

# Headline Report – Grid Code Review Panel

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Meeting Name	Grid Code Review Panel
Meeting Number	33
Date of Meeting	30 <sup>th</sup> September 2008
Time	10:00am – 3:00pm
Venue	Glebe Hotel, Barford, Warwickshire

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This note sets out the headlines and key decisions of the Grid Code Review Panel held on the 30<sup>th</sup> September 2008. Full minutes of the meeting will be produced and subsequently approved at the next Panel meeting and will then be published on the website.

## **1) Minutes of Previous Meeting**

The minutes of the Grid Code Review Panel (GCRP) meeting held on 15<sup>th</sup> May 2008 were APPROVED subject to minor amendments. The minutes will be accessible from the Grid Code website in due course.

## **2) Structure of the Grid Code**

The Panel agreed that National Grid should come forward with options for restructuring the Grid Code to improve its clarity to the February Panel. The Code was essentially unchanged in its basic structure since vesting in 1990. The Group agreed that major developments such as BETTA, Offshore, the prospect of a European wide Grid Code and Transmission Access meant that the Code in its current form had become unwieldy and would greatly benefit from a restructuring in due course.

## **3) Electricity Generation from Gas Networks (Blue NG)**

National Grid gave the Panel an update on the action taken by National Grid at the May GCRP on whether the BlueNG project would be impacted by the Grid Code. Two local trial projects for Blue NG at Fulham and Becton in London are initially proposed to be developed. Up to around 200 compressor sites could be developed in the future as Blue NG sites each with a maximum export of no more than 25-30MW, hence the 1GW figure quoted in a recent Ofgem open letter on whether the BlueNG project should be licensed. All of the sites are anticipated to be electrically connected to Distribution Systems and thus would be classified as Small Embedded Generators which would mean that they would have no direct or indirect Grid Code obligations. It was agreed that the connection of these Blue NG stations would predominantly be a matter for the Distribution Code but given the potentially large numbers of sites involved and the cumulative impact of such generation that National Grid should monitor developments closely and provide periodic reports to the Panel.

## **4) New Grid Code Amendments**

### **GB Transmission System Study Network Data File (pp08/31)**

National Grid presented pp/08/31 and explained that the issues had been considered at the May meeting (pp08/13 – Minutes 977 & 978) and the paper was now presented with legal text for the proposed changes to the Grid Code. Because of increasing complexity and the level of paralleling, Network Operators (NOs) were increasingly opting to receive the full network model from National Grid which included OC2 data from the Generators. The Grid Code allowed National Grid to provide such generator data to the Network Operators (NOs) in the operational phase but not necessarily in the programming phase. The changes to the Glossary and Definitions and OC2.4.1.3.5 made it clear that the GBSSNDF data could be provided for the programming phase.

During discussion on the wording National Grid confirmed that the main generator information passed to the NOs in the GBTSSNDF was output useable (originally provided

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by the generator) and expected output (either the same as output useable or a National Grid projection) and this was used in the operational and programming phases. The Panel felt that the definition on the GBTSSNDF should make it clear that the file is produced and managed by NGET.

A question was raised about the information provided to National Grid relevant to the control phase. National Grid believed this was covered by operational liaison (OC7) between NGET and the relevant generator but this was not entirely clear. It was agreed that National Grid would discuss further with the relevant Panel Members to ensure that OC2 and OC7 were consistent in this area and bring the issue back to the November Panel meeting.

### **SCR Modification (pp08/32)**

National Grid presented pp08/32 and explained that the Short Circuit Ratio (SCR) was an issue discussed during the consideration of the New Technologies papers at the May Panel meeting, pp/08/32. The issue concerned the expected increase in machine ratings in future years. The SCR requirement of a generating unit tended to increase with the size of the machine. The physical size of these machines with MVA ratings up to 2000MVA in combination with the current Grid Code requirement could result in transport difficulties which could act as a barrier to their introduction.

National Grid had commenced discussions with the manufacturers to investigate options to address the issue. One of these options might be to reduce the SCR requirement but this would need to be subject to analysis of the impact on the overall transmission system. Another option could be improved excitation system performance. National Grid confirmed that they would consider stability provisions in the round including leading reactive power capability in considering any changes to the SCR requirement. National Grid requested Panel Members to investigate whether their parent companies might be able to provide data about large machine performance and the potential impact on system stability.

Panel Members noted National Grid's request for information about the performance of large generator units and the intention to report back to the November Panel meeting on the outcome of the discussions with manufacturers and the resulting options for any Grid Code changes. The Panel Representative from the AEP agreed to ask her Members if they could provide data to National Grid to help with the SCR assessment.

