3. Results of Analysis

The application of the methodology, with updated connection probability data, network gas flow data and network cost data, results in a unit cost (p/pdkWh/day) of network utilisation for each tier and sub-tier of the Network. The cost of utilisation of a tier or sub- tier by a supply point in a Load Band is then the cost of utilisation of that tier or sub-tier times the probability that that Load Band will use that tier or sub-tier.

Table 1. Typical LDZ System Costs by Load Band and Tier (p/pdkWh/day)

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0154	0.0056	0.0214	0.0001	0.0007	0.0027	0.0123	0.0083	0.0157	0.0338	0.0210	**0.1370**
73.2 - 146.5	0.0154	0.0055	0.0214	0.0006	0.0012	0.0029	0.0119	0.0071	0.0121	0.0219	0.0133	**0.1133**
146.5 - 293	0.0154	0.0055	0.0214	0.0013	0.0013	0.0028	0.0115	0.0066	0.0110	0.0200	0.0149	**0.1118**
293 – 439	0.0154	0.0055	0.0214	0.0004	0.0013	0.0028	0.0110	0.0064	0.0105	0.0179	0.0123	**0.1050**
439 – 586	0.0154	0.0055	0.0215	0.0003	0.0011	0.0028	0.0110	0.0061	0.0104	0.0177	0.0089	**0.1008**
586 – 732	0.0154	0.0055	0.0215	0.0005	0.0010	0.0026	0.0107	0.0064	0.0110	0.0218	0.0137	**0.1102**
732 - 2,931	0.0154	0.0055	0.0215	0.0002	0.0010	0.0025	0.0100	0.0060	0.0102	0.0178	0.0065	**0.0966**
2,931 - 14,654	0.0154	0.0056	0.0214	0.0013	0.0013	0.0016	0.0060	0.0031	0.0051	0.0063	0.0013	**0.0682**
14,654 - 58,614	0.0154	0.0063	0.0197	0.0013	0.0003	0.0007	0.0019	0.0005	0.0007	0.0006	0.0000	**0.0473**
58,614 - 293,071	0.0153	0.0084	0.0147	0.0000	0.0003	0.0000	0.0002	0.0001	0.0000	0.0000	0.0000	**0.0391**
>293,071	0.0156	0.0075	0.0059	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0290**

The table shows the cost of utilisation of each of the tiers and sub-tiers for each of the 11 load bands. The total cost of utilisation for a load band is determined by summing the individual tier costs. The further down the Network the supply points in a given load band tend to connect, therefore, the higher will be the total cost of utilisation.

Initially this analysis was done separately for direct loads and for CSEP loads. For the reasons given in Section 4 we propose not to continue with separate direct load and CSEP charging functions and so have then utilized analysis based on all loads, both direct loads and CSEP loads, combined. This data forms the basis for the selection of charging functions.

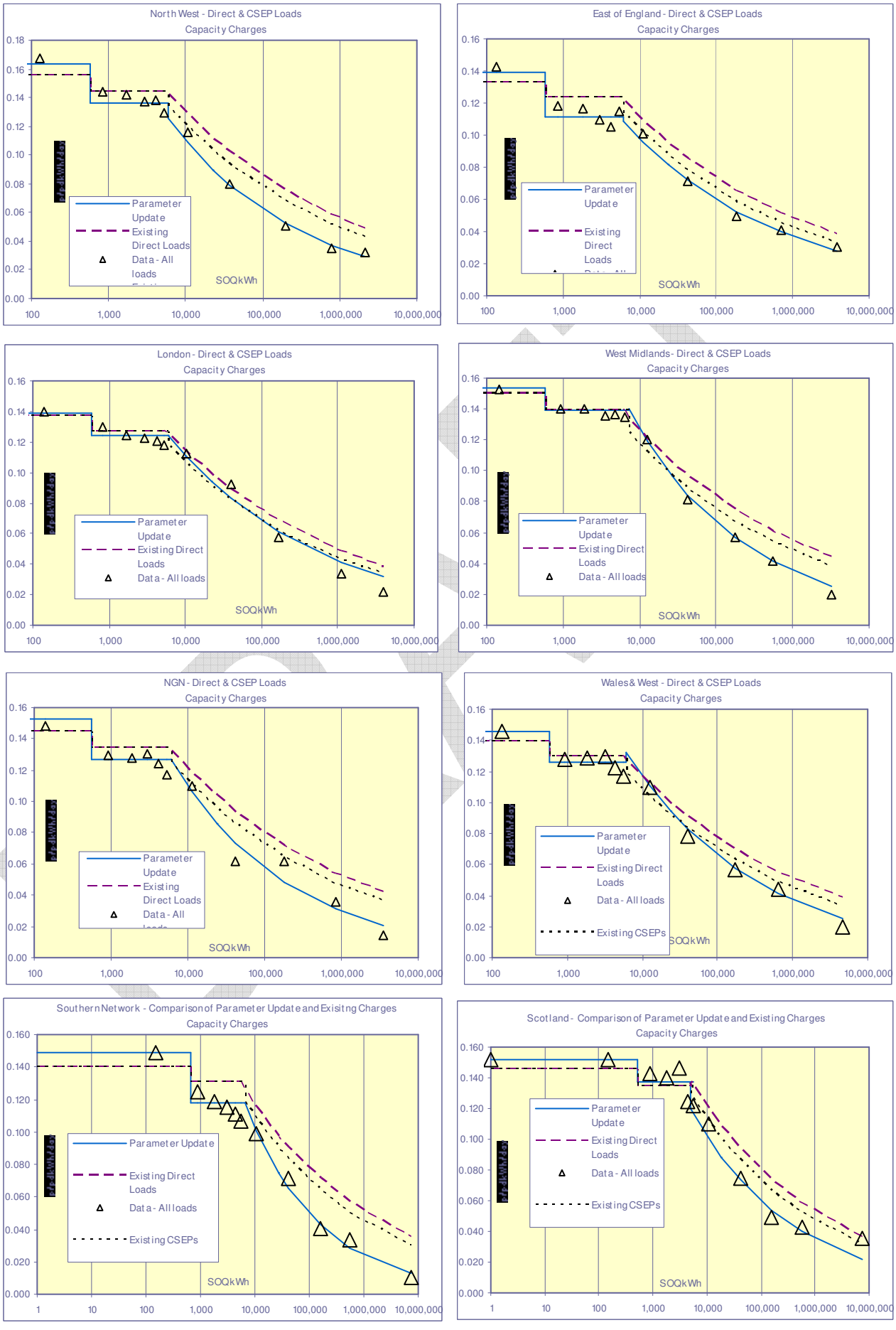
The data for each network is shown in each graph within Figure 1. Note that in all cases the functions shown have been scaled so that, based upon application of the capacity charges for 2010/11, the same level of overall LDZ System revenue would be forecast for a network. The data underlying the calculation of the unit costs is shown in Appendix 3.

The key conclusions from consideration of the cost data are:

- The present LDZ System Charging Structure, with the current relative balance of charges, does not accurately reflect the costs for each network.
- There are sufficient differences in the relative levels of unit costs across the load bands between networks to justify, on the basis of improved cost reflectivity, LDZ System Charging functions with different relative levels of charges across load sizes in each network.
- The unit cost data would seem to support retaining a three tier structure of Charge Bands. However the optimum breakpoint between the middle and top tier of charges may vary across networks (currently this is 732 MWh/a).
- A separate charge rate for a Sub 73.2 MWh/a tier seems to be justified. It is proposed to continue to have a flat unit rate charge for this charge tier.

Q.1 Is there any reason why the DNs should not adopt a network specific form of function rather than a national form of function for LDZ System charges?

Figure 1. Comparison of updated data, existing charges and fitted parameter update function for each Network



4. CSEP Charging Functions

A separate CSEP charging function for loads above 732 MWh/a was introduced following the PC68 consultation because the evidence available at the time showed that, for loads above 732 MWh/a, this type of CSEP load typically made less use of the system than the average equivalent sized directly connected load. For loads below 732 MWh/a the previous analysis indicated that CSEP loads could make greater use of the system than the average equivalent sized directly connected loads; for loads sizes below 732 MWh/a it was determined that it was appropriate to use the same charging functions for CSEPs as for direct loads.

4.1 CSEP Connection Probability Analysis and Charge Functions

Figures 2A and 2B show the average connection point analysis for CSEPs alongside directly connected loads. The data indicates that on average CSEPs typically connect further down stream than similar sized directly connected loads, particularly for lower Load Band CSEPs. It is evident that in all networks CSEPs are typically connected to smaller sized pipe diameters than directly connected loads within each Load Band. To illustrate this point Figure 2A shows a histogram as an example of sampled connection points for a single Load Band (732MWh/a-2391MWh/a). The mid point of the CSEPs is further to the right, lower down the pipe diameter bands, than directly connected loads. Figure 2B also shows the midpoint (Median – where 50% of the Load Band connects to the network) for all Load Bands in the DN.

A similar profile can be reproduced for all DNs from the connection probability tables given in Appendix 3.

In part, this is consistent with the 2001 review that showed that CSEPs with AQs up to 293 MWh/a on average connected further down stream than the equivalent average directly connected load. However, the 2001 review showed that for CSEPs with AQs above 293 MWh/a typically connected further up the network than equivalent directly connected loads. The current analysis indicates that CSEP loads neither consistently use more or less network assets for transportation than equivalent sized direct loads which is consistent with the earlier study. However, our latest analysis indicates that for the vast majority of CSEPs, those consuming less than 2,931MWh/a, typically make more use of the network, on average, than equivalent sized directly connected loads.

It appears that industry developments over the past decade, in which CSEPs have grown from relatively minor numbers of connections to over 5% of all gas consumer supply points, have resulted in CSEPs utilising, on average, at least the same network assets as equivalent directly connected loads.

Our results show that for all networks the unit charges to CSEPs, on a purely cost reflective basis, should if anything be higher than the unit charges to equivalent sized directly connected loads, particularly for the vast majority that are middle-sized and smaller loads.

Figure 2A Connection Point Comparison between Directly connected and CSEP connected Loads - (Histogram of Load Band 732-2931MWh/a for East of England and Median Connection Point Average for all Load Bands – below)

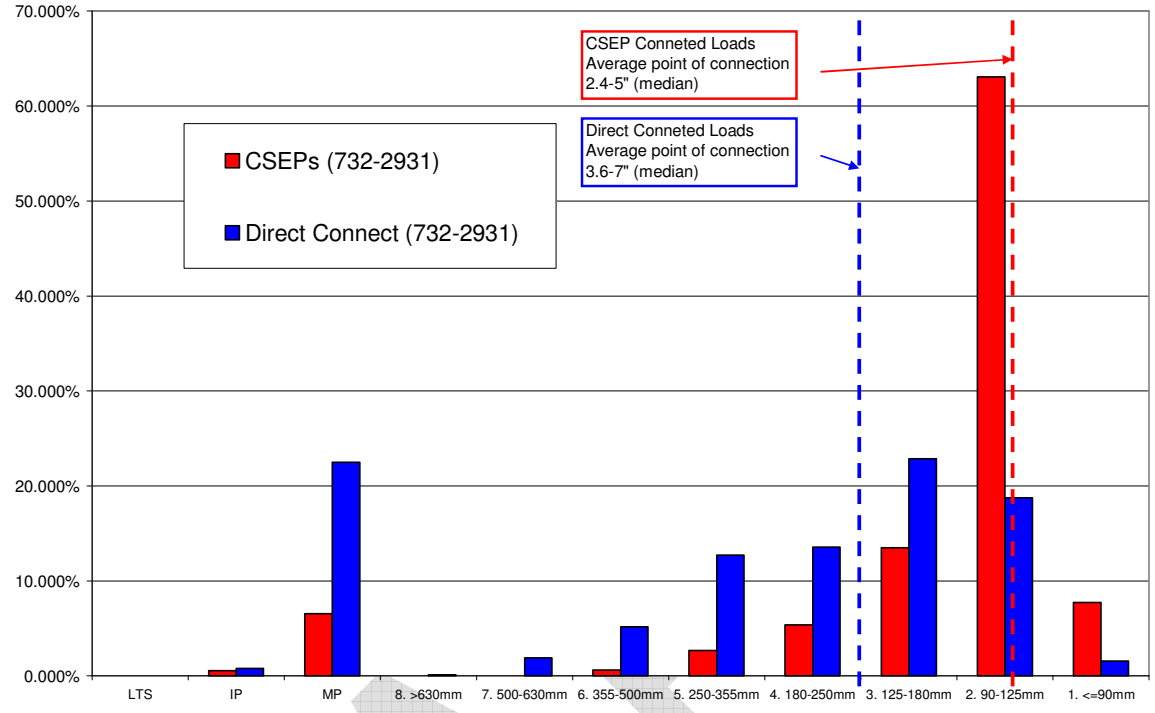
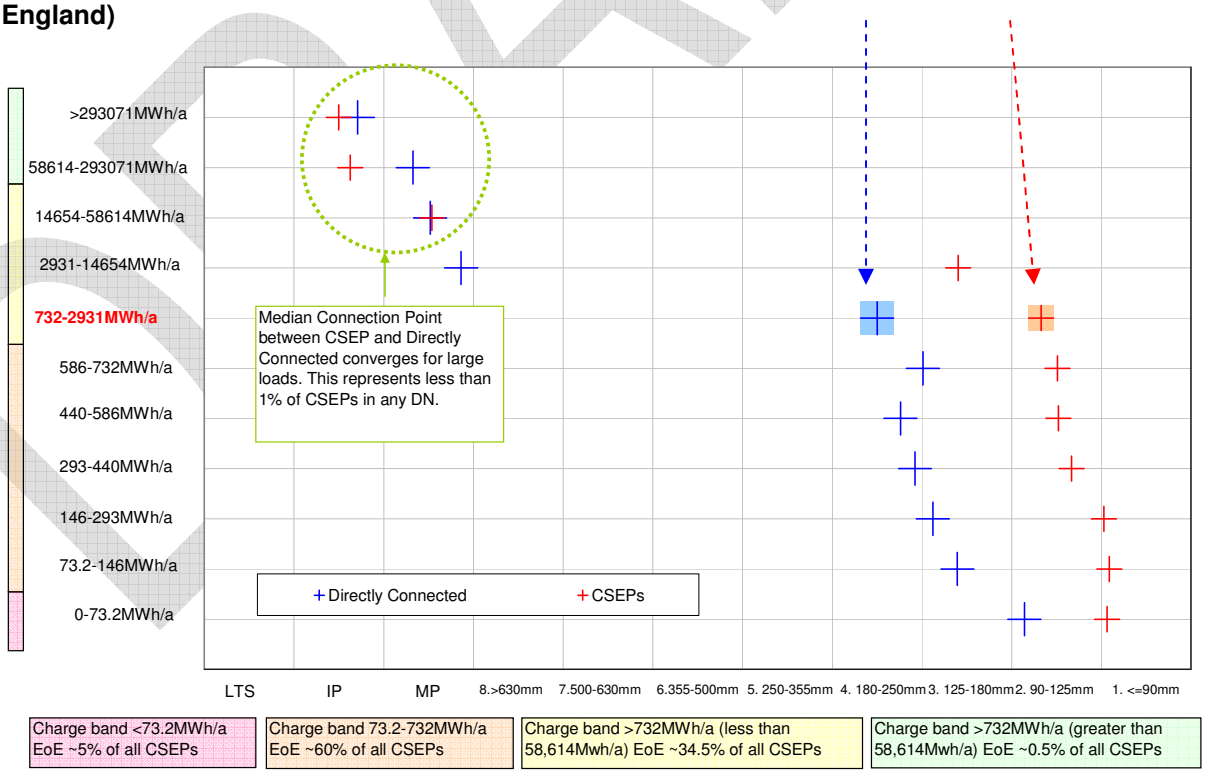


Figure 2B Connection Point Comparison between Directly connected and CSEP connected Loads - Median Connection Point Average for all Load Bands – East of England)



Following the PC68 consultation unit charges to CSEPs in the load bands up to 732 MWh/a were set at the same level as directly connected unit rates because the evidence was not felt to be strong enough to justify charging higher rates to CSEPs. At present more than 65% of CSEPs are in Load Bands 0-732 MWh/a and charged the same unit rates as equivalent directly

connected loads. Only larger CSEPs currently benefit from lower rates based on the power function.

