

## **Structure of Electricity Distribution Charges**

### **RWEnpower response to Ofgem consultation paper (235/04)**

#### **Proposed DNO Charging Methodology Statements**

##### **Generally**

1. We are pleased that Ofgem is now consulting on the drafts of the new charging methodology statements that will be published pursuant to the new Licence Conditions agreed with the Distribution Companies. SLC 4 and SLC 4B oblige DNOs to publish Connection and Use of System charging methodologies that will apply to charges made from 1 April 2005. This is a welcome step forward in the regulation of distribution prices that have remained opaque in their construction for far too long.
2. Whilst we appreciate the efforts Distributors have made in creating their draft statements we are concerned that they may require a little more development before they can be judged entirely fit for purpose. The acid test of the effectiveness of the methodology statements is to be found in the Licence, namely that the User should be able to make a reasonable estimate of the charges that will be incurred in the connection of new load or for using the distribution system. In making this assessment the User should be confident that the charging methodologies will facilitate the economic operation of the system, facilitate competition in the generation and supply of electricity, and reflect the costs the User imposes on the system.
3. Distribution charges can be as much as one third of the final price seen by a customer. In determining the price at which a customer can be supplied a supplier will need to forecast the anticipated cost over the duration of the term of the customer's contract, which could be up to three years. The supplier will therefore need to be able to form a view of the likely movement in distribution charges so that he can compete effectively in making an offer for supply. Thus it is important that the method by which the charges are set should be sufficiently transparent so that the Supplier can not only estimate the liability in the year of account, but can also take an informed view of the likely level of charge in subsequent years.
4. Similarly a prospective investor in distributed generation needs to be able to assess the most economic location for the investment. In doing this he must be able to make an informed judgement on the future level of charges for use of the distribution network in order to assess the financial viability of the scheme. The ability to predict DUoS costs more accurately should diminish some of the risk associated with such projects and thus reduce the associated cost of capital.
5. To make an accurate prediction of costs requires that the model and revenue constraints utilised by the distributor are available to the User. This has been the case for a number of years in transmission charging where an integral part of the methodology statement is the DCLF model used by NGT to compute the nodal charges for generation and load. The charging

statements for distribution will not be effective in meeting the Licence criteria until they too are accompanied by the relevant models.

6. Facilitating the prediction of charges for making new connections will also enhance competition in the provision of connections. The draft Connection Charging Methodology Statements that have been presented are generally those that existed previously as connection charging statements with an additional section to cover the methodology by which charges are set. They contain a considerable amount of information on the procedures that must be followed in applying for a connection and a number of useful examples have been added of the costs that might be incurred in making a connection under different circumstances. However, it would be helpful if there was more clarity in how connection costs are to be distinguished from use of system.
7. A newly connecting party will generally pay for the costs of connection by way of an initial capital contribution. Distributors then appear to treat connection assets as either required for sole use, or shared with other users but designated to specific customers often in relation to the capacity utilised. The boundary between connection and use of system is thus one of construction rather than representing a physical point on the system, as is the case for transmission assets.
8. This creates the methodological difficulty that assets deemed to be for “connection” will be charged on a different basis to those in the infrastructure. This distinction will also impact the “second comer” issue since whether the first comer is due a rebate will depend on how the assets were categorised at the outset. The connection and use of system charging methodologies need to make clear the principles that will apply either side of this notional boundary.
9. A general criticism of the methodology statements is that they do not include a clear exposition of the principles on which they are based. The declared objective of the charges is to reflect underlying costs. However, the statements need to be clear as to what type of costs are being reflected. These could be accounting, future, incremental economic, or some other definition. The appropriate category will depend upon the purpose of the charge but this should be made clear in a preamble to the Statements. Our specific comments on the issues raised in the consultation document are given below.
10. The Charging Methodologies also contain a number of ambiguities. If the Distributor has discretion as to whether or not a charge will apply the supplier and customer will be unclear what the cost will be<sup>1</sup>. Furthermore if the DNO retains an option to alter the charge as part of their methodology then this will effectively circumvent the Ofgem approval process.
11. A general concern is that no Independent Distribution Network Operator (IDNO) has yet produced a draft charging methodology statement. There are indications that at least one IDNO is proposing employing a wholly

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<sup>1</sup> “Where availability charges apply, YEDL will calculate these from the Agreed Capacity (AC). Where the customer’s Maximum Demand/Export is higher than the AC, YEDL may calculate availability charges using the highest Maximum Demand/Export raised”. CE Electric, UoSM paragraph 6.1:

different basis for its UoS charging methodology. If this were permitted then it would have major ramifications for suppliers. We would hope that Ofgem will encourage distributors to strive for commonality in their approaches rather than permit experimental or maverick approaches.

