NETS SQSS Review Panel – Modification Proposal

Modelling of Security and Economy Planned Transfer Conditions

Date Raised: 7th October 2015

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Summary

This Modification proposes review of the availability factors and scaling factors used in setting up the power system transfer conditions for design of the Main Interconnected Transmission System (MITS) in Chapter 4 of the NETS SQSS.

Application of this year's Future Energy Scenarios (FES) generation backgrounds is leading to problems when applying the Security Planned Transfer condition referred to in Chapter 4 of the NETS SQSS. This follows from the availability factors applied to power station and external system imports. Using the current availability factors, the Security Planned Transfer condition cannot be modelled in later years as there is insufficient generation to meet demand.

Additionally, in the application of the Economy Planned Transfer condition also referred to in Chapter 4 of the NETS SQSS, different types of generation and external system connections are categorised and scaled by fixed or variable factors as described in Appendix E of the NETS SQSS. It is already acknowledged in Appendix E that this categorisation and the scaling factors used should be reviewed from time to time.

It is therefore proposed that a Workgroup be formed to consider these issues and report what changes to the NETS SQSS are required.

Users Impacted

High

The GB System Operator and Transmission System Owners in the application of the NETS SQSS Main Interconnected Transmission System criteria to determine compliance of the GB Transmission System with these criteria and investment requirements.

Medium

None identified.

Low

None identified.

Description & Background

Security Planned Transfer Condition

For work on the 2015 Electricity Ten Year Statement (ETYS), the 2015 FES generation and demand backgrounds have been applied.

When applying the Security Planned Transfer condition, generation types are included as per the availability factors detailed in Appendix C of the NETS SQSS. The Security Planned Transfer condition considers demand security at winter peak. In effect, the availability factors that are currently specified mean that there are no contributions to security from renewable generation sources or from external systems via interconnectors. The availability factors (A_T) for these sources are set to 0. The availability factors for other sources are set to 1 and these contributory sources are then scaled to meet demand.

Given the mix of generation types assumed for the 2015 FES backgrounds, when the Security Planned Transfer condition is applied, the available generation (largely nuclear, coal, gas and hydro) is insufficient to meet demand in later years. This is illustrated in Table 1 which tabulates the scaling factors for contributory generation to meet demand against the four FES scenarios year on year. Table 1 shows there would be insufficient contributory plant by 2018/19 for the Gone Green background and insufficient contributory plant by 2022/23 against all four of the backgrounds.

Variable Scaling Factors	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24
Gone Green 2014	0.850	0.885	0.858	0.844	0.876	0.860	0.867	0.864	0.866	0.865
Slow Progression 2014	0.850	0.885	0.864	0.855	0.865	0.878	0.886	0.887	0.889	0.893
No Progression 2014	0.850	0.892	0.874	0.869	0.868	0.873	0.883	0.889	0.885	0.892
Low Carbon Life 2014	0.852	0.900	0.883	0.884	0.897	0.911	0.901	0.905	0.910	0.914
Gone Green 2015	0.885	0.961	0.967	0.956	1.003	1.025	1.075	1.069	1.100	1.114
Slow Progression 2015	0.885	0.961	0.982	0.960	0.975	1.004	1.028	1.056	1.058	1.072
No Progression 2015	0.886	0.947	0.991	0.953	0.958	0.978	0.986	0.997	1.004	1.013
Consumer Power 2015	0.885	0.963	0.966	0.945	0.975	1.014	1.032	1.016	1.023	1.062

Compared to the 2014 FES generation and demand background assumptions, the 2015 assumptions include increasing levels of renewable generation and increasing levels of interconnector capacity. For these types of background, it is unlikely that the current application of the Security Planned Transfer condition will provide the most accurate assessment of transmission requirements.

Economy Planned Transfer Condition

In the application of the Economy Planned Transfer condition, renewable generators and interconnectors do contribute to the planned transfer assessment. However, the categorisation of generator types for fixed and variable scaling and the fixed scaling factors that are used for different types of plant should be reviewed from time to time to ensure that they accurately represent the operation of different types of plant. This is acknowledged in Appendix E of the NETS SQSS in paragraphs E.2 and E.4.

Given that it is apt to review the availability factors for the Security Planned Transfer condition, it would be reasonable to review the scaling factors for Economy Planned Transfer condition as part of a single NETS SQSS Workgroup.

Proposed Solution

Revised availability and scaling factors subject to NETS SQSS Workgroup assessment.

Assessment Against NETS SQSS Objectives

(i) 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;

The proposal would improve the ongoing accuracy of MITS assessment and the assessment of investment requirements.

(ii) ensure an appropriate level of security and quality of supply and safe operation of the National Electricity Transmission System;

A better targeted level of security and quality of supply would be provided if the current scaling factors are found to be inappropriate and are revised.

(iii) facilitate effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity; and

The proposal is more likely to result in the provision of transmission capacity that is adequate for different generation types and areas. For example, in an area with high levels of renewables, the current Security and Economic Planned Transfer requirements may be understating transmission export capacity requirements.

(iv) facilitate electricity Transmission Licensees to comply with their obligations under EU law.

Not applicable.

Impact & Assessment

Impact on the NETS SQSS

To be determined by a Workgroup.

Impact on the National Electricity Transmission System (NETS)

More accurate assessment of system security and more accurate targeting of investment on the Main Interconnected Transmission System.

Impact on greenhouse gas emissions

None foreseen.

Impact on relevant computer systems

None foreseen.

Impact on core industry documents

None foreseen.

Impact on other industry documents

None foreseen.

Supporting Documentation

Have you attached any supporting documentation: [~~YES~~/NO] (Will be presented in person at the NETS SQSS Review Panel Meeting).

If Yes, please provide the title of the attachment: Not applicable.

Recommendation

The NETS SQSS Review Panel is invited to:

Progress this issue to a Workgroup for further analysis and discussion.

Document Guidance

This document is used to raise a Modification Proposal at the NETS SQSS Review Panel. Incomplete forms will not be processed and the Proposer may be asked to clarify any information that is not clear.

Guidance has been provided in square brackets within the document but please contact the NETS SQSS Review Panel Secretary: Nick Martin (nick.martin@nationalgrid.com and/or box.SQSS@nationalgrid.com) if you have any queries.