In the current review the evidence is more consistent that CSEPs tend to connect further down the system, and therefore incur higher DN transportation costs. The DNs propose to continue with the current policy of charging transportation to CSEPs using the same charging functions as for direct loads where CSEPs cause the same or higher costs to be incurred as directly connected loads.

In all networks the analysis indicates that, for each of the three load band charging levels there is no evidence that transportation to CSEPs consistently uses less system assets than for equivalent sized directly connected loads. It is proposed therefore that in all networks for loads of all sizes transportation to CSEPs and to directly-connected loads should be charged using the same charging functions and the separate CSEP charging function should be discontinued.

For the avoidance of doubt the individual CSEP Maximum SOQ shall be applied in the derivation of unit rates for CSEP charge functions where either an SOQ based power or log function is used.

The analysis presented in the following sections on the form of functions is based upon the analysis of directly-connected and CSEPs load combined.

Consideration has been given to the impact of the proposed functions on current CSEP charges in subsequent sections. DNs are not in a position to provide a full assessment of the RPC implications of aligning directly connected and CSEP functions. As shown in Figure 1 and discussed in detail in Section 6, the updated charges on each network are likely to result in higher 0-73MWh/a levels and lower charges for loads in excess of 73MWh/a compared to existing charge levels. Consequently, in the absence of other changes, we anticipate that the iGT margin would increase for current and future connections in excess of 73MWh/a. Smaller future connections would be likely to have similar margins to the current arrangements. We understand that under the RPC a cap and collar arrangement is in place that may constrain the level of margin change for individual IGT developments.

Q.2 Do you agree that, based on the analysis shown, transportation to CSEPs and to directly-connected loads should use the same charging functions?

5. Structure and Forms of Function

We have based our evaluation on the results of an analysis that incorporates CSEP and Directly connected load data into a single set of charge functions.

In considering possible charging functions we have only included Charge Bands that are based on complete EUC Load Bands. Charge Bands that do not align with existing EUC Band definitions may marginally improve cost reflectivity but could lead to excessive complexity impacting on both Shipper and DN processes.

We have investigated, for each network, the most appropriate forms and fit of charging functions, based on optimizing the cost reflectivity of the charging function relative to the determined average unit costs for loads within each load band analysed. The best-fit functions may involve different forms of function (e.g logs instead of power) and different breakpoints across the Networks. Because applying these different functions may involve additional implementation costs for the shippers we therefore show three potential options for new functions fitted to the unit cost data.

a) Parameter Update - a simple update to the current form of function and structure of charges but reflecting each Network's cost data;
b) Best Fit - optimized functions and structures to achieve the best fit of functions to the cost data for each Network;
c) Common Function Form - revised functions and structure to achieve the best fit to cost data constrained by common function forms and charge bands for all 8 networks.

a) Parameter Update

Under this option the current form of charging functions would be retained i.e. a fixed unit rate would apply for 0-73MWh/a, a separate fixed unit rate would apply to 73-732MWh/a loads and a power function would be applied for loads in excess of 732MWh/a. Each network will have its own unit rates and power function parameters as determined through the network specific cost analysis. This is considered the minimum change proposed through this review in order to achieve a reasonable level of cost reflectivity for each Network

Table 1 shows the breakpoint between the middle and higher Charge Band, the type of function for the middle and higher Charge Bands, the R^2 value and the maximum error deviation to the fitted function. Similar tables will be shown in the alternative options.

The maximum error deviation provides the maximum error of the fitted charging function from any single data point. We have used this as a measure of fit since we consider that, as well as providing a good overall fit, the charging functions should provide a reasonable fit to the data for every charge band. The maximum error deviation typically occurs for the very largest loads which have very low unit rate charges and hence, for a given absolute error, the largest percentage error deviation. The R^2 figure relates to the sum of errors of the fitted function to the data points and is a method of evaluating the overall level of fit.

Table 1 Summary of Parameter Update Based on DN specific Cost Reflective Analysis

Network	Breakpoint (MWh/a) Middle-Higher	Function Type Middle / Higher	R^2	Maximum Error Deviation
East of England	732	Fixed/ Power	0.993	8.5%
North West	732	Fixed/ Power	0.996	8.1%
London	732	Fixed/ Power	0.995	44.0%
West Midlands	732	Fixed/ Power	0.999	24.9%
Scotland	732	Fixed/ Power	0.985	21.1%
Southern	732	Fixed/ Power	0.993	33.3%
Northern	732	Fixed/ Power	0.930	59.0%
Wales & West	732	Fixed/ Power	0.972	31.7%

Tables 2 and 3 give the impact assessment compared with the current 2010/11 charges scaled to 100% capacity levels. The tables show the change in the typical level of distribution transportation charges (including Customer charges for direct loads) for loads within each band. We do not expect significant differences in the impact assessment should the current 95/5 capacity/commodity split be retained. The changes to the charging functions under this option are shown in Figure 1 (page5).

Table 2 – Impact analysis of parameter update vs Current Charges – Directly connected Loads

Network / Load band (MWh/a)	East of England	London	North West	West Midlands	Scotland	Southern England	Wales & West	Northern England
0-73	3.2%	0.8%	3.6%	1.6%	2.8%	3.8%	2.8%	3.5%
73-147	-7.9%	-1.6%	-4.4%	-0.4%	1.7%	-7.2%	-2.0%	-5.1%
147-293	-8.7%	-1.8%	-4.7%	-0.5%	2.2%	-7.7%	-2.1%	-5.1%
293-440	-9.0%	-1.9%	-4.9%	-0.5%	2.6%	-7.9%	-2.2%	-5.1%
440-586	-9.2%	-1.9%	-5.0%	-0.5%	2.7%	-8.1%	-2.3%	-5.7%
586-732	-9.3%	-2.0%	-5.0%	-0.5%	2.8%	-8.2%	-2.3%	-5.1%
732-2931	-12.8%	-2.2%	-14.3%	-0.3%	-12.6%	-12.3%	-4.3%	-9.0%
2931-14654	-16.1%	-5.8%	-20.4%	-11.0%	-18.0%	-25.1%	-11.8%	-15.0%
14654-58614	-19.6%	-9.0%	-28.4%	-21.9%	-24.0%	-36.7%	-20.2%	-17.7%
58615-293071	-22.9%	-13.0%	-33.2%	-30.1%	-30.8%	-48.7%	-26.1%	-22.4%
>293071	-28.0%	-16.2%	-36.1%	n/a	n/a	-56.6%	-31.1%	-33.1%
Interruptible Users	-21.5%	-15.0%	-34.4%	-28.9%	-29.2%	-48.4%	-24.8%	-31.2%
Total	0.3%	0.0%	0.2%	0.0%	0.1%	0.1%	0.7%	0.3%

Table 3 Impact Assessment on CSEP Loads

Network / Load band (MWh/a)	East of England	London	North West	West Midlands	Scotland	Southern England	Wales & West	Northern England
0-73	5.0%	1.4%	5.4%	2.3%	4.7%	5.8%	4.2%	5.3%
73-147	-9.8%	-2.1%	-5.3%	-0.5%	1.9%	-9.5%	-2.4%	-5.2%
147-293	-9.8%	-2.1%	-5.3%	-0.5%	1.9%	-9.6%	-2.4%	-5.2%
293-440	-9.8%	-2.1%	-5.3%	-0.5%	1.9%	-9.6%	-2.4%	-5.2%
440-586	-9.8%	-2.1%	-5.3%	-0.5%	1.9%	-9.6%	-2.4%	-5.2%
586-732	-9.8%	-2.1%	-5.3%	-0.5%	1.9%	-9.6%	-2.4%	-5.2%
732-2931	-7.9%	4.0%	-9.6%	6.5%	-1.2%	-1.1%	-5.1%	-3.0%
2931-14654	-10.2%	1.7%	-15.4%	-4.9%	-6.3%	-14.5%	-12.5%	-8.8%
14654-58614	-13.5%	-1.2%	-25.4%	-17.5%	-11.6%	-26.6%	-20.2%	-12.4%
58615-293071	n/a	n/a	n/a	n/a	-15.4%	-35.1%	-26.6%	-18.3%
>293071	n/a	n/a	n/a	n/a	-22.2%	n/a	-33.2%	-38.1%
Interruptible Users	n/a	n/a	n/a	n/a	n/a	n/a	-38.5%	-49.2%
Total	-9.7%	1.0%	-10.7%	-0.5%	-2.7%	-9.7%	-10.4%	-13.9%

From the assessment it is evident that, with no change in the total revenue recovered, 0-73MWh/a loads would be charged slightly higher levels (less

than 4% for directly connected and less than 6% for CSEPs) with larger loads charged lower levels. The increase will typically be less than £4 per annum for domestic supply points. In contrast we anticipate the level of reductions to larger consumer would be significantly larger. Rebalancing of the System charges is thus needed to avoid the cross-subsidisation which the analysis indicates will occur if the charges are unchanged.

b) Best Fit

From our analysis it was evident that three charge bands could be used to give a good fit of the functions to the network specific costs data. Under this option the types of charging functions fitted and function have been optimized to the cost reflective data points. Each network has a fixed unit rate for 0-73 MWh/a and two charging functions covering all the larger loads. However, the transition between the charge bands and the type of functions adopted differ between each network in accordance with the optimisation as does the transition breakpoint from the function for the smaller I&C loads to the function for the larger I&C loads. The optimisation was based on the minimisation of the maximum error deviation as in all options the R^2 is broadly similar and at acceptable levels and the maximum deviation is most likely to highlight a significant deviation between the charge rate derived using the new function for a particular load band and the target charge rate for a typical load within that load band as identified from the cost analysis.

Table 4 shows the breakpoint between the middle and higher Charge Band, the type of function for the middle and higher Charge Bands, the R^2 value and the maximum error deviation to the fitted function. As expected, under this option the R^2 and maximum error are improved compared to the Parameter Update option (Table 1). However this improvement, for all networks, is achieved with a variation in charging function forms across the 8 networks and with variation in the breakpoints between the middle and higher charging functions across the 8 networks. The additional cost and complexity of this charging option needs to be considered against the additional cost reflectivity which it provides.

For the avoidance of doubt, where it is indicated that the breakpoint is 2931 and Power / Power this describes a DN charge structure that adopts a fixed unit rate for 0-73MWh/a loads, a power function for loads between 73-2931MWh/a loads and a separate power function for loads in excess of 2931MWh/a. Similarly where we have indicated Log / Log this describes charging functions utilising the natural log of the SOQ to determine the unit rate.

Table 4 Summary of Optimized DN specific Cost Reflective Analysis

Network	Breakpoint (MWh/a) Middle-Higher	Function Type Middle / Higher	R^2	Maximum Error Deviation
East of England	732	Power / Power	0.990	6.2%
North West	732	Power / Power	0.995	6.4%
London	2931	Power / Power	1.000	2.5%
West Midlands	2931	Power / Power	0.996	8.4%
Scotland	732	Power / Power	0.985	19.3%
Southern	2931	Power / Power	0.997	12.8%
Northern	2931	Log / Log	0.965	16.5%
Wales & West	2931	Log / Log	0.995	5.9%

Table 5 and 6 give the impact assessment for the Best Fit option functions compared to the Parameter Update option functions. We do not expect significant differences in the impact assessment should the current 95/5 capacity/commodity split be retained.

Table 5 Impact Assessment of Best fit Functions relative to Parameter Update for Directly connected Loads

Network / Load band (MWh/a)	East of England	London	North West	West Midlands	Scotland	Southern England	Wales & West	Northern England
0-73	-0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
73-147	7.8%	2.1%	0.0%	4.2%	7.5%	3.3%	5.6%	8.1%
147-293	3.5%	-0.4%	4.2%	-0.1%	4.7%	-1.5%	0.8%	-0.0%
293-440	-0.1%	-2.7%	2.3%	-4.3%	1.9%	-5.9%	-3.3%	-5.5%
440-586	-2.2%	-4.1%	0.4%	-6.4%	0.4%	-8.3%	-5.8%	-8.6%
586-732	-3.8%	-5.0%	-0.5%	-8.1%	-0.8%	-10.2%	-7.7%	-11.9%
732-2931	-2.1%	2.6%	-1.9%	0.6%	-4.1%	1.7%	-0.4%	-15.0%
2931-14654	-1.0%	3.8%	-1.7%	5.5%	-2.7%	9.4%	-1.1%	-7.5%
14654-58614	0.2%	-6.9%	-1.2%	-0.5%	-1.3%	4.9%	8.3%	-3.5%
58615-293071	1.5%	-19.0%	-0.7%	-5.3%	0.5%	0.7%	9.1%	3.1%
>293071	3.0%	-27.4%	-0.2%	n/a	n/a	-22.1%	0.6%	8.0%
Interruptible Users	1.3%	-22.8%	0.1%	-4.5%	0.3%	-0.1%	-38.8%	2.9%
Total	0.0%	-0.1%	-0.1%	0.0%	0.0%	0.0%	-0.4%	0.1%

Table 6 Impact Assessment of Best fit Functions relative to Parameter Update on CSEP Loads

Network / Load band (MWh/a)	East of England	London	North West	West Midlands	Scotland	Southern England	Wales & West	Northern England
0-73	-0.4%	0.2%	0.0%	0.0%	-0.1%	0.0%	0.0%	1.0%
73-147	9.5%	2.1%	0.0%	4.8%	8.4%	3.4%	11.2%	9.3%
147-293	4.3%	-0.7%	5.0%	0.1%	4.6%	-1.9%	5.4%	1.5%
293-440	0.3%	-2.9%	2.5%	-3.6%	1.9%	-6.3%	0.7%	-4.3%
440-586	-2.1%	-4.4%	0.8%	-5.9%	-0.9%	-8.9%	-2.2%	-8.2%
586-732	-4.0%	-5.5%	-0.5%	-7.6%	-1.3%	-10.9%	-4.5%	-11.3%
732-2931	-2.2%	5.6%	-2.0%	1.5%	-4.2%	5.6%	5.5%	-16.5%
2931-14654	-0.9%	10.5%	-1.7%	5.4%	-2.7%	8.8%	25.2%	-8.2%
14654-58614	1.1%	-6.5%	-1.3%	-2.2%	-1.0%	0.9%	13.5%	-3.0%
58615-293071	n/a	n/a	n/a	n/a	0.4%	-5.2%	16.1%	5.2%
>293071	n/a	n/a	n/a	n/a	2.9%	n/a	4.8%	-0.7%
Interruptible Users	n/a	n/a	n/a	n/a	0.0%	n/a	-27.8%	-29.5%
Total	-0.6%	2.8%	0.0%	0.9%	-2.1%	2.3%	9.2%	-8.1%

Whilst the 0-73MWh/a load band impact is largely unchanged from the parameter update impact, under the Best Fit option there will be varying impacts for larger loads relative to the parameter update impact.

c) Common Function Form

Under this option the charging parameters have been optimized to the cost reflective data points, subject to all the DNs using the same breakpoints and the same types of functions. This option is intended to strike a balance between optimization on a DN specific basis yet retain commonality nationally within the methodology. From an internal review, the costs of implementing either the optimized and common function options remain similar but we anticipate that a level of commonality may be beneficial to Shippers and reduce administration and system changes. If this is the case it would be beneficial to understand the level of cost reduction relative to the Best Fit option and the level of any additional costs relative to the Parameter Update option.