## **Distribution**

### *Use of System Models*

12. There can be no substitute for publication of the models so that Users can better understand both the data assumptions and the computational algorithms that are applied. The description of the demand UoS models that are to be employed is sufficiently vague so as to leave the reader unclear as to exactly how the charges will be calculated<sup>2</sup>. From the description that has been given it is clear that the charging models are essentially allocation models based on the original DRM. Broadly there would seem to be two approaches. Either the DRM cost is calculated each year from updated costs and load research data, and then scaled to produce the regulated income, or historic cost proportions are maintained such that each customer group provides the same proportion of overall revenue from one year to the next.
13. We have concerns about both approaches properly reflecting the costs of using the distribution system. For distribution it is important that the costs reflect the location of locating demand both in terms of geography and voltage. Whilst in many instances there may be little geographical flexibility, I&C customers will always have options in terms of the connection voltage. Ensuring that charges are reflective of the incremental costs of locating load at any point must encourage the economic development of the system.
14. We would suggest a more appropriate approach should separate the incremental costs of using the system from the overall level of revenue required to deliver the price control. Distribution charges would then comprise two elements. The first would indicate the cost of locating a load at a particular point on the system. The second should reflect the additional revenue a distributor is permitted to earn in order to meet the overall price control. The second part could then be directed at the least price elastic customers in accordance with economic theory.

### *Yardsticks*

15. Tariff yardstick calculations are helpful in making transparent the costs that should be borne by each group of customers. Separate yardsticks should exist for each group of customers that impose similar costs on the system. The structure of the tariff will need to reflect the metering arrangements and whether the customer is sensitive to pricing signals, but should not influence the choice of yardstick for a given load. Generally we would support the view

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<sup>2</sup>: *"The charging model has been developed in such a way as to maintain cost reflectivity between customer groups, where a customer group is a collection of Line Loss Factor Classes (LLFCs), or tariffs, with similar characteristics (e.g. Domestic Unrestricted, Domestic Restricted etc. The allocation of specific tariffs to customer groups is at the discretion of YEDL."* CE Electric UoS SM paragraph 3.2.3

that tariff yardsticks should be based on the long run incremental costs that a particular load imposes on the system.

16. DUoS charges usually comprise three components, a standing charge, a service capacity charge, and a commodity rate, depending upon the type of metering installed. The more sophisticated the metering the more accurately the tariff structure can reflect the underlying costs. Although the service capacity charge is invariably presented as a use of system charge, because it reflects the costs of the system at the voltage of connection it is in effect a connection charge expressed as an annuity of the cost of attributed assets as opposed to sole use assets. The charging methodology should make clear the basis on which the service capacity charge has been derived since the principles employed are likely to be different to those for the other elements of the DUoS charge.
17. Once set by negotiation the service capacity is fixed and thus the charge does not provide a pricing signal unless it is exceeded. Thus the ability of the service capacity charge to influence or reflect the costs associated with low power factors is extremely limited. Charging arrangements for excess service capacity vary widely between distributors. It is difficult to understand why there should be such variation since the costs and risks should be similar amongst all distributors. In some instances there is even variation within a distributor's area<sup>3</sup>. These differences create considerable additional costs for suppliers in that billing systems have to be able to cope with all variations. A uniform approach would reduce costs and thus benefit customers.
18. The switch from a capacity cost to a commodity rate is assumed to reflect the increased responsibility the peak demand of a load will have at the lower voltages. The rationale for moving from capacity to commodity charges should be clearly described in the methodology statement.

#### *Tariff Disturbance*

19. Since all suppliers bear the same DUoS charges in any area such charges competition will ensure that these charges are passed through to customers. Smoothing changes in underlying costs therefore has very little purpose other than to give suppliers time to respond to the cost movements that will apply to all.
20. More important than any smoothing algorithm is that sufficient notice be given of a proposed change in the methodology and its likely consequence for charges. A step change in the price of copper might well affect the costs of certain types of assets and thus elements of the DRM model. Users should be as capable of predicting movements in underlying costs as distributors, but need to be aware of the proportion of the charge represented by the cost of copper in this example if an accurate prediction of a movement in the charge is to be made. If smoothing is used then its purpose should be

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<sup>3</sup> *"Where the capacity requested is exceeded then charges for the exceeded capacity will be either levied for a period of twelve months or charged at a rate of 3 times the normal rate for the month the capacity was exceeded. The actual approach is detailed in the charging statement and is dependent on the capabilities of the billing system."* SP Distribution/SP Manweb UoS paragraph 3.1.4:

made explicit<sup>4</sup>. Otherwise it is difficult to construe it as anything other than cross subsidy.

