

Stage 02: Industry Consultation

Grid Code

D/11 System to Generator Operational Intertripping Schemes

What stage is this document at?

01	Working Group Report
02	Industry Consultation
03	Report to the Authority

This proposal seeks to modify the Grid Code to ensure the Grid Code is consistent with how system to generator operational intertripping schemes have been implemented for generators connected to Relevant Transmission Licensees systems.

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: 20 May 2011
Length of Consultation: 20 Working Days
Responses by: 20 June 2011



High Impact:
None



Medium Impact:
National Electricity Transmission System Operator, Relevant Transmission Licensees, Offshore Generators and Onshore Generators



Low Impact:
Distribution Network Operators

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About this document

This Industry Consultation outlines the information required for interested parties to form an understanding of a defect within the Grid Code and the proposed solutions.

To modify the Grid Code a Modification Proposal must be taken to the Grid Code Review Panel (GCRP). This Modification Proposal will outline the background to the issue, how to address it, any impacts it may have on the industry and a recommendation for the GCRP to proceed to a Working Group or to an Industry Consultation.

The GCRP, based on the Modification Proposal, will determine if any further work or debate is required. If the group feels that the issue could benefit from further examination it will be progressed to a Working Group. Terms of Reference will be created to outline the purpose and scope of the Working Group, as well as any timelines for reporting back to the GCRP. The Working Group will then meet to discuss the issue and produce a Working Group Report. This Working Group Report is then presented to the GCRP to determine if the Terms of Reference have been met and that a robust solution has been developed to meet the defect within the Grid Code.

If the GCRP feels that the issue has already been investigated thoroughly and a robust solution has been developed, the Modification Proposal will progress to an Industry Consultation. Grid Code Industry Consultations last approximately one month but timescales can alter based on the complexity of the issue.

Following the conclusion of the Industry Consultation, a Report to the Authority is produced which takes into account any responses to the Industry Consultation and puts forward recommendations to Ofgem on how to address the defect within the Grid Code. The Authority then considers the issue and the proposed solutions to make a determination.



Any Questions?

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Proposer:

National Grid

D/11

Industry Consultation

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Version 1.0

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1 Executive Summary

Following the conclusion of a previous Grid Code Amendment, F/08, relating to the technical requirements that form part of a system to generator operational intertripping scheme, National Grid was asked by the Authority to review the intertripping scheme descriptions in the Grid Code.

The current Grid Code drafting assumes that system to generation operational intertripping schemes always employ the “User’s circuit breaker(s)” whereas it has been found that this is not always the case, with recent examples both onshore and offshore.

It is proposed within this Consultation to amend the definition of “System to Generator Intertripping” so that scheme which use the Relevant Transmission Owner’s circuit breaker are included, where all relevant parties have agreed this solution.

2 Purpose & Introduction

Introduction

1. During 2008, National Grid raised F/08¹, a Grid Code Amendment Consultation to clarify the technical requirements that may be specified in a generator's bilateral agreement as part of a system to generator operational intertripping scheme requirement.
2. The Consultation proposed changes to the Grid Code to amend the:
 - Definition of system to generator operational intertripping schemes to reflect changes to the CUSC (to extend payment arrangements to power park modules);
 - Connection Conditions to explain the additional content of a bilateral agreement that specifies a system to generator operational intertripping scheme requirement; and
 - Connection Conditions to provide generic technical information relevant to system to generator operational intertripping schemes.
3. In March 2009, the Authority issued a decision letter² approving the proposals which were consequently implemented shortly after. The letter noted that the existing Grid Code arrangements for intertripping schemes had been developed under the expectation that the generator would be tripped on receipt of an intertripping signal by a circuit breaker owned by that generator. However, it was observed that it was feasible that the generator could be tripped by an intertrip signal to a transmission licensee owned circuit breaker.
4. The Authority asked National Grid to review the system-to-generator operational intertripping scheme descriptions in the Grid Code, in light of this scenario.

Summary of Current Grid Code Requirements

5. The Grid Code contains the following definitions:

"System to Generator Operational Intertripping":

"A **Balancing Service** involving the initiation by a **System to Generator Operational Intertripping Scheme** of automatic tripping of the **User's** circuit breaker(s) resulting in the tripping of **BM Unit(s)** or (where relevant) **Generating Unit(s)** comprised in a **BM Unit** to prevent abnormal system conditions occurring, such as over voltage, overload, **System** instability, etc, after the tripping of other circuit-breakers following power **System** fault(s).."

