# National Electricity Transmission System Security and Quality of Supply Standards (NETS SQSS)

**Modification Register** 

(Updated November 2017)

## **Modification Summary**

Dates in **bold** are confirmed dates, while dates in *italics* are anticipated dates for future milestones.

SQSS GSR No.	Title	Modification Proposal Raised	Workgroup Stage	Previous Workgroup Meeting	Next Workgroup Meeting	Workgroup Report Approved by Review Panel	I/C Published	I/C Closed	Responses Received	Modification Report Submitted to Authority	Authority Decision	Implementation Date
012	Treatment of Interconnectors	5 October 2010	<b>→</b>	24 May 2014	TBC							
016	Embedded Generation Assumptions	22 July 2013	<b>→</b>	11 January 2017	<b>→</b>							
018	Treatment of Sub- Synchronous Oscillations in the NETS SQSS	4 December 2013	<b>→</b>	<b>→</b>	<b>&gt;</b>	2 Dec 2015	11 April 2016	09 May 2016	<b>→</b>	31 Jan 2017	7 March 2017	TBC
022	Security and Economy Required Transfer Conditions	1 June 2016	<b>→</b>	24 May 2014	TBC							

# **Ongoing Modifications**

SQSS GSR No.	012		
Title	Treatment of Interconnectors		
Proposer	NETS SQSS Review Panel Secretary on behalf of the Three Transmission Licensees (SHETL, SPT and NGET)		
Submitted	5 October 2010		
	Modification Description	Progress	
within the NETS: There are significonstruction and in flows within shipportant to uninterconnection a	cant new interconnections to external systems currently under more are planned. Interconnectors can result in large changes nort timescales across the transmission system. It is therefore derstand the implications and means of managing greater and market coupling with other European nations, including the interconnector flow can be relied upon to meet demand and	The Modification Proposal The Modification Proposal was proposed at the Industry Workshop on 5 October 2010 where the NETS SQSS Review Panel determined that the Modification Proposal will progress to a Workgroup.  Workgroup The NETS SQSS Review Panel determined that a Workgroup was required to investigate the issues around the treatment of interconnectors within the NETS SQSS. The Terms of Reference have been agreed by the NETS SQSS Review Panel and the first Workgroup meeting took place in March 2011.  However, due to personnel change and the difficulties this Workgroup was experiencing, the Workgroup has formally been re-established and re-started with a new Workgroup lead.  The writing of the Workgroup Report is in progress.  Industry Consultation GSR012 has not yet progressed to this stage.  Modification Report GSR012 has not yet progressed to this stage.  Authority Decision & Implementation GSR012 is yet to be submitted to the Authority for a decision.	

SQSS GSR No.	016		
Title	Embedded Generation Assumptions		
Proposer	Vandad Hamidi (NGET)		
Submitted	22 July 2013		
	Modification Description	Progress	
Chapter 4 MITS specified certain type) with different These scaling fargeneration over 1 Boundary transfers the boundaries. To week 24 Day penetration of exaculate boundary generators within	sed to specify how embedded generation should be treated in studies. The GSR009 modification to the NETS SQSS in 2011 scaling factors for various types of generation (based on fuel ent scaling factors under the economy and security criteria. actors are only considered for "large" power stations (i.e. 00MW in England and Wales).  To calculations are performed assuming static net demand within the net demand is supplied to transmission companies as part ta submissions from the DNOs. Given the increase in the mbedded generation, it is no longer possible to accurately ary transfers without considering the impact of embedded in the boundaries. To date, there is no standard treatment of ation in the DNO submissions, leading to various assumptions	Modification Proposal The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 22 July 2013 where the NETS SQSS Review Panel determined that the Modification Proposal will progress to a Workgroup, subject to ratification of the Terms of Reference.  Workgroup The NETS SQSS Review Panel determined that a Workgroup was required to investigate these issues. The Terms of Reference have been agreed by the NETS SQSS Review Panel and a Workgroup has been established with Workgroup Meetings in progress. The Draft Workgroup Report is currently being reviewed by the Workgroup.  Industry Consultation GSR016 has not yet progressed to this stage.	
It is therefore recommended to amend the NETS SQSS to explicitly specify how to include the impact of small and medium power stations on boundary calculations.		Modification Report GSR016 has not yet progressed to this stage.	
		Authority Decision & Implementation GSR016 has yet to be submitted to the Authority for a decision.	

