

Stage 02: Industry Consultation

Grid Code

GC0093 – Assessment of System Warnings

What stage is this document at?

01	Workgroup Report
02	Industry Consultation
03	Report to the Authority

This proposal seeks to modify the Grid Code to make a change to the name of a Notice of Inadequate System Margin (NISM) as part of a wider work package (outside the Grid Code) designed to provide clarity to system warning hierarchy and protocols.

This document is open for Industry Consultation. Any interested party is able to make a response in line with the guidance set out in Section 5 of this document.

Published on: 8 July 2016
Length of Consultation: 20 Working Days
Responses by: 5 August 2016



National Grid recommends:

GC0093 should be implemented as it better facilitates Applicable Grid Code objectives (i) (ii) (iii) and (iv)



High Impact:

None identified



Medium Impact:

System Operator



Low Impact:

Generators, Transmission Owners, DNOs

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Any Questions?

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Proposer

National Grid

About this document

This Industry Consultation outlines the information required for interested parties to form an understanding of a proposed change within the Grid Code and seeks the views of interested parties in relation to the issues raised by this document.

Parties are requested to respond by **5 August 2016** to grid.code@nationalgrid.com

Document Control

Version	Date	Author	Change Reference
0.1	9 May 2016	National Grid	Draft Industry Consultation for GCRP
0.2	8 July 2016	National Grid	Industry consultation as issued

1 Executive Summary

- 1.1 This document describes the GC0093 Modification Proposal and seeks views from industry relating to the proposal.
- 1.2 National Grid in their role as the GB System Operator can issue a range of National Electricity Transmission System Warnings, as defined in the Grid Code, to alert the market to specific anticipated system conditions. The first level of such warnings is a NISM (Notice of Inadequate System Margin), issued by National Grid when they consider that the predicted margin between demand and available generation should be greater. A NISM is simply a signal to the market to provide more power or reduce demand to restore this margin and is not indicative of an imminent power shortage.
- 1.3 There will be a number of changes to the electricity market operation from winter 2016/17 onwards which would benefit from increased clarity over system warnings and protocols in order to avoid confusion, particularly for new entrants. As part of this process of clarification it was proposed to:
 - Change the name of a NISM in the Grid Code to clarify that this is simply a signal to the market. It can also be made consistent with the gas warning system, the first stage of which is a Margins Notice, so the proposal is to change the name to an '**Electricity Margin Notice.**'
 - Evaluate the system of warnings to be issued in winter 2016/17, particularly considering interactions with long notice Supplemental Balancing Reserve plant warning and the Capacity Market Notices that will go live this winter with the introduction of the Capacity Market Transitional Arrangements.
- 1.4 Although this is a part of a wider work package considering the interactions of system warnings that will be in place from winter 2016/17 onwards, only the NISM name change directly impacts the Grid Code.
- 1.5 In summary, the stakeholder debate over a name change comes down to two key points:
 - A name change would give a more accurate reflection of what a NISM actually means which would help to give the correct messages, particularly to those not directly involved through industry and to new participants.
 - A name change could affect existing industry familiarity with a process that is long established and fundamentally works.
- 1.6 On balance, and after due consideration of all views provided, National Grid would recommend the name change. A simple name change with no revision to the underlying process could be managed by industry. In this consultation however further stakeholder input is sought.

2 Why Change?

Background

- 2.1 The Grid Code defines a number of National Electricity Transmission System Warnings that can be issued by NGET to Users (or to certain Users only) in accordance with OC7.4.8.2, which provide information relating to System conditions or Events and are intended to:
- alert Users to possible or actual Plant shortage, System problems and/or Demand reductions;
 - inform of the applicable period;
 - indicate intended consequences for Users; and
 - enable specified Users to be in a state of readiness to receive instructions from NGET.

- 2.2 The Grid Code system warnings are as follows:

Inadequate System Margin - A warning issued by NGET, in accordance with OC7.4.8.5, which is intended to alert recipients of an inadequate System Margin and which if not improved may result in Demand reduction being instructed.

High Risk of Demand Reduction - A warning issued by NGET, in accordance with OC7.4.8.6, which is intended to alert recipients that there is a high risk of Demand reduction being implemented and which may normally result from an inadequate System Margin.

Demand Control Imminent - A warning issued by NGET, in accordance with OC7.4.8.7, which is intended to provide short term notice, where possible, to those Users who are likely to receive Demand reduction instructions from NGET within 30 minutes.

Risk of System Disturbance - A warning issued by NGET, in accordance with OC7.4.8.8, which is intended to alert Users of the risk of widespread and serious System disturbance which may affect Users.

