Electricity Distribution connection and use of system charges for demand customers and generators – RWE npower's response to Ofgem's open letter

Generally

1. Under the terms of the Distribution Use of System Agreements suppliers are obliged to pay use of system charges as levied, provided these are in accordance with the Charging Statements. For some customer groups these charges can comprise as much as one third of the retail price. Accordingly the prediction of likely movements in distribution use of system charges is crucial for the financial security of supply companies. If use of system charges are uncertain or unpredictable then suppliers face considerable regulatory risk in their businesses and the margins will inevitably be raised to accommodate these risks.

2. The ability to predict movements in DUoS charges requires that the manner in which charges are derived should be wholly transparent. This in turn implies that the models from which they are determined should be available to users so that charges for different customer groups can be replicated and an informed view taken on the likely movement in relevant costs and cost relativity. The principles on which the models are derived should be common across all distributors otherwise particular customers or groups of customers may be advantaged in some areas compared to those in others. This would be both discriminatory and also undermine competition.

3. Although DUoS charges for non half-hourly customers are based on the assumptions underpinning the eight standard profiles, the combination of line loss factors and tariff regimes combine to create around 7000 settlement profiles. For efficiency of handling such a vast number of settlement profiles and their associated DUoS charges it would aid the process if scheduled DUoS charges and their associated parameters were presented in a standard format and were available electronically.

Use of System Charging Methodologies

Introduction

4. The introduction to the use of system methodology should describe the legal basis for the charges, and also provide a general description of the methods and principles on which the charges are based. It should be clear whether charges are intended to be reflective of costs that are historic, based on modern equivalent assets, or marginal to the established asset base. It would also be helpful for the introduction to explain the origin of the regulated asset base and how it is likely to change in future years, such as the average life of the assets and their permitted rate of depreciation.

5. Repetition of the relevant parts of the Licence requirements would be generally useful. As suggested these should include: -
   - The charging methodology objectives,
   - The change process for revision to charges, and
   - Definitions of terms used in the methodology statement, as well as
   - The security standard that charges are designed to support

6. Given that the DUoSA is a bilateral agreement it may also be helpful to replicate the principles on which charges are to be levied. These principles should make clear which party has liability for these charges, especially for sites that have specific charges or where distributed generation is also located.

Demand use of system models

7. As noted above transparency of the method by which charges are derived is essential. Methodology Statements should also include access to the charging models so that charges can be replicated and likely movements investigated under various scenarios.

8. The growth of distributed generation argues for the basis of the DUoS charging models to be brought into line with that used for deriving transmission use of system charges. That is charges should be derived from "economic" models that reflect the incremental costs (or savings) of connecting generation or load at any point on the system as well as generating a revenue that will maintain the capital investment that has been made in the system.

9. Whilst a move to an economic basis of charging rather than the allocation models that are currently used may represent a significant change to the basis of use of system charges a phased introduction that can be predicted would create the least disturbance for users. We would suggest that serious consideration be given to embracing from 1 April 2005 a charging model for the 132kV system that is similar to the transmission ICRP model.

10. Most substantial sources of distributed generation will be connected at this voltage and the approach thus has the obvious advantage of achieving convergence in use of system charges between major transmission and distribution connected generating facilities. It would further provide an enduring alternative to the proposed interim small generators' subsidy that arises from the discriminatory treatment of 132kV connected generation in Scotland to that in E&W. The DCLF model presents possibilities for extending the principles of ICRP to distribution voltages that were not apparent in the distance related travelling salesman model previously used for deriving transmission charges.

Calculation of Yardsticks

11. If allocation models are to be used for determining charges at lower voltages for an interim period then these must have a common basis across all distribution companies. The 500 MW distribution reinforcement model appears to be the most widely employed and has a logical expression in tariff yardsticks. Once again transparency in the derivation of the yardsticks is paramount. Thus the source from which demand estimation coefficients, coincidence factors, and annuity factors have been calculated should be specified. This further implies that the load research on which these factors have been based should also be in the public domain so that trends can be determined and forecasts of future movements made.

12. The use of system charging methodology should contain a model form of calculation for loss factors. When incorporated in the use of system models these will inevitably be averaged across a range of prospective customers. However, the methodology should make clear that the approach to determining the loss factors should be consistent between the averages incorporated in the 500 MW model and those used for settlement purposes.

Treatment of EHV connected customers

13. The principles for deriving charges for EHV connected customers should be the same as those employed for all other classes of customer. Two aspects may differentiate the calculation of DUoS tariffs at these voltages and thus indicate the appropriateness of site specific charges.

    - First, the 500 MW model, or its equivalent may average the assumed assets to service the load such that it is no longer representative of the costs that are incurred for a site.

    - Secondly the assets needed to supply the load may include a significant quantity of connection assets where the charging methodology may be distinct for that employed for use of the system. This aspect is addressed further in the section on connection charging methodologies.

    These considerations might argue for site specific rather than tariff based charges, but if this is the case then the methodology should make clear the criteria on which the distinction is made.