### *Reactive power charges for Demand*

21. Additional costs imposed by poor power factors on the system should be borne by the connected party that imposes those costs. However, unlike active power, reactive power does not move unidirectionally across the system. Instead it “shuttles” between various parts of the distribution system. As we have noted above a kVA charge for the service capacity required by a customer may only provide an incentive for improved power factor at the time of connection and not necessarily in operational timescales.
22. The charging methodology statement should lay out the basis for any separate reactive power charge that is to be levied, and also how such charges are to be applied (i.e. whether through peak charging arrangements or metered kVAh). For a customer to be clear as to whether it is economic to invest in power factor correction equipment the charge must be both cost reflective and transparent. For the system to be managed economically the reactive power charges must demonstrably reflect the costs imposed<sup>5</sup>.

### *EHV Assets*

23. The consultation document refers to transitional arrangements for EHV connected customers following the introduction of a single charging methodology from 1 April 2005. It would appear that a number of DNOs currently employ a different methodology for charging EHV customers for the 132kV system as compared to customers connected at lower voltages. Some of the DNO proposals suggest transitional arrangements in the event that the new arrangements cause a step change in the DUoS charges for EHV customers.
24. We are concerned that such an approach will create unnecessary disturbance in the DUoS charges for these customers. In the first place there may be a confusion between charging for EHV assets as if they were use of system when in reality they are performing a connection function. For example where a part of the EHV system has been dedicated to a specific user. In this case it may be wholly appropriate for the charge to be based on the historic costs of the assets (which may be the current practice), since this would be the opportunity cost to the customer of developing its own connection

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<sup>4</sup> *“Tariff disturbance can be occasioned for example by step changes in particular cost inputs to pricing models, and can often reflect differences in timing of contracts for network materials, rather than real changes in underlying long run costs. In the interests of price stability - and to ensure tariffs properly reflect long run costs - where the methodology indicates that disproportionate price changes are required, the changes may be introduced gradually over time.”* United Utilities UoS paragraph 3.11:

<sup>5</sup> *“An excess reactive unit charge per kVAh unit delivered to the exit point from the system. The excess reactive power charge provides a behavioural pricing signal to customers to improve their power factor. Reactive power charges are only applied to customers who have poor power factors.”* WPD UoSM

25. A second consideration is the change that is likely to occur when the DRM based charging arrangements are replaced by economic models. If there is a surplus of capacity on the 132kV system then this should be reflected in lower incremental costs than the DRM model might produce. Rather than face the disturbance that will ensue over the next few years by first increasing charges and then reducing them it may be better simply to freeze the present levels of charge until the economic models are developed. Especially if their introduction was on a phased basis starting with the 132kV.

#### *DuoS Rates and Parameters*

26. The Charging Statements contain a considerable amount of information concerning rates and associated parameters such as tariff class and line loss factors. It would significantly aid the transfer of these rates and parameters in to supplier systems if they could be presented in a common format and made available electronically.
27. A small number of distributors have indicated that they intend to leave Metering charges 'bundled' with their DUoS rates. Since metering is not part of the Distribution Price Control from April 2005 this would appear to be inappropriate and makes interpreting the rates more difficult. Again it would be helpful if the treatment across all DNOs was the same.
28. In some instances the Statements seek approval for a practice that would give the distributor discretion regarding the charge that might subsequently apply, but without stating the underlying principle. We would trust that Ofgem will not accept such proposals unless it is clear how the charge is to be derived and when it will apply.

### **Generation**

#### *Generator Use of System Models*

29. Generators connecting at 132kV in England & Wales are likely to display operating characteristics similar to those connected directly to the transmission system. Unless the charging models for generators connected at this voltage reflect the same principles as applied to transmission connected generation then there will be perversity in the relative economics of their operation and competition will be distorted. It is therefore important that similar principles to those employed for the transmission system are adopted for the 132 kV system as soon as practicable.
30. Virtually all of the methodologies provide little or no incentive for generators to seek connection to the distribution system at the most economic point, i.e. where the least amount of reinforcement is likely to be required, although in the case of SH-E this is mooted<sup>6</sup>. If the methodology is based on the costs of reinforcement, in line with the DRM for demand, this carries the risk of creating uneconomic investment. We should have expected the GDUoS methodology to produce a similar lifetime cost to the current deep connection

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<sup>6</sup> "The charging methodology may be refined in future to incorporate charges for such generators, to set different charges for different voltage levels and/or to set different GDUoS charges in different geographical areas." SH-E PDL UoS

charging arrangements. The lack of any variation with location is a structural weakness that needs to be addressed.

