E.ON UK plc
Westwood Way
Westwood Business Park
Coventry
CV4 8LG
eon-uk.com

Paul Jones
024 7642 4829

paul.jones@eon-uk.com

Grant McEachran
Head of Transmission Charging
Ofgem
70 West Regent Street
Glasgow
G2 2QZ

26 January, 2007

Dear Grant,

Charging arrangements associated with GB SQSS design variations based on customer requests – Regulatory Impact Assessment

Thank you for the opportunity to respond to the above consultation document. E.ON UK supports the principle of a discount to cover this situation. However, we are concerned that the chosen method for calculating the discount will lead to a higher level than is appropriate.

Our response to each of the questions is as follows:

Chapter 3: Question 1 - Do respondents have any views on the appropriateness and size of the discounts described?

As we mention above, we support the principle of providing a discount. Our concern though is that the proposed calculation of the discount overstates the reduction which should be provided.

Firstly, we would like to emphasise two areas where we are in strong agreement with National Grid.

The first of these is that the discount should apply to all stations which have opted for a non GBSQSS compliant design connection. It would be unduly discriminatory not to allow certain generators access to the discount purely on the basis of size. Therefore, this principle must be correct.

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Registered Office:
Westwood Way
Westwood Business Park
Coventry CV4 8LG

The second principle is that the discount should be removed should the generator subsequently receive a compliant connection, even if this is due to the connection of another generator. The SQSS is clear that a generator can opt for a non compliant connection design as long as it does not affect another generator's connection. We believe that this is an important principle which should continue to hold regardless of which generator connects first to the system. Therefore, if a non compliant connection is provided to a particular user, it should not affect the compliance of the connection of existing or subsequent users.

If a connection is compliant, then it should attract the relevant tariff in full. To do otherwise would be unduly discriminatory as users would be paying different amounts for the same standard of connection.

In terms of the construction of the discounts, we agree that discounts should be provided in respect of reduced circuit costs. However, we disagree with the methodology that has been devised to calculate this discount. The substation discount causes us more fundamental concerns. We will address each discount in turn.

The circuit discount

We agree with the proposal to calculate this discount by applying nodal security factors to single circuits. However, the methodology chosen overstates the level of discount which should be provided. We support National Grid's original approach which is to apply a security factor of 1 to that part of the locational charge which corresponds to the single circuit in question. Under this proposal, the remainder of the charge would have the GB wide security factor applied as normal.

National Grid has attempted to simplify this approach by calculating the discount to apply to the charge which would ordinarily apply to a compliant connection. However, there is a problem with the calculation chosen to achieve this. National Grid has assumed that the single circuit would have had a security factor of 2 applied to it, had it been SQSS compliant. However, this is not the case. It would presently have a security factor of 1.8 applied. Therefore, when National Grid calculates the difference in security factor in order to calculate the discount it arrives at a figure of 1 rather than the correct value of 0.8. Our workings to show this are contained in our last letter to National Grid on this issue and are replicated in Appendix 1 to this response.

The effect of this miscalculation is that this particular discount is overstated by 25%. We would support the discount calculated by applying the difference of 0.8 times the MWkm of the relevant single circuit as implied by National Grid's correct initial proposal.

The substation discount

We have concerns with the principle of the substation discount as it inconsistent with the present shallow methodology.

If a generator causes increased costs to be incurred on the system, it sees only a small proportion of these in its own TNUoS charges. That is because only 27% of the increase

is allocated to generators as a class and that the generator will only see a proportion of this amount. Therefore a generator with a 1% share of total generation capacity would only see 0.27% of the cost of substation costs which it "caused". If it caused a reduced amount of costs to be incurred it would see a similar proportioned change in its charges.

National Grid's proposal is to provide a discount which corresponds to 100% of the costs which are deemed "saved" by adopting a non compliant design. This inconsistent treatment provides a cross subsidy to the generator who receives the discount. We have provided a stylised numeric example to illustrate this in appendix 2 as part of our response to question 2 below.

In simple terms, all other users fund a proportion of any increase in costs, but it is being proposed that they do not benefit at all from any decreases.

An additional issue relates to the fact that the discount will be applied on a voltage specific basis. At present the residual tariff does not differ by voltage. Therefore, substation costs are smeared over all users equally regardless of the voltage at which they connect. If the discount is allocated on a voltage specific basis then a double benefit is achieved by those who have higher than average substation costs. Firstly, they benefit from the averaging and then are provided with a specific discount. Again, this distorts the costs so that specific generators are provided with an unfair advantage.

The two effects above are additive which means that the distortion will particularly favour those with discounts connecting at lower voltages.

Chapter 3: Question 2 - Do respondents wish to present any additional analysis that they consider would be relevant to assessing the proposal?

Yes.