14. Where site specific charges are employed then these should be transparent to the rest of the market to facilitate competition in the provision of supplies to these sites. At present site specific charges are either "agreed" with the customer or advised to the extant supplier, or advised to the customer and passed to the supplier as a variation to the DUOSA. The interpretation employed appears to vary between distributors. Publication of the charges would effectively remove this confusion.

Special arrangements and non-standard terms

15. The principles on which charges for low power factors are made must be clearly described. At present there appears to be a significant divergence in both principle and practice between distributors in this matter. The alleged basis for charging for poor power factors is that it imposes costs on the system of additional distribution capacity and additional losses. Reactive power will naturally "shuttle" between different parts of the system so the effect of the poor power factor at any specific location is not entirely obvious. Whilst poor power factors will impose additional capacity costs at the voltage of connection, the suggestion that a low power factor imposes costs further up the system needs careful consideration. In any event the costs that can be attributed to poor power factors should be capped by the cost of installing local compensation.

16. Charges for exceeding agreed supply capacities vary widely between individual distributors. It would significantly reduce the costs of servicing these customers if distributors could align the charging practices for exceeding an agreed supply capacity. The diversity of arrangements makes comprehensive billing arrangements difficult to implement. In some cases, for example where the ability to vary the supply capacity is a function of the age of the connection, the supplier can do no more than retrospectively vary the charge often to the annoyance of the customer. The methodology statement should make clear the principles on which charges for exceeding the agreed service capacity will be made.

Generation Use of System

Generator use of system models

17. We noted above that the relative economics of connecting at 132 kV could be properly compared to a connection at 275 or 400 kV if the basis for DUoS charging for generators connected at 132 kV was an economic model akin to that used by the System Operator for transmission. Over time we would expect such models to be applied to lower voltages such that economic locational signals could appropriately influence the siting of distributed generation. Models should be capable of not only demonstrating the different costs consequent upon geographic location, but also the credit that a generator connected to a particular part of the network might bring.

18. Our understanding is that it is Ofgem's intention that there should be freedom for a distributor to contract directly with a generator for use of the system, or with an off-taking supplier. In either event these parties could be different to the supplier that was providing electricity to the site. The methodology statements need to make clear how the various metered quantities of active and reactive power attributable to the relevant contracted parties will be measured. As we have noted elsewhere the existing Codes of Metering Practice would seem to be inadequate in this respect.

Inclusion of NGT exit charges in GDUoS charges

19. The treatment of NGT exit (connection) charges must be clearly indicated together with the associated principles. It would seem appropriate to include these in GDUoS charges only to the extent that the transmission system is required to support the distributed generator. Generally if the generation supports the distribution system then the GDUoS should be reduced or even become a credit. In either case the principle of the consequent treatment of cost or benefit should be clearly described in the methodology.

Volatility in GDUoS charges

20. The prospect of volatile GDUoS will contribute significantly to the financial uncertainty of distributed generation schemes, and thus raise the associated cost of capital. It is therefore important that the methodology statement describes how stability in charging arrangements is to be achieved, albeit without detracting from providing economic signals for siting. Caps that can be revised at 3 months notice can hardly be described as "caps". The issue needs careful consideration, but inevitably introducing stability to GDUoS charges will mean that other system users will shoulder the risk of the cost movements that contribute to GDUoS uncertainty. In RPZs it may be appropriate for the DNO to assume these risks in return for a higher rate of return on its investment.

Treatment of microgeneration

21. Small generation operating at relatively low load factors located on a site where there is also a significantly greater installed load would seem unlikely to contribute additional system costs provided the relevant technical requirements are met. However, the criteria in terms of the ratio of generation to load, generator capacity, voltage of connection, and fault level at which costs would be anticipated and thus charges expected to apply needs to be clearly articulated. Such criteria should not relate to any specific technology.

Existing generation

22. The methodology statements must clearly explain the distinction that will apply to existing generation that is connected to the distribution system and has paid "deep" connection charges. Ofgem has indicated that such generation will not be liable to GDUoS until April 2010 at the earliest. It needs to be made explicit how aspects such as plant extensions, the sharing of assets provided at the time of the connection, and the power factor of the output that is generated will be treated. Provisions will already cover some of these aspects in the extant connection agreement or operating agreement with the DNO.

Connection to the Distribution Networks

Connection Charging Methodologies

23. Whilst transparency of the DUoS charging methodology is essential for suppliers, so transparency in the connection charging methodology is essential so that developers can have confidence in both their estimation of costs and the timescales that will be needed to complete their projects. The principles on which connection charges should be based differ from use of system charges.

24. Use of system charges will be designed to recover the revenue permitted under the price control and be based either on an allocation model to ensure there is no preference or on an economic model to aid appropriate locational signals. Connection charges should reflect the costs of the assets that have been provided to make the connection. Thus they should be based on the historic costs of the connection assets and permit a reasonable rate of return on these assets. Such an approach also has the potential to encourage competition where the works are contestable since the basis will also be the basis on which a third party would assess its investment.

25. A difficulty with the present arrangements is that offers for connection invariably do not draw a clear distinction between charges for contestable and non-contestable works. Bundling of these charges, which is often the practice has the risk of inhibiting competition in the contestable arena. The charging methodology statement should include a clear statement of charges for non-contestable works and the principles on which they are based, which should generally be one of cost recovery subject to the costs being prudently incurred. They should also include a schedule of charges for specific items wherever this is possible.