- 2.3 A NISM, being the first stage of margin warning available to NGET, will typically be issued up to a day ahead of when additional power is required with the most likely scenario being to cover the ensuing evening peak in demand. The Grid Code sets out that a NISM will be issued subsequent to monitoring that will commence at 1200 hours each day in relation to the following Operational Day. In making this assessment the generation available in the Balancing Mechanism is weighed against the forecast demand to see whether the anticipated level of the System Margin for any period is insufficient.
- 2.4 The most recent uses of a NISM were on 9th May 2016, and before that November 4th 2015. May 9th saw a day of sustained Generation losses. and 1500MW of capacity was requested between 19:00 and 21:30 that evening. The NISM on November 4th 2015 occurred on the third consecutive day of cold weather and again was a result of multiple plant breakdowns. An additional 500MW of capacity was requested between 16:30 and 18:30 on that evening. On both occasions the market responded as expected resulting in the NISM being cancelled without the need for further action. The 9 May 2016 fax as sent to industry is included in this consultation under annex 2 along with the template used to also inform industry through the BMRS.

- 2.5 Prior to these events NISMs were issued in February 2012, and before that on one occasion in 2009. Historically NISMs were more frequent with 8 having been issued in 2008 and a high of 39 in 2000. Although part of the standard toolkit for system operation, the use of NISMs may therefore now be less familiar.
- 2.6 The response to a NISM is usually that more plant is made available within the Balancing Mechanism and that existing plant runs more reliably, thus averting any need for further action. This is borne out by historical records which show that the next stage of warning, a High Risk of Demand Reduction (HRDR), has been issued on only two occasions since 2008, both of which were in fact associated with very significant in-day plant breakdowns which could not have been planned for or anticipated and had not been preceded by a NISM, and on a total of 13 occasions since 1995 compared to 139 NISMs.

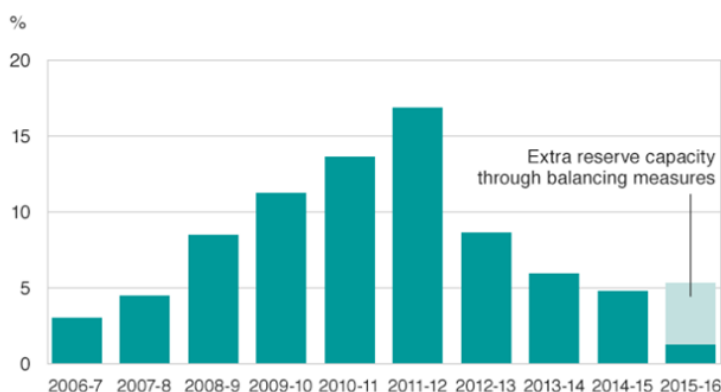


Fig 1 – Spare GB generation capacity at winter peak 2006-16

- 2.7 As shown in figure 1, plant margin from 2015 has been supported by the introduction of the Demand Side Balancing Reserve and Supplemental Balancing Reserve products, which support National Grid in balancing the system when all commercial actions have been exhausted (SBR is targeted at generators who would otherwise be closed, mothballed or generally unavailable).
- 2.8 SBR is only required for one remaining winter, 2016/17, before being replaced by the capacity market. Other than in an emergency situation, SBR plant will only be run following the issuing of a NISM. A further signal will though be given to the market when warming of SBR plant takes place through the System Operator Notification and Reporting package (SONAR), which emails registered users when plant is warmed (the category is called BM start up). It is also intended to issue a Balancing Mechanism Reporting Service (BMRS) message to the market when SBR plant is warmed.

Development of proposals

- 2.9 A draft issue paper regarding these proposals was first discussed at the March 2016 meeting of the Grid Code Review Panel which recommended that the issue be taken to the Grid Code Development Forum for a more detailed discussion. The issue paper presented to the GCRP and duly to the GCDF in April 2016 is included as annex 3 to this paper. A draft of the consultation as was subsequently developed was then presented to the GCRP in May 2016.

Timeline of Events	
16th March 2016	Initial discussion of outline issue paper at GCRP.
14th April 2016	Discussed at GCDF
18th May 2016	Draft consultation presented to GCRP

3 Solution

Name Change

- 3.1 The name of a NISM (Notice of Inadequate System Margin) is subject to misinterpretation by those unfamiliar with operational terminology.
- 3.2 National Grid has proposed changing the name of the NISM. The benefits of changing the name are that:
- This provides clarity around the hierarchy and protocols of system notices for winter 2016/17 onwards, when new participants will be operating in the market with the introduction of the Capacity Market Transitional Arrangements.
 - It is consistent with, but distinct from, Gas Margin Notices
 - Use of more representative wording reduces the likelihood of misinterpretation
- 3.3 Although there is a disadvantage since the existing naming protocol is familiar to those already operating in the market, we consider that this is outweighed by the benefits above and will be mitigated by the extensive discussions that have taken place.
- 3.4 National Grid has therefore proposed that the NISM is renamed as an **'Electricity Margin Notice'**.