Appendix 2 contains a stylised example to show how the application of a deep discount, as proposed with the substation discount, in connection with a shallow charging methodology distorts charges to provide too great a benefit. Indeed, it shows that the present methodology already automatically adjusts the charges to a generator to reflect any savings it provides in substation costs. This adjustment is equal and opposite to the adjustment caused by a similar increase in costs. Therefore, it is arguable that no further reduction in charges is appropriate as to provide a further discount for reductions in cost alone would create an asymmetry in the methodology and provided a cross subsidy to specific generators. Indeed there is the distinct possibility that certain generators will be "paid" for the provision of a substation.

This overstating of the discount can also be illustrated by a simple comparison of the discounts and the residual tariff for generation. The present residual tariff is around £3.5/kW. The discount presently proposed for a 33kV connected generator is £3.12/kW. This means that a 33kV connected generator would receive just under a 90% discount on its residual tariff for a 50% reduction in the cost of its substation. This is obviously disproportionate, particularly so given that substation costs represent only a proportion of

the costs recovered through the residual tariff.

Additionally, we would wish to illustrate how significant the error in the circuit discount could become in relation to cable links.

In Appendix 3 to the Impact Assessment consultation an example is shown of how the discounts could work in practice. This shows that for a 14km length of 132kV overhead line in England & Wales or in southern Scotland would result in a £0.37/kW circuit discount. In this context a 25% overstating of the true discount (or 20% of this figure) of £0.074/kW does not seem too problematic. However, if this discount is calculated for a 132kV cable the higher expansion factor of 27.85 has to be accounted for, as compared with the 2.61 expansion factor of the overhead line. In this instance the error becomes £0.074 x (27.85/2.61) = £0.79/kW. Twice the level of cable would double the error.

Whilst the substation discount provides us with most concern, we also believe that the potential size of circuit discount error which could occur if this methodology is utilised in respect of offshore developments should be considered before a decision is made to implement the methodology change. This error would represent a direct cross subsidy to the generators concerned.

Chapter 3: Question 3 - Do respondents feel that the discounts available reflect the types and sizes of connections that have been built as well as those currently within the GB queue?

We do not believe that the discounts should be voltage specific.

Chapter 3: Question 4 - Do respondents consider that there are any aspects of the proposal that have not been fully assessed?

We fully support the proposal to use this discount in respect of offshore single circuit connections. However, we do not believe that the potential magnitude of the errors in these circumstances has been properly assessed nor the potential for this to provide significant cross subsidies to particular parties.

It parties are given too strong a signal to accept a lower standard of connection then this will not result in an economically efficient outcome.

The size of the potential overstatement of the substation discount will provide the most significant level of cross subsidy. However, the potential for the circuit discount to do so in certain circumstance is significant too.

Additionally, the effect on locational signals should be considered. Most of the lower voltage transmission assets are situated in areas where the locational signal is higher than average. Therefore, the discount will be most skewed towards generators in these areas due to the higher levels of discount for lower voltage connections. If higher discounts are systematically achieved in areas with a higher locational charge than other areas, then this will undermine the locational signal. This would be appropriate if

substation costs were recovered on a locational or voltage specific basis, but they are not. Instead they form part of a flat charge which is paid by all GB generators. Therefore, the signal is eroded inappropriately.

Chapter 4: Question 1 - Do respondents have any views on the additional analysis set out in this chapter?

As we stated in our response to Chapter 1 Question 1, we agree with National Grid's proposal to apply a discount to all circuits over 2km and to remove the discount should the connection subsequently become compliant. We do not agree with the view that the discount was provided in respect of historic factors and that to continue it for a subsequently compliant connection would therefore not constitute undue discrimination. The part of the methodology concerned works on the basis of forward looking investment costs, not historic. It would be inconsistent to abandon this principle for certain users and therefore unduly discriminatory.

We believe that the substation charge as presently structured would be unduly discriminatory. This is because the discount is provided on deep basis and at a voltage specific level. Any other connecting party whose connection design was lower than average for reasons other than non SQSS compliant design, would see a far smaller reduction in charge.

Chapter 4: Question 2 - Do respondents wish to present any additional analysis that they consider would be relevant to assessing the proposal?

No.

Chapter 4: Question 3 - Do respondents consider that there are any aspects of the proposal that have not been fully assessed?

No.

Chapter 5: Question 1 - Do respondents consider that we have appropriately outlined the key environmental impacts of the proposal?

The key environmental impacts are correctly identified if you assume that the proposed discount provides the correct incentive to choose a lower standard connection. However, if this level of discount is overstated then it is not at all apparent that this benefit is achieved.

If the system is not adequately reinforced to support new renewable technology then the total capacity of renewable generation may increase, but the amount which can be utilised will not increase at the same rate. Additionally, a requirement to carry higher levels of partly loaded conventional plant to cover a less secure system could have the effect of increasing carbon emissions. In a market based system, the decisions on where to locate and whether to accept a lower standard of connection have to be taken by market participants themselves. This assessment has to be made with reference to all relevant

cost drivers. If these do not provide the correct cost signal then the wrong decision for all customers as a whole will be made.