Table 7 shows the breakpoint between the middle and higher Charge Band, the type of function for the middle and higher Charge Bands, the R^2 value and the maximum error deviation to the fitted function. As expected, under this option the R^2 and maximum error is improved compared with the Parameter Update option (Table 1). Compared to the Best Fit option (Table 4) the fits are identical for London, West Midlands and Southern networks, marginally worse for East of England, North West and Scotland networks, and significantly worse for Northern and Wales and West networks, where using Log/Log functions was optimal. The specific changes to converge to the common breakpoint of 2931 and Power / Power function have been highlighted (in yellow).

Table 7 Summary of Optimised Common Function Form Based on DN specific Cost Reflective Analysis

Network	Breakpoint (MWh/a) Middle-Higher	Function Type Middle / Higher	R^2	Maximum Error Deviation
East of England	2931	Power / Power	0.994	7.5%
North West	2931	Power / Power	0.995	7.3%
London	2931	Power / Power	1.000	2.5%
West Midlands	2931	Power / Power	0.996	8.4%
Scotland	2931	Power / Power	0.989	20.3%
Southern	2931	Power / Power	0.997	12.8%
Northern	2931	Power / Power	0.931	23.4%
Wales & West	2931	Power / Power	0.979	11.8%

Table 8 and 9 give the impact assessment compared to the Parameter Update option. We do not expect significant differences in the impact assessment should the current 95/5 capacity/commodity split be retained.

Table 8 Common Function Form Impact Assessment relative to Parameter Update on Directly connected Loads

Network / Load band (MWh/a)	East of England	London	North West	West Midlands	Scotland	Southern England	Wales & West	Northern England
0-73	-0.2%	0.1%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.4%
73-147	8.9%	2.1%	9.0%	4.2%	6.4%	3.3%	-2.6%	5.8%
147-293	3.1%	-0.4%	1.7%	-0.1%	-0.2%	-1.5%	-4.5%	0.1%
293-440	-1.6%	-2.7%	-4.6%	-4.3%	-5.9%	-5.9%	-5.9%	-3.5%
440-586	-4.3%	-4.1%	-7.9%	-6.4%	-8.9%	-8.3%	-6.8%	-5.7%
586-732	-6.4%	-5.0%	-10.4%	-8.1%	-11.2%	-10.2%	-7.4%	-7.5%
732-2931	2.4%	2.6%	2.2%	0.6%	5.0%	1.7%	4.4%	10.8%
2931-14654	-3.5%	3.8%	-2.4%	5.5%	-1.2%	9.4%	10.4%	7.3%
14654-58614	-1.9%	-6.9%	-1.7%	-0.5%	-0.6%	4.9%	4.2%	5.6%
58615-293071	-0.3%	-19.0%	-1.1%	-5.3%	0.1%	0.7%	-0.7%	2.4%
>293071	-16.9%	-27.4%	-0.7%	n/a	n/a	-22.1%	-4.1%	-5.5%
Interruptible Users	3.3%	-22.8%	-1.3%	-4.5%	0.1%	-0.1%	0.0%	-5.6%
Total	0.0%	-0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	-0.0%

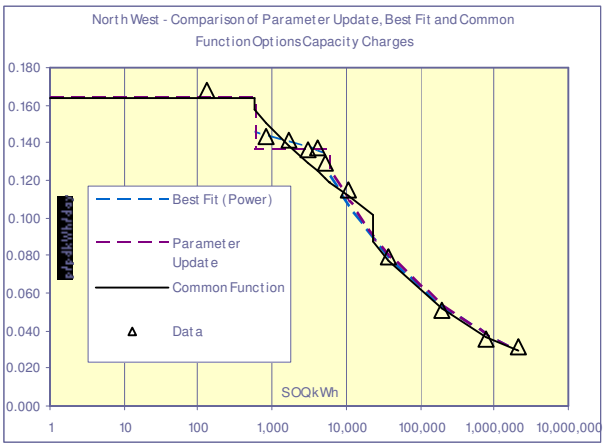
Table 9 Common Function Form Impact Assessment relative to Parameter Update for CSEP Loads

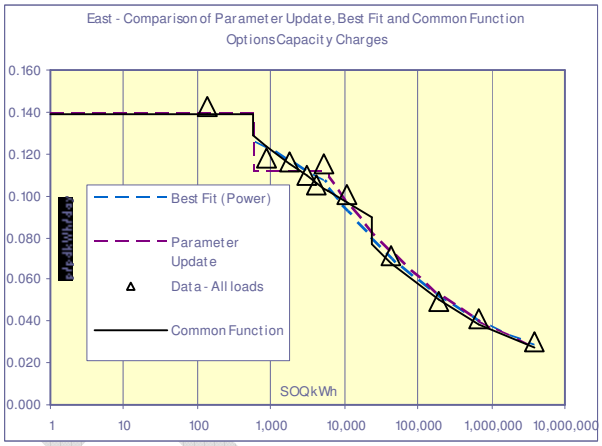
Network / Load band (MWh/a)	East of England	London	North West	West Midlands	Scotland	Southern England	Wales & West	Northern England
0-73	-0.4%	0.2%	0.0%	0.0%	-0.1%	-0.0%	-0.1%	-0.6%
73-147	10.8%	2.1%	10.4%	4.8%	5.9%	3.4%	-3.3%	6.6%
147-293	3.9%	-0.7%	2.0%	0.1%	-1.6%	-1.9%	-5.1%	1.2%
293-440	-1.2%	-2.9%	-4.0%	-3.6%	-6.9%	-6.3%	-6.5%	-2.7%
440-586	-4.3%	-4.4%	-7.9%	-5.9%	-11.1%	-8.9%	-7.4%	-5.3%
586-732	-6.7%	-5.5%	-10.6%	-7.6%	-12.6%	-10.9%	-8.0%	-7.3%
732-2931	3.7%	5.6%	3.2%	1.5%	7.3%	5.6%	6.4%	11.8%
2931-14654	-3.7%	10.5%	-2.6%	5.4%	-1.2%	8.8%	37.9%	8.1%
14654-58614	-1.1%	-6.5%	-1.4%	-2.2%	-0.5%	0.9%	5.5%	5.7%
58615-293071	n/a	n/a	n/a	n/a	-0.1%	-5.2%	0.6%	1.8%
>293071	n/a	n/a	n/a	n/a	1.1%	n/a	-4.8%	-11.5%
Interruptible Users	n/a	n/a	n/a	n/a	n/a	n/a	-9.4%	-23.9%
Total	0.2%	2.8%	-0.4%	0.9%	-0.7%	2.3%	9.8%	2.7%

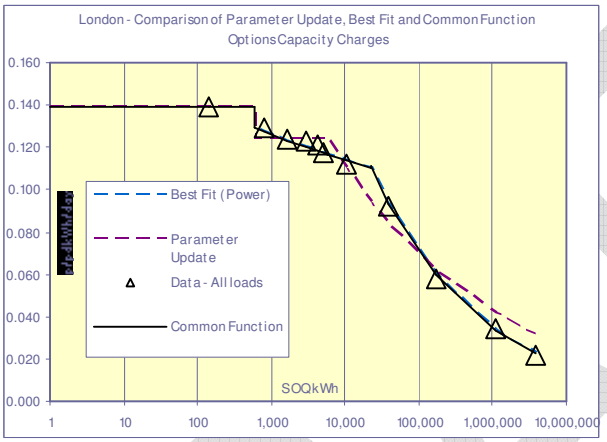
Figure 3 shows the three options compared to the cost data points.

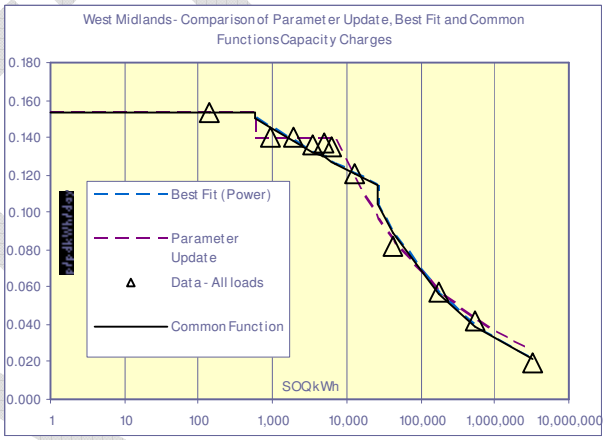
Q3 Of the three options discussed the Best Fit (b) functions would be the most cost reflective but may be the most expensive to implement. Which option of the three discussed (Parameter Update, Best Fit, or Common Option) would you prefer to be implemented and why.

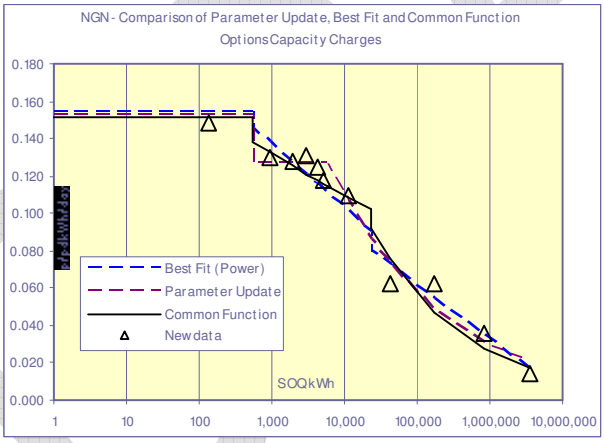
Figure 3 comparison between Parameter Update, Best fit Functions, Common Function Form Options

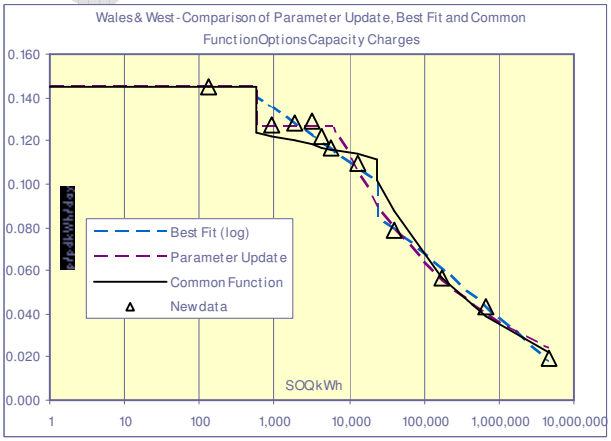


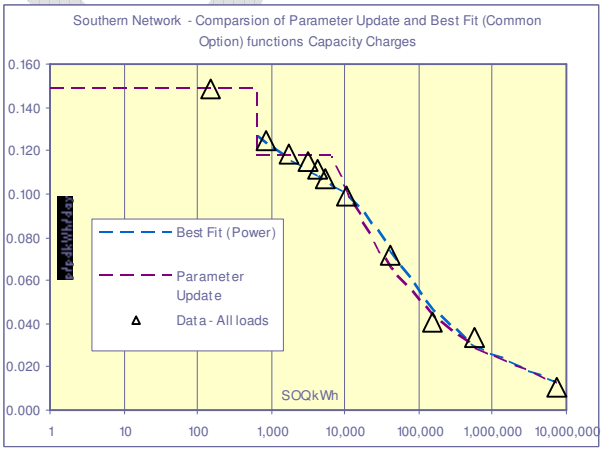


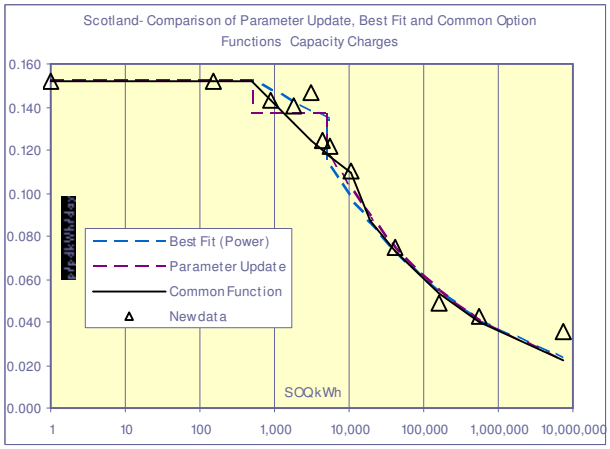












The potential impacts, relative to the existing charges, where there are increases in the charge levels are no greater than the impacts from annual variations to charge levels. Accordingly we believe that final proposals, following this consultation, ought to be adopted from April 2011.

Technically, there are no DN system changes that would prevent or delay the adoption of the charge profiles described in this consultation. However, we welcome any feedback from the community to the impact of system or other changes to the options discussed above.

Q4 is there any reason why the proposals should not be implemented from 1st April 2011?

6. Objectives of the Charging Methodology

The proposed change would involve a change to the charging methodology, and therefore needs to be considered with respect to the achievement of the objectives of the charging methodology, set out in Standard Special Condition 5 of the Gas Transporter Licence. The objectives for charges not set by auction are:

(a) That compliance with the charging methodology results in charges which reflect the costs incurred by the licensee in its transportation business;

(b) That, so far as is consistent with (a), the charging methodology properly takes account of developments in the transportation business;

(c) That, so far as is consistent with (a) and (b), compliance with the charging methodology facilitates effective competition between gas Shippers and between gas suppliers.

(a) Cost Reflectivity

The analyses by the DNs provide an updated more cost reflective basis compared with the current structure of the LDZ System charges that was last updated in 2001 and derived from a national sample and national derivation of costs. The methodology has been updated in so much as the principle methodology has been applied on DN specific costs and samples rather than at a national level.

(c) Facilitating Competition

Updating the methodology with more cost reflective analysis ought to complement the recent methodology changes that support the development of charges prescribed on DN level of cost reflectivity and DN Price Control Allowances whilst maintaining a common methodology across all gas Distribution Networks. Consideration has been given to the balance between cost reflectivity and consistency between the structure of DN charges in order to mitigate any difficulties that Shipper and consumers may have in comparing the treatment between similar sized loads within differing DNs. Consideration has also been given to the justification of separate CSEP charging functions, and while we have proposed similar functions we are proposing to continue

the application of Maximum CSEP SOQs in deriving unit rates, primarily to facilitate competition between Shippers.

7. Questions for Consultation

The questions for consultation are:

Q.1 Is there any reason why the DNs should not adopt a network specific form of function rather than a national form of function for LDZ System charges?

Q.2 Do you agree that, based on the analysis shown, transportation to CSEPs and to directly-connected loads should use the same charging functions?

Q3 Of the three options discussed the Best Fit (b) functions would be the most cost reflective but may be the most expensive to implement. Which option of the three discussed (Parameter Update, Best Fit, or Common Function) would you prefer to be implemented and why.