Capacity Market Notices

- 3.5 The capacity market is intended to ensure security of electricity supply by providing a payment for reliable sources of capacity. When plant that has been successful in the capacity market auction is called on it will be subject to financial penalty if it is unable to do so; capacity market notices will be issued 4 hours ahead of real time to alert providers that a system stress event is ensuing which will be likely to result in the requirement for them to provide the capacity agreed. Capacity Market Notices will be issued for the first time in winter 2016/17 with the introduction of the Transitional Arrangements. The capacity market will go live fully in time for winter 2017/18 at which point it will also replace the need for SBR plant.
- 3.6 Consideration was given to whether Capacity Market Notices should be written into the Grid Code. This was discounted as:
- The capacity market is a commercial arrangement and warnings under this are for commercial rather than technical reasons and are aimed at a subset of Users being those that are participating in the capacity market rather than to all BM participants.
 - A NISM could be issued in the same time frame of 4 hours ahead as a capacity market notice. While the calculations leading to a NISM or capacity market notice are separate, potentially putting two Grid Code warnings out at the same would not add value.
 - Any operational changes deemed necessary would be more complex to deliver as two change processes (the Capacity Market Rules and the Grid Code) would need to be negotiated.
- 3.7 National Grid intends to provide detailed information to industry over summer 2016 on the automatic decision process that will be followed when

Capacity Market warnings are issued and how they will interact with other system messages.

Impact on the Grid Code

- 4.1 GC0093 requires amendments to the following clauses of the Grid Code:
- Glossary and Definitions (GD)
 - Operating Conditions OC7.4.8.4, OC7.4.8.5, OC7.4.8.6, OC7.4.8.6.1, OC7.4.8.10, OC7 Appendix 1
 - Balancing Conditions BC1.5.4
- 4.2 The legal text required to give effect to the proposal is contained in Annex 1 of this document.

Impact on National Electricity Transmission System (NETS)

- 4.3 The proposed changes will have a positive impact on the transmission system in terms of giving a clearer signals to market within the range of system warnings as will be applicable from winter 2016/17 onwards.

Impact on Greenhouse Gas emissions

- 4.4 The proposed changes will not have a material impact on Greenhouse Gas Emissions.

Impact on core industry documents

- 4.5 The proposed modification only requires changes to the Grid Code.

Impact on other industry documents

- 4.6 The proposed modification would need to be reflected in the SBR Operational Methodology and also the Balancing Principles Statement.

Assessment against Grid Code Objectives

- 4.7 National Grid considers that GC0093 will better facilitate the Grid Code objective:

- (i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;

The solution will facilitate better clarity to market and wider stakeholders of the system of warnings that will be available from winter 2016/17.

- (ii) to facilitate competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the National Electricity Transmission System being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);

Greater clarity should improve the efficiency of responses from the market, particularly as new participants will be involved in winter 2016/17.

- (iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the National Electricity Transmission System operator area taken as a whole; and

A better response to system warnings will enhance security of supply.

- (iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency.

A better response to system warnings would improve efficiency.

Implementation

- 4.8 National Grid proposes that GC0093 should be implemented 10 business days after an Authority decision. Views are invited on this proposed implementation date.

5 Consultation Responses

5.1 Views are invited upon the proposals outlined in this consultation, which should be received by 5 August 2016. Please email your responses to grid.code@nationalgrid.com.

5.2 Responses are invited to the following questions:

- Do you believe that GC0093 better facilitates the applicable Grid Code Objectives as set out in paragraph 4.7?
- Do you support the proposed implementation approach in paragraph 4.8?
- Do you support the proposed changes to the Grid Code as set out in annex 1 to this consultation? If not, can you provide evidence of the risks or costs that would be incurred in implementing this change?

5.3 If you wish to submit a confidential response please note the following:

- (i) Information provided in response to this consultation will be published on National Grid's website unless the response is clearly marked "Private & Confidential", we will contact you to establish the extent of the confidentiality. A response marked "Private and Confidential" will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the Grid Code Review Panel or the industry and may therefore not influence the debate to the same extent as a non confidential response.
- (ii) Please note an automatic confidentiality disclaimer generated by your IT System will not in itself, mean that your response is treated as if it had been marked "Private and Confidential".

GLOSSARY & DEFINITIONS (GD)

National Electricity Transmission System Warning - Inadequate System Margin Electricity Margin Notice	A warning issued by NGET, in accordance with OC7.4.8.5, which is intended to invite a response from and to alert recipients of to a decreased an inadequate System Margin and which if not improved may result in Demand reduction being instructed.
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OC7.4.8.4 Types Of National Electricity Transmission System Warnings

National Electricity Transmission System Warnings consist of the following types:-

- (i) **National Electricity Transmission System Warning – ~~Inadequate System Margin~~ Electricity Margin Notice**
- (ii) **National Electricity Transmission System Warning - High Risk of Demand Reduction**
- (iii) **National Electricity Transmission System Warning - Demand Control Imminent**
- (iv) **National Electricity Transmission System Warning - Risk of System Disturbance**

OC7.4.8.5 National Electricity Transmission System Warning - ~~Inadequate System Margin~~ **Electricity Margin Notice**

A **National Electricity Transmission System Warning - ~~Inadequate System Margin~~ Electricity Margin Notice**

may be issued to **Users** in accordance with OC7.4.8.2, at times when there is a reduced **System Margin**, as determined under BC1.5.4. It will contain the following information:

- (i) the period for which the warning is applicable; and
- (ii) the availability shortfall in MW; and
- (iii) intended consequences for **Users**, including notification that **Maximum Generation Service** may be instructed.