31. For the schemes we have under active development we have observed that the proposed charging methodology will increase costs where no reinforcement is required, but decrease them when system expenditure is needed to accommodate the scheme. This illustrates the inevitable perversity of moving from a deep connection charging arrangement to a system of GDUoS with no locational element to the charge. In this context location should be by both voltage and geography. Employing a “high cost” reinforcement element in the tariff also provides no incentive for the DNO’s to consider more innovative and cost effective solutions when connecting distributed generation.
32. The methodology statements need to clarify that a second comer to a site will pay a proportion of the initial connection costs in the same manner that the second comer to a demand site would. In this respect there should be no distinction between generation and demand, other than that a generator could have the potential to reduce a reinforcement costs. The methodology statements should also explain how the “high cost” reinforcement assets that were paid for by a first comer are treated in the event that there is a second comer. This should be on the same principles as for ordinary connection costs. Furthermore there should be consistency in the period for which the second comer rules will apply, and the rationale for the period adopted.
33. All the statements have limits on the reinforcement costs that are paid by the generator under the apportionment rules. In all but two distribution areas this value is set at £200/kW. However in the Scottish HydroElectric area this value is much lower at £100/kW. There is no explanation for these arbitrary values, or for the substantial disparity between the two limits. The principles for the threshold should be clearly stated within the methodology. If it is intended to surcharge those schemes with exceptionally high costs of connection then, based on our experience in developing schemes, the threshold chosen appears too low. We would expect the threshold to be set at such a level that only, say, 5% of schemes are subjected to the “high cost” charge.
34. It is unclear from the Statements how the rule relating to “high-cost” reinforcement assets should be applied, and whether the charge would include capitalised O&M costs. None of the examples in the statements illustrates the “high cost” reinforcement rule. Where it would probably be of most relevance the Scottish HydroElectric DNOs Statements positively ignores it. The associated O&M costs will only be incurred if the assets remain in use and thus they should be incorporated in the GDUoS charge. We would agree with Ofgem’s view (paragraph 5.31) that any reinforcement works should be subject to apportionment, even if they are contestable.

#### *Generation Reactive Power Charges*

35. Ofgem has expressed the view that for demand a connected party should be encouraged to operate their connection near unity power factor to ensure efficient use of the system (para. 5.10). However, this principle can not be extended to generation since the Grid Code requires generators to be capable of operating across a wide range of power factors. Furthermore if

distribution systems are to become more actively managed as the amount of distributed generation increases then maintaining a unity power factor may prove detrimental to the efficient management of the system.

36. We would suggest that reactive power charging for generators needs further consideration. The approach should contemplate a symmetrical arrangement such that generation can be rewarded for supporting voltage when this is appropriate. However, we do not believe it appropriate that GDUoS charges should be based on kVA if the power factor is consequent upon an instruction from the system operator, or a condition of the connection agreement.
37. Double wound induction generators, such as those commonly used in wind farms, will tend to import reactive power when producing active power. Such generation will usually be provided with power factor correction equipment under the terms of the connection agreement. It is inevitable that this equipment will occasionally fail from time to time. Whilst it may be appropriate to reflect the costs to the system when such failures occur to provide an incentive for its repair, such failures will be transitory and are unlikely to lead to additional investment by the DNO.
38. Additional costs to the system of poor power factor will generally depend upon the level of output. Wind farms spend a significant amount of time operating at outputs below their maximum rated capacity. Thus the imposition of poor power factor charges should also be related to the level of active power output at times of poor power factor.

#### *Tariff Smoothing*

39. The stability of GDUoS charges from year to year is an important factor when assessing future costs and thus predicting the financial viability of a scheme. This will be important for its funding prospects. However, such stability should not be achieved by arbitrary intervention from the distributor<sup>7</sup>. Instead it should be achieved by the GDUoS charges being subject to a term arrangement. This is effectively the outcome of the current deep connection charging arrangement.

#### *Transitional arrangements*

40. Most statements are silent on how the transition between the present arrangements, the interim arrangements and any future arrangements are to be managed. If any aspect of the methodology is subject to review in the medium term then the Statements should make this explicit.
41. Given the transitory nature of the interim charging arrangements we believe that it would be inappropriate to link the new charging basis with the Connection Date. This will create significant uncertainty for the financial viability of schemes under development where the connection dates have yet to be finalised. We would suggest that Ofgem should make clear that all schemes where the connection offer is accepted before 1<sup>st</sup> April 2005 should

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<sup>7</sup> "In recognition of the expected greater volatility with generator export tariffs, in the period to 2010, annual price increases will be restricted to the greater of 10% per annum or £1/kVA (0.5p/kWh for non-half-hourly metered generators)." S P Distribution/SP Manweb UoS

be subject to the existing charging arrangements irrespective of the date that the scheme is eventually connected. At least one distributor has indicated that it intends to adopt this practice.