Q4 Is there any reason why the proposals should not be implemented from 1st April 2011?

8. Responses

Responses to this Consultation Paper should be sent to enquiries@gasgovernance.co.uk to arrive by close of play on xxxxxxx.

Questions on the content of the paper can be directed to any of the following:-

Denis Aitchison
SGN Distribution Pricing
Scotia Gas Networks
Tel: 07770 703 100
Denis.Aitchison@sgn.co.uk

Steve Armstrong
Pricing & Margins Manager
National Grid
Tel: 01926 655834
steve.armstrong@uk.ngrid.com

Anna Taylor
Pricing Manager
Northern Gas Networks
Tel: 0113 3975328
ataylor@northerngas.co.uk

John Edwards
Pricing Manager
Wales & West Utilities
Tel: 02920278838
john.edwards@wwutilities.co.uk

Appendix 1 LDZ System Unit Rates Comparison to 2010/11

Option a) Parameter Update

East of England (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1397
73,201 - 732,000	0.1113
> 732,000	0.6910*SOQ^-0.2124

North West (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1637
73,201 - 732,000	0.1365
> 732,000	1.0665*SOQ^-0.2467

London (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1390
73,201 - 732,000	0.1241
> 732,000	0.7778*SOQ^-0.2110

West Midlands (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1539
73,201 - 732,000	0.1388
> 732,000	1.6926*SOQ^-0.2810

Scotland (Scotia Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1458
73,201 - 732,000	0.1313
> 732,000	0.8475*SOQ^-.2338

Southern England (Scotia Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1470
73,201 - 732,000	0.1167
> 732,000	1.5318*SOQ^-0.2970

Northern England (Northern Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1526
73,201 - 732,000	0.1272
> 732,000	1.492*SOQ^-0.2834

Wales and West (Wales & West Utilities)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1454
73,201 - 732,000	0.1262
> 732,000	1.292*SOQ^- 0.2513

Option b) Best Fit

East of England (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1392
73,201 - 732,000	0.2013*SOQ^-0.0740
> 732,000	0.6065*SOQ^-0.2030

North West (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1637
73,201 - 732,000	0.1811*SOQ^-0.0348
> 732,000	1.0012*SOQ^-0.2422

London (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1393
73,201 – 2,931,000	0.1701*SOQ^-0.0432
> 2,931,000	2.2671*SOQ^-0.3087

West Midlands (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1539
73,201 – 2,931,000	0.2357*SOQ^-0.0706
> 2,931,000	2.9031*SOQ^-0.3265

Scotland (Scotia Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1458
73,201 - 732,000	0.2022*SOQ^-0.0527
> 732,000	0.7296*SOQ^-0.2221

Southern England (Scotia Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1470
73,201 – 2,931,000	0.2151*SOQ^-0.084
> 2,931,000	2.8994*SOQ^-0.3479

Northern England (Northern Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1541
73,201 – 2,931,000	0.2382 - 0.0147*Ln(SOQ)
> 2,931,000	0.208 -0.0127*Ln(SOQ)

Wales and West (Wales & West Utilities)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1454
73,201 – 2,931,000	0.2063 - 0.0105*Ln(SOQ)
> 2,931,000	0.2128 - 0.0127*Ln(SOQ)

Option c) Common Form Functions

East of England (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1392
73,201 – 2,931,000	0.2378*SOQ^-0.0968
> 2,931,000	0.5702*SOQ^-0.1998

North West (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1637
73,201 – 2,931,000	0.3360*SOQ^-0.1191
> 2,931,000	0.9903*SOQ^-0.2421

London (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1393
73,201 – 2,931,000	0.1701*SOQ^-0.0432
> 2,931,000	2.2671*SOQ^-0.3087

West Midlands (National Grid)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1539
73,201 – 2,931,000	0.2357*SOQ^-0.0706
> 2,931,000	2.9031*SOQ^-0.3265

Scotland (Scotia Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1458
73,201 – 2,931,000	0.2856*SOQ^-0.1082
> 2,931,000	0.7971*SOQ^-0.2290

Southern England (Scotia Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1470
73,201 – 2,931,000	0.2151*SOQ^-0.084
> 2,931,000	2.8994*SOQ^-0.3479

Northern England (Northern Gas Networks)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1517
73,201 – 2,931,000	0.2299*SOQ^1
> 2,931,000	2.6258*SOQ^-0.3326

Wales and West (Wales & West Utilities)

Charge band (kWh/a)	Unit rate (p/Peak Day kWh/a)
0-73,200	0.1453
73,201 – 2,931,000	0.1475*SOQ^-0.0276
> 2,931,000	1.9389*SOQ^-0.2925

Appendix 2 Overview of LDZ System Methodology

Clarification on Methodology Terminology

The LDZ System Methodology is an 'umbrella' term used to describe all methodology components relevant to the costs identified as being represented through the DN LDZ System charges.

The application of LDZ System Methodology to LDZ System charges, defined as the process for scaling of the LDZ System charges to recover the targeted revenue when charges are set remains subject to:

- the methodology for defining the costs reflected in the LDZ System charges – most recently defined in DNPC05 and summarised in Appendix 2.1
- the methodology for defining the structure of the Charge i.e. Capacity, Commodity etc. - most recently defined in DNPC07 and summarised in Appendix 2.2
- and the methodology for defining the forms of function – Structure Methodology – detailed in Appendix 2.3

Whilst the application of the methodology is applied each time charges are reset and based on the current output from the LDZ System methodologies, the frequency of updates to the methodology for defining the costs, variable component and structure remains independent from each other and independent from charge setting.

2.1 Methodology for Determining the balance of Revenue Recovery from LDZ System Charges

2.1.1 The LDZ System Charges Methodology is designed to reflect the costs to which these charges relate. LDZ System Charges reflect costs which include the cost of all assets and work relating to those assets upstream of the service pipe (including the gas mains to which the service pipes are connected) and those costs associated with managing the flow of gas through the system.

Regulatory depreciation on the assets, business rates and the allowed rate of return on the assets are allocated using the detailed split across asset categories available within the accounting depreciation schedules
.
Operational expenditure for all activities upstream of service pipes relating to the maintenance, emergency, replacement, system control and repair of mains and larger pipes, as well as energy management work such as on storage and on the construction of new pipes are included in this cost category. The relevant portion of indirect operational expenditure relating to employee overheads and work management costs in supporting LDZ System cost activities are directly identified or based on cost allocations related to the LDZ System cost category in comparison to the direct work activity Customer cost category.

All odorant and shrinkage costs excluding service pipe leakage are allocated to the LDZ System cost category.

All other business related costs and pass through costs are split in proportion to LDZ System and Customer costs in aggregate.

2.1.2 Costs are based on DN Actual Regulatory Reporting Pack submissions.

2.1.3 The target balance of revenue recovery between LDZ System Charges and LDZ Customer Charges for each DN is based upon a network-specific estimate of the split of relevant costs.

2.1.3 The network-specific estimate of the split of relevant costs will be assessed using an average of an appropriate number of years for which data on a consistent basis is available for each network.

2.1.4 The target balance of revenue recovery between LDZ System Charges and LDZ Customer Charges will be reviewed at the beginning of each Price Control period, except in exceptional circumstances.

2.2 LDZ System Charge Structure - Capacity Commodity Split

The current structure of the LDZ System Charge is 95% Capacity and 5% Commodity. This was based on the cost analysis done in DNPC03 when the 5% commodity element appropriately reflected the proportion of costs which were commodity related. Since then however changes in the regulatory treatment of shrinkage have meant that the commodity related element of costs is now significantly less than one percent in all DNs and it would be more cost reflective to have a 100% /0% capacity commodity split.

The DNs have consulted on this proposal in DNPC07, and the report on the consultation has been submitted to Ofgem, who have 28 days from the date of submission, (19th June) in which to veto or not veto the proposal.

2.3 LDZ System Charge Methodology Approach

The LDZ System Charge Methodology is defined as the methodology applied in determining the forms and types of function used to represent different sizes of user of the system, to differentiate between the comparative LDZ System costs of different sizes of user of the network.

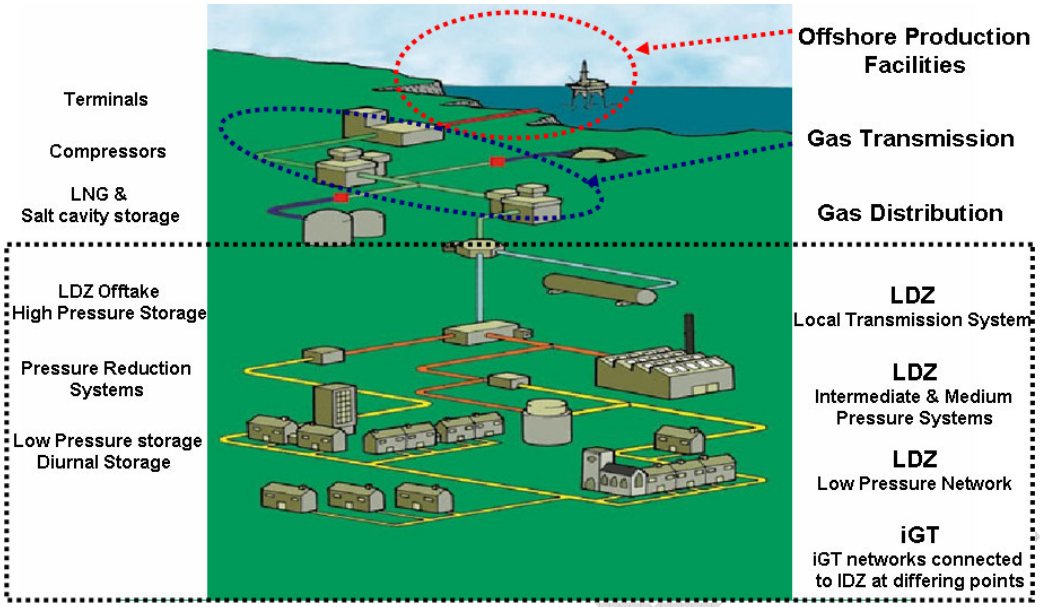
The LDZ System Charge Methodology reflects the average use of the network made by customers of a given size, rather than the actual use made by a particular supply point. The latter methodology would be too complex to be a practical basis of charging and the average basis avoids inconsistencies that may arise if neighbouring sites of similar size, and operating as intended when connected to the network, are actually connected to different pressure tiers.

Distribution systems transport gas from the National Transmission System (NTS) through the LDZ to each supply point connection (Figure 2.1). The LDZ comprises four separate pressure systems. Accordingly, in principle a supply point connected downstream utilises more of the LDZ network than supply points further upstream. Consequently, it is expected that supply points attract higher unit rates the further downstream they connect relative to those connected upstream.

Furthermore, connection point data shows that there is a good correlation between supply point average capacity requirements and off-take tier. Large supply points are

typically supplied from higher-pressure tiers and small customers from lower pressure tiers.

Figure 2.1 Directional Flow of Gas



The LDZ System Charge Methodology relates the connection characteristics and associated network costs to supply point size. The LDZ System Methodology comprises three stages including the identification of supply point connection to the LDZ system (section 2.3.1), the relative utilisation of the upstream systems (section 2.3.2) and the identification of network costs (section 2.3.3). The combination of the three stages enables analysis of the resulting cost reflective data points and the fitting of appropriate functions to represent supply point relative cost implications to the DN.

2.3.1 Supply Point Probability of Connection

The LDZ networks contain a series of pipe networks split into four main pressure tiers (Table 2.1):

Table 2.1 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	
	LP8	>630mm
	LP7	500-630mm
	LP6	355-500mm
	LP5	250-355mm
	LP4	180-250mm
	LP3	125-180mm
	LP2	90-125mm
	LP1	<=90mm

The Low Pressure System is the largest part of the LDZ system and is disaggregated into sub-tiers based on pipe diameter for the purpose of determining a more accurate split of costs to supply point connect information.

A survey of connection point data is taken to identify where on average a supply point representing each EUC Load band connects to the LDZ system. The most recent survey was carried out in 2008 by an independent research organisation[3].

The connection point survey included directly connected and CSEP connected supply points on the IPS, MPS and LPS networks in each DN. The samples taken were banded into 11 EUC Load Band for consistency with previous reviews. The samples included a 100% sample (all supply points) of directly connected and CSEPs supply points connected to the LTS, IPS and MPS networks. Given the number of supply points connected to the LPS networks a sampling process was undertaken to obtain a representative sample for each of the 11 EUC Load bands within each DN to a Confidence Level width of +/-5% or less. To illustrate the scale of the sampling some 15-20% of all LPS connected supply points have been included in the samples used (>3m LPS supply points nationally). Similarly some 50% of all CSEPs were included in the LPS samples. The LPS sample was subsequently scaled to the total LPS population size to enable aggregation with IPS and MPS data sets.

The most recent results of the survey have been given as an output from the joint LDZ System Structure Methodology in Appendix 2.1

[3] Advantica was commissioned by the DNs to carry out the survey

- Now operating under the name Germanischer LLoyd

2.3.2 Connection Point Network Utilisation

The probability of connection gives the statistical profile of how supply points of different load sizes typically connect to each DN. This alone is not sufficient to identify the relative costs incurred on the network when compared to other average supply points of different load requirements. A further step is required to incorporate the upstream requirements i.e. use of upstream pipes / pressure tiers, for transportation to the point on the network where the average supply point exits the network. A second stage of utilisation analysis is required.

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 using network design peak gas flow modelling analysis. This process includes two stages of analysis.

Stage 1. Network peak day flow models are used to determine the following percentage flows of gas:

- Total NTS off-take gas energy flowing into the LTS, IPS, MPS and LPS directly
- Total LTS gas energy flowing into IPS, MPS and LPS directly
- Total IPS gas energy flowing into MPS or LPS directly
- Total MPS gas energy flowing into the LPS directly

This process identifies the total gas entering each pressure tier. With the consumption at each tier and sub-tier known from the connection analysis it is therefore possible to model the total gas entering each tier, the consumption by supply points at that point on the network and the resultant flow into downstream tiers. It is assumed that upstream flows do not exist i.e. gas is not compressed back up to a higher pressure tier.

Stage 2. The second stage of the gas flow analysis identifies the gas energy entering all the LPS sub-tiers directly from the NTS, LTS, IPS and MPS networks. Gas flow between LPS pipe diameter bands is highly complex and to simplify the analysis it is assumed gas flows from larger diameter e.g. LPS8, to smaller diameter e.g. LPS7 pipes in succession.

Having identified the gas energy flows through the network, the impact of gas exiting the network at a point can be assessed so that its upstream utilisation can be accounted for. As a result, a System Usage Probability matrix is produced.

2.3.3 Cost Allocation and Cost Reflective Data Calculations

The costs identified from the Methodology for Determining the balance of Revenue Recovery from LDZ System Charges are split between pressure tiers and pipe diameter bands using relevant allocations. In previous reviews the cost were split using the ABC costs for the main tiers. The LPS cost was then sub-divided across the pipe diameter sub-tiers pro-rata to the replacement asset value of each sub-tier.

Because ABC costs are no longer available the replacement asset value methodology was used to allocate the asset-based costs, including regulatory depreciation, business rates, repair, mains maintenance, replacement and allowed return across both the main tiers and the sub-tiers as appropriate.

