National Grid Transco

Response to the Ofgem/ DTI Consultation "Small Generator Issues under BETTA – November 2003."

Introduction

1. We welcome the opportunity to comment on "Small Generator Issues under BETTA" (the consultation). In this response we provide some background information on small generator issues. We then comment on the three key issues on which views are invited in the consultation summary. Finally we raise a number of other relevant issues.

2. We recognise that the main focus of this consultation is issues raised by the considerable number of transmission connected generators below 100MW in Scotland. This is a clear difference with the situation in England and Wales and arises mainly from the proposed classification of 132kV as a transmission voltage in Scotland. Whilst we agree that these are important issues, we also believe that important issues arise from material impact on the transmission system in Scotland, of significant number of distribution connected generators below 100MW. This is both in terms of its current operation and also the potential for major future reinforcements (such as those identified in the DTI's Transmission Issues Working Group report).

Background to Small Generator Issues in Scotland

3. In order to put our views on small generator issues in Scotland in context, we initially review the some of the impacts of small generators on transmission in England and Wales, and the nature of differences that inevitably arise if 132kV is a transmission voltage in Scotland.

Power Station Size and Impact on the Transmission System:

4. It is our understanding that all generators (whether directly connected or embedded) that have a significant impact on transmission should be covered by the main industry codes relating to transmission. One important criterion in determining whether a generator needs to comply with the Grid Code, Connection and Use of System Code and the Balancing and Settlement Code in England and Wales is the size of the generator. In England and Wales power station size limits have been established for generation exemption and compliance with Codes, these are largely based on transmission equipment ratings.

5. Generators that are licensed are required to comply with these Codes through their licences (generators that are not licensed can still be required to comply with these codes, for example through their transmission connection agreements, or other relevant agreements if they are embedded). The rules for licence exemption are based primarily on the size of the power station being considered. Hence every power station which exports more than 100MW onto the transmission or distribution system requires a licence. Power stations below 100MW but above 50MW may also require a licence in some circumstances, for example new generators above 50MW may only be exempted under the terms of a relevant Statutory Instrument.

6. The typical impact of a 100MW Power Station on the England and Wales transmission system can be assessed by considering the relative impact that it has compared to typical transmission equipment ratings. From the tables below it can be seen that generators below 100MW treated in isolation have a low impact on the transmission system (however combinations of small power stations may have a significant impact). However when considering a transmission system that includes 132KV transmission equipment the tables below show that the impact of a 100MW generator is 10 times greater on the 132kV transmission system than on the 400KV transmission system and 5 times greater than on the 275kV transmission system.

Table 1: Comparative impact of 100MW power station on circuits

Voltage	Typical Circuit Thermal Rating	Percent of rating used by 100MW generator
400 kV	2000 MW	5%
275 kV	1000 MW	10%
132 kV	200 MW	50%

7. From table 1 above it can be seen that a single power station may utilise 50% of the transmission capability available on a typical 132kV circuit. Many 132kV circuits are rated at less than 100MW.

8. On the basis that 132kV will be transmission in Scotland, and due to the greater impact of smaller generators at this voltage, as set out above, some of the obligations that are placed on 100 MW generators in England and Wales should be applied to 10-20 MW generators in Scotland. This is needed in order to ensure that the transmission system can be appropriately managed. One way to achieve this would be by having a lower licence exemption limit for power stations in Scotland. In any event, we wish to ensure that either through licences, or through other arrangements, any generation that may significantly affect the operation of the transmission system in Scotland is required to comply with the appropriate parts of BETTA industry codes. Such an

approach would ensure that if operational obligations, information, and/or mandatory services are required these could be specified.

9. The existing code and contractual arrangements in Scotland recognise these issues by having "central despatch size limits" of 5MW in the Scottish Hydro Electric Transmission area and 30MW in the Scottish Power Transmission area. Whilst the BETTA arrangements will be based England and Wales arrangements, the MW levels at which certain obligations apply should be adjusted to reflect the operational necessities of operating 132kV as transmission. Whilst the current trading and transmission arrangements in Scotland differ from those that will apply under BETTA, the need for information from generators above 5 or 30MW is clear from the current Scottish arrangements.

10. The impact on other transmission equipment ratings is also important such as short circuit level. Table 2 below gives the typical impact on equipment short circuit ratings of a 100MW power station.