### *Tie-in Arrangements*

42. We would support the suggestion in paragraph 5.23 that the tie-in period for generation should generally be the same as for demand at, say, 5 years. This would be consistent with the suggestion above of using a term arrangement as a method of removing volatility in charges in the early years of a scheme.

## **Connection Charging Methodology Statements**

### *Form and Content of Statements*

43. Many of the reservations expressed in the first part of this response apply to the Connection Charging Methodology Statements. We would favour the separation of the Charging Methodology Statements from the procedural requirements for establishing a new connection. We would imagine that the former document would require formal approval by Ofgem, whereas the latter document would be for administrative guidance. Of course any fees attached to the application process, such as assessment and design charges, should be expressly stated in the Statement together with the underlying principles.
44. The consultation document suggests there is a fair degree of consistency in the description of the determination of connection charges in each distributor's area. At first sight this might appear comforting, but in reality it is merely a reflection of the blandness of the Statements. In some instances the wording in the Statement would benefit from the arithmetic or algebra being incorporated within the text. For example when describing how O&M is to be capitalised the derivation of the percentage on-cost to the capital component of the charge could be illustrated algebraically from the assumed life of the asset, the annual O&M charge as a percentage of the initial asset value, and the discount rate that has been assumed.
45. Some aspects also seem to be contrary to the Licence objectives. For example where reinforcement works that are chargeable as connection give rise to the recovery of assets that have a residual value, or a potential for a residual value, then no credit appears to be given against this value<sup>8</sup>. This would seem contrary to the principles of cost reflection.
46. More generally we are concerned at the lack of consistency between DNOs in respect of specific aspects of the Statements. For example the range of % on-costs for capitalised O&M belies what must be significant differences in the assumptions concerning annual O&M costs and asset lives. There is also no consistency on whether wayleaving can be a contestable cost.

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<sup>8</sup> *"When assets are removed from the distribution network to facilitate reinforcement works, the written-down value of the removed assets is held by United Utilities for the benefit of all customers irrespective of whether the assets are reused or not."* United Utilities CSM paragraph 6.22:

### *Tariff Support Allowances*

47. Ofgem has indicated that it expects to see the removal of tariff support allowances from connection charges from 1 April 2005. It is suggested that this has the objective of improving cost transparency and encouraging competition in the provision of connections. As discussed above it would be helpful if the Charging Statements could make explicit the interaction between the service capacity charge in the DUoS tariff and the connection charge that is required at the time of connection<sup>9</sup>.
48. Some of the examples that have been provided by DNOs seem to imply that there could be double counting. For example it would appear that the developer of a housing estate may be required to pay for all the LV mains and service cables, and yet the cost of these will also be recovered in the DUoS charge. We would commend the approach taken by Central Networks in providing typical costs of specific assets.

### **Process Governance**

49. We would agree with the sentiment in the consultation paper that to encourage economic efficiency there is a need to further develop the emerging distribution charging methodologies such that these can be based on economic principles rather than the classic DRM. We would suggest that the implementation of any revision to the charging methodology that is seen as better meeting the Licence objectives should not be constrained by the period of the price review but should be implemented progressively. However, there should be sufficient notice of impending change such that Suppliers can manage the changes in an orderly fashion.
50. Whilst the Charging Methodology Statements are in a state of flux we would hope that the Distribution Charging Structures ISG will continue to act as a source of expertise for Ofgem to draw on as policy is developed. It may be appropriate to contemplate adding further individuals who can bring specific experience and knowledge from backgrounds other than the electricity industry.
51. In addition to the ISG we would also hope that Ofgem could facilitate the establishment of a Distribution Charging Methodology Forum (DCMF) that will enable Users to raise issues concerning the application of distribution connection and UoS charges and their methodologies. Such a forum would also enable DNOs to promulgate and explain forthcoming changes and act as force for harmonising their approaches. Consistency and coherence between charging and other distribution commercial issues might be furthered if the DCMF was an adjunct to the Distribution Commercial Forum (DCF). This would also mitigate against an unnecessary proliferation of industry meetings.

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<sup>9</sup> *"The cost associated with the reinforcement of the existing distribution network assets will be split. A share will be attributed to the connecting party based on their requirements as part of their Connection Charge and the remainder will normally be recovered through use of system tariffs."* SP Distribution/SP Manweb CMS, Paragraph 2.3: