Transmission licensees, generators, suppliers, consumer groups and any other party who has an interest in the transmission arrangements

Promoting choice and value for all gas and electricity customers

andrew.burgess.ofgem.gov.uk
020 7901 7159

Date: 10 May 2012

National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS): proposed modification (GSR008)

On 19 October 2011 the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS or SQSS) Review Group (the Review Group) submitted an Amendment Report to us[1] setting out a proposal to modify the SQSS. This proposal is known as GSR008 – "Regional Variations and wider issues" and aims to clarify the existing standard in a number of areas and ensure consistency with other engineering standards. This letter sets out the process we intend to follow in considering the proposed changes to the SQSS and summarises our initial assessment of the proposal. We are consulting on this process, our initial assessment and the GSR008 proposal in general and would welcome views by 8 June 2012.

Background and context

Licence conditions C17, D3 and E17 require owners and operators of onshore and offshore transmission systems to plan and operate the transmission system in accordance with the NETS SQSS approved by us. The SQSS sets out the criteria and methodologies that those licensees must use in the planning and operation of the transmission system. The current version of the SQSS referred to in the transmission licence conditions is version 2.2.

In 2008 the Review Group established a wide ranging review of the NETS SQSS (often referred to as the 'Fundamental Review'). Subsequently this review was split into two parts: GSR008 (Regional Variations and Wider Issues) and GSR009 (Intermittent Generation). The GSR008 proposal was subject to two consultations[2] by the Review Group before a final proposal was submitted to us for a decision.

The proposal

A number of the proposed changes can be categorised as either removing regional variations which are no longer appropriate, clarifications or ensuring consistency with engineering standards (such as P2/6)[3].

[1] The terms 'the Authority', 'Ofgem' and 'we' are used interchangeably in this document. Ofgem is the Office of the Gas and Electricity Markets Authority.
[2] The first consultation, in April 2010, sought feedback on the findings and recommendations of the review to date (referred to as the 'principles consultation'). The second consultation, in March 2011, was focused on the text changes that would be necessary to implement the proposals made (the 'text consultation'). We note that minor changes have been made to the proposals since these consultations. The final proposals are reflected in the latest draft version of the SQSS on NGET's website : http://www.nationalgrid.com/NR/rdonlyres/0F3512E9-EFE9-4A3F-8F0F-57FBD67652DA/52977/NETSSQSSversion23changemarked1.pdf
[3] Engineering Standard P2/6 (ER P2/6) is the current distribution network planning standard relating to security of supply. ER P2/6 forms part of the distribution code. Distribution licensees have a licence condition requiring compliance with the distribution code.

Removal of regional variations

- The proposal would amend the assumptions currently used on the reactive power output of generators in England & Wales to match the treatment in Scotland.
- The requirements currently in place on double circuit line faults in the SPT transmission area would be amended to bring these in line with the rest of GB.
- The proposal removes a number of regional variations in the existing voltage standards by differentiating by voltage level rather than geographical location[4].

Clarifications

- The use of dynamic ratings in the SQSS would be clarified.
- The proposal would clarify the scope of the SQSS in terms of the applicability of generator connection criteria.
- The proposal clarifies how generation and demand criteria are applied when they overlap.

Consistency with P2/6

- The proposal would bring the way demand security requirements are presented in the SQSS in line with P2/6 (this would not alter the overall level of demand security).
- The proposal would mean the SQSS would give more detail on the contribution of embedded generation to demand security (consistent with P2/6).

There are also a number of proposed changes which do not fall into these categories:

- A small adjustment to the treatment of circuit outages (where circuits do not contain cable sections that are wholly or mainly outside a substation).
- A requirement that circuit breaker faults do not cause unacceptable changes in voltage.
- A requirement that voltage implications of generator trips should be considered as a secured event in the same way as, for example, the loss of a transmission line.
- In terms of voltage standards, differentiation between hard limits (which must not be exceeded) and soft limits (which would offer more flexibility in how they are met).
- In order to prevent the above changes having unintended consequences, some minor adjustments have been proposed to the voltage step change criteria.

A more detailed summary of the proposal can be found in Annex 1. Full details of the proposals can be found in the Review Group's Amendment Report[5] and in the final associated change marked version of the SQSS[6].

