

GSR001

## GB SQSS REVIEW REQUEST

DATE: 29/01/2007

<b>1. Title of Review request</b>
Review of need for Intermittent Generation specific parameters in the GB SQSS.
<b>2. Name of Proposer <i>(include name of contact person)</i></b>
The Secretary of the GB SQSS Review Group on behalf of the 3 transmission licensees.
<b>3. Proposer Contact Details<sup>1</sup></b>
National Grid House, Technology Park, Warwick, CV 34 6DA Tel: 01926 656322 Fax: 01926 656521 Email: GBSqss.review@uk.ngrid.com
<b>4. Description of issue(s)/Defect(s) to be addressed by the proposal</b>
<p>The deterministic standards specified in the GB SQSS were established for a system dominated by conventional generation. With the expected significant increases in intermittent generation, it has become necessary to review the GB SQSS to ensure that it continues to serve its intended purpose. A number of issues that need addressing have been identified:</p> <ol style="list-style-type: none"><li>1. How would increased penetration of intermittent generation affect the security level of the system if the GB SQSS is used in its current form?</li><li>2. What modifications/amendments to the GB SQSS would be necessary if the security level prescribed by the GB SQSS (for a system with little or no intermittent generation) were to be maintained?</li><li>3. How should intermittent generation be handled in the GB SQSS given that its characteristics are significantly different from those of conventional generation? There is need to determine intermittent generation specific parameters to appropriately represent the characteristics of intermittent generation in the GB SQSS.</li><li>4. Would it be appropriate to change the minimum security level of the system in order to accommodate intermittent generation?</li></ol>

## 5. Description of the review request, its nature and purpose

Given that the GB SQSS was derived based on a system with mainly conventional generation, there are concerns on whether the GB SQSS is still relevant in its current form. The review would need to first determine if the GB SQSS can be used in its current form without negatively impacting on system security. It would then be necessary to consider appropriate ways of handling intermittent generation in the application of the standard and finally to identify any changes or amendments that might be necessary in order that the GB SQSS continues to deliver the desired security level in a robust manner, taking into account the different generation technologies.

The review should address the following issues:

1. To determine the security level delivered by the current standard against a background for which it was designed.
2. How to determine availability factors for intermittent generation and whether a deterministic approach is still applicable.
3. How to determine the contribution of intermittent generation. Specifically, the following issues need to be addressed:
  - a. How to determine the position of intermittent generation in the ranking order technique;
  - b. Whether intermittent generation should be scaled in the same way as conventional generation in the straight scaling technique;
  - c. How intermittent generation should be considered when carrying out sensitivity analysis as specified in section 4.4.3 in the GB SQSS, which considers individual generating units with their outputs equal to their registered capacities;
  - d. How intermittent generation affects the minimum required transmission capabilities; and
  - e. How intermittent generation affects the planned transfer and the interconnection allowance, whether the concept of planned transfer and interconnection allowance is still applicable and if so, whether modifications would be necessary to the two components.
4. Depending on the findings, it would be appropriate to determine if there is need to change the minimum security level of the system in order to accommodate a significantly high penetration of intermittent generation.

It is believed that by addressing these and other related issues, the GB SQSS will be brought up-to-date with the current developments in generation technologies. It also provides an opportunity to evaluate what the GB SQSS actually delivers.

## 6. Impact on the GB SQSS<sup>ii</sup>

### 6 (a) Parts of the GB SQSS that require amendment to give effect to the proposal

Chapter 3. - Treatment of embedded generation.

Appendix C. - Methodology for determining the planned transfer.

Appendix D. - The Interconnection Allowance curve.

In the case that the concept of planned transfer and interconnection are deemed no longer applicable, then Appendices C and D will need to be changed.

### 6 (b) Parts of the GB SQSS that would otherwise be affected by the proposal

Chapter 7. Terms and Definitions – The term “Plant margin” may have to be redefined in order to adequately deal with intermittent generation which has relatively lower availabilities compared to conventional generation.

### 6 (c) Nature and contents of amendments or effects

#### Chapter 3.

Treatment of embedded intermittent generation: Tables 3.2 and 3.3 may need to be modified to adequately address embedded intermittent generation. It is desirable to have these tables aligned to the appropriate section in the ER P2/6.

#### Appendix C.

The methodology for determining the planned transfer may need to be changed/modified to address the characteristics of intermittent generation. This relates to the use of availability factors for intermittent generation and generation scaling.

#### Appendix D.

The Interconnection Allowance curve “Circle diagram” might need to be modified depending on how the intermittent generation affects the minimum required transfers.

#### Chapter 7. Terms and Definitions:

“Plant margin” is defined based on installed capacity. It is the only place in the GB SQSS where installed capacity is mentioned. There might be need to introduce another term to specifically deal with the “plant margin” equivalence in a system with considerable intermittent generation.

#### 7. Justification of the proposal, giving the background thereof<sup>iii</sup>

The role played by the transmission system in enabling the connection of wind generation in the GB system is pivotal. It is important to ensure that the design of the transmission system continues to be guided by security standards that are relevant to the generation and demand backgrounds that can be reasonably foreseen. The review of the GB SQSS proposed here seeks to address concerns emanating from the fact that the current version of the GB SQSS was not designed for a system with a significant amount of intermittent generation. As wind generation is expected to play a major role in meeting the GB renewables target, its penetration into the GB system is increasing significantly. It is therefore very important to determine if the GB SQSS will adequately handle the emergent generation backgrounds. If necessary, changes or amendments would need to be carried out in order to ensure that it remains relevant.

The DTI recognises that due to substantial increases in wind generation, there will be a requirement for parallel development in transmission infrastructure. The DTI is also concerned that there may exist the potential for the system to be “over engineered” in some cases. Ofgem has expressed interest in the GB SQSS review and considers this exercise as a critical issue that needs immediate attention.

#### 8. Potential impact of the proposal on other Industry Framework Documents<sup>iv</sup>

CUSC:

Transmission access arrangements may need to be revised in light of lack of firm capacity of intermittent generation.

#### 9. Potential impact of proposal on relevant computer systems<sup>v</sup>

**Guidance notes**

- (i) Please include address, contact telephone/fax number and optionally, a contact email address.
- (ii) Impact on the GB SQSS - Where possible, give an indication of those parts of the GB SQSS which, in the opinion of the Proposer, would be likely to require amendment in order to give effect to (or would otherwise be affected by) the proposal and an indication of the nature and contents of those amendments or effects (including, where relevant, any need for the establishment of new, or removal of existing GB SQSS criteria and methodologies).
- (iii) Justification - Please give reasons why you believe that the proposal would better facilitate achievement of the GB SQSS objectives as compared with the then current version of the GB SQSS, together with background information in support thereof. If more space is needed you can use additional sheets of paper which should be attached to this form.
- (iv) Industry Framework Documents include but not limited to The Grid Code, System Operator – Transmission Owner Code and the Connection and Use of System Code.
- (v) Where possible, please give an indication of the potential impact of the proposal on relevant computer systems and processes used by the Transmission Licensees.
- (vi) Incomplete forms will not be processed. The Proposer may be asked to clarify any information that is not clear. The Proposer's attention is drawn to clause 4.2.1.5 of the GB SQSS governance document – condition to the right to make a review request/proposal.