SQSS GSR No.	018		
Title	Treatment of Sub-Synchronous Oscillations in the NETS SQSS		
Proposer	Graham Stein (NGET)		
Submitted	Submitted 4 December 2013		
	Modification Description Progress		

#### **Modification Description**

A number of Transmission Licensees and Transmission Users are in the process of enhancing their networks or connecting generation using Series Capacitor and / or HVDC technology. Both of these types of equipment can cause sub-synchronous oscillations (SSO) to occur by interacting with other User's equipment in the form of sub-synchronous resonance (SSR) or subsynchronous torsional interaction (SSTI).

The Grid Code Review Panel Paper: "Suppression of Sub-Synchronous Resonance from Series Compensators" (pp13/54) proposed changes to the Grid Code to place obligations on Transmission Licensees to mitigate SSR where Series Compensation is deployed. The Grid Code Review Panel asked that these proposals be given further consideration in light of concerns raised by Transmission Licensees about how and where any SSR related obligations are expressed within the transmission frameworks. The Grid Code Review Panel also asked whether there was a need to capture SSR and SSTI within the NETS SQSS.

## **Modification Proposal**

The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 4 December 2013 where the NETS SQSS Review Panel determined that the Modification Proposal will progress to a Workgroup, subject to ratification of the Terms of Reference.

#### Workgroup

The NETS SQSS Review Panel determined that a Workgroup was required to investigate these issues. The Terms of Reference were approved at the 2 April 2014 NETS SQSS Review Panel and a Workgroup has been established. The Workgroup Report was presented and approved at the 2 December 2015 NETS SQSS Review Panel. This shall now proceed to industry consultation in due course.

### **Industry Consultation**

An Industry Consultation was published on 11 April 2016 with a closing date of 09 May 2016.

## Modification Report

A Modification Report that summarises the Industry Consultation responses has been produced and submitted to the Authority for a decision. The Modification was sent back by the authority with a request for further work to be done. The Modification Report was re-submitted to the Authority.

## **Authority Decision & Implementation**

GSR018 was re-submitted to the Authority for a decision on 31 January 2017. The Authority made a decision on 7 March 2017 and deemed that as the Modification is not time critical a statutory consultation will be issued in due course, such as when the Authority issue a decision on other SQSS Modifications.

SQSS GSR No.	022	
Title	Security and Economy Required Transfer Conditions	
Proposer	NGET	
Submitted	1 June 2016	
	Modification Description	Progress
	considers issues and interactions that arise when applying ction 4 criteria due to the availability of generation and due to ology.	Modification Proposal The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 1 June 2016 where the NETS SQSS Review Panel determined that nominations for the Workgroup would be sent out and Terms of Reference agreed.  Workgroup The amended Terms of Reference were agreed at Panel on 8 February 2017.  Industry Consultation GSR022 has not yet progressed to this stage.  Modification Report GSR022 has not yet progressed to this stage.  Authority Decision & Implementation GSR022 has not yet progressed to this stage.

## **Concluded Modifications**

SQSS GSR No.	008		
Title	Regional Variations and Wider Issues		
Proposer	NETS SQSS Review Panel Secretary on behalf of the Three T	ransmission Licensees (SHETL, SPT and NGET)	
Submitted	2008		
	Modification Description	Progress	
GSR008 seeks to	undertake a "fundamental review" of the NETS SQSS.	Modification Proposal	
		Workgroup	
		Industry Consultation An Industry Consultation was published on 23 April 2010 with a closing date of 4 June 2010. A number of responses were received.	
		Modification Report  A Modification Report has been prepared and submitted to the Authority for a decision.	
		Authority Decision & Implementation GSR008 was submitted to the Authority for a decision on 19 October 2011. The Authority made a decision on 4 July 2016 and the modification was implemented on 8 February 2017.	

SQSS GSR No.	010
Title	Review of Onshore Generation Connection Criteria
Proposer	NETS SQSS Review Panel Secretary on behalf of the Three Transmission Licensees (SHETL, SPT and NGET)
Submitted	5 October 2010

#### **Modification Description**

GSR010 was raised to continue the work of Workgroup 2 (WG2) of the fundamental NETS SQSS Review (GSR008) which had been investigating Generation Connection Criteria.

Presently the NETS SQSS specifies the same standard of connection for all generators. However, customers can voluntarily opt for a less robust connection if they consider the financial implications of doing so to be favourable, providing they do not adversely affect other users.