Intended process

Where we are proposing to make a decision that is 'important' (within the meaning of section 5A of the Utilities Act 2000) we are normally required to undertake an impact assessment (IA). Proposals are considered important where they make a major change to our activities, have a significant impact on parties engaged in relevant industry activities or on the general public, or have significant effects on the environment.

Given the nature of the changes to the SQSS being proposed under GSR008, we do not consider that the proposal is 'important' within the meaning of section 5A. The proposal is not intended to bring about significant changes to the security and quality of supply of electricity but rather to ensure that the SQSS remains fit for purpose, internally consistent, and consistent with other standards. The proposal does not, in our view, create any significant environmental effects; nor does it have a significant impact on those engaged in the relevant activities or the general public.

[4] In the summary table provided in annex 1, this forms part of the Revised Voltage Standard rather than sitting within the regional variations section.

[5] http://www.nationalgrid.com/NR/rdonlyres/19A7BE38-56F6-4BAA-99CA-4E3D22D15740/49669/ReporttoAuthority14Oct2011_3_.pdf

[6] Note: this has been updated since the submission of the Amendment Report http://www.nationalgrid.com/NR/rdonlyres/0F3512E9-EFE9-4A3F-8F0F-57FBD67652DA/52977/NETSSQSSversion23changemarked1.pdf

The Office of Gas and Electricity Markets
9 Millbank London SW1P 3GE **Tel** 020 7901 7000 **Fax** 020 7901 7066 **www.ofgem.gov.uk**

There are occasions when, in the interests of transparency, we will carry out an IA that is not required by statute. However, the GSR008 proposal has widely been consulted on by the Review Group prior to the completion of the Amendment Report. We do not therefore feel that an IA would add significantly to the process.

For these reasons, we have not carried out an IA. However, we wish to give interested parties a further opportunity to comment on the proposal and are therefore inviting comments in response to this open letter.

Our initial assessment

Initial assessment against the Relevant Principles of the Review Group

In this section we summarise our initial assessment of the GSR008 proposal against the relevant principles of the SQSS Review Group.

1. *Facilitate the planning, development and maintenance of an efficient, coordinated and economical system of electricity transmission, and the operation of that system in an efficient, economic and coordinated manner.*

A more detailed summary of the potential impact of GSR008 can be found in Annex 1. However, the proposed changes to the SQSS set out in GSR008 would appear on balance to make the SQSS clearer and more consistent (both internally and with other key industry documents). Therefore, our initial assessment is that the proposal would better facilitate this objective.

2. *Ensure an appropriate level of security and quality of supply and safe operation of the National Electricity Transmission System.*

Neither the Review Group nor our internal review, have identified any adverse impact on the security and quality of supply. Our initial assessment is that the proposal would be broadly neutral in terms of this objective.

3. *Facilitate effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity.*

The Review Group did not identify any specific effect on competition from the GSR008 proposal. Similarly, our review of the proposals indicates that their nature is unlikely to have a material effect on competition. Therefore, our initial assessment is that the proposal would be broadly neutral in terms of this objective.

4. *Facilitate electricity Transmission Licensees to comply with their obligations under EU law.*

It is our initial assessment that the GSR008 proposals would not materially affect on the Transmission Licensees' obligations under EU law and therefore that the proposals will be broadly neutral in terms of this objective.

Initial assessment against the Authority's statutory objectives and duties

The Authority's principal objective is to protect the interests of existing and future consumers, wherever appropriate by promoting effective competition. Our initial assessment is that the proposal will be broadly neutral in terms of its impact on consumers, competition and sustainable development.

We do, however, recognise that the proposal will improve the clarity of the SQSS and its consistency (both internally and with other key industry documents). Therefore, we are

The Office of Gas and Electricity Markets
9 Millbank London SW1P 3GE **Tel** 020 7901 7000 **Fax** 020 7901 7066 **www.ofgem.gov.uk**

minded to approve the proposed change, subject to any issues raised in response to this consultation.

Next steps

We welcome any comments from interested parties on our intended approach, our initial assessment and on the GSR008 proposal itself. Responses should be sent, preferably by e-mail, to Sheona Mackenzie (sheona.mackenzie@ofgem.gov.uk; telephone 0141 331 6019) by 8 June 2012.