Operational costs were allocated on appropriate bases. In particular, we have allocated storage costs based on SOQ utilisation on each pressure tier, all LTS maintenance costs have been allocated directly to the LTS and indirect and work management costs have been allocated in proportion to the operational costs which they support. Mains emergency costs have been split by relative pipe length as it is expected that mains emergency costs are broadly similar regardless of pipe diameter.

Shrinkage costs are allocated to the (LTS, IP, MP and LPS) tiers directly and AQ utilisation has been used for own use and theft of gas costs.

Table detailing allocation rules.

Costs Category	**Allocation**
Emergency (excluding service pipe and downstream of network)	Split by pipe length (excludes LTS)
LTS maintenance	Directly allocated to LTS
Storage maintenance	Split over LPS tiers by SOQ utilisation
Mains maintenance	Split in proportion to value of each tier by pipe length multiplied by Replacement Target Value – excludes LTS
Mains expensed replacement	
Mains repair	
Regulatory depreciation (excludes service pipe)	Split in proportion to value of each tier by pipe length multiplied by Replacement Target Value
Allowed Return	
Business Rates	
Work Management	Split in proportion to operational costs (emergency, maintenance, repair, expensed replacement)
Indirect	
Shrinkage – leakage	Allocated to tier directly (LTS, IP, MP, LPS)
Shrinkage – Own use	Split by AQ utilised
Shrinkage - Theft	Split by AQ utilised – LTS only
Licence Fee	Allocated by supply points on tier

Appendix 3 Outputs from LDZ System Structure Methodology review

East Of England

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.044%	0.814%	0.043%	0.359%	1.889%	8.140%	9.933%	22.038%	47.859%	8.881%
73.2 - 146.5	0.000%	0.159%	5.482%	0.306%	2.300%	4.044%	13.417%	14.889%	23.941%	31.368%	4.093%
146.5 - 293	0.000%	0.218%	9.077%	0.689%	2.721%	4.500%	15.123%	14.976%	22.267%	27.055%	3.375%
293 - 439	0.000%	0.449%	12.051%	0.204%	3.018%	5.730%	14.498%	15.232%	23.267%	23.369%	2.182%
439 - 586	0.000%	0.228%	14.579%	0.190%	2.088%	6.036%	16.819%	13.212%	23.424%	21.526%	1.898%
586 - 732	0.000%	0.436%	15.524%	0.312%	1.995%	4.613%	12.718%	14.152%	20.511%	25.686%	4.052%
732 - 2,931	0.000%	0.791%	22.512%	0.116%	1.907%	5.186%	12.721%	13.558%	22.884%	18.744%	1.581%
2,931 - 14,654	0.000%	3.518%	53.869%	0.804%	4.724%	3.819%	11.055%	6.432%	10.653%	5.126%	0.000%
14,654 - 58,614	0.000%	12.798%	71.873%	0.748%	0.748%	3.739%	6.356%	1.496%	1.496%	0.748%	0.000%
58,614 - 293,071	0.000%	27.367%	69.615%	0.000%	1.509%	0.000%	0.000%	1.509%	0.000%	0.000%	0.000%
>293,071	6.250%	61.607%	32.143%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	1.724%	0.000%	0.000%	1.724%	3.448%	3.448%	8.621%	27.586%	53.448%
73.2 - 146.5	0.000%	0.134%	1.872%	0.000%	0.267%	0.267%	3.610%	6.684%	11.898%	20.455%	54.813%
146.5 - 293	0.000%	0.110%	2.412%	0.000%	0.000%	0.439%	2.632%	3.728%	10.197%	29.057%	51.425%
293 - 439	0.000%	0.169%	3.046%	0.338%	0.000%	0.677%	3.723%	5.245%	9.814%	40.440%	36.548%
439 - 586	0.000%	0.000%	1.362%	0.000%	0.000%	1.090%	1.635%	3.270%	9.809%	63.215%	19.619%
586 - 732	0.000%	0.000%	4.263%	0.000%	0.000%	0.000%	3.507%	3.507%	5.260%	65.578%	17.885%
732 - 2,931	0.000%	0.537%	6.543%	0.000%	0.000%	0.631%	2.680%	5.359%	13.477%	63.050%	7.724%
2,931 - 14,654	0.000%	3.344%	19.743%	0.000%	0.000%	2.128%	3.344%	9.424%	29.792%	29.488%	2.736%
14,654 - 58,614	1.299%	11.607%	69.075%	0.000%	0.000%	0.000%	1.502%	6.007%	7.508%	3.003%	0.000%
58,614 - 293,071	0.000%	80.000%	20.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
>293,071	0.000%	100.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP	92.07%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MP	93.59%	34.50%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8. >24"	93.54%	38.47%	92.79%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7. >18-24"	93.54%	38.47%	92.79%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. >12-18"	93.54%	38.47%	92.79%	0.00%	10.83%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. 10-12"	93.54%	38.47%	92.79%	0.00%	4.13%	38.17%	100.00%	0.00%	0.00%	0.00%	0.00%
4. 8-9"	93.54%	38.47%	92.79%	0.00%	2.73%	25.19%	66.00%	100.00%	0.00%	0.00%	0.00%
3. 6-7"	93.54%	38.47%	92.79%	0.00%	2.33%	21.53%	56.39%	85.45%	100.00%	0.00%	0.00%
2. 4-5"	93.54%	38.47%	92.79%	0.00%	2.25%	20.79%	54.47%	82.54%	96.59%	100.00%	0.00%
1. <=3"	93.54%	38.47%	92.79%	0.00%	2.23%	20.58%	53.92%	81.69%	95.60%	98.98%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	93.54%	38.46%	92.81%	0.04%	2.96%	24.02%	57.98%	75.52%	76.76%	56.66%	8.89%
73.2 - 146.5	93.54%	38.35%	93.03%	0.30%	4.98%	25.31%	56.02%	65.01%	58.95%	36.63%	5.65%
146.5 - 293	93.54%	38.25%	93.22%	0.65%	5.25%	24.91%	54.14%	60.28%	53.82%	33.44%	6.32%
293 - 439	93.54%	38.28%	93.21%	0.22%	5.47%	25.07%	51.83%	58.00%	51.07%	30.01%	5.19%
439 - 586	93.55%	38.07%	93.55%	0.17%	4.60%	25.28%	51.80%	55.43%	50.64%	29.66%	3.77%
586 - 732	93.54%	38.14%	93.45%	0.27%	4.26%	23.25%	50.35%	58.78%	53.80%	36.46%	5.80%
732 - 2,931	93.54%	38.15%	93.51%	0.09%	3.95%	22.23%	46.91%	54.68%	49.94%	29.86%	2.75%
2,931 - 14,654	93.51%	38.74%	92.95%	0.64%	5.31%	14.19%	28.06%	28.11%	24.67%	10.54%	0.55%
14,654 - 58,614	93.42%	43.33%	85.65%	0.64%	1.35%	6.57%	8.77%	4.73%	3.18%	1.01%	0.00%
58,614 - 293,071	93.04%	58.16%	63.85%	0.00%	1.38%	0.34%	0.88%	1.34%	0.00%	0.00%	0.00%
>293,071	94.94%	51.96%	25.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	48.2	18.4	62,4	0.8	2.3	6.9	30.4	19.7	36.6	75.8	45.7
p/pd KWh	0.016	0.014	0.023	0.195	0.024	0.011	0.021	0.011	0.021	0.060	0.236

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0154	0.0056	0.0214	0.0001	0.0007	0.0027	0.0123	0.0083	0.0157	0.0338	0.0210	**0.1370**
73.2 - 146.5	0.0154	0.0055	0.0214	0.0006	0.0012	0.0029	0.0119	0.0071	0.0121	0.0219	0.0133	**0.1133**
146.5 - 293	0.0154	0.0055	0.0214	0.0013	0.0013	0.0028	0.0115	0.0066	0.0110	0.0200	0.0149	**0.1118**
293 - 439	0.0154	0.0055	0.0214	0.0004	0.0013	0.0028	0.0110	0.0064	0.0105	0.0179	0.0123	**0.1050**
439 - 586	0.0154	0.0055	0.0215	0.0003	0.0011	0.0028	0.0110	0.0061	0.0104	0.0177	0.0089	**0.1008**
586 - 732	0.0154	0.0055	0.0215	0.0005	0.0010	0.0026	0.0107	0.0064	0.0110	0.0218	0.0137	**0.1102**
732 - 2,931	0.0154	0.0055	0.0215	0.0002	0.0010	0.0025	0.0100	0.0060	0.0102	0.0178	0.0065	**0.0966**
2,931 - 14,654	0.0154	0.0056	0.0214	0.0013	0.0013	0.0016	0.0060	0.0031	0.0051	0.0063	0.0013	**0.0682**
14,654 - 58,614	0.0154	0.0063	0.0197	0.0013	0.0003	0.0007	0.0019	0.0005	0.0007	0.0006	0.0000	**0.0473**
58,614 - 293,071	0.0153	0.0084	0.0147	0.0000	0.0003	0.0000	0.0002	0.0001	0.0000	0.0000	0.0000	**0.0391**
>293,071	0.0156	0.0075	0.0059	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0290**

London

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	0.579%	0.942%	2.498%	3.363%	7.279%	7.256%	16.306%	50.827%	10.950%
73.2 - 146.5	0.000%	0.006%	1.038%	1.526%	3.826%	5.889%	8.078%	9.151%	20.195%	42.963%	7.328%
146.5 - 293	0.000%	0.008%	0.976%	1.430%	4.887%	7.957%	8.571%	10.203%	22.475%	38.187%	5.307%
293 - 439	0.000%	0.000%	1.440%	2.110%	4.419%	8.118%	8.441%	11.519%	22.269%	36.991%	4.692%
439 - 586	0.000%	0.000%	1.242%	1.685%	5.898%	7.494%	8.071%	10.732%	22.794%	37.871%	4.213%
586 - 732	0.000%	0.000%	1.692%	3.311%	6.402%	7.138%	10.596%	10.596%	23.547%	33.628%	3.091%
732 - 2,931	0.000%	0.075%	3.788%	1.894%	6.454%	9.370%	11.288%	12.086%	21.704%	30.800%	2.542%
2,931 - 14,654	0.000%	0.882%	11.209%	3.401%	8.816%	11.209%	17.758%	13.350%	18.514%	14.358%	0.504%
14,654 - 58,614	0.000%	8.235%	45.882%	2.353%	9.412%	9.412%	12.941%	9.412%	2.353%	0.000%	0.000%
58,614 - 293,071	10.526%	13.474%	62.526%	0.000%	0.000%	10.105%	3.368%	0.000%	0.000%	0.000%	0.000%
>293,071	0.000%	100.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	6.849%	8.219%	23.288%	30.137%	31.507%
73.2 - 146.5	0.000%	0.000%	0.313%	0.000%	1.567%	0.940%	3.448%	5.956%	15.361%	32.288%	40.125%
146.5 - 293	0.000%	0.000%	0.428%	0.000%	0.428%	3.212%	4.283%	6.424%	15.846%	29.979%	39.400%
293 - 439	0.000%	0.000%	1.485%	0.000%	0.495%	1.485%	3.465%	5.446%	17.822%	38.119%	31.683%
439 - 586	0.000%	0.000%	2.655%	0.000%	0.000%	2.655%	4.425%	7.965%	16.814%	50.442%	15.044%
586 - 732	0.000%	0.000%	0.000%	0.000%	2.632%	3.947%	6.579%	11.842%	11.842%	52.632%	10.526%
732 - 2,931	0.000%	0.000%	2.477%	0.000%	0.000%	3.715%	4.954%	4.954%	22.601%	56.037%	5.263%
2,931 - 14,654	0.000%	0.000%	12.727%	0.000%	0.000%	7.273%	14.545%	9.091%	36.364%	20.000%	0.000%
14,654 - 58,614	0.000%	0.000%	27.273%	0.000%	0.000%	0.000%	0.000%	36.364%	18.182%	18.182%	0.000%
58,614 - 293,071											
>293,071											

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MP	100.00%	28.48%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8. >24"	100.00%	30.14%	97.67%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7. >18-24"	100.00%	30.14%	97.67%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. >12-18"	100.00%	30.14%	97.67%	0.00%	44.74%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. 10-12"	100.00%	30.14%	97.67%	0.00%	20.27%	45.30%	100.00%	0.00%	0.00%	0.00%	0.00%
4. 8-9"	100.00%	30.14%	97.67%	0.00%	14.00%	31.28%	69.06%	100.00%	0.00%	0.00%	0.00%
3. 6-7"	100.00%	30.14%	97.67%	0.00%	11.63%	26.00%	57.39%	83.10%	100.00%	0.00%	0.00%
2. 4-5"	100.00%	30.14%	97.67%	0.00%	10.95%	24.48%	54.04%	78.25%	94.16%	100.00%	0.00%
1. <=3"	100.00%	30.14%	97.67%	0.00%	8.97%	20.05%	44.26%	64.08%	77.12%	81.90%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	100.00%	30.13%	97.69%	0.94%	14.94%	27.80%	53.96%	67.59%	72.61%	59.79%	10.95%
73.2 - 146.5	100.00%	30.13%	97.69%	1.49%	16.99%	29.53%	52.43%	64.36%	66.53%	49.31%	8.04%
146.5 - 293	100.00%	30.13%	97.69%	1.35%	18.50%	31.01%	51.50%	62.52%	63.22%	43.69%	7.30%
293 - 439	100.00%	30.12%	97.71%	1.98%	18.01%	30.93%	51.29%	62.51%	61.82%	42.30%	6.40%
439 - 586	100.00%	30.12%	97.70%	1.58%	19.09%	30.32%	51.05%	62.57%	62.59%	42.67%	4.89%
586 - 732	100.00%	30.12%	97.71%	3.08%	19.62%	30.12%	51.22%	59.22%	58.41%	37.87%	3.60%
732 - 2,931	100.00%	30.13%	97.69%	1.70%	19.93%	31.57%	50.27%	57.37%	55.36%	35.64%	2.82%
2,931 - 14,654	100.00%	30.51%	97.17%	3.05%	22.12%	31.77%	46.30%	41.81%	34.77%	15.31%	0.45%
14,654 - 58,614	100.00%	34.54%	91.52%	2.10%	16.90%	19.02%	23.45%	17.25%	5.92%	1.97%	0.00%
58,614 - 293,071	100.00%	30.82%	75.14%	0.00%	3.55%	7.94%	2.30%	0.00%	0.00%	0.00%	0.00%
>293,071	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	20.2	5.7	32.7	3.2	6.0	14.6	25.5	15.4	25.0	48.6	15.3
p/pd KWh	0.011	0.010	0.019	0.147	0.022	0.030	0.029	0.015	0.023	0.057	0.106