WG2 considered that providing a firm connection for a small intermittent generator could be uneconomic but that such customers may be nervous to accept a non-standard connection. WG2 therefore proposed a deterministic methodology that specifies different minimum connection robustness for different generator capacities and source-fuel load factors. It was proposed that all tiers of connection would be adequate for the full capacity of generation during system intact conditions but that the different tiers would provide varying levels of capacity following different types of faults. The connection standard would be both a default design and a minimum standard - customers could voluntarily opt for a more robust connection but could not opt for a less robust connection. In other words, a small intermittent generator could still opt to 'upgrade' to a firm connection but a large base load generator could not 'downgrade' to a lower connection standard.

#### Modification Proposal

The Modification Proposal was proposed at the Industry Workshop on 5 October 2010 where the NETS SQSS Review Panel determined that the Modification Proposal will progress to a Workgroup.

**Progress** 

#### Workgroup

The NETS SQSS Review Panel determined that a Workgroup was required to investigate the issues around Onshore Generation Connection Criteria. The Terms of Reference have been agreed by the NETS SQSS Review Panel and the first Workgroup meeting took place in February 2011.

#### **Industry Consultation**

An Industry Consultation was published on 18 June 2012 with a closing date of 17 August 2012. Three responses were received (E.ON, International Power and SHETL).

## **Modification Report**

The decision was taken at the 1 April 2015 NETS SQSS Review Panel that a Guidance Note shall formally replace any official submission to the Authority to request a change to the NETS SQSS.

## **Authority Decision & Implementation**

The Guidance Note negates the need for a change to the NETS SQSS and therefore no Authority decision is required. GSR010: Review of Onshore Entry Criteria is therefore considered as concluded and closed and shall be removed from the NETS SQSS Modification Register accordingly.

SQSS GSR No.	011	
Title	Review of Offshore Networks	
Proposer	NETS SQSS Review Panel Secretary on behalf of the Three Tr	ansmission Licensees (SHETL, SPT and NGET)
Submitted	5 October 2010	
	Modification Description	Progress
GSR011 was raised to develop NETS SQSS criteria applicable to interconnected offshore networks.  The current standards provide criteria for radially connected windfarms. However, there is a need for criteria to guide the cost-effective development of interconnected offshore transmission networks suitable for connecting very large wind farms (>1500MW), located far from shore (100-300km), such as those proposed in the Crown Estate's Round 3 programme.		Modification Proposal The Modification Proposal was proposed at the Industry Workshop on 5 October 2010 where the NETS SQSS Review Panel determined that the Modification Proposal will progress to a Workgroup.  Workgroup The NETS SQSS Review Panel determined that a Workgroup was required to investigate the issues around NETS SQSS criteria applicable to interconnected offshore networks. The Terms of Reference have been agreed by the NETS SQSS Review Panel and the first Workgroup meeting took place in February 2011.
		Industry Consultation An Industry Consultation was published on 6 August 2012 with a closing date of 1 October 2012. No responses were received, although subsequent discussion with the Authority produced queries which have been worked through ahead of the submission of the Modification Report.  Modification Report A revised Modification Report, addressing the queries raised by the Authority, was submitted on 15 May 2013. Further queries were subsequently raised and these continue to be worked through.  Authority Decision & Implementation GSR011 was formally re-submitted to the Authority for a decision on 18 August 2014. The Authority made a decision on 4 July 2016 and the modification was implemented on 8 February 2017.

SQSS GSR No.	014	
Title	Offshore Transformer Requirements	
Proposer	John Zammit-Haber (NGET)	
Submitted	19 November 2012	
	Modification Description	Progress
GSR014 was raised to investigate whether the current requirements for two transformers and two substation bays where offshore cables connect to the onshore transmission system is necessary or whether two transformers connected to a single bay or even a single transformer and single bay would be sufficient.		Modification Proposal  The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 19 November 2012 where the NETS SQSS Review Panel determined that the Modification Proposal will progress to a Workgroup.
		Workgroup The NETS SQSS Review Panel determined that a Workgroup was required to investigate whether to amend the requirement for two transformers and two substation bays where offshore cables connect to the onshore transmission system. The Terms of Reference have been agreed by the NETS SQSS Review Panel and a Workgroup has been established. The Workgroup Report has since been approved at the April 2014 NETS SQSS Review Panel.
		Industry Consultation An Industry Consultation was published on 13 October 2014 with a closing date of 14 November 2014. Five responses were received (Blue Transmission, DONG Energy, Scottish Power Renewables, Statkraft and National Grid Electricity Transmission).
		Modification Report  A Modification Report was presented to the 5 August 2015 NETS SQSS Review Panel. It was agreed that this should now be submitted to the Authority.
		The Modification Report was well developed and almost complete however, there were a number of small changes to be made prior to its submission. Due to change of personnel the changes are still outstanding and the Report has not been submitted to the Authority.
		The Authority has advised that due to 2 years passing since the CBA was completed; a new CBA would be required before the modification could be submitted for decision.
		Withdrawal The SQSS Review Panel voted to withdraw this Modification on 14 June 2017.