OC 7.4.8.6 National Electricity Transmission System Warning - High Risk of Demand Reduction

(a) A **National Electricity Transmission System Warning - High Risk of Demand Reduction** may be issued to **Users** in accordance with OC7.4.8.2 at times when there is reduced **System Margin**, as determined under BC1.5.4 and in **NGET's** judgement there is increased risk of **Demand** reduction being implemented under OC6.5.1. It will contain the following information in addition to the required information in a **National Electricity Transmission System Warning -**

~~Inadequate System Margin~~ **Electricity Margin Notice:**

- (i) the possible percentage level of **Demand** reduction required; and
- (ii) Specify those **Network Operators** and **Non Embedded Customers** who may subsequently receive instructions under OC6.5.1.

(b) A **National Electricity Transmission System Warning - High Risk of Demand Reduction** may also be issued by **NGET** to those **Network Operators** and **Non Embedded Customers** who may subsequently receive instructions under OC6.5.1 relating to a **Demand** reduction in circumstances not related to inadequate **System Margin** (for example **Demand** reduction required to manage **System** overloading). The **National Electricity Transmission System Warning - High Risk of Demand Reduction** will specify the period during which **Demand** reduction may be required and the part of the **Total System** to which it applies and any other matters specified in OC6.5.

OC7.4.8.6.1 Protracted Periods Of Generation Shortage

(a) Whenever **NGET** anticipates that a protracted period of generation shortage may exist a **National Electricity Transmission System Warning - ~~Inadequate System Margin~~ Electricity Margin Notice** or **High Risk of Demand Reduction** may be issued, to give as much notice as possible to those **Network Operators** and **Non Embedded Customers** who may subsequently receive instructions under OC6.5.

(b) A **National Electricity Transmission System Warning - High Risk of Demand Reduction** will in these instances include an estimate of the percentage of **Demand** reduction that may be required and the anticipated duration of the **Demand** reduction. It may also include information relating to estimates of any further percentage of **Demand** reduction that may be required.

(c) The issue of the **National Electricity Transmission System Warning - ~~Inadequate System Margin~~ Electricity Margin Notice** or **High Risk of Demand Reduction** is intended to enable recipients to plan ahead on the various aspects of **Demand** reduction.

OC7.4.8.6.1 Protracted Periods Of Generation Shortage

(a) Whenever **NET** anticipates that a protracted period of generation shortage may exist a **National Electricity Transmission System Warning - ~~Inadequate System Margin~~ Electricity Margin Notice** or **High Risk of Demand Reduction** may be issued, to give as much notice as possible to those **Network Operators** and **Non Embedded Customers** who may subsequently receive instructions under OC6.5.

(b) A **National Electricity Transmission System Warning - High Risk of Demand Reduction** will in these instances include an estimate of the percentage of **Demand** reduction that may be required and the anticipated duration of the **Demand** reduction. It may also include information relating to estimates of any further percentage of **Demand** reduction that may be required.

(c) The issue of the **National Electricity Transmission System Warning - ~~Inadequate System Margin~~ Electricity Margin Notice** or **High Risk of Demand Reduction** is intended to enable recipients to plan ahead on the various aspects of **Demand** reduction.

OC7.4.8.10 General Management Of National Electricity Transmission System Warnings

(a) **National Electricity Transmission System Warnings** remain in force for the period specified unless superseded or cancelled by **NET**.

(b) A **National Electricity Transmission System Warning** issued for a particular period may be superseded by further related warnings. This will include **National Electricity Transmission System Warning - ~~Inadequate System Margin~~ Electricity Margin Notice** being superseded by **National Electricity Transmission System Warning - High Risk of Demand Reduction** and vice-versa.

OC7 APPENDIX 1 - NATIONAL ELECTRICITY TRANSMISSION SYSTEM WARNINGS TABLE

WARNING TYPE	GRID CODE	FORMAT	TO : FOR ACTION	TO : FOR INFORMATION	TIMESCALE	WARNING OF/OR CONSEQUENCE	RESPONSE FROM RECIPIENTS
NATIONAL ELECTRICITY TRANSMISSION SYSTEM WARNING - Inadequate System Margin Electricity Margin Notice	OC7.4.8.5	etc					

BC1.5.4 Reserve And ~~Inadequate~~ System Margin

Contingency Reserve

(a) The amount of **Contingency Reserve** required at the day ahead stage and in subsequent timescales will be decided by **NET** on the basis of historical trends in the reduction in availability of **Large Power Stations** and increases in forecast **Demand** up to real time operation. Where **Contingency Reserve** is to be allocated to thermal **Gensets**, **NET** will instruct through a combination of **Ancillary Services** instructions and **Bid-Offer Acceptances**, the time at which such **Gensets** are required to synchronise, such instructions to be consistent with **Dynamic Parameters** and other contractual arrangements.

