Small Generators under BETTA

Response to Ofgem/DTI Consultation

Treatment of the 132kV system

The TISC report stated that "Whether by regulation or amendment of the industry codes to exempt small generators from the burden of transmission charges, or by other means, an equality of treatment must be established among generators connected at 132kV". The government also concluded that small generators directly connected to 132kV should be treated in a non-discriminatory way (vis a vis their counterparts in England and Wales).

This consultation has failed to address these fundamental points. Ofgem state that "The purpose of the 132kV network in Scotland is the bulk transfer of electricity." This is demonstrably wrong. If "bulk" is defined in MW transfer terms (and it is difficult to envisage any other definition), then it performs exactly the same function in Scotland as in England and Wales. A 132kV line of a given size can transfer exactly the same amount of power in Scotland as in E&W. In fact, in the North of Scotland particularly, the power actually transferred across much of the 132kV system is much less than the line rating. The choice of voltage in these cases is determined by the distance rather than the amount of power being transferred. In E&W the transfer of the same amount of power over the shorter distances involved would result in the choice of 33 or 11kV circuits.

In designing an electricity system the choice of voltage is determined principally by the amount of power to be transferred, and the distance. Indeed, the loading on the 275kV transmission system north of Aberdeen could be managed by 132kV circuits if the distance to the load centres of Inverness and further north was not so great.

In short, in determining the choice of voltage for a particular circuit, the terms "transmission" and "distribution" are irrelevant. This is particularly the case in Scotland where the licensees own the entire wires network from generator to household. A particular design solution is optimised independent of whether the equipment chosen falls into the category of "transmission" or "distribution".

The choice of terminology is also demonstrated in the historical development of the network.

In both Scotland and E&W the 132kV system in GB was the original "grid" network providing security of supply to the many diverse distribution networks. The 275kV (and later 400kV) system was constructed (the "super grid") to accommodate the much larger generators being developed and to transfer these bulk quantities of power around the country. This super grid is wholly different in terms of plant specification, design parameters and protection schemes from the 132kV network. The generation plant connected to the "super grid" is also different in that it tends to be significantly larger (hundreds or thousands of MW) with fundamentally different economics, imposing substantially different costs on the system. We do not therefore believe that a lower charge for 132kV connected generators in Scotland would discriminate against generators connected at 275kV.

In E&W the CEGB subsequently disposed of its 132kV network to the Area Boards. This divestment led to 132kV assets being reclassified as distribution since they were owned by distribution companies and not because of any fundamental change in the power flowing across the 132kV network. In Scotland, the networks were, and continue to, be run by the integrated Scottish companies.

In justifying the retention of the 132 kV system as transmission, Ofgem further state that "a system excluding 132kV lines would not be sufficient to transfer bulk flows of energy around Scotland". We consider this to be a strange conclusion, since an inspection of the E&W system without its 132kV lines would give the same result.

In summary, we firmly believe that the term "transmission" is only useful in clarifying the ownership of particular networks. There is no fundamental difference in the physical characteristics of the networks. The only difference for 132kV is in the ownership of the assets and therefore the responsibility for charge setting and commercial arrangements. This being the case, it is necessary to return to the TISC conclusions and consider how the charging and commercial arrangements can be harmonised so that there is no difference in treatment of a Scottish 132kV connected generator and one in E&W.

Use of System Charges

In England and Wales, 132kV connected generators receive an embedded benefit, and in Scotland 132kV connected generators presently pay a transmission network use of system (TNUOS) charge. Ofgem/DTI have concluded that "the operation of the TNUOS embedded benefit confers a benefit to small distribution connected generation relative to small transmission connected generation, and that this difference in treatment is not proportionate. Its continuation within a common set of GB arrangements does not therefore appear consistent with BETTA." This conclusion is a welcome recognition of the potential discriminatory treatment of 132kV connected generation in Scotland, and accords with the TISC recommendation to ensure non-discriminatory treatment.

In addressing this problem, Ofgem have concluded that there is a "net benefit" of £8.6/kW of being connected at 132kV. After deducting £6/kW (either as a proxy for the deep connection or in recognition of a potential £6/kW distribution use of system charge) Ofgem conclude that there is an overall benefit of £2/kW. They also conclude that 132kV connected generators in Scotland should have their tariff discounted by this amount in the meantime. The rationale for arriving at this conclusion has some merit, but the analysis is flawed for a number of reasons.

At a nodal level, Ofgem's analysis demonstrates that the net benefit of being connected at 132kV is the generator residual charge, plus the supplier residual charge. At a nodal level, this is correct, since the generator and supply charges are, by definition, equal and opposite[1]. However, two factors combine to distort this equation.

[1] At a particular node, say that the generator charge is £5/kW, and the supplier charge is -£5/kW. After the residual element, the charges would be £7/kW and £1.60/kW respectively. A transmission connected generator would pay £7, and the embedded generator would receive a payment of £1.60 as embedded benefit. The net benefit of being embedded is 7+1.6 = £8.60.

Firstly, charges are not applied nodally. Supply charges are grouped by Grid Supply Point (GSP) group and generator charges into zones of similar geographical location and price. Secondly, supply charges are not normally permitted to be negative, as payment for taking demand would be a perverse signal.