SQSS GSR No.	015	
Title	Normal Infeed Loss Risk	
Proposer	Graham Stein (NGET)	
Submitted	27 May 2013	
	Modification Description	Progress
to 1320MW to th from 1 April 2014 The proposed ch procure additiona	sed to amend the GSR007 requirement to contain a loss of up e normal infeed loss criteria of -0.5Hz in operational timescales onwards, without restricting new connection activity.  In ange would therefore avoid an increase in costs incurred to all frequency response. If the change is not made, these costs in the absence of any actual change in the risk of frequency 19.5Hz.	The Modification Proposal The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 5 June 2013. Further comment was invited from NETS SQSS Review Panel Members. It was agreed that the Modification Proposal will not progress to a Workgroup but straight to Industry Consultation.  Workgroup A Workgroup was not established for GSR015.  Industry Consultation An Industry Consultation was published on 11 November 2013 with a closing date of 6 December 2013. Three responses were received (EDF Energy, National Grid Electricity Transmission and Scottish and Southern Energy).  Modification Report A Modification Report A Modification Report that summarises the Industry Consultation responses has been produced and submitted to the Authority for a decision.  Authority Decision & Implementation GSR015 was initially submitted to the Authority for a decision on 10 March 2014. The Authority responded with a number of questions. These were addressed and GSR015 was formally re-submitted to the Authority for a decision on 13 August 2014. The Authority approved GSR015 on 3 December 2014. However, for these changes to take effect, the Authority will need to modify the electricity transmission licenses so that they refer to the new version of the NETS SQSS. Since this modification is not considered to be time-critical, the Authority has not yet issued a statutory consultation to modify the licenses. The Authority will do this at an appropriate stage in the future.  The Authority made a decision to implement this modification alongside GSR008 and GSR011 on 8 February 2017.

SQSS GSR No.	017	
Title	Treatment of Switch Faults in Operational Timescales	
Proposer	Ben Marshall (NGET)	
Submitted	5 February 2014	
	Modification Description	Progress
generation conne to the infrequent system issues su collapse depending	t version of the NETS SQSS, switch faults are secured for new ections but only with respect to limiting the loss of power infeed t infeed loss risk. Switch faults can potentially cause wider uch as instability, system splits, cascade tripping and voltage ng on the substation at which they occur, the network running the generation and demand levels at the time of the fault.	Modification Proposal The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 5 February 2014 where the NETS SQSS Review Panel determined that the Modification Proposal will progress to a Workgroup, subject to ratification of the Terms of Reference.
GSR017 will therefore undertake a review of the current NETS SQSS and will determine the need case for securing against the above challenges in the event of switch faults in operational timescales.		Workgroup The NETS SQSS Review Panel determined that a Workgroup was required to investigate these issues. The Terms of Reference have been agreed by the NETS SQSS Review Panel and a Workgroup has been established.
		Due to the complex issues this Workgroup is investigating, they are not expected to report back to the NETS SQSS Review Panel in 2015. A withdrawal paper was submitted to Panel on 8 February 2017 and subsequently this Modification has been withdrawn.
		Industry Consultation GSR017 did not progress to this stage.
		Modification Report GSR017 did not progress to this stage.
		Authority Decision & Implementation GSR017 did not progress to this stage.