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0112	0.0029	0.0190	0.0014	0.0032	0.0085	0.0159	0.0099	0.0167	0.0342	0.0116	**0.1345**
73.2 - 146.5	0.0112	0.0029	0.0190	0.0022	0.0037	0.0090	0.0154	0.0095	0.0153	0.0282	0.0085	**0.1249**
146.5 - 293	0.0112	0.0029	0.0190	0.0020	0.0040	0.0094	0.0151	0.0092	0.0145	0.0250	0.0077	**0.1202**
293 - 439	0.0112	0.0029	0.0190	0.0029	0.0039	0.0094	0.0151	0.0092	0.0142	0.0242	0.0068	**0.1188**
439 - 586	0.0112	0.0029	0.0190	0.0023	0.0041	0.0092	0.0150	0.0092	0.0144	0.0244	0.0052	**0.1170**
586 - 732	0.0112	0.0029	0.0190	0.0045	0.0042	0.0092	0.0151	0.0087	0.0134	0.0217	0.0038	**0.1138**
732 - 2,931	0.0112	0.0029	0.0190	0.0025	0.0043	0.0096	0.0148	0.0084	0.0127	0.0204	0.0030	**0.1089**
2,931 - 14,654	0.0112	0.0030	0.0189	0.0045	0.0048	0.0097	0.0136	0.0061	0.0080	0.0088	0.0005	**0.0890**
14,654 - 58,614	0.0112	0.0034	0.0178	0.0031	0.0037	0.0058	0.0069	0.0025	0.0014	0.0011	0.0000	**0.0568**
58,614 - 293,071	0.0112	0.0030	0.0146	0.0000	0.0008	0.0024	0.0007	0.0000	0.0000	0.0000	0.0000	**0.0327**
>293,071	0.0112	0.0097	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0209**

North West

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.001%	0.186%	0.095%	0.595%	1.887%	4.504%	6.190%	13.264%	44.341%	28.937%
73.2 - 146.5	0.000%	0.032%	2.488%	0.551%	2.119%	5.620%	10.730%	9.534%	18.538%	30.767%	19.620%
146.5 - 293	0.000%	0.059%	4.417%	0.600%	3.325%	7.653%	12.129%	9.089%	17.391%	25.644%	19.693%
293 - 439	0.000%	0.231%	6.019%	0.926%	3.704%	6.713%	10.301%	8.449%	17.245%	31.944%	14.468%
439 - 586	0.000%	0.105%	7.446%	0.787%	3.933%	4.510%	9.386%	7.027%	18.773%	31.253%	16.780%
586 - 732	0.000%	0.079%	9.444%	0.317%	5.079%	4.762%	11.032%	6.825%	17.857%	32.143%	12.460%
732 - 2,931	0.000%	0.379%	16.730%	0.852%	1.894%	5.271%	8.333%	8.649%	22.696%	29.482%	5.713%
2,931 - 14,654	0.000%	2.058%	41.975%	1.509%	3.018%	5.761%	9.191%	10.700%	15.364%	9.602%	0.823%
14,654 - 58,614	2.500%	6.923%	68.077%	0.000%	1.731%	4.038%	5.769%	9.808%	1.154%	0.000%	0.000%
58,614 - 293,071	10.638%	33.664%	50.307%	0.000%	0.000%	0.000%	3.593%	1.797%	0.000%	0.000%	0.000%
>293,071	16.667%	16.667%	66.667%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	10.811%	6.757%	43.243%	39.189%
73.2 - 146.5	0.000%	0.000%	1.246%	0.000%	0.000%	0.623%	0.623%	0.623%	9.034%	23.053%	64.798%
146.5 - 293	0.000%	0.000%	1.975%	0.000%	0.000%	0.000%	1.616%	3.770%	8.079%	26.032%	58.528%
293 - 439	0.000%	0.000%	0.904%	0.000%	0.000%	0.000%	0.602%	3.916%	10.241%	44.578%	39.759%
439 - 586	0.000%	0.000%	1.293%	0.000%	0.000%	1.724%	1.724%	3.879%	12.500%	63.362%	15.517%
586 - 732	0.000%	0.000%	3.922%	0.000%	0.000%	0.000%	5.882%	2.614%	12.418%	68.627%	6.536%
732 - 2,931	0.000%	0.277%	5.671%	0.000%	0.553%	1.107%	3.458%	3.458%	16.459%	65.698%	3.320%
2,931 - 14,654	0.000%	0.000%	25.911%	0.000%	0.000%	2.429%	9.717%	4.858%	36.437%	20.648%	0.000%
14,654 - 58,614	6.250%	0.000%	87.500%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	6.250%	0.000%
58,614 - 293,071	0.000%	0.000%	100.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
>293,071	0.000%	100.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MP	99.83%	41.85%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8. >24"	99.84%	45.94%	92.91%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7. >18-24"	99.84%	45.94%	92.91%	72.55%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. >12-18"	99.84%	45.94%	92.91%	29.74%	40.99%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. 10-12"	99.84%	45.94%	92.91%	9.93%	13.68%	33.38%	100.00%	0.00%	0.00%	0.00%	0.00%
4. 8-9"	99.84%	45.94%	92.91%	6.88%	9.49%	23.14%	69.33%	100.00%	0.00%	0.00%	0.00%
3. 6-7"	99.84%	45.94%	92.91%	5.12%	7.05%	17.21%	51.56%	74.37%	100.00%	0.00%	0.00%
2. 4-5"	99.84%	45.94%	92.91%	4.85%	6.68%	16.30%	48.83%	70.44%	94.71%	100.00%	0.00%
1. <=3"	99.84%	45.94%	92.91%	4.44%	6.11%	14.92%	44.68%	64.45%	86.66%	91.50%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	99.84%	45.93%	92.92%	6.07%	8.24%	18.65%	50.22%	65.94%	80.34%	70.82%	28.94%
73.2 - 146.5	99.84%	45.86%	93.05%	8.72%	11.27%	22.42%	50.60%	57.78%	65.09%	49.33%	20.44%
146.5 - 293	99.84%	45.80%	93.16%	9.82%	12.75%	23.46%	48.64%	53.51%	60.13%	45.68%	21.88%
293 - 439	99.84%	45.83%	93.10%	9.77%	12.31%	21.84%	47.21%	54.56%	62.57%	48.55%	16.85%
439 - 586	99.84%	45.72%	93.29%	9.09%	11.58%	19.84%	46.95%	55.56%	65.78%	50.45%	16.62%
586 - 732	99.84%	45.62%	93.46%	9.42%	12.60%	19.80%	46.74%	52.38%	61.92%	47.20%	11.76%
732 - 2,931	99.84%	45.55%	93.59%	7.51%	9.43%	19.08%	44.04%	53.01%	61.14%	42.00%	5.20%
2,931 - 14,654	99.84%	45.23%	94.15%	7.55%	8.80%	15.82%	32.45%	33.37%	32.30%	12.74%	0.63%
14,654 - 58,614	99.85%	44.66%	88.46%	3.39%	4.67%	7.63%	12.05%	9.95%	1.60%	0.61%	0.00%
58,614 - 293,071	99.90%	57.73%	60.20%	0.45%	0.62%	1.51%	4.52%	1.68%	0.00%	0.00%	0.00%
>293,071	99.91%	58.49%	54.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	24.9	6.0	44.1	2.3	4.5	10.3	23.4	14.5	28.0	52.6	44.7
p/pd KWh	0.012	0.006	0.024	0.019	0.029	0.031	0.028	0.014	0.022	0.050	0.110

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0122	0.0029	0.0225	0.0012	0.0024	0.0058	0.0139	0.0090	0.0179	0.0352	0.0317	**0.1546**
73.2 - 146.5	0.0122	0.0029	0.0225	0.0017	0.0032	0.0069	0.0140	0.0079	0.0145	0.0245	0.0224	**0.1327**
146.5 - 293	0.0122	0.0029	0.0225	0.0019	0.0037	0.0072	0.0135	0.0073	0.0134	0.0227	0.0240	**0.1312**
293 - 439	0.0122	0.0029	0.0225	0.0019	0.0035	0.0067	0.0131	0.0075	0.0139	0.0242	0.0185	**0.1268**
439 - 586	0.0122	0.0029	0.0226	0.0017	0.0033	0.0061	0.0130	0.0076	0.0146	0.0251	0.0182	**0.1273**
586 - 732	0.0122	0.0029	0.0226	0.0018	0.0036	0.0061	0.0129	0.0072	0.0138	0.0235	0.0129	**0.1194**
732 - 2,931	0.0122	0.0028	0.0227	0.0014	0.0027	0.0059	0.0122	0.0072	0.0136	0.0209	0.0057	**0.1073**
2,931 - 14,654	0.0122	0.0028	0.0228	0.0014	0.0025	0.0049	0.0090	0.0046	0.0072	0.0063	0.0007	**0.0744**
14,654 - 58,614	0.0122	0.0028	0.0214	0.0006	0.0013	0.0024	0.0033	0.0014	0.0004	0.0003	0.0000	**0.0461**
58,614 - 293,071	0.0122	0.0036	0.0146	0.0001	0.0002	0.0005	0.0012	0.0002	0.0000	0.0000	0.0000	**0.0326**
>293,071	0.0122	0.0037	0.0132	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0290**

West Midlands

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.006%	0.875%	0.008%	0.167%	1.922%	5.761%	11.093%	18.719%	41.959%	19.490%
73.2 - 146.5	0.000%	0.034%	3.226%	0.057%	0.621%	5.135%	10.435%	13.171%	19.264%	31.443%	16.613%
146.5 - 293	0.000%	0.062%	4.935%	0.000%	0.682%	5.170%	11.618%	13.962%	16.789%	29.138%	17.644%
293 - 439	0.000%	0.035%	7.009%	0.000%	1.168%	4.460%	13.770%	11.929%	14.584%	31.469%	15.575%
439 - 586	0.000%	0.329%	8.235%	0.000%	0.329%	4.084%	13.307%	8.564%	14.229%	37.022%	13.900%
586 - 732	0.000%	0.442%	9.735%	0.000%	0.553%	4.425%	8.296%	8.850%	17.810%	36.615%	13.274%
732 - 2,931	0.000%	0.268%	14.954%	0.000%	0.345%	5.100%	9.701%	12.155%	18.520%	31.212%	7.745%
2,931 - 14,654	0.000%	1.386%	40.381%	0.000%	1.906%	4.679%	11.265%	10.572%	19.237%	9.185%	1.386%
14,654 - 58,614	0.000%	3.106%	64.596%	1.863%	0.000%	3.106%	14.286%	8.075%	3.106%	1.863%	0.000%
58,614 - 293,071	0.000%	8.571%	88.571%	0.000%	0.000%	2.857%	0.000%	0.000%	0.000%	0.000%	0.000%
>293,071	33.333%	66.667%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	6.000%	18.000%	14.000%	40.000%	22.000%
73.2 - 146.5	0.000%	0.000%	0.702%	0.000%	0.000%	0.702%	4.211%	9.825%	19.298%	31.930%	33.333%
146.5 - 293	0.000%	0.000%	1.646%	0.412%	0.000%	1.646%	7.819%	6.173%	15.021%	30.864%	36.420%
293 - 439	0.000%	0.000%	3.162%	0.000%	0.000%	5.534%	9.486%	7.905%	17.787%	28.854%	27.273%
439 - 586	0.000%	0.000%	5.000%	0.000%	0.000%	0.000%	2.500%	6.875%	23.750%	41.875%	20.000%
586 - 732	0.000%	0.000%	4.211%	0.000%	0.000%	3.158%	9.474%	6.316%	20.000%	47.368%	9.474%
732 - 2,931	0.000%	0.202%	5.640%	0.000%	0.404%	0.808%	10.103%	9.699%	22.832%	46.473%	3.839%
2,931 - 14,654	0.000%	0.000%	31.304%	0.870%	0.000%	3.478%	11.304%	11.304%	32.174%	9.565%	0.000%
14,654 - 58,614	0.000%	0.000%	84.615%	0.000%	0.000%	0.000%	0.000%	7.692%	7.692%	0.000%	0.000%
58,614 - 293,071											
>293,071											

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MP	98.26%	41.44%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8. >24"	98.26%	41.68%	99.60%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7. >18-24"	98.26%	41.68%	99.60%	64.34%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. >12-18"	98.26%	41.68%	99.60%	32.55%	50.59%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. 10-12"	98.26%	41.68%	99.60%	18.28%	28.42%	56.17%	100.00%	0.00%	0.00%	0.00%	0.00%
4. 8-9"	98.26%	41.68%	99.60%	16.05%	24.95%	49.32%	87.80%	100.00%	0.00%	0.00%	0.00%
3. 6-7"	98.26%	41.68%	99.60%	14.37%	22.33%	44.15%	78.60%	89.51%	100.00%	0.00%	0.00%
2. 4-5"	98.26%	41.68%	99.60%	13.87%	21.56%	42.61%	75.86%	86.40%	96.52%	100.00%	0.00%
1. <=3"	98.26%	41.68%	99.60%	12.33%	19.17%	37.89%	67.46%	76.83%	85.83%	88.93%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	98.26%	41.68%	99.59%	14.49%	22.51%	44.16%	75.19%	79.08%	75.95%	59.29%	19.49%
73.2 - 146.5	98.26%	41.69%	99.57%	15.29%	23.68%	45.62%	72.26%	70.58%	64.23%	46.58%	17.01%
146.5 - 293	98.26%	41.70%	99.56%	15.06%	23.36%	44.92%	71.22%	68.19%	61.21%	46.16%	19.00%
293 - 439	98.26%	41.68%	99.59%	14.99%	23.30%	43.95%	70.14%	64.62%	59.25%	45.99%	16.58%
439 - 586	98.27%	41.83%	99.33%	14.14%	21.98%	42.86%	69.78%	65.57%	63.88%	50.43%	14.52%
586 - 732	98.27%	41.89%	99.24%	14.05%	21.84%	42.20%	67.50%	67.28%	65.59%	49.25%	12.85%
732 - 2,931	98.27%	41.80%	99.39%	13.66%	21.23%	41.25%	65.75%	63.75%	58.14%	40.23%	7.04%
2,931 - 14,654	98.28%	42.19%	98.73%	11.01%	16.76%	30.33%	46.23%	39.81%	32.45%	10.20%	1.02%
14,654 - 58,614	98.30%	43.02%	97.30%	6.61%	7.87%	15.56%	23.11%	12.82%	5.38%	1.55%	0.00%
58,614 - 293,071	98.41%	46.47%	91.42%	0.93%	1.45%	2.86%	0.00%	0.00%	0.00%	0.00%	0.00%
>293,071	100.00%	51.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	23.3	5.3	35.7	1.8	3.0	11.6	24.7	15.6	20.4	38.0	23.1
p/pd KWh	0.015	0.008	0.023	0.009	0.009	0.019	0.024	0.015	0.021	0.051	0.099

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0146	0.0033	0.0230	0.0013	0.0021	0.0082	0.0181	0.0118	0.0157	0.0304	0.0192	**0.1477**
73.2 - 146.5	0.0146	0.0033	0.0230	0.0014	0.0022	0.0085	0.0174	0.0105	0.0133	0.0239	0.0168	**0.1348**
146.5 - 293	0.0146	0.0033	0.0230	0.0013	0.0022	0.0084	0.0171	0.0102	0.0127	0.0236	0.0188	**0.1352**
293 - 439	0.0146	0.0033	0.0230	0.0013	0.0022	0.0082	0.0168	0.0096	0.0123	0.0236	0.0164	**0.1313**
439 - 586	0.0146	0.0033	0.0229	0.0013	0.0021	0.0080	0.0168	0.0098	0.0132	0.0258	0.0143	**0.1321**
586 - 732	0.0146	0.0033	0.0229	0.0013	0.0021	0.0079	0.0162	0.0100	0.0136	0.0252	0.0127	**0.1298**
732 - 2,931	0.0146	0.0033	0.0230	0.0012	0.0020	0.0077	0.0158	0.0095	0.0121	0.0206	0.0069	**0.1167**
2,931 - 14,654	0.0146	0.0033	0.0228	0.0010	0.0016	0.0057	0.0111	0.0059	0.0067	0.0052	0.0010	**0.0790**
14,654 - 58,614	0.0146	0.0034	0.0225	0.0006	0.0007	0.0029	0.0055	0.0019	0.0011	0.0008	0.0000	**0.0541**
58,614 - 293,071	0.0146	0.0037	0.0211	0.0001	0.0001	0.0005	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0402**
>293,071	0.0149	0.0041	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0190**