"System to Generator Operational Intertripping Scheme":

A **System to Generating Unit** or **System to CCGT Module** or **System to Power Park Module Intertripping Scheme** forming a condition of connection and specified in Appendix F3 of the relevant **Bilateral Agreement**, being either a **Category 1 Intertripping Scheme**, **Category**

¹ <http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/consultationpapers/2008/>

² <http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/consultationpapers/2008/>

2 Intertripping Scheme, Category 3 Intertripping Scheme or Category 4 Intertripping Scheme.

6. The Grid Code contains the following two relevant clauses within the Connection Conditions:

CC.6.3.17 **NGET** may require that a **System to Generator Operational Intertripping Scheme** be installed as part of a condition of the connection of the **Generator**. Scheme specific details shall be included in the relevant **Bilateral Agreement** and shall, in respect of **Bilateral Agreements** entered into on or after 16th March 2009 include the following information:

1. the relevant category(ies) of the scheme (referred to as **Category 1 Intertripping Scheme, Category 2 Intertripping Scheme, Category 3 Intertripping Scheme and Category 4 Intertripping Scheme**);
2. the **Generating Unit(s)** or **CCGT Module(s)** or **Power Park Module(s)** to be either permanently armed or that can be instructed to be armed in accordance with BC2.8;
3. the time within which the **Generating Unit(s)** or **CCGT Module(s)** or **Power Park Module(s)** circuit breaker(s) are to be automatically tripped;
4. the location to which the trip signal will be provided by **NGET**. Such location will be provided by **NGET** prior to the commissioning of the **Generating Unit(s)** or **CCGT Module(s)** or **Power Park Module(s)**.

Where applicable, the **Bilateral Agreement** shall include the conditions on the **National Electricity Transmission System** during which **NGET** may instruct the **System to Generator Operational Intertripping Scheme** to be armed and the conditions that would initiate a trip signal.

CC.6.3.18 The time within which the **Generating Unit(s)** or **CCGT Module** or **Power Park Module** circuit breaker(s) need to be automatically tripped is determined by the specific conditions local to the **Generator**. This 'time to trip' (defined as time from provision of the trip signal by **NGET** to the specified location, to circuit breaker main contact opening) can typically range from 100ms to 10sec. A longer time to trip may allow the initiation of an automatic reduction in the **Generating Unit(s)** or **CCGT Module(s)** or **Power Park Module(s)** output prior to the automatic tripping of the **Generating Unit(s)** or **CCGT Module(s)** or **Power Park Module(s)** circuit breaker. Where applicable **NGET** may provide separate trip signals to allow for either a longer or shorter 'time to trip' to be initiated.

3 Description of Proposed Modification and its Effects

The Issue

7. The Grid Code currently defines a system to generator operational intertripping scheme as making use of "the User's circuit breaker(s)". There are cases, both onshore and offshore, where a Transmission Licensee's circuit breaker has been used rather than a User's circuit breaker.
8. Several of the transitional offshore generator connections have been implemented with intertripping schemes which operate via the Offshore TO circuit breaker. At the time these schemes were designed, these circuit breakers would have been treated as User circuit breakers under the Grid Code. Since Offshore Transmission Go-live this has not been replicated and therefore the number of such connections is not expected to increase.
9. In addition, there are a small number of cases of onshore generators where operational intertripping schemes make use of the Relevant Transmission Owner circuit breaker.

Proposal

10. It is proposed that the definition of System to Generator Operational Intertripping definition is amended to cater for intertrip schemes which make use of Relevant Transmission Owner's circuit breakers in circumstances where all the relevant parties have agreed to this solution. The proposed drafting is shown in Annex 1.

4 Impacts & Assessment

4.1 Impact on National Electricity Transmission System (NETS)

The proposed changes will not have a material impact on the NETS.

4.2 Impact on Grid Code Users

The proposed modification will ensure that the Grid Code definitions relating to system to generator operational intertripping schemes are consistent with all the cases of how such schemes have been implemented.

4.3 Impact on Greenhouse Gas emissions

The proposed modification will have a net zero impact on the level of Greenhouse Gas emissions.

4.4 Assessment against Grid Code Objectives

National Grid considers that D/11 this proposal would better facilitate the Grid Code objective:

- (i) 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) ;

This proposal better facilitates competition in the generation and supply of electricity as it ensures that the Grid Code drafting concerning system to generator intertripping schemes more accurately reflects the schemes that have been implemented for generators connected to Relevant Transmission Licensee's systems. This ultimately provides greater clarity to Users.

4.5 Impact on Industry Documents

4.5.1 Impact on core industry documents

The proposed modification does not impact on any core industry documents

4.5.2 Impact on other industry documents

The proposed modification does not impact on any other industry documents

5 Responses

- 5.1 This section will contain a summary of responses received during the Industry Consultation and will be completed as part of the Report to the Authority.
- 5.2 Views are invited upon the proposals outlined in this report, which should be received by 20 June 2011.
- 5.3 Your formal responses may be:-

Posted to: Tom Ireland
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This annex contains the suggested changes to the Grid Code text that will give effect to the proposal contained within this paper.

Glossary and Definitions

‘System to Generator Operational Intertripping’:

“A Balancing Service involving the initiation by a System to Generator Operational Intertripping Scheme of automatic tripping of the User’s circuit breaker(s), or Relevant Transmission Licencee’s circuit breaker(s) where agreed by NGET, the User and the Relevant Transmission Licensee, resulting in the tripping of BM Unit(s) or (where relevant) Generating Unit(s) comprised in a BM Unit to prevent abnormal system conditions occurring, such as over voltage, overload, System instability, etc, after the tripping of other circuit-breakers following power System fault(s)..”