NGC's tariff model is not sufficiently transparent to disaggregate these effects, but the fact that the net benefit is not £8.60 can be shown simply by looking at the potential generator charges in NGC's recent consultation on indicative GB charges for each of the combinations of generator and supply zones. The net benefit is best illustrated in the northern zones, where generators would, for example, pay £5/kW in the north west, and demand would pay £10/kW, giving a net benefit of £15/kW, rather than £8.60.

Applying this to the "Solway Firth" problem, an offshore windfarm in the Solway Firth would face around £9/kW transmission charges if connecting to Scottish Power's 132 kV network (even with its £2 discount) as opposed to a benefit of £10/kW if connecting into Norweb's network, a disparity of £19/kW. Even if the generator pays £6/kW embedded use of system under Ofgem's proposals for distribution charges, there would still be a net benefit of £13/kW by connecting into Norweb's system even though the electrical effect on the transmission system would be identical.

We therefore believe that Ofgem's proposals have failed to ensure that there is no discrimination between generators connected at 132kV. It would appear that the only way forward is either (a) to ensure that Scottish generators connected at 132kV pay no more than an E&W generator connected at the same voltage or (b) redefine Scottish 132kV assets as Distribution.

Commercial Arrangements

To remove the potential discrimination, the commercial options for small generators also needs to be addressed. Ofgem have proposed that small generators would not need to be parties to the BSC, in the same way that the CUSC does not oblige Non-Embedded Customers to join the BSC. This is a welcome conclusion and removes some of the administrative burden from small generators. It does however place the existing obligations onto the Supplier and does not equalise the commercial arrangements between E&W and Scotland. The changes would therefore need to go further. 132kV connected generators in Scotland would be captured by the BSC through the requirement to have the output metered (in order to get a credit for the energy and hence get paid). In particular, through the requirement in section K 2.1.1of the BSC that; Plant and Apparatus directly connected to the Transmission System needs to be registered in Central Meter Registration Service (CMRS).

In England and Wales, generators connected to the 132kV system are by default "embedded". Their metering is registered by their Supplier in Supplier Meter Registration Service (SMRS), and they are not obliged to register metering in CMRS.

To remove this discrimination, it would be necessary to allow these 132kV connected generators to have their metering systems registered in SMRS rather than in CMRS, and thereafter that the generation can be treated as part of a Supplier's demand BMU. The required amendments are in two parts:

The first part is to not have the Exempt Export BM Unit registered in CMRS. This would need a change to section K 2.1.1.

"A Boundary Point Metering System shall be registered in CMRS where:

(a) the Metering Equipment measures quantities of Imports to or Exports from Plant or Apparatus which is directly connected to the Transmission System *other than the Metering Equipment of Exemptable Generating Plant*; or ……."

The second part would be to have the Exempt Export BM Unit associated with a particular GSP Group. Currently, because these generators are not below the GSP, they are not registered as part of the GSP Group.

This can be achieved by adding a GSP Group identifier to the 132kV generator MSID. Indeed this is already in place in the Scottish areas, and in E&W, embedded licence exempt generators (ELEGs) can already register themselves in CMRS rather than SMRS, taking with them an associated GSP Group identifier. The association would be made by its physical location, and could be made through its associated Import meter (i.e. a back-door supply registered in SMRS), or through a mapping statement (e.g. that used for zonal losses). The export meters would then be registered in SMRS against its associated Supplier's GSP Group. The aggregation rules would be written to allow the generation to act as negative demand and thereby provide equivalent E&W benefits.

To further equalise the commercial options available, it is necessary to consider the options in E&W to create "Trading Units". Presently in the BSC, Exempt Export BM Units in GSP Groups are able to form Class 4 Trading Units with other Trading Units in the same GSP Group. This allows them to participate in the Balancing Mechanism (BM) and maintain their embedded benefits. However, the formation of these Trading Units would not be allowed for Scottish 132kV connected Exempt Export BM Units, as they are not registered in a GSP Group.

A further change to the BSC would enable licence exempt generators connected to 132kV system in Scotland to be registered as Class 4 Trading Units, thereby being able to operate in the BM and realise the same commercial benefits as 132kV connected generators in E&W.

Again the changes would be in two stages.

The first would be to get the Exempt Export BM Unit associated with a particular GSP Group. As above, the association would be made by its physical location, and could be made through its associated Import meter (i.e. a back-door supply registered in SMRS), or through a mapping statement (e.g. that used for zonal losses).

The second would be to change the BSC to recognise the association. This would mean a change to section K 4.7.2.

"Subject to paragraph 4.7.3:
(a) each Supplier BM Unit shall automatically belong to the Base Trading Unit for the relevant GSP Group; and

(b) each Exempt Export BM Unit (which is not a Supplier BM Unit) in*, or associated with,* a GSP Group shall automatically belong to the Base Trading Unit for that GSP Group."

The aggregation rules would be written such that through Settlement, the Trading Unit would provide benefits as they would in E&W.

Summary

Ofgem have recognised that changes do need to be made to realise the TISC recommendations for removing discrimination for 132kV connected generators. In our view, the changes proposed fall far short of removing the discriminatory treatment resulting from the decision not to reclassify the Scottish 132kV network as distribution.

To fully implement the TISC recommendation, two things need to be done:

1. Cap the TNUOS charges for 132kV connected generators to £6/kW as will apply to new 132kV connected generators in E&W;
2. Minor amendments to the BSC as outlined above to provide the same commercial opportunities to 132kV connected generation.