Scotland

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.091%	2.975%	0.142%	0.325%	2.526%	6.573%	9.827%	24.417%	43.644%	9.479%
73.2 - 146.5	0.000%	0.827%	6.215%	0.047%	0.973%	4.549%	8.480%	14.381%	21.760%	33.735%	9.034%
146.5 - 293	0.000%	1.432%	9.679%	0.149%	1.760%	4.444%	9.664%	14.631%	21.312%	29.172%	7.755%
293 - 439	0.000%	1.690%	12.716%	0.121%	1.529%	4.306%	8.089%	10.865%	22.455%	29.296%	8.934%
439 - 586	0.000%	2.170%	13.465%	0.255%	1.659%	5.871%	8.679%	11.934%	20.613%	29.738%	5.616%
586 - 732	0.000%	1.894%	14.955%	0.000%	1.695%	7.079%	9.073%	13.360%	19.442%	28.514%	3.988%
732 - 2,931	0.000%	3.695%	19.734%	0.185%	1.515%	5.765%	8.500%	11.345%	19.845%	27.273%	2.143%
2,931 - 14,654	0.000%	9.040%	45.763%	0.377%	1.318%	4.143%	6.026%	12.618%	11.299%	9.416%	0.000%
14,654 - 58,614	0.794%	24.197%	60.492%	0.000%	2.420%	2.420%	4.033%	4.033%	1.613%	0.000%	0.000%
58,614 - 293,071	2.222%	35.100%	60.171%	0.000%	0.000%	0.000%	0.000%	2.507%	0.000%	0.000%	0.000%
>293,071	28.571%	35.714%	35.714%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	9.259%	0.000%	0.000%	1.852%	5.556%	11.111%	12.963%	25.926%	33.333%
73.2 - 146.5	0.000%	0.000%	5.952%	0.000%	0.595%	1.786%	4.167%	9.524%	15.476%	35.714%	26.786%
146.5 - 293	0.000%	0.581%	4.942%	0.000%	0.000%	1.453%	6.686%	4.070%	12.209%	32.558%	37.500%
293 - 439	0.000%	1.732%	6.926%	0.000%	0.000%	2.597%	5.195%	6.061%	13.853%	29.437%	34.199%
439 - 586	0.000%	1.010%	8.081%	0.505%	0.505%	2.525%	10.101%	8.081%	9.596%	49.495%	10.101%
586 - 732	0.000%	0.575%	9.770%	0.000%	0.000%	2.299%	8.046%	6.322%	22.414%	34.483%	16.092%
732 - 2,931	0.000%	0.826%	12.121%	0.275%	0.964%	0.826%	7.438%	8.264%	23.140%	38.154%	7.989%
2,931 - 14,654	0.000%	1.660%	33.195%	0.000%	0.000%	3.320%	6.224%	16.183%	22.407%	14.523%	2.490%
14,654 - 58,614	0.000%	6.452%	77.419%	3.226%	0.000%	0.000%	9.677%	0.000%	3.226%	0.000%	0.000%
58,614 - 293,071	0.000%	50.000%	50.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
>293,071	0.000%	0.000%	100.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP	90.12%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MP	94.52%	51.56%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8. >24"	94.40%	53.98%	69.43%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7. >18-24"	94.40%	53.98%	69.43%	26.06%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. >12-18"	94.40%	53.98%	69.43%	11.29%	43.33%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. 10-12"	94.40%	53.98%	69.43%	8.15%	31.27%	72.16%	100.00%	0.00%	0.00%	0.00%	0.00%
4. 8-9"	94.40%	53.98%	69.43%	6.22%	23.88%	55.10%	76.36%	100.00%	0.00%	0.00%	0.00%
3. 6-7"	94.40%	53.98%	69.43%	6.04%	23.19%	53.53%	74.18%	97.14%	100.00%	0.00%	0.00%
2. 4-5"	94.40%	53.98%	69.43%	5.75%	22.08%	50.95%	70.61%	92.47%	95.19%	100.00%	0.00%
1. <=3"	94.40%	53.98%	69.43%	5.16%	19.82%	45.74%	63.40%	83.02%	85.46%	89.78%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	94.40%	53.95%	70.28%	6.13%	23.00%	52.33%	69.02%	81.77%	74.06%	52.15%	9.48%
73.2 - 146.5	94.37%	54.20%	70.77%	6.11%	23.28%	51.50%	65.15%	74.34%	61.83%	42.24%	9.42%
146.5 - 293	94.35%	54.38%	71.34%	6.13%	22.98%	49.26%	62.40%	69.34%	57.07%	38.24%	9.83%
293 - 439	94.34%	54.46%	71.96%	5.80%	21.84%	47.22%	59.72%	67.99%	59.31%	39.63%	11.50%
439 - 586	94.33%	54.60%	71.93%	6.07%	22.18%	47.69%	58.55%	65.07%	55.21%	37.83%	6.19%
586 - 732	94.34%	54.41%	72.59%	5.78%	22.17%	47.87%	57.55%	63.69%	52.93%	34.69%	5.86%
732 - 2,931	94.29%	54.96%	72.83%	5.56%	20.55%	44.20%	54.73%	60.84%	51.63%	32.65%	3.39%
2,931 - 14,654	94.13%	56.41%	77.40%	3.79%	13.40%	28.49%	33.98%	36.55%	23.90%	10.89%	0.50%
14,654 - 58,614	93.52%	62.75%	72.58%	1.83%	5.88%	8.48%	8.70%	5.39%	1.77%	0.00%	0.00%
58,614 - 293,071	92.94%	68.99%	63.13%	0.16%	0.61%	1.40%	1.94%	2.54%	0.00%	0.00%	0.00%
>293,071	93.20%	67.01%	44.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	12.5	9.5	28.4	0.6	1.3	5.4	15.7	8.3	15.9	18.5	29.2
p/pd KWh	0.0097	0.0123	0.0299	0.0084	0.0052	0.0097	0.0214	0.0098	0.0213	0.0362	0.3208

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0092	0.0067	0.0210	0.0005	0.0012	0.0051	0.0148	0.0080	0.0158	0.0189	0.0304	**0.1310**
73.2 - 146.5	0.0092	0.0067	0.0211	0.0005	0.0012	0.0050	0.0140	0.0073	0.0132	0.0153	0.0302	**0.1240**
146.5 - 293	0.0092	0.0067	0.0213	0.0005	0.0012	0.0048	0.0134	0.0068	0.0122	0.0138	0.0315	**0.1210**
293 - 439	0.0092	0.0067	0.0215	0.0005	0.0011	0.0046	0.0128	0.0066	0.0127	0.0143	0.0369	**0.1270**
439 - 586	0.0092	0.0067	0.0215	0.0005	0.0011	0.0046	0.0126	0.0064	0.0118	0.0137	0.0199	**0.1080**
586 - 732	0.0092	0.0067	0.0217	0.0005	0.0011	0.0046	0.0123	0.0062	0.0113	0.0126	0.0188	**0.1050**
732 - 2,931	0.0092	0.0068	0.0218	0.0005	0.0011	0.0043	0.0117	0.0059	0.0110	0.0118	0.0109	**0.0950**
2,931 - 14,654	0.0091	0.0070	0.0231	0.0003	0.0007	0.0028	0.0073	0.0036	0.0051	0.0039	0.0016	**0.0640**
14,654 - 58,614	0.0091	0.0077	0.0217	0.0002	0.0003	0.0008	0.0019	0.0005	0.0004	0.0000	0.0000	**0.0430**
58,614 - 293,071	0.0090	0.0085	0.0189	0.0000	0.0000	0.0001	0.0004	0.0002	0.0000	0.0000	0.0000	**0.0370**
>293,071	0.0090	0.0083	0.0134	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0310**

Southern

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.008%	1.440%	0.114%	0.662%	3.108%	7.261%	7.701%	24.457%	42.562%	12.687%
73.2 - 146.5	0.000%	0.043%	7.676%	0.210%	1.159%	6.426%	11.533%	10.765%	23.110%	31.487%	7.589%
146.5 - 293	0.000%	0.105%	8.878%	0.056%	2.290%	7.950%	14.054%	11.111%	21.948%	27.617%	5.991%
293 - 439	0.000%	0.115%	10.263%	0.461%	1.568%	7.542%	15.244%	12.431%	22.809%	24.054%	5.512%
439 - 586	0.000%	0.462%	12.552%	0.000%	1.175%	7.137%	14.903%	12.510%	20.277%	27.120%	3.862%
586 - 732	0.000%	0.350%	12.263%	0.000%	4.905%	8.549%	8.970%	11.633%	25.088%	25.578%	2.663%
732 - 2,931	0.000%	0.317%	17.106%	0.342%	2.538%	8.102%	15.203%	12.494%	22.450%	19.937%	1.513%
2,931 - 14,654	0.132%	2.532%	39.806%	0.000%	2.391%	8.580%	10.127%	17.864%	13.925%	4.642%	0.000%
14,654 - 58,614	0.685%	19.134%	76.536%	0.000%	0.000%	0.000%	0.911%	1.822%	0.000%	0.911%	0.000%
58,614 - 293,071	8.000%	36.316%	50.842%	0.000%	0.000%	2.421%	0.000%	0.000%	0.000%	2.421%	0.000%
>293,071	66.667%	33.333%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	3.109%	0.000%	0.000%	0.000%	2.073%	4.145%	18.653%	53.368%	18.653%
73.2 - 146.5	0.000%	0.000%	2.681%	0.000%	0.699%	2.098%	5.594%	12.121%	21.562%	35.664%	19.580%
146.5 - 293	0.000%	0.000%	3.141%	0.000%	0.419%	0.942%	6.283%	11.099%	21.466%	33.508%	23.141%
293 - 439	0.000%	0.000%	4.969%	0.000%	1.159%	1.622%	4.636%	6.490%	20.861%	41.257%	19.006%
439 - 586	0.000%	0.000%	5.858%	0.000%	0.000%	0.837%	6.695%	5.858%	22.594%	47.699%	10.460%
586 - 732	0.000%	0.676%	4.730%	0.000%	2.703%	1.351%	8.784%	12.162%	14.189%	47.297%	8.108%
732 - 2,931	0.000%	0.145%	12.011%	0.000%	1.015%	2.029%	4.784%	10.147%	23.918%	39.283%	6.668%
2,931 - 14,654	0.000%	2.225%	27.019%	0.000%	0.000%	2.670%	7.565%	12.460%	34.711%	13.350%	0.000%
14,654 - 58,614	0.000%	7.580%	72.208%	0.000%	2.527%	2.527%	0.000%	5.053%	10.106%	0.000%	0.000%
58,614 - 293,071	0.000%	100.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
>293,071	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MP	100.00%	64.28%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8. >24"	100.00%	71.17%	80.70%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7. >18-24"	100.00%	71.17%	80.70%	49.98%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. >12-18"	100.00%	71.17%	80.70%	28.08%	56.17%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. 10-12"	100.00%	71.17%	80.70%	21.10%	42.21%	75.15%	100.00%	0.00%	0.00%	0.00%	0.00%
4. 8-9"	100.00%	71.17%	80.70%	15.45%	30.90%	55.01%	73.21%	100.00%	0.00%	0.00%	0.00%
3. 6-7"	100.00%	71.17%	80.70%	15.19%	30.39%	54.10%	72.00%	98.35%	100.00%	0.00%	0.00%
2. 4-5"	100.00%	71.17%	80.70%	14.93%	29.87%	53.17%	70.76%	96.65%	98.28%	100.00%	0.00%
1. <=3"	100.00%	71.17%	80.70%	7.45%	14.90%	26.53%	35.30%	48.22%	49.03%	49.89%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	100.00%	71.07%	80.98%	15.05%	29.89%	52.03%	65.10%	79.01%	72.51%	48.90%	12.69%
73.2 - 146.5	100.00%	70.67%	82.11%	15.41%	30.43%	52.13%	61.06%	67.98%	58.12%	35.68%	8.07%
146.5 - 293	100.00%	70.62%	82.25%	15.82%	31.55%	52.35%	59.81%	63.33%	53.09%	31.73%	7.33%
293 - 439	100.00%	70.53%	82.51%	15.77%	30.71%	51.93%	59.78%	62.15%	51.09%	28.96%	6.73%
439 - 586	100.00%	70.47%	82.68%	14.98%	29.98%	51.45%	59.67%	62.10%	50.99%	31.05%	4.42%
586 - 732	100.00%	70.48%	82.63%	16.27%	32.55%	49.57%	55.48%	63.55%	52.74%	29.16%	3.17%
732 - 2,931	100.00%	70.12%	83.63%	15.27%	29.96%	49.18%	55.75%	57.30%	45.87%	23.63%	2.21%
2,931 - 14,654	100.00%	69.29%	85.97%	11.36%	22.73%	36.92%	39.03%	40.07%	23.49%	6.12%	0.00%
14,654 - 58,614	100.00%	62.17%	71.12%	0.99%	1.98%	2.97%	3.54%	3.89%	1.92%	0.69%	0.00%
58,614 - 293,071	100.00%	63.48%	46.73%	0.89%	1.78%	3.17%	1.46%	2.00%	2.03%	2.07%	0.00%
>293,071	100.00%	5.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	31.5	22.4	70.6	2.0	5.6	10.7	35.4	23.4	48.1	67.0	65.7
p/pd KWh	0.0097	0.0106	0.0294	0.0049	0.0067	0.0074	0.0201	0.0113	0.0259	0.0554	0.2208

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.01	£0.01	£0.02	£0.03	£0.03	**£0.144**
73.2 - 146.5	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.01	£0.01	£0.02	£0.02	£0.02	**£0.121**
146.5 - 293	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.01	£0.01	£0.01	£0.02	£0.02	**£0.115**
293 - 439	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.01	£0.01	£0.01	£0.02	£0.01	**£0.111**
439 - 586	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.01	£0.01	£0.01	£0.02	£0.01	**£0.107**
586 - 732	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.01	£0.01	£0.01	£0.02	£0.01	**£0.103**
732 - 2,931	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.01	£0.01	£0.01	£0.01	£0.00	**£0.096**
2,931 - 14,654	£0.01	£0.01	£0.03	£0.00	£0.00	£0.00	£0.01	£0.00	£0.01	£0.00	£0.00	**£0.069**
14,654 - 58,614	£0.01	£0.01	£0.02	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	**£0.040**
58,614 - 293,071	£0.01	£0.01	£0.01	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	**£0.033**
>293,071	£0.01	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	**£0.010**