Operating Reserve

(b) The amount of **Operating Reserve** required at any time will be determined by **NGET** having regard to the **Demand** levels, **Large Power Station** availability shortfalls and the greater of the largest secured loss of generation (ie, the loss of generation against which, as a requirement of the **Licence Standards**, the **National Electricity Transmission System** must be secured) or loss of import from or sudden export to **External Interconnections**. **NGET** will allocate **Operating Reserve** to the appropriate **BM Units** and **Generating Units** so as to fulfil its requirements according to the **Ancillary Services** available to it and as provided in the **BC**.

Inadequate System Margin

(c) In the period following 1200 hours each day and in relation to the following **Operational Day**, **NGET** will monitor the total of the Maximum Export Limit component of the **Export and Import Limits** received against forecast **National Electricity Transmission System Demand** and the **Operating Margin** and will take account of **Dynamic Parameters** to see whether the anticipated level of the **System Margin** for any period is insufficient.

(d) Where the level of the **System Margin** for any period is, in **NGET's** reasonable opinion, anticipated to be insufficient, **NGET** will send (by such data transmission facilities as have been agreed) a **National Electricity Transmission System Warning - Inadequate System Margin Electricity Margin Notice** in accordance with OC7.4.8 to each **Generator**, **Supplier**, **Externally Interconnected System Operator**, **Network Operator** and **Non-Embedded Customer**.

(e) Where, in **NGET's** judgement the **System Margin** at any time during the current **Operational Day** is such that there is a high risk of **Demand** reduction being instructed, a **National Electricity Transmission System Warning - High Risk of Demand Reduction** will be issued, in accordance with OC7.4.8.

(f) The monitoring will be conducted on a regular basis and a revised **National Electricity Transmission System Warning - Inadequate System Margin Electricity Margin Notice** or **High Risk of Demand Reduction** may be sent out from time to time, including within the post **Gate Closure** phase. This will reflect any changes in **Physical Notifications** and **Export and Import Limits** which have been notified to **NGET**, and will reflect any **Demand Control** which has also been so notified. This will also reflect generally any changes in the forecast **Demand** and the relevant **Operating Margin**.

(g) To reflect changing conditions, a **National Electricity Transmission System Warning - Inadequate System Margin Electricity Margin Notice** may be superseded by a **National Electricity Transmission System Warning - High Risk of Demand Reduction** and vice-versa.

(h) If the continuing monitoring identifies that the **System Margin** is anticipated, in **NGET's** reasonable opinion, to be sufficient for the period for which previously a **National Electricity Transmission System Warning** had been issued, **NGET** will send (by such data transmission facilities as have been agreed) a **Cancellation of National Electricity Transmission System Warning** to each **User** who had received a **National Electricity Transmission System Warning - Inadequate System Margin Electricity Margin Notice - Electricity** or **High Risk of Demand Reduction** for that period. The issue of a **Cancellation of National Electricity Transmission System Warning** is not an assurance by **NGET** that in the event the **System Margin** will be adequate, but reflects **NGET's** reasonable opinion that the insufficiency is no longer anticipated.

(i) If continued monitoring indicates the **System Margin** becoming inadequate **NGET** may issue further **National Electricity Transmission System Warnings - Inadequate System Margin Electricity Margin Notice** or **High Risk of Demand Reduction**.

(j) **NGET** may issue a **National Electricity Transmission System Warning - Inadequate System Margin Electricity Margin Notice** or **High Risk of Demand Reduction** for any period, not necessarily relating to the following **Operational Day**, where it has reason to believe there will be inadequate-reduced **System Margin** over a period (for example in periods of protracted **Plant** shortage, the provisions of OC7.4.8.6 apply).

Fax to industry notifying issue of NISM – 9 May 2016:



nationalgrid

From: The Power System Manager, ENCC

GB TRANSMISSION SYSTEM WARNING

Inadequate System Margin

A NISM has been issued by the System Operator to encourage market actions to restore System Margins to adequate levels.

A **GB TRANSMISSION SYSTEM WARNING** is ISSUED for the period

From...1900...(Hrs) to 2100...(Hrs) on...MONDAY... (Day) 09/05/16 (Date)

There is inadequate System Margin

Aggregate MEL shortfall 1500 MW (excluding any available DSBR and SBR)

Trading Points, Control Points and Externally Interconnected System Operators are requested to ensure current MEL is maintained and to review MEL, notifying National Grid of any additional MW capacity.