Table 2: Comparative impact of 100MW power station on substations

Voltage	Typical Substation Short Circuit Rating	Percent of rating used by typical short circuit contribution of 100MW generator (500MVA)
400 kV	35000 MVA	1.5%
275 kV	15000 MVA	3%
132 kV	3500 MVA	14%

11. In addition to the issues raised above it is also the case that in certain areas all generators will contribute to the need for transmission reinforcement, irrespective of their size or connection voltage. For example if work is needed to increase the thermal capacity of the transmission system to support the level of exports from an area all generators will have a similar impact on the need for the work.

Key Issues Identified in the Consultation Document for Discussion

12. Our views on the three key proposals identified in the summary of the consultation (and listed in the bullet points below) are:

- *The classification of 132kV lines as forming part of the transmission system in Scotland should not be revisited in order to remove perceived commercial differences in treatment between transmission and distribution connected generators in Scotland.*

13. In order to respond to the complex issues arising from treating 132kV as transmission in Scotland we have based our response on this assumption. If it changed we would need to submit further analysis.

- *The exemption order made under section 5 of the Electricity Act setting out the criteria under which a generator is automatically exempt from the requirement to hold a generation licence should be harmonised between England and Wales and Scotland.*

14. As explained in our "power station size and impact on the transmission system" section above this approach may cause significant problems for the transmission system unless we are sure that other, appropriate measures will be put in place to protect the transmission system, including the provision of the necessary information. This requirement from the treatment of 132kV as a transmission voltage in Scotland.

15. In order to ensure safe, efficient and economic operation of the transmission system all power stations that have a significant impact (whether they are transmission or distribution connected) need to be obliged to comply with the relevant sections of the industry codes.

16. Even in England and Wales, where transmission is predominately limited to 275kV and 400Kv, embedded generation below 100MW may have a significant impact on the Transmission System. Modifications to the CUSC, Grid Code and Distribution Codes are currently being sought in this respect. However the number of power station below 100MW that have a significant impact on the transmission system, and the magnitude of the issues that will arise if 132kV is a transmission voltage will require more robust solutions to be in place form the start of BETTA. Even if the modifications currently being progressed in England and Wales are approved the issues arising in Scotland need to be addressed separately as part of the BETTA implementation.

- *An interim measure to reduce transmission charges for small generators connected to the 132kV network in Scotland is appropriate to remove undue differences in the treatment of this class of generator in comparison with distribution connected small generators*

17. Due to the wide range of issues that need to be considered when reviewing the difference in rights and charges on transmission and distribution networks, we agree with the view in the consultation paper that NGC does not have the necessary scope (and data) to identify and address this issue. Hence, if an interim measure of this type is to be introduced, the role of NGC with regard this proposal will need to be clearly directed by other parties based on the wider issues, and in a manner that avoids conflict with any other obligations on NGC.

18. Within the scope of our obligations, paragraphs 19 to 21 below identify some issues the proposal raises for the calculation and application of Transmission Network Use of System (TNUoS) Charges.

19. Under the approved England and Wales charging statement all transmission connected generation is liable for TNUoS charges. If

implemented the consultation proposal would treat different categories (by size) of transmission connected power stations in a different manner. Further work is required to demonstrate how the consultation proposal could be implemented in a manner consistent with the objectives of the charging statement. This is essential to ensure that if the proposal were implemented at BETTA Go-Live it will not be subject to modification proposals that would better meet the objectives.

20. We would welcome further clarity of the proposals with regard to 132kV transmission in England and Wales. Although this is relatively limited it does exist and a full GB treatment of the proposal is needed.

21. The implementation of the consultation proposal requires further work to clarify its impact on the calculation of GB TNUoS charges.

Framework for Licence Exemption (Chapter 4 of the consultation)

22. In addition to our earlier comments on licence exemption, we would like to raise some points of clarification regarding the current generation licence exemption rules in England and Wales. These are explained in the consultation document, this section of our response examines the implications of the B values in paragraph 4.24 of the consultation.

23. The first is that the B values have a very specific meaning in the statutory instruments. They refer to the situation where a power station is part of a customer site that also contains demand to net off the generation. Hence, if a power station is part of a site that also includes demand, and the export from that site is less than 50MW then B factors apply to the size of power station that may be licence exempt.