This is a consultation period of four weeks, which we consider to be an appropriate length in this instance because of the previous industry consultations that have been undertaken on this proposal, as a result of which interested parties are likely to be familiar with the proposal and to have previously expressed any concerns they may have.

Any questions about the content of this letter should also be addressed to Sheona Mackenzie (contact details above) in the first instance.

Yours faithfully

Andrew Burgess
Associate Partner, Transmission and Distribution Policy

The Office of Gas and Electricity Markets
9 Millbank London SW1P 3GE **Tel** 020 7901 7000 **Fax** 020 7901 7066 **www.ofgem.gov.uk**

GSR008 proposals – Summary of changes by theme

Note: This summary is intended to be used as a high level overview of the key changes proposed in GSR008. It should be read in conjunction with the GSR008 Amendment Report and the marked up version of the SQSS showing the proposed changes to the text, both of which are available on National Grid's website.

	Proposed change	Relevant SQSS paragraphs	Likely impact
Removal of regional variations			
Assumed reactive power output of generators	• The existing standard specifies that registered capacity is used for system stability studies in England and Wales whilst in Scotland the operating state can be determined in light of the expected overall system configuration. • It is proposed to amend the treatment in England and Wales to match that in Scotland.	• 2.8.2/2.8.3 – amended so that the whole transmission system is subject to the same condition. • 2.8.5 (now 2.8.4) – changed so that it refers to the onshore transmission system rather than the NETS. • Paragraph references are updated throughout chapter 2.	• This is effectively a relaxation of the conditions in England and Wales to match those in Scotland – no change for SPT and SHETL. • The change is designed to enable planners 'reasonable discretion' when setting the reactive power output levels of generators (ie if the default rating is unreasonable). • This appears to be a relatively minor change which is unlikely to significantly change the generation backgrounds that are studied. • The change would make the process more consistent, but is unlikely to have any material impact on users.
Double circuit line faults	• The existing standard sets out that for post fault criteria a double circuit line is not considered if it is wholly within the SPT area (Sections 2 and 4). • The proposals would remove this difference in section 2 of the SQSS although it would remain in section 4 (further detailed analysis would be needed to explore removing this).	• 2.10.2- removal of the term 'on the *supergrid*' (essentially allowing the condition to apply on parts of the transmission system below 275kV. • 2.10.3 – removal of this clause (essentially opening the conditions up to the whole system). • In addition paragraph references updated throughout chapter 2.	• It is not thought that removing the regional variation from Section 2 of the SQSS would have a material impact. • The Review Group consider that the existing variation is now redundant.
Clarifications			
Use of dynamic ratings	• Amend definitions of 'Pre-fault rating' and 'Unacceptable Loading' to refer explicitly to dynamic rating for operational timescales.	• Pre-fault ratings definition would change (section 11 of the SQSS). • Unacceptable overloading definition would change (section 11 of SQSS).	• This is intended to be a clarification only. • Nothing in the existing standard would prevent the use of dynamic ratings, but this change would make it explicit that they can be used to cost effectively allow power transfers above the seasonally derived level when conditions permit.
Applicability of generation connection criteria	• Proposed changes to section 1 to clarify the scope of latter sections of the SQSS.	• 1.10 – change 'generation points of connection' to 'grid entry points (GEPs)'	• Clarification only – the existing wording could have an unintended interpretation. There should be no material impact as a result of this change.