Maximum Generation Service may be instructed.

Suppliers please ensure National Grid is advised of any further Customer Demand Management (above that already notified under OC1 of the Grid Code).

Network Operators and Non-Embedded Customers are notified that unless there is an improvement in System Margin demand reduction may be instructed.

No further action is required until instruction is given by National Grid.

The situation will be reviewed again by National Grid at 2130 Hours and an Update issued.

Notification Issued at 1955 Hrs on 09/05/16

(Signed) [Redacted] National Grid Electricity National Control Centre

(Print Name) [Redacted]

Any calls should be made to the Power System Manager on [Redacted]

Information Note:-

As the System Operator, National Grid are responsible for balancing the electricity system in the final hours before real-time. We have a number of routine tools we can use to help us do this, this toolkit includes NISMs. A NISM is used to send a signal to the electricity market. It highlights that, in the short-term, we would like a greater safety cushion (margin) between power demand and available supply. It does not signal that blackouts are imminent or that there is not enough generation to meet current demand.

BMRS template

This is filled in as a message on BMRS to industry when a NISM is issued.

Market Notification of Issue of 'Notification of Insufficient System Margin'

A NISM has been issued by the System Operator to encourage market actions to restore System Margins to adequate levels.

Issued at:

By Duty Power System Manager, Electricity National Control Centre:

There is Inadequate System Margin. System margin shortfall {MWSHORT} MW (excluding any available DSBR and SBR)

Maximum Generation Service may be instructed.

Trading Points, Control Points and Externally interconnected System Operators are requested to notify National Grid of any additional MW capacity.

Suppliers please advise National Grid of any additional Demand Control available

The situation will be reviewed again by National Grid at {REVIEWTIME} hours and an update issued.

This Notification of Issue of a GB Transmission System Warning — Inadequate System Margin Notification Issued at {ISSUETIME} hrs on {ISSUEDATE}

Issued by {ISSUEDBY} National Grid Electricity Control Centre

Information Note:—

As the System Operator, National Grid are responsible for balancing the electricity system in the final hours before real-time. We have a number of routine tools we can use to help us do this, this toolkit includes NISMs. A NISM is used to send a signal to the electricity market. It highlights that, in the short-term, we would like a greater safety cushion (margin) between power demand and available supply. It does not signal that blackouts are imminent or that there is not enough generation to meet current demand.

V2.1	nationalgrid	
Grid Code Issue Paper		
Paper Ref:	pp16/XX	Date Raised: 16 March 2016

<<INTRODUCE>>

Rob Wilson on behalf of National Grid

Updating the NISM Protocols for Winter 2016/17

Before submitting this paper, did you present this issue to the Grid Code Development Forum?			
Yes [Please provide details of any outcomes below]	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
<p><i>GCDF is a periodic meeting where stakeholders can discuss any Grid Code-related technical issues. It gives stakeholders the opportunity to fully understand their issues before raising them to the Panel. Click the link above for more info, including dates.</i></p>			

<<PANEL RECOMMENDATION>>

What would you like the GCRP to do?	
Note the issue for information only	<input type="checkbox"/>
Consider the issue and provide guidance	<input checked="" type="checkbox"/>
Further investigate this issue at a one-off workshop <i>[Please consider GCDF if answered 'no' for question above]</i>	<input type="checkbox"/>
Approve this issue for a workgroup for further analysis and form solutions <i>[Please consider workgroup Terms of Reference and attendance at workgroup]</i>	<input type="checkbox"/>
Progress this issue straight to Industry Consultation <i>[Please contact the code administrator before proceeding (see details at the bottom)]</i>	<input type="checkbox"/>

<<DEFINE>>

Summary
<p>National Grid in their role as the GB System Operator can issue a range of Transmission System Warnings, as defined in the Grid Code, to alert the market to specific anticipated system conditions. The first level of such warnings is a NISM (Notice of Insufficient System Margin) which is issued by National Grid when they consider that the predicted margin between demand and available generation should be greater. A NISM is simply a signal to the market to provide more power or reduce demand and is not indicative of an imminent power shortage.</p> <p>To make this clearer but also to account for recent developments in the electricity market it is proposed that the following points be considered:</p> <ol style="list-style-type: none"> 1) Change the name of NISMs in the Grid Code to make it clearer that these are just a signal to the market rather than signifying an imminent event¹ 2) Reconsider the triggers for, and gradations of warnings to be issued in winter 2016/17, particularly considering interactions with the Capacity Market warnings and long notice Supplemental Balancing Reserve² plant dispatches

¹ See <http://www.theguardian.com/business/2015/nov/04/national-grid-issues-urgent-call-for-extra-power> or <http://www.telegraph.co.uk/finance/newsbysector/energy/11975069/Power-plant-breakdowns-force-National-Grid-to-issue-alert.html> for example.