SQSS GSR No.	019	
Title	Review of Chapter 7 Double Busbar Requirements	
Proposer	Gareth Parker (DONG Energy)	
Submitted	2 April 2014	
	Modification Description	Progress
the use of a dor substation for of benefit analysis this requirement wind-farm connect within the NETS arrangements is assessment, this demonstrated for	aggests that current interpretation of the NETS SQSS mandates uble busbar (or equivalent) arrangement for the first onshore ffshore transmission system connections. However, a cost (CBA) performed by DONG Energy aims to demonstrate that is not the most economic and efficient solution for all offshore ctions. DONG Energy therefore proposes that this interpretation S SQSS for the need to have double busbar substation addressed and subject to NETS SQSS Review Panel deterministic requirement be removed if no net benefit can be this configuration of switchgear when considering the specific offshore generation connections.	The Modification Proposal The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 2 April 2014 where the NETS SQSS Review Panel determined that the Modification Proposal required further consideration at a dedicated Workshop that was scheduled for 23 May 2014.  Workgroup Following this Workshop, the NETS SQSS Review Panel determined that a Workgroup was required to investigate these issues further. The Terms of Reference were approved at the 4 June 2014 NETS SQSS Review Panel and a Workgroup has been established.  Following a review at the Panel held on 5 October 2016 this this modification was re-tabled for an update to be given at the next Panel meeting on 5 December 2016. The Panel voted to withdraw this Modification at the December Panel meeting; this was communicated with DONG whom accepted the withdrawal. A Paper has not been submitted. The Modification will either be absorbed in the work around the Chapter 7 Review or withdrawn.  Withdrawal

The SQSS Review Panel voted to request withdrawal of this Modification on 14 June 2017. Consequently the Modification was withdrawn by the Proposer.

SQSS GSR No.	020	
Title	Modification of Clause 7.8.1.1 to Allow Single Transformer Offshore Substations of Capacity Greater Than 90MW	
Proposer	Nigel Platt (Siemens Power Transmission)	
Submitted	27 October 2014	
-	Modification Description	Progress
provide lower confeature of these particular a recinstallation. Sien prevents the use and that this is Siemens have the	with other manufacturers, are developing new systems to est export of offshore wind farm power to shore. A common systems is the simplification of the offshore equipment and induction in the number of transformers on each offshore enems propose that current interpretation of the NETS SQSS of single transformer installations at power levels above 90MW shampering the introduction of these lower cost solutions. erefore requested a review of the relevant sections of the NETS are compliant use of these new, lower cost solutions.	The Modification Proposal The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 3 December 2014 where the NETS SQSS Review Panel determined that the Modification Proposal required further consideration and that a Workgroup should be established.  Workgroup The NETS SQSS Review Panel determined that a Workgroup was required to investigate these issues. The Terms of Reference were approved at the 1 April 2015 NETS SQSS Review Panel and a Workgroup has been established. The first Workgroup meeting was held on 5 June 2015.  Industry Consultation GSR020 has not yet progressed to this stage.  Modification Report The decision was taken at the 7 October 2015 NETS SQSS Review Panel that an Open Letter and Guidance Note clarifying the relevant sections of the standards shall formally replace any official submission to the Authority to request a change to the NETS SQSS.  Authority Decision & Implementation The Open Letter and Guidance Note negates the need for a change to the NETS SQSS and therefore no Authority decision is required. GSR020: Modification of Clause 7.8.1.1 to Allow Single Transformer Offshore Substations of Capacity Greater Than 90MW is therefore considered as concluded and closed and shall be removed from the NETS SQSS Modification Register accordingly.

SQSS GSR No.	021	
Title	Operational and Planning Criteria for 220kV Transmission Assets	
Proposer	Bless Kuri (SHE Transmission)	
Submitted	4 February 2015	
Modification Description		Progress
The first 220kV assets will shortly be introduced onto the National Electricity Transmission System (NETS) with the commissioning of the Kintyre-Hunterston subsea AC link that shall consist of two 220kV subsea cables between Crossaig on the Kintyre peninsula and Hunterston.  This proposal therefore seeks to modify the NETS SQSS to adopt the 275kV planning and operational voltage limits for 220kV and to modify the defined term "supergrid" to include 220kV by aligning this with the Grid Code definition which considers any voltage above 220kV as a supergrid voltage.		Modification Proposal The Modification Proposal was proposed at the NETS SQSS Review Panel meeting on 4 February 2015.  Workgroup The NETS SQSS Review Panel was of the opinion that a Workgroup was not required to progress this Modification Proposal. However, a detailed impact assessment was requested. This was completed by Bless Kuri and presented at the 1 April 2015 NETS SQSS Review Panel.
		Industry Consultation A draft Industry Consultation Document was presented at the 3 June 2015 NETS SQSS Review Panel. This was released for Industry Consultation on 21 September 2015 for a period of 20 working days closing on 16 October 2015. One response (Vattenfall) was received.
		Modification Report The Modification Report was presented and approved at the 2 December 2015 NETS SQSS Review Panel.  Authority Decision & Implementation GSR021 was formally submitted to the Authority for a decision on 23 December 2015. The Authority rejected the modification on 01 July 2016.