Chapter 5: Question 2 - Do respondents consider that there are other environmental impacts that should have been assessed?

No.

Chapter 5: Question 3 - Do respondents have any additional analysis in relation to environmental impacts that they wish to present?

No.

Chapter 6: Question 1 - Do respondents have any views on both the process and timetable that are proposed for taking forward this assessment of the modification proposal?

We believe that Ofgem and National Grid should consider the potential implications of this discount carefully and not rush into an inappropriate solution which may well have to be unwound later.

Chapter 6: Question 2 - Do respondents have any views on the appropriateness of the Authority granting a shorter notice period to allow this modification proposal to be implemented by 1 April 2007 if approved?

We do not believe that it should be approved in its current form.

I hope that the above proves helpful. Please contact me in the first instance should you wish to discuss this further.

Yours sincerely

Paul Jones
Trading Arrangements

Appendix 1 – Details of the correct circuit discount calculation

The analysis from National Grid illustrating the calculation of the circuit discount assumes that a security factor of 2 would be applied to the calculated locational charge of a compliant connection. This is not the case. We agree with National Grid that the circuit concerned is most likely to be a double circuit. However, the charging methodology would actually have applied the national average security factor, which is presently 1.8, to this part of the connection. Therefore the calculation of the discount presented appendix 1 of the consultation should actually be as follows:

As in the example in appendix 1, gen A has a compliant double circuit whilst gen B has single circuit.

The marginal MWkm of relevant circuit is Y for each generator.
The MWkm of the zone is X.

Tariff = Security Factor x Marginal km of connecting circuit x Expansion Constant

Tariff @ gen A = 1.8 * (X+Y) * EC

= (1.8X + 1.8Y) * EC

Tariff @ gen B = $\frac{(1.8X + Y)}{(X+Y)}$ * (X+Y) * EC

= (1.8X + Y) * EC

Therefore, differential/discount = tariff A – tariff B
= [(1.8X + 1.8Y) * EC] – [(1.8X + Y) * EC]
= 0.8Y * EC

Appendix 2 – The effect of the 27:73 split and the substation discount

Assume a very simple system with two generators each with its own substation.

Generator A = 200MW Generator = 400MW

Under the present methodology, generators as a whole would be allocated 27% of total costs. Generator A has 1/3 of the generation capacity so is allocated 1/3 of this proportion of costs allocated to generators. Generator B is allocated 2/3 of the costs.

Scenario A

The cost per kW of each substation is the same and is £5/kW

Cost of Generator A's substation = £1m Cost of Generator B's substation = £2m

Cost to generators = 0.27 x £3m = £0.81m

Generator A's cost = £0.81m x 1/3 = £0.27m
Generator B's cost = £0.81m x 2/3 = £0.54m

The cost per MW for each generator is the same and is £1.35/kW.

Scenario B

The cost of Generator A's substation is still £5/kW. Generator B's is half of the cost per kW (as appears to be the case with single circuit connections).

Cost of Generator A's substation = £1m Cost of Generator B's substation = £1m

Cost to generators = 0.27 x £2m = £0.54m

Generator A's cost = £0.54m x 1/3 = £0.18m
Generator B's cost = £0.54m x 2/3 = £0.36m

The cost per MW for each generator is the same and is £0.9/kW. Therefore, each generator sees a £0.45/kW reduction in charge compared with scenario A as a result of generator B's cheaper connection.

Scenario C

The cost of Generator A's substation is still £/kW. Generator B's is one and a half times the cost per kW. This scenario is to illustrate the effect of a cost increase.

Cost of Generator A's substation = £1m Cost of Generator B's substation = £3m

Cost to generators = 0.27 x £4m = £1.08m

Generator A's cost = £1.08m x 1/3 = £0.36m
Generator B's cost = £1.08m x 2/3 = £0.72m

The cost per MW for each generator is the same and is £1.8/kW. Therefore, each generator sees a £0.45/kW increase in charge compared with scenario A as a result of generator B's more expensive connection.

Issues

Under the present methodology, a £1m decrease in generator A's substation costs moves its charges by the same amount as a £1m increase. Therefore, the present methodology would already appear to adjust charges appropriately.

If a deep discount is given as proposed by National Grid's change then the full £2.5/kW saving in generator B's substation described in Scenario B would be allocated to it. In this example it would see a £2.5/kW discount against the £1.35/kW charge allocated to it in scenario B. Therefore, it would effectively be paid generation substation costs.

Although this is a stylised example, the illustration of the mechanisms at work is accurate. It therefore illustrates the problems associated with the proposed approach.