Grid Code Issue Paper

Paper Ref: pp16/XX

Date Raised: 16 March 2016

- 3) Under the Rules and Regulations of Electricity Market Reform (EMR), consider the interaction between the system of existing Grid Code warnings and the Capacity Mechanism warning rules as will go live by winter 2016/17.

This paper assesses the potential for a name change to NISMs and also looks at the gradation of system warnings.

Description

A NISM (Notice of Insufficient System Margin) will typically be issued by National Grid up to a day ahead of when additional power is required with the most likely scenario being to cover the ensuing evening peak in demand. The most recent use of a NISM was on 4 November 2015, which incurred on the third consecutive day of cold weather and multiple plant breakdowns. This requested an additional 500MW of capacity between 16:30 and 18:30.

NISMs are relatively rare having been previously issued only in February 2012, and before that in 2008. Improved plant margin in recent years has meant that use of NISMs is now unusual and as such unfamiliar; 10 NISMs were however issued in 2005 and 8 in 2008 indicative of a lower volume of spare capacity at that time.

Plant margin from 2015 has been increased by the creation of Supplemental Balancing Reserve which is a new service designed to support National Grid in balancing the system (SBR is targeted at generators who would otherwise be closed, mothballed or generally unavailable). While dependent on many external factors though, it is likely that NISMs will be more frequently used in 2016/17 than in the current winter.

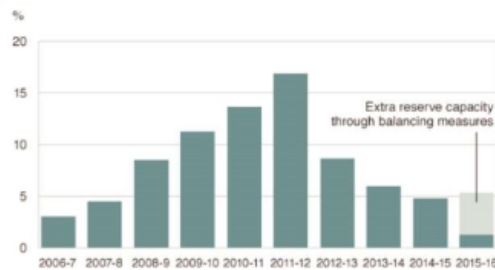


Fig 1 – Spare GB generation capacity at winter peak 2006-16

The vast majority of time when a NISM is issued, the market responds, and the NISM can then be cancelled. In response to a NISM, generators may make more generation available, either by increasing the available output from generators already expected to be running, or by bringing online additional generators in time for the anticipated peak, and large energy users may take a commercial decision to reduce their demand over the peak in order to avoid higher charges for using the system. This kind of reaction shows the electricity market working as it should.

² <http://www2.nationalgrid.com/UK/Services/Balancing-services/System-security/Contingency-balancing-reserve/SBR-Tender-Documentation/>

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If the market doesn't respond by bringing on more generation to help meet demand, or by reducing demand, there are a number of further actions that can be taken including sending further signals to the market, using additional reserves or working to bring in more power through interconnectors.

In terms of the signals that can be sent to the market, a NISM can be superseded by either a High Risk of Demand Reduction notice or a Demand Control Imminent instruction.

Each of these system warnings is defined in the Grid Code as follows:

National Electricity Transmission System Warning

A warning issued by NGET to Users (or to certain Users only) in accordance with OC7.4.8.2, which provides information relating to System conditions or Events and is intended to :

- (a) alert Users to possible or actual Plant shortage, System problems and/or Demand reductions;
- (b) inform of the applicable period;
- (c) indicate intended consequences for Users; and
- (d) enable specified Users to be in a state of readiness to receive instructions from NGET.

National Electricity Transmission System Warning – Inadequate System Margin

A warning issued by NGET, in accordance with OC7.4.8.5, which is intended to alert recipients of an inadequate System Margin and which if not improved may result in Demand reduction being instructed.

A National Electricity Transmission System Warning - Inadequate System Margin may be issued to Users in accordance with OC7.4.8.2, at times when there is inadequate System Margin, as determined under BC1.5.4. It will contain the following information:

- (i) the period for which the warning is applicable; and
- (ii) the availability shortfall in MW; and
- (iii) intended consequences for Users, including notification that Maximum Generation Service may be instructed.

National Electricity Transmission System Warning - High Risk of Demand Reduction

A warning issued by NGET, in accordance with OC7.4.8.6, which is intended to alert recipients that there is a high risk of Demand reduction being implemented and which may normally result from an inadequate System Margin.

A National Electricity Transmission System Warning - High Risk of Demand Reduction may be issued to Users in accordance with OC7.4.8.2 at times when there is inadequate System Margin, as determined under BC1.5.4 and in NGET's judgement there is increased risk of Demand reduction being implemented under OC6.5.1. It will contain the following information in addition to the required information in a National Electricity Transmission System Warning - Inadequate System Margin:

- (i) the possible percentage level of Demand reduction required; and
- (ii) Specify those Network Operators and Non Embedded Customers who may subsequently receive instructions under OC6.5.1.

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The National Electricity Transmission System Warning - High Risk of Demand Reduction will specify the period during which Demand reduction may be required and the part of the Total System to which it applies and any other matters specified in OC6.5.

