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Dear Tom,

GBECM-11 Charging Arrangements for Generator Local Assets – Pre Consultation

I am responding to the above pre-consultation on behalf of E.ON UK plc. On the basis of the information available at this point, it would appear that the preferable approach for the calculation of a local connection charge is the specific treatment of generation assets method outlined in the document.

Our more detailed comments are as follows.

Option 1: Specific treatment for generation assets

This option has the benefit that it is easy to understand the principles behind it. That is, certain elements of the network identified as local assets are removed from the transport model and are charged separately, but in a manner that is consistent with a shallow charging methodology. Therefore, a generator is charged for its “fair share” of the local assets required for its connection rather than the full cost, which could be far higher due to the often “chunky” nature of system investment.

It would seem appropriate to allocate the assets on the basis of the marginal investment for the generator concerned. Defining local assets as being those circuits that wouldn’t have been built if the generator concerned was not connected seems too simple and would miss those circumstances where several generators share local infrastructure. The challenge is to ensure that an appropriate definition is used that does not encroach on the wider transmission system.

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We believe that if local charging is introduced that it should cover all transmission connection voltages. There does not appear to be strong enough a case for different treatment. We also agree with National Grid that local charging would be required for all voltages if certain of the models being contemplated under the Transmission Access Review were to be adopted.

Charging more specific expansion factors would appear to be a sensible way of achieving deeper recovery of local charges consistent with the shallow charging regime used for the wider network. These expansion factors could be set on a specific circuit basis or could be averaged over a wider set of circuits. It would seem appropriate to undertake some form of wider averaging to provide more stability, although not as wide so as to be across a whole TO region. This would in any case be a somewhat arbitrary area to choose. It may be more appropriate to average costs over a generation zone and by voltage say.

Alternatively, categorisation by voltage and asset type (ie OHL tower type) would be more appropriate if these factors are more likely to drive the level of costs than perhaps more arbitrary geographic factors. It is not clear, however, that the number of circuits (ie single or double) should drive the expansion factor. This should be the role of a specific security factor. Whilst we appreciate that it would be possible to combine the effects of expansion and security factors into one, having a specific security factor would provide greater transparency so that a comparison can be made with the wider security factors used in the transport model.

It seems clear that a different measure of capacity will be required against which to charge the local costs. TEC should not be used as it would not be appropriate for circumstances when short term access products are being used. Similarly, CEC is not a good measure of the local assets that a generator is using as a generator may hold a CEC that is higher than its access requirements, meaning that a lower level of local network capacity has been built to accommodate it. Therefore, a local capacity charge as proposed would seem appropriate.

We accept that there are some limitations with this approach, not least disagreements about whether or not the correct local assets have been identified in respect of a particular generator. However, at least this approach allows a generator to question or dispute the assignment of assets, whereas the more mechanistic zonal hub option leaves no such option whilst having the same, if not greater, potential for inaccuracy.

If local assets are removed from the transport model and charged with more specific local expansion and security factors applied, then the expansion and security factors used in the model should be recalculated with the local values removed. Otherwise wider system charges will be incorrect as they will be influenced by local costs which have already been charged out separately elsewhere.

Option 2: Specific treatment of distance to zonal hub

The reasons for introducing this option appear clear and sensible. That is, to provide a more mechanistic methodology than the specific treatment of generation assets option that avoids difficult value judgements in identifying the local assets for specific generator connections. However, it would make the methodology more complex and arguably less cost reflective.

This mechanistic approach avoids difficult value judgments having to be made during its operation as these are essentially made up front with the assumptions used to calculate the zonal hub, the local security factors and the local expansion factors. However, these are then set in stone with no scope to adjust them for particular connection and local circuit designs. This means that they have similar if not greater chance of being incorrect than the specific treatment of generation assets option, with no opportunity for challenge by the generator.

Another issue with this approach is that the definition of the zonal hub will change as the balance of demand and generation changes on the network and when the system itself changes, such as when circuits are up rated to different voltages. By implication this means that the calculation of a generator's local assets will change, as it is made by reference to the zonal hub. This will be very difficult methodology to sell to generators who would rightly question why their local assets, and thus local charges, are changing so often.

There also appears to be an issue with the proposed calculation of the local charge. The element in question is the multiplication of the difference between the nodal and zonal MWkm from the transport model by the difference in local and wider expansion factors, as described on page 12 of the pre consultation. This does not appear to be correct. It would seem more sensible to multiply the difference in MWkm by the ratio of the actual local expansion factor to the local expansion factor used in the model. This issue is illustrated by a simple stylised example in Appendix 1 to this response.

Not withstanding our deep reservations about the desirability of this option, we have a number of comments on some of the sub issues raised in the pre-consultation.

On the calculation of the zonal hub, of the three options listed using the lowest nodal charge would seem the most appropriate, although even this is a simplification. The weighted average of the demand nodal charge does not appear to have much relevance in the calculation of a local charge for generation and the weighted average nodal generation charge would produce negative local charges.

Ideally, the local expansion factor would reflect the cost of the local assets identified in the methodology. Of course, the distance to zonal hub methodology does not identify these assets so this option is not possible. Instead, a proxy is required. Of the options considered all of the options would appear to have strengths and weaknesses dependent on the circumstances of particular connections. For instance, calculating the weighted average of the expansion factors in the zone may be appropriate for zonal hubs that are quite distant (in MWkm) from each of the nodes, but would not be appropriate where the local assets are relatively short (in MWkm). Similarly, the voltage that the generator is attached could be a useful proxy for short local assets, but not where their distance from the calculated zonal hub is longer which reasonably could include assets of different voltage levels.