26. Generally the existing statements purport to indicate the “basis” for charges but this is interpreted as the procedure that has to be followed to secure a connection together with illustrative examples of charges for non-contestable works. What needs to be made transparent is a description of the methodology that will be employed in the calculation of charges, and the treatment of any part of the adjacent system whose costs will be recovered through the DUoS charge.

Non-standard connections

27. It is unclear what circumstances would be treated as Non-standard connections. It would be helpful for these to be more fully described. One situation that might be envisaged is the provision of a connection with an enhanced level of security of supply, possibly by the provision of additional feeders. In such circumstances it is difficult to see why the treatment of the assets should be any different to those of a normal connection. Charges for the assets should relate to the cost of the assets installed. If a second user emerged who wished to share these assets then there should be a rebate to the first user to reflect that some of the costs of the assets were being borne by the second user.

Connection boundary

28. Our understanding is that there is now a common definition amongst DNOs of the boundary between connection and infrastructure assets. This boundary seems to be drawn at a notional point in the system at the voltage above the connection voltage. Common rules are apparently now adopted to cover reinforcement of the system brought about by the connection of new capacity (and generation?) and the contribution it makes to system fault levels.

29. Although helpful from a point of view of transparency, such rules appear at best empirical. The approach would seem to be create two types of connection asset. Local assets for the "sole use" for the load or generator, which may at some point in the future be shared (the second comer syndrome), and parts of the local system that have effectively been "reserved" for "joint use" by the customer. The use of economic models to derive DUoS (and especially GDUoS) charges might lead to a shallower connection boundary thus moving the second category of asset into the infrastructure. High cost generator connections might be a particular example of this situation. In order that the possible impact of this change can be considered the charging methodology must make clear the rationale for such rules and their economic basis.

30. In particular some explanation is required concerning the multiplier of 3 in the fault level formula. Historically there have been disputes with DNOs over the calculation of system fault levels and the associated permitted margins. The method of calculation needs to be explicit since increased fault levels will often trigger the reinforcement in the first place. The consequence of a second comer triggering reinforcement as a result of increased fault levels also needs clear articulation.

31. In general the use of transitional arrangements to move from the present position to more enduring arrangements will create uncertainty for developers. This may inhibit development or delay the start of renewable schemes if there is the prospect that more favourable arrangement may subsequently emerge. Accordingly for generation there may be merit in moving directly to an economic basis for GDUoS charges, and their consequent connection charges, at least for generation connected at higher system voltages.

Connection Charges

32. Once the connection assets have been clearly delineated the mechanics of the charge calculation should be straightforward in principle. Charges should comprise depreciation, O&M and a reasonable rate of return on the undepreciated asset value. However, the application of these simple principles should not be underestimated. The charging methodology statements must indicate the commercial life that has been assumed for the assets, how RPI is to be used to inflate the asset value if the rate of return is expressed in real terms, and the logic for the chosen rate of return. The statements should further deal with the calculation of termination amounts where a user abandons a site before sole use assets have been fully depreciated.

33. The wider use of termination amounts that recovered the cost of stranded assets (that would otherwise become a burden on other users) would appear the most appropriate way of dealing with the early closure of a site, or even speculative developments. Applying a rule concerning minimum take arrangements that will effectively become administered by the supplier where, for example, a supply capacity cannot be reduced for a set period has practical difficulties in that a new supplier is unaware of the age of the connection and thus the outstanding liability.

Second comer charges for reinforcement

34. The treatment of second comers, and the associated rationale, requires clear description. The approach should generally encourage the sharing of connection assets but also guard against a party being subjected to higher charges than he would pay as a sole user if the other party departs. Arrangements to “sell back” unwanted “joint use” connection capacity to a DNO and thus avoid reinforcement might also be contemplated.

O&M Charges

35. The open letter is unclear on the treatment of O&M charges. It appears to state that they have been abolished but then describes the replacement of site specific charges by standard O&M charges, albeit with a separate treatment of assets that have been provided at the request of the connected party and are additional to the normal connection specification. If this approach is to be taken then the usual approach would be to apply the O&M standard percentages to the asset value at the time of purchase (GAV) rather than the current asset value (NAV) as implied.

36. The capitalisation of O&M would appear inappropriate especially if these are interim arrangements. In addition to being a crude estimate of the actual cost burden likely to be incurred, it could also result in double counting when the enduring arrangements are adopted and the connection boundary made shallower.

Conclusion

37. Generally many of the issues raised by the Open Letter embrace detail that requires careful consideration. We should be happy to explain the views expressed above in greater detail if this is helpful. We would also note that the existing Connection Charging Statements could not reasonably be described as "Connection Charging Methodologies". Instead they describe procedure and practice. Where charges are mentioned they are notably lacking in any description of how they are derived. As the statements proclaim, they are a basis for charging not a charging methodology. We would suggest that they should not be viewed as a basis for discharging the obligation placed on the DNOs by the new Licence Condition 4.