

GSR006

GB SQSS REVIEW REQUEST

DATE: 26 November 2007

1. Title of review request
Review of stability criteria in the GB SQSS
2. Name of Proposer (<i>include name of contact person</i>)
The Secretary of the GB SQSS Review Group on behalf of the 3 transmission licensees
3. Proposer Contact Details¹
National Grid House, Technology Park, Warwick, CV 34 6DA Tel: ?????????? Fax: ?????????? Email: GBsqss.review@uk.ngrid.com
4. Description of issue(s)/Defect(s) to be addressed by the request
<p>The current GB SQSS specifies system instability as one of the unacceptable system conditions following the occurrence of a secured event. It is proposed to review the GB SQSS in respect of the following two aspects:</p> <ul style="list-style-type: none">▶ Stability criteria for use in stability studies (to cover credible stability related events) and▶ Whether the stability criteria should form part of the standard and to what detail it should be. <p>This is a very onerous condition in terms of system transient stability and the likelihood of its occurrence combined with the fastest protection being out of service is very low. There is scope in reviewing these criteria in order to evaluate the relative increase in risk of system instability against possible release of transmission capacity if these criteria were relaxed.</p>

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

Following the occurrence of a fault, loss of synchronism of generating plant can result in one or more of the following:

- ▶ Large fluctuations in voltage and frequency can cause mal-operation of power station auxiliaries leading to power station shutdown (loss of power infeed to the system),
- ▶ Possible tripping of consumer loads,
- ▶ Damage of generation plant and
- ▶ Mal-operation of protection possibly leading to cascaded tripping.

It is important to ensure that the system is designed to ensure that for credible contingencies (which should at least be specified at high level), the system does not become unstable. It is also worth noting that the planning criteria appropriate for steady state conditions are not sufficient for transient conditions. Therefore it is proposed that the review addresses the criteria for transient stability analysis.

Additionally it is important that the review investigates an acceptable level of relaxation of the current stability criteria and evaluates possible release of transmission capacity. Should it be feasible to release additional transmission capacity, more generation could be connected for a given amount of transmission.

6. Impact on the GB SQSSⁱⁱ

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

There might be need to create a new chapter on stability in the GB SQSS. This would deal with issues such as setting up stability studies.

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

None

6 (c) Nature and contents of amendments or effects

Possible addition of a chapter or appendix on stability.

7. Justification of the request, giving the background thereofⁱⁱⁱ

The current criteria used in stability analysis are very onerous. If additional transmission capacity could be released by relaxing the stability criteria, additional generation could be connected. It is however important to note that additional capacity would be realised in areas where stability is the predominantly limiting conditions on power transfer capabilities. The amount of transmission released would also depend on the limiting conditions and actual power transfer capabilities in the adjacent parts of the transmission system.

Noting that the power transfer limit across the Anglo-Scottish transmission circuits is imposed by stability constraints, it is worthwhile to investigate the potential release in transmission capacity on these circuits versus the associated risks of system instability, both transient and small signal instability. These circuits play a key role in the connection of renewables in Scotland, which would benefit alongside other generation technologies in Scotland if additional transmission capacity is released on these circuits.

8. Potential impact of the request on other Core Industry Documents^{iv}

None

9. Potential impact of request on relevant computer systems^v

None

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 request 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 request 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) Core Industry 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 request 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.