National Electricity Transmission System Warning – Demand Control Imminent

A warning issued by NGET, in accordance with OC7.4.8.7, which is intended to provide short term notice, where possible, to those Users who are likely to receive Demand reduction instructions from NGET within 30 minutes.

A National Electricity Transmission System Warning - Demand Control Imminent, relating to a Demand reduction under OC6.5, will be issued by NGET to Users in accordance with OC7.4.8.2. It will specify those Network Operators who may subsequently receive instructions under OC6.5. A Demand Control Imminent warning need not be preceded by any system warning.

Proposed solution

It is proposed that the name of a NISM be changed to a 'System Margin Notice'. This is factually accurate and does not change the signal to industry. To do this would require various minor amendments to the Grid Code.

It is also proposed that a further category of system warning, an 'Advance System Margin Notice', is introduced. This would typically be employed the day prior to any identified period of reduced system margin so ahead of the period in which a NISM would normally be used. This would serve as an advance notice to the market that a period of reduced margin could be approaching but would also act as a signal allowing the warming of long notice period SBR plant to commence.

New capacity mechanism warnings³ also come into force for winter 2016/17 as part of Electricity Market Reform and the interaction with these needs to be carefully considered. The System Operator will issue a 'Capacity Market warning' at least 4 hours in advance of any anticipated stress event with penalties for those generators that fail to meet their obligations and recompense for those exceeding them.

The further gradation of warnings (High Risk of Demand Reduction, Demand Control Imminent) beyond a NISM will not be amended by these proposals.

Which Grid Code clause/section is relevant for this issue?

Definitions and OC7.

³

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209280/15398_TSO_Cm_86_37_DECC_Electricity_Market_Reform_web_optimised.pdf

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How has this issue originated? [Please provide details in the text box below]	
An affected party has identified a Grid Code defect	<input type="checkbox"/>
An affected party wishes to provide information to the Panel	<input type="checkbox"/>
An affected party has identified a Grid Code procedural inefficiency	<input type="checkbox"/>
An affected party needs clarity	<input type="checkbox"/>
As a consequence of Significant Code Review (initiated by the Regulatory Authority)	<input type="checkbox"/>
As a consequence of a licence or legislative change (including European Law)	<input type="checkbox"/>
Other:	<input checked="" type="checkbox"/>

<<ASSESS>>

How are the Grid Code objectives better achieved by resolving this issue?
<p>Economic & Efficient Development: (i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity</p> <p>Making the proposed amendments will allow more appropriate signals to be sent to the market and will aid in the more economic provision of services to assuage periods of lower system margin.</p>
<p>Competition: (ii) to facilitate competition in the generation and supply of electricity ... (on terms which neither prevent nor restrict competition in the supply or generation of electricity)</p> <p>No impact.</p>
<p>System Security: (iii) subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;</p> <p>Improvements in the services to resolve periods of lower system margin will improve security of supply.</p>
<p>Licence Obligations: (iv) to efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency</p> <p>No impact.</p>

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<<IMPACT>>

To what extent are industry stakeholders affected by this issue?	
Developers/Operators of Large generation units	Medium
Developers/Operators of Medium generation units	Medium
Developers/Operators of Small generation units	Medium
National Electricity Transmission System Operator (NETSO)	Medium
Transmission Owners (incl OFTOs & Interconnectors)	Medium
Distribution Network Operators	Medium
Suppliers	Medium
Aggregators	Medium
Directly-Connected Demand (including Response providers)	Medium
Manufacturers	None
Regulator	Medium
Other	N/A

Is there a positive impact on greenhouse gas emissions by resolving this issue?			
Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Is there any impact on industry codes or documents?			
CUSC	<input type="checkbox"/>	BSC	<input type="checkbox"/>
STC	<input type="checkbox"/>	SQSS	<input type="checkbox"/>
Distribution Code	<input type="checkbox"/>	DCUSA	<input type="checkbox"/>
Other Industry Documents	<input type="checkbox"/>		

NISMs are defined in the Grid Code and are not used in other GB codes - although being a tool to help facilitate balancing of the system.

Is there a time limitation for this issue?			
Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

Aim to be in place for winter 2016/17.

Have you attached any supporting documentation?	
No	<input checked="" type="checkbox"/>
Yes [Please provide details/attach files below]	<input type="checkbox"/>

Grid Code Issue Paper

Paper Ref: Date Raised: **Document Guidance**

This template is used to raise an issue at the Grid Code Review Panel, as well as providing an initial assessment. An issue can be anything that a party would like to raise and does not have to result in a modification to the Grid Code or creation of a Working Group.

Grid Code Issue Papers for consideration at the next scheduled Grid Code Panel meeting (GCRP), must be submitted THREE weeks in advance [\[GCRP dates\]](#)

Guidance has been provided in square brackets within the document, but please contact National Grid, The Code Administrator, with any questions or queries about this template: grid.code@nationalgrid.com

An overview of the Grid Code modification process can be found here:
<http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=28959>