	Proposed change	Relevant SQSS paragraphs	Likely impact
Overlap of generation and demand criteria	• Embedded generation can sometimes exceed local demand causing the GSP to export – currently it is unclear in the standard whether generation or demand criteria, or both should be applied in these circumstances. • It is proposed that exporting GSPs be designed to comply with both generation criteria (section 2) and demand criteria (section 3). • This means that where sites have both generation and demand connections the security provided isn't lower than for a standard demand connection of that size.	• 1.23 – clarifies that the situation described in 1.23.1 (previously part of 1.23) is an example. • Additional text is included as 1.23.1 giving clarification/example.	• Should have a very minor impact. TOs previously proceeded on the basis that this was the position – this simply clarifies the SQSS. • Overlapping generation and demand connection criteria will place demand or generation in a position which is no less secure than if the either criteria were separately applied. • Further work in this area will be carried forward separately.
Consistency with Engineering Recommendation P2/6			
Demand Security Table – presentational changes	• There are differences in the way demand criteria are presented in the SQSS and P2/6. The proposal is to clarify the SQSS approach and make the two more comparable. • This would involve introducing a 'demand group class' field and using bandings which are consistent with P2/6.	• Table 3.1 – updated to match the presentation in P2/6 and improve clarity.	• This is only a presentational issue – the criteria themselves would not change.
Contribution of embedded generation to demand security	• The SQSS treatment of embedded generation (for demand security purposes) is much less granular than that in P2/6. • The proposals would add text to give greater clarity and revise a table in the SQSS which indicates the maximum effective contribution of different types of embedded generation.	• 3.5 – new text clarifying the position for connections with both demand and generation present. Three scenarios are outlined: o No embedded generation. o Small/medium embedded power stations. o Large embedded power stations • 3.6.4 – (formerly 3.5.4) would be split into two paragraphs – one dealing with small/medium, and one with large embedded power stations. • 3.9 – would be amended to incorporate 3.10. • 3.14 – new text sets out criteria for assessing contribution of generation to	• The change should result in a more accurate consideration of the contribution of embedded generation. • The change is aimed at bringing more consistency between standards. • The impact of this should be that the SQSS is clearer regarding the treatment of embedded generation.

The Office of Gas and Electricity Markets
9 Millbank London SW1P 3GE **Tel** 020 7901 7000 **Fax** 020 7901 7066 **www.ofgem.gov.uk**

	Proposed change	Relevant SQSS paragraphs	Likely impact
		group security. • 3.15 & Table 3.2 (replacing 3.2 and 3.3) set out the effective contribution of large power stations. Specifies treatment for intermittent generation.	
Other changes			
Adjusted N-1-1 requirement	• Currently a single circuit outage is considered with the prior outage of another transmission circuit, generating unit, etc. • The proposal is to relax this slightly in England and Wales, to only consider the prior outage of another transmission circuit when the circuit on prior outage contains a cable section that is wholly or mainly outside a substation. • Also extended criteria to include several generating units sharing a common circuit breaker.	• 4.6.2 – the addition of a separate criteria for a single generation circuit (this includes multiple generating units sharing a single circuit breaker). • 4.6.6 – addition of text stating that the circuit on prior outage contains a circuit wholly or mainly outside a substation. • Consequential changes are also made to paragraphs 5.1.2 and 9.1.2 (normal operational criteria for onshore and offshore transmission system).	• Not expected to have a significant impact, but in a small number of cases it may mean less transmission capacity being built – reducing capital costs. • Additional cost (constraints) may arise in cases where capacity is lower than under the current approach – increasing constraint costs. • Two independent overlapping non-transient overhead line outages within a region during peak demand are rare (and likely to be for a short duration). Therefore on balance it could reasonably be expected to reduce costs. • The change to paragraph 4.6.6, would only affect the NGET transmission system (the review group indicated that the N-1-1 peak demand criteria only drives investment on a small number of boundaries). • There is no change for SHETL and SPT areas.
Circuit breaker faults	• Currently the standard does not require that circuit breakers are considered when assessing network voltage compliance. Although previous versions of the standard did require this. • The proposal adds a requirement to ensure that circuit breaker faults do not cause unacceptable voltage rises.	• 4.11 – new paragraph adding a condition that under an intact system/planned outage a circuit breaker fault or operational switching should not cause an unacceptably high voltage. • The term 'unacceptably high voltage' is added to the list of defined terms.	• Circuit breaker faults are rare (SP statistics show nine faults in 16 years). • The review group felt that in almost all cases compliance could be achieved by redesigning the arrangement of equipment within a substation rather than purchasing additional equipment.
Generator trips	• Currently there is a requirement in the standard for generation connections not to cause an unacceptable change in frequency (infeed loss risk limits). However there is no equivalent requirement for generation connections not to cause an unacceptable change in voltage.	Inclusion of generation trip as a secured event means amending the following paragraphs: • 2.10.1 • 2.10.5 • Adding 2.10.6 • 3.9.2 • Adding 4.6.2 • Adding 5.1.2	• The impact would vary depending on the size of the connection. • Given the proposal is effectively bringing back previous conditions it will not impact on the whole system as much will have been planned/built based on the 'old' standard. On that basis, it is not thought to have a significant impact. • New connections are most likely to be