Northern

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.00%	0.00%	0.11%	0.05%	0.08%	0.57%	4.87%	8.53%	21.42%	52.71%	11.66%
73.2 - 146.5	-	0.04%	1.06%	0.46%	0.81%	3.11%	10.53%	14.11%	21.61%	38.72%	9.54%
146.5 - 293	-	0.02%	2.26%	0.78%	2.26%	4.78%	11.39%	14.85%	20.06%	32.49%	11.11%
293 - 439	-	0.06%	2.44%	0.95%	0.95%	4.70%	9.13%	13.59%	21.09%	36.76%	10.32%
439 - 586	-	0.05%	3.32%	0.42%	2.95%	3.38%	13.03%	12.61%	18.46%	37.39%	8.39%
586 - 732	-	0.43%	3.76%	1.88%	3.07%	4.27%	11.70%	18.45%	19.64%	28.86%	7.94%
732 - 2,931	-	0.11%	8.23%	0.72%	2.19%	4.15%	14.39%	12.69%	24.13%	27.79%	5.59%
2,931 - 14,654	-	1.97%	48.91%	1.31%	1.31%	6.11%	8.73%	14.85%	11.79%	5.02%	-
14,654 - 58,614	-	1.61%	19.65%	-	-	8.70%	8.70%	43.80%	17.55%	-	-
58,614 - 293,071	6.25%	8.27%	26.19%	-	-	29.64%	-	29.64%	-	-	-
>293,071	42.86%	28.57%	28.57%	-	-	-	-	-	-	-	-

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.00%	0.00%	0.11%	0.05%	0.08%	0.57%	4.87%	8.53%	21.42%	52.71%	11.66%
73.2 - 146.5	-	0.04%	1.06%	0.46%	0.81%	3.11%	10.53%	14.11%	21.61%	38.72%	9.54%
146.5 - 293	-	0.02%	2.26%	0.78%	2.26%	4.78%	11.39%	14.85%	20.06%	32.49%	11.11%
293 - 439	-	0.06%	2.44%	0.95%	0.95%	4.70%	9.13%	13.59%	21.09%	36.76%	10.32%
439 - 586	-	0.05%	3.32%	0.42%	2.95%	3.38%	13.03%	12.61%	18.46%	37.39%	8.39%
586 - 732	-	0.43%	3.76%	1.88%	3.07%	4.27%	11.70%	18.45%	19.64%	28.86%	7.94%
732 - 2,931	-	0.11%	8.23%	0.72%	2.19%	4.15%	14.39%	12.69%	24.13%	27.79%	5.59%
2,931 - 14,654	-	1.97%	48.91%	1.31%	1.31%	6.11%	8.73%	14.85%	11.79%	5.02%	-
14,654 - 58,614	-	1.61%	19.65%	-	-	8.70%	8.70%	43.80%	17.55%	-	-
58,614 - 293,071	6.25%	8.27%	26.19%	-	-	29.64%	-	29.64%	-	-	-
>293,071	42.86%	28.57%	28.57%	-	-	-	-	-	-	-	-

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	-	-	-	-	-	-	-	-	-	-
IP	90.79%	100.00%	-	-	-	-	-	-	-	-	-
MP	95.29%	47.24%	100.00%	-	-	-	-	-	-	-	-
8. >24"	95.33%	47.08%	95.17%	100.00%	-	-	-	-	-	-	-
7. >18-24"	95.33%	47.08%	95.17%	54.74%	100.00%	-	-	-	-	-	-
6. >12-18"	95.33%	47.08%	95.17%	26.88%	49.11%	100.00%	-	-	-	-	-
5. 10-12"	95.33%	47.08%	95.17%	13.65%	24.93%	50.77%	100.00%	-	-	-	-
4. 8-9"	95.33%	47.08%	95.17%	11.71%	21.39%	43.56%	85.80%	100.00%	-	-	-
3. 6-7"	95.33%	47.08%	95.17%	10.74%	19.61%	39.94%	78.67%	91.70%	100.00%	-	-
2. 4-5"	95.33%	47.08%	95.17%	10.40%	19.00%	38.69%	76.19%	88.81%	96.85%	100.00%	-
1. <=3"	95.33%	47.08%	95.17%	5.19%	9.49%	19.32%	38.05%	44.35%	48.36%	49.93%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	95.33%	47.08%	95.17%	10.29%	18.72%	37.96%	73.65%	80.16%	78.11%	58.53%	11.66%
73.2 - 146.5	95.32%	47.10%	95.19%	11.62%	20.40%	39.94%	72.64%	72.58%	63.99%	43.83%	9.92%
146.5 - 293	95.32%	47.09%	95.26%	12.57%	21.60%	39.52%	68.78%	67.16%	57.47%	38.89%	11.87%
293 - 439	95.32%	47.11%	95.23%	12.02%	20.37%	39.56%	69.42%	70.55%	62.89%	43.50%	10.88%
439 - 586	95.32%	47.11%	95.27%	12.29%	21.76%	38.85%	70.47%	67.77%	59.95%	43.20%	8.64%
586 - 732	95.31%	47.28%	94.99%	13.60%	21.83%	38.52%	68.50%	66.84%	54.28%	36.35%	8.30%
732 - 2,931	95.32%	47.16%	95.43%	11.89%	20.65%	38.36%	68.36%	65.00%	57.54%	34.45%	5.47%
2,931 - 14,654	95.24%	48.04%	95.70%	8.57%	13.62%	25.47%	38.87%	35.43%	22.40%	7.99%	0.77%
14,654 - 58,614	95.25%	47.94%	94.69%	10.40%	18.99%	38.68%	59.69%	58.86%	17.72%	-	-
58,614 - 293,071	96.68%	33.87%	57.75%	8.00%	14.62%	29.76%	18.39%	20.42%	-	-	-
>293,071	98.63%	14.51%	9.85%	-	-	-	-	-	-	-	-

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	22.4	7.4	36.2	0.7	2.9	7.3	18.6	20.3	25.3	59.6	22.4
p/pd KWh	0.011	0.008	0.020	0.003	0.008	0.010	0.014	0.015	0.021	0.069	0.011

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0103	0.0037	0.0188	0.0003	0.0015	0.0039	0.0106	0.0120	0.0163	0.0404	0.0249	**0.1427**
73.2 - 146.5	0.0103	0.0037	0.0188	0.0004	0.0016	0.0041	0.0105	0.0109	0.0134	0.0302	0.0211	**0.1250**
146.5 - 293	0.0103	0.0037	0.0188	0.0004	0.0017	0.0040	0.0099	0.0101	0.0120	0.0268	0.0253	**0.1231**
293 - 439	0.0103	0.0037	0.0188	0.0004	0.0016	0.0040	0.0100	0.0106	0.0131	0.0300	0.0232	**0.1258**
439 - 586	0.0103	0.0037	0.0188	0.0004	0.0017	0.0039	0.0102	0.0101	0.0125	0.0298	0.0184	**0.1200**
586 - 732	0.0103	0.0038	0.0188	0.0004	0.0018	0.0039	0.0099	0.0100	0.0113	0.0251	0.0177	**0.1129**
732 - 2,931	0.0103	0.0037	0.0189	0.0004	0.0017	0.0039	0.0099	0.0097	0.0120	0.0238	0.0117	**0.1059**
2,931 - 14,654	0.0103	0.0038	0.0189	0.0003	0.0011	0.0026	0.0056	0.0053	0.0047	0.0055	0.0016	**0.0597**
14,654 - 58,614	0.0103	0.0038	0.0187	0.0003	0.0015	0.0039	0.0086	0.0088	0.0037	-	-	**0.0597**
58,614 - 293,071	0.0104	0.0027	0.0114	0.0003	0.0012	0.0030	0.0027	0.0031	-	-	-	**0.0347**
>293,071	0.0106	0.0012	0.0019	-	-	-	-	-	-	-	-	**0.0137**

Wales and West

Table 3.1 Connection Probability Tables

Directly Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.060%	0.867%	0.073%	0.483%	2.447%	5.380%	8.094%	18.034%	46.237%	18.325%
73.2 - 146.5	0.000%	0.372%	4.772%	0.129%	1.249%	6.540%	10.509%	10.787%	18.343%	34.907%	12.392%
146.5 - 293	0.000%	0.389%	7.264%	0.165%	1.495%	6.040%	9.807%	11.408%	18.625%	31.999%	12.809%
293 - 439	0.000%	0.626%	10.330%	0.313%	0.939%	4.348%	7.443%	10.852%	19.200%	34.504%	11.443%
439 - 586	0.000%	0.809%	10.952%	0.311%	1.431%	4.543%	6.783%	13.255%	16.988%	35.905%	9.023%
586 - 732	0.000%	1.220%	12.093%	0.915%	1.931%	5.691%	10.467%	10.976%	17.175%	30.996%	8.537%
732 - 2,931	0.000%	2.064%	18.090%	0.526%	1.740%	3.966%	9.106%	11.534%	17.726%	30.959%	4.290%
2,931 - 14,654	0.000%	9.609%	42.527%	0.000%	0.000%	0.000%	0.000%	0.000%	18.861%	8.007%	0.712%
14,654 - 58,614	0.000%	17.677%	60.957%	0.000%	0.000%	0.000%	0.000%	0.000%	1.257%	4.399%	0.000%
58,614 - 293,071	2.083%	31.250%	55.506%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	4.464%	0.000%
>293,071	54.545%	45.455%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

CSEP Connected Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	0.000%	0.000%	0.000%	0.000%	4.950%	0.000%	7.921%	2.970%	12.871%	20.792%	50.495%
73.2 - 146.5	0.000%	0.000%	0.930%	0.000%	0.000%	0.930%	4.419%	7.209%	11.628%	17.907%	56.977%
146.5 - 293	0.000%	0.168%	2.680%	0.000%	1.005%	0.000%	2.178%	3.853%	10.385%	24.288%	55.444%
293 - 439	0.000%	0.000%	3.021%	0.000%	0.000%	0.906%	2.719%	6.949%	6.949%	30.816%	48.640%
439 - 586	0.000%	0.833%	3.750%	0.000%	0.000%	1.250%	1.250%	4.167%	12.500%	52.917%	23.333%
586 - 732	0.000%	0.000%	2.717%	0.000%	4.348%	0.000%	1.630%	1.630%	9.783%	65.761%	14.130%
732 - 2,931	0.000%	0.000%	4.563%	0.000%	0.000%	0.380%	2.535%	4.309%	17.617%	60.456%	10.139%
2,931 - 14,654	0.000%	1.261%	14.262%	0.000%	0.000%	0.000%	7.565%	12.609%	30.261%	34.043%	0.000%
14,654 - 58,614	0.000%	0.000%	42.857%	0.000%	0.000%	0.000%	23.810%	19.048%	4.762%	9.524%	0.000%
58,614 - 293,071	0.000%	38.887%	61.113%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
>293,071	0.000%	95.775%	4.225%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

Table 3.2 System Utilisation Matrices

Combined Loads

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
LTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP	87.74%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MP	93.87%	46.36%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
8. >24"	92.87%	55.55%	70.86%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
7. >18-24"	92.87%	55.55%	70.86%	19.90%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
6. >12-18"	92.87%	55.55%	70.86%	7.67%	38.52%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%
5. 10-12"	92.87%	55.55%	70.86%	2.75%	13.81%	35.86%	100.00%	0.00%	0.00%	0.00%	0.00%
4. 8-9"	92.87%	55.55%	70.86%	1.97%	7.57%	18.46%	71.60%	100.00%	0.00%	0.00%	0.00%
3. 6-7"	92.87%	55.55%	70.86%	1.51%	7.57%	19.66%	49.77%	76.59%	100.00%	0.00%	0.00%
2. 4-5"	92.87%	55.55%	70.86%	1.41%	7.11%	18.46%	51.47%	71.90%	93.88%	100.00%	0.00%
1. <=3"	92.87%	55.55%	70.86%	1.37%	6.87%	17.85%	49.77%	69.51%	90.76%	96.68%	100.00%

Table 3.3 Percentage of Total Capacity Utilised within each Pressure Tier

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
0 - 73.2	92.88%	55.49%	71.07%	1.84%	8.69%	21.22%	53.07%	67.89%	78.07%	63.96%	18.33%
73.2 - 146.5	92.90%	55.28%	71.96%	2.30%	10.67%	24.42%	51.54%	58.83%	62.87%	47.64%	13.67%
146.5 - 293	92.92%	55.07%	72.62%	2.28%	10.43%	23.15%	50.10%	58.25%	61.82%	46.59%	15.61%
293 - 439	92.94%	54.92%	73.25%	2.11%	8.96%	20.96%	48.54%	59.35%	63.86%	48.94%	15.33%
439 - 586	92.93%	54.97%	73.25%	2.19%	9.33%	20.77%	47.87%	59.38%	61.50%	47.93%	10.55%
586 - 732	92.93%	55.02%	73.29%	2.95%	10.57%	21.51%	47.26%	54.10%	57.84%	44.31%	9.24%
732 - 2,931	92.94%	54.87%	74.17%	2.22%	8.81%	19.16%	45.53%	53.99%	57.34%	42.22%	5.47%
2,931 - 14,654	92.83%	55.69%	75.97%	1.00%	4.72%	12.10%	33.70%	39.09%	34.19%	13.85%	0.57%
14,654 - 58,614	92.59%	57.69%	75.98%	0.69%	3.24%	8.28%	14.04%	15.33%	6.03%	4.79%	0.00%
58,614 - 293,071	93.06%	54.58%	54.98%	0.27%	1.31%	3.37%	4.84%	4.30%	3.31%	3.52%	0.00%
>293,071	96.88%	25.42%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Table 3.4 Target Revenue from Cost Allocation & Pressure Tier Unit Cost

	LDZ Tiers			LPS Sub Tiers							
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1
Target Revenue (£m)	28.2	16.0	33.2	0.4	2.9	4.3	15.2	26.8	21.5	38.8	30.4
p/pd KWh	0.015	0.015	0.026	0.012	0.021	0.013	0.019	0.026	0.019	0.043	0.124

Table 3.5 LDZ System Target Costs

Consumption Band (MWh/a)	LDZ Tiers			LPS Sub Tiers								
	LTS	IPS	MPS	LP8	LP7	LP6	LP5	LP4	LP3	LP2	LP1	Total
0 - 73.2	0.0140	0.0085	0.0187	0.0002	0.0018	0.0027	0.0099	0.0179	0.0148	0.0274	0.0227	**0.1386**
73.2 - 146.5	0.0140	0.0084	0.0189	0.0003	0.0022	0.0031	0.0096	0.0155	0.0119	0.0204	0.0169	**0.1214**
146.5 - 293	0.0140	0.0084	0.0191	0.0003	0.0022	0.0030	0.0093	0.0153	0.0117	0.0200	0.0194	**0.1227**
293 - 439	0.0140	0.0084	0.0192	0.0003	0.0019	0.0027	0.0091	0.0156	0.0121	0.0210	0.0190	**0.1232**
439 - 586	0.0140	0.0084	0.0192	0.0003	0.0020	0.0027	0.0089	0.0156	0.0117	0.0206	0.0131	**0.1164**
586 - 732	0.0140	0.0084	0.0192	0.0004	0.0022	0.0028	0.0088	0.0142	0.0110	0.0190	0.0115	**0.1115**
732 - 2,931	0.0140	0.0084	0.0195	0.0003	0.0019	0.0025	0.0085	0.0142	0.0109	0.0181	0.0068	**0.1049**
2,931 - 14,654	0.0140	0.0085	0.0199	0.0001	0.0010	0.0016	0.0063	0.0103	0.0065	0.0059	0.0007	**0.0748**
14,654 - 58,614	0.0140	0.0088	0.0199	0.0001	0.0007	0.0011	0.0026	0.0040	0.0011	0.0021	0.0000	**0.0544**
58,614 - 293,071	0.0140	0.0083	0.0144	0.0000	0.0003	0.0004	0.0009	0.0011	0.0006	0.0015	0.0000	**0.0417**
>293,071	0.0146	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0185**