24. For example a wind farm capable of generating 233MW connected to either the transmission system or the distribution system could not be licence exempt. However, a wind farm capable of generating 233MW that is on the same site as a large demand such that the site never exported more than 50MW to the transmission or distribution system may apply for licence exemption due to the 0.43 B factor for wind.

25. Hence it is possible that the issues raised in the earlier section on “Power Station Size and Impact on the Transmission System” are more significant when these B factors is applied as described above. Further consideration is needed regarding the significance of this issue.

26. On a drafting point we note that paragraph 4.31 taken in isolation is ambiguous. We believe that a careful reading of paragraph 4.29 can derive the correct meaning. However, further clarification of the intent behind the drafting would reduce the possibility of any confusion.

Emerging Issues (Chapters 7 and 8 of the consultation)

27. This section of the consultation notes the interaction of this consultation with CUSC and Grid Code issues amongst other issues. Below are our additional comments on the views invited in this section.

- *The extent to which obligations anticipated under the GB System Operator's Grid Code might be considered disproportionate for small generators*

28. As explained in our "power station size and impact on the transmission system" the impact of small generators on the transmission system will be greater in Scotland than in England and Wales. Hence it is to be expected that small generators should continue to provide the services and information necessary to support the operation of 132kV transmission in Scotland. The GB Grid Code consultations proposes that sizes of power station currently subject to central despatch in the current Scottish Grid Codes (5MW in Scottish and Southern area, and 30MW in Scottish Power area) should be defined as "large power stations" in the GB Grid Code. We support this proposal, and that all power stations in excess of these sizes are required to comply with the Grid Code, whether transmission or distribution connected.

29. Where the design of the transmission network has been based on particular local generation obligations in Scotland, there may be a need for these to continue under BETTA or for network reinforcement.

30. In relation to registration of BM Units, it is essential that the appropriate data is sent and received under the Grid Code for all power stations that may affect the operation of the transmission system. There are data rules for BM Units, we believe that an obligation to be register as a BM Units or alternative equivalent obligations need to be in place for generators in Scotland that are below the current England and Wales size limits. Otherwise there may be some generators that will affect the operation of the 132KV transmission system that are not BM Units and the System Operator may not be able to get the data needed to operate the transmission system economically and securely. Examples of such information include generator outage information, generation plant characteristics, and generator physical notifications).

31. In relation to Grid Code obligations for power stations to provide services that contribute only to national energy issues (such as frequency response), rather than management of the local transmission system, then is may be possible to provide a standard MW level across GB for provision of these services.

- *The extent to which obligations anticipated under the CUSC (other than obligation to pay transmission charges) might be considered to be disproportionate for small generators.*

32. As explained in our “power station size and impact on the transmission system” the impact of small generators on the transmission system will be greater in Scotland than in England and Wales. Hence the requirement for small generators to comply with the CUSC, and other relevant obligations is a direct consequence of treating 132kV as a transmission voltage. This obligation will be necessary whether or not the small generators are transmission or distribution connected.

- *Whether it may be appropriate for more explicit measures to be taken under the GB CUSC to facilitate transfer of obligations to another party*

33. It is essential that generators directly connected to the transmission system, and embedded generators that may have an impact on the operation of the transmission system (and be deemed to be using it) should sign the CUSC directly, or have in place equivalent arrangements which have the same contractual effect. If it is done by equivalent arrangements, then the method by which these would need to be put in place may need to be partially specified in the CUSC.

Other Issues Related to This Consultation

34. Information that is provided by a generator to a network operator (whether transmission or distribution) should enable the economic and safe operation of that network. In England and Wales the contractual arrangements under which generation is connected to the transmission system differ for those for connection to the transmission system. However, the obligations and information requirements on generators in England and Wales are intended to ensure that the transmission system operator can operate the transmission system irrespective of whether generation is transmission or distribution connected.

35. Similarly in Scotland the it is unlikely that the terms under which a power station is connected to the distribution system will be exactly the same as an identical power station connected to the transmission system. Whether a power station is transmission or distribution connected depends on the definition of the transmission system boundary. In England and Wales the transmission system boundary has been determined in by the application of certain principles. New connections in Scotland can be treated in a similar manner.

36. If the existing transmission system boundaries in Scotland are not consistent with the current England and Wales principles, this may also affect whether generation is treated as transmission or distribution connected. This would reinforce the need to ensure that power station obligations to provide information and mandatory balancing services to the GBSO are based on their impact on the transmission system, not whether they are transmission or distribution connected.