The Office of Gas and Electricity Markets
9 Millbank London SW1P 3GE **Tel** 020 7901 7000 **Fax** 020 7901 7066 **www.ofgem.gov.uk**

	Proposed change	Relevant SQSS paragraphs	Likely impact
	• Previous standards did consider a loss of generation as a secured event. • The proposal would mean that a loss generation is treated as a secured event, in the same way as the loss of a transmission line etc.	• 8.8.2 • Adding 8.8.4 • Adding 9.1.2	affected. However as the system was essentially designed around the older larger units the reintroduction is not expected to have a significant impact. • The Review Group consider that any impact would be beneficial to the quality of supply which would offset any additional costs.
Revised voltage standards	• The existing voltage standards include some regional variations. • It is proposed to remove several of these variations by differentiating by voltage level rather than region (for 132kV area). • It is proposed that the standard will differentiate between hard limits (which must not be exceeded – driven by infrastructure capabilities) and soft limits (which can be given more careful consideration during scheme design). • It is proposed to allow more discretion in the pre-fault voltage levels whilst ensuring post-fault criteria are always complied with. • It is proposed to differentiate between frequent and infrequent operational switching events.	Much of section 6 of the SQSS would change. **Planning** (existing text is replaced) • 6.1 – sets out what would be considered an unacceptable voltage condition. • 6.2 – sets out what should/should not be used in order to achieve a steady state voltage after a secured event. • 6.3 & Table 6.1 – set out the pre-fault planning voltage limits (NB – a minimum is now given for 132kV network). • 6.4 & Table 6.2 set out the voltage limits to be observed following a secured event (NB this replaces table 6.3 and now includes minimum for the 132kV network). • 6.5 – states that for sites with group demand less than 1500MW measures should be identified at the planning stage to allow operation requirements be met. **Operational** (sig. changes/additional text) • 6.6 – states that a voltage condition is unacceptable if they are not able to achieve pre-fault steady state voltages as specified in this section. • Table 6.3 – included to distinguish between pre-fault and other limits. • Table 6.4 - replaces table 6.4 – format changes – small change to 275kV limit (by 1kV).	• No change in overall voltage limits (these are set in statute) but the proposal will give more flexibility in design potentially allowing efficiencies to be gained. • The proposed changes are also intended to improve consistency across the NETS. • The Review Group considered that the proposal would not impact on the security of supply.

The Office of Gas and Electricity Markets
9 Millbank London SW1P 3GE **Tel** 020 7901 7000 **Fax** 020 7901 7066 **www.ofgem.gov.uk**

	Proposed change	Relevant SQSS paragraphs	Likely impact
		Voltage step change limits • 6.7 – states that the voltage step change limits apply to all interfaces between users' plant and the NETS (where connected). • 6.8 – states that load response must be taken into account. • Table 6.5 – replaces 6.2 &6.4 – replaces reference to EPR28 with specifics, also additional detail for substations. • Figure 6.1 – showing max voltage step changes permitted for operational switching.	
Voltage step change criteria	• This change is proposed to prevent unintended consequences of the other changes proposed (as the proposal could otherwise accidently introduce more onerous voltage requirements). • The proposal would mean that - for planning demand groups less than 1500MW (item 11 of table 6.5) demand left connected post fault on the 132kV system, would be required to remain within a voltage variation range of -12% - +6%. - For operation these same limits would only apply for demand groups greater than 1500MW.	• Note 12 within table 6.5 would be amended to ensure consistency with Section 5.	• Intended to ensure consistency between section 5 & 6 of the standard. • The proposal is intended to prevent more onerous conditions becoming the default as a consequence of other proposed changes. • The intention is that this change in the text would prevent a change in the actual requirements.

The Office of Gas and Electricity Markets
9 Millbank London SW1P 3GE **Tel** 020 7901 7000 **Fax** 020 7901 7066 **www.ofgem.gov.uk**