A similar argument could be made for the local security factor. The security factor of the assets connected to the generator may be appropriate where the MWkm between the node and zonal hub is relatively short, but not for longer distances. Running the Secure Load Flow model may be a more appropriate solution.

The treatment of substation assets

We agree with National Grid's suggested analysis of substation costs to ascertain whether or not these should be charged within the local charge. If these are to be charged locally it would seem to make sense to do so on the basis of voltage and whether the connection is single or double circuit. Again, we would question the validity of using arbitrary geographical boundaries such as TO region unless these can be proven to be a clear driver of cost.

Deep Connection Charge

Arguably, a deep connection charge is the most accurate method for reflecting the local costs of a generator. However, as pointed out in the pre-consultation document this is not without its difficulties. It would suffer from the same issue as the specific treatment of generator assets option in that it will be difficult to identify local assets in some circumstances. Additionally, there will be issues with generators being allocated a greater than "fair" share of costs when larger "chunks" of investment are made than is strictly necessary to accommodate the generator, either for strategic reasons or simply because smaller capacity assets are not available. This would put the local charge at odds with the wider shallow methodology that seeks only to allocate the proportion of costs required specifically to accommodate the level of access required by the generator.

In summary, we believe that a model based on the specific treatment of generation assets appears to be the preferable option, although we accept that it will not be without its issues. The distance from zonal hub option has the scope to be complex, inaccurate and volatile. The deep connection charge option would be most accurate but would be inconsistent with the wider shallow methodology and penalise generators in areas where strategic investment has been made. Further work should be carried out on the costs of substations before a decision on how they should be recovered is made.

Yours sincerely

Paul Jones
Trading Arrangements

Appendix 1 – Illustrative simple calculation showing concerns with proposed "distance from zonal hub" local charge methodology

The calculation in the pre-consultation document appears to be:

Local Charge $= (MWkm_{[NODE]} - MWkm_{[ZONAL\ HUB]}) \times (EF_{[LOCAL]} - EF_{[WIDER]}) \times SF_{[LOCAL]} \times EC$

where:

$MWkm_{[NODE]}$ = the output from the transport model for the generator node (including the Expansion Factors used within the model)

$MWkm_{[ZONAL\ HUB]}$ = the output from the transport model for the zonal hub (including the Expansion Factors used within the model)

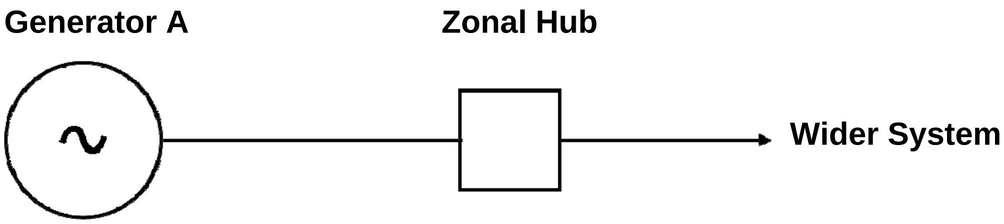
$EF_{[LOCAL]}$ = the specific Expansion Factor to be used for the local charge

$EF_{[WIDER]}$ = the wider Expansion Factor used in the model for the zonal hub

$SF_{[LOCAL]}$ = the local Security Factor

EC = Expansion Constant

It is the application of the difference between the local and wider expansion factors which is problematic. We will illustrate with the following very simple example:



$MWkm_{[NODE]} = 125$

$MWkm_{[ZONAL\ HUB]} = 100$

$EF_{[LOCAL\ MODEL]} = 2.5$

$EF_{[WIDER]} = 2$

$EF_{[LOCAL\ ACTUAL]} = 3$

Generator A has a nodal MWkm value of 125MWkm from running the transport model. The chosen zonal hub has a MWkm value of 100MWkm. Both of these values are calculated using the normal Expansion Factors in the transport model. The average Expansion Factor used for the calculation of the MWkm for the zonal hub is 2 whereas the local average values used for the local assets is 2.5. However, the actual local value for the Expansion Factor is 3. The difference between the MWkm of the node and the hub is 25MWkm (125 – 100). However, the local Expansion Factor used in the model is 2.5 which means that the "unexpanded" MWkm difference is 10MWkm (25MWkm ÷ 2.5). This should then be "expanded" by the true expansion factor of 3 to make 30MWkm. It is this value that should be multiplied by the local Security Factor and the Expansion Constant to achieve the local charge.

$$\text{Local Charge} = \frac{(MWkm_{[NODE]} - MWkm_{[ZONAL\ HUB]})}{EF_{[LOCAL\ MODEL]}} \times EF_{[LOCAL\ ACTUAL]}) \times SF_{[LOCAL]} \times EC$$

$$= \frac{(125MWkm - 100MWkm)}{2.5} \times 3 \times SF_{[LOCAL]} \times EC$$

$$= 30 \times SF_{[LOCAL]} \times EC$$

However, the calculation used in the pre consultation would arrive at the following charge:

$$\text{Local Charge} = (MWkm_{[NODE]} - MWkm_{[ZONAL\ HUB]}) \times (EF_{[LOCAL]} - EF_{[WIDER]}) \times SF_{[LOCAL]} \times EC$$

$$= (125MWkm - 100MWkm) \times (3 - 2) \times SF_{[LOCAL]} \times EC$$

$$= 25 \times SF_{[LOCAL]} \times EC$$

Clearly, in this example the difference is not particularly stark (albeit 17%). With other combinations of expansion factors the difference could be higher.