### **Protection – Fault Clearance Times and Back-up Protection (pp08/33)**

National Grid presented pp08/33 and explained that protection issues had been discussed at a number of recent Panel meetings. The purpose of the proposed changes to the Grid Code were to clarify in CC.6.2.2.2(a) and CC.6.2.3.1(a) to ensure that:

- i) if the Bilateral Agreement states a figure of 80 milliseconds at 400kV for the fault clearance time, there would be nothing to stop the User or National Grid having a fault clearance time faster on their own apparatus if it wished to do so;
- ii) the use of the terms greater than or less than were employed rather than faster or slower as the latter terms could be construed as misleading in this context;
- iii) CC.6.2.2.2(b) is amended such that it provides the appropriate level of discrimination between National Grid's and the Generator's back up system. This would eliminate the risk of the back-up protection operating on National Grid's system before the Generator's back-up protection operated in the event of failure of both main protections provided by the Generator. This was undesirable as it could result in the loss of the entire substation and the circuits remote from the substation.

During discussion it was agreed that National Grid should re-consider the wording and bring this issue back to the November Panel meeting for consideration to reflect:

- i) National Grid and User agreement to the application of shorter or longer fault clearance times;

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- ii) appropriate reference to relevant licensees so that the protection regime would also be applicable in Scotland at 132kV;
- iii) clarification that where there were two or more main protections and one of these is independent of the others the independent main protection may be considered to be an independent back up protection.

### 5) Working Group Reports

#### **Compliance**

The Chair of the Compliance Group had provided a summary of the progress to date in the Working Group. Work on drafting proposals for codifying the Compliance process in the Grid Code had been proceeding in the Group by way of examining separate drafting on specific issues in order to meet the February '09 timetable for submitting the Working Group report to the Panel. At the last meeting, the Group had agreed that it would be beneficial to produce a consolidated version of the proposals due to the increasing interactivity of the drafting. This consolidated version would be considered at the Working Group's next meeting scheduled for 3<sup>rd</sup> November.

#### **Rated MW**

National Grid reported that the Working Group had agreed upon an interim solution which would allow Generators to operate above their Rated MW and which would be reflected in the Bilateral Agreement. Draft Grid Code text was being finalised by Working Group members. The Working Group planned to report fully to the November Panel meeting.

#### **Gas Insulated Switchgear**

National Grid reported that the Working Group had undertaken background work to clarify the issues associated with the various boundaries for GIS sites that existed at present and the construction, operational and enduring ownership issues raised by the different arrangements and also ensure that the Group members fully understood the technical aspects of GIS. The Group had recently agreed to examine in more detail two specific options for change – one based on the original RWE proposal and one was based on enduring ownership as for AIS but with one party building all the GIS assets. More recently the Group had begun looking at the issues for the DNO with GIS in the light of experience with GIS at Generating sites. The next meeting of the Working Group would be on 14<sup>th</sup> November. The Group were still on course for reporting back to the February 2009 Panel meeting.

#### **Frequency Response**

##### **Terms of Reference (pp08/34)**

National Grid confirmed that the joint Grid Code/CUSC Working Group membership had now been established and that the first meeting of the Working Group had been scheduled for Wednesday 22<sup>nd</sup> October. The Group would need to understand the background to the Grid Code requirements and then model the capability of the new technologies to meet the Grid Code requirements. The Group would also need to refine the draft Terms of Reference (TORs) contained in pp08/34.

#### **Reactive Power**

##### **Terms of Reference (pp08/35)**

This Joint Grid Code/CUSC Working Group was expected to commence work in 2009 and would carry on the work of the Rated MW Working Group that would report to the November Panel. The Working Group would also need to refine the draft TORs contained in pp08/35.

### 6) Report on System Incident (27<sup>th</sup> May 2008)

National Grid gave the Panel a presentation describing the events leading up to the System Frequency Incident that occurred on 27<sup>th</sup> May. The frequency fell on 27<sup>th</sup> May

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around 11.30am to below 48.8Hz (for 1.2seconds) following the loss of two power stations (of capacities 345MW and 1237MW) and then a loss of 160 MW of windfarm generation and then a further amount of embedded generation. Frequency recovered to 49Hz quickly and was back within statutory limits within 9 minutes. National Grid noted that it was required to maintain Frequency between 49.5Hz and 50.5Hz and to limit any deviations outside this range to no longer than 60 seconds and bring frequency back within operational range within 10 minutes. The Low Frequency Demand Disconnection parameters were noted such that if Frequency falls below 49Hz then up to 60% of DNO's demand in E + W would be disconnected by LF relays in 9 blocks and up to 40% of demand would be reduced in stages in Scotland.

The performance of the 12 units of transmission contracted generation that were instructed to operate in frequency sensitive mode at the time of the incident was that nine stations delivered to their contract, two delivered subject to minor underperformance issues and one unit did not respond. Corrective measures have been put in place in respect of the one unit that did not respond and the two units subject to minor underperformance were being investigated by their owners with a view to rectifying the minor underperformance.

Work was continuing to analyse and reconcile the data in the context of the fall in frequency triggered by the loss of embedded generation.

The LF Relay Operational Performance generally operated in line with conditions and halted the frequency fall. As a result 546Mw of demand was disconnected (about 1.5%). About 91 LF relays were set at 48.8Hz and some 26 operated as confirmed by the DNOs. Relays that did not operate have not been classed as failing to meet their Grid Code obligations as frequency only fell 0.005Hz below 48.8Hz briefly and the typical measurement accuracy of the relays is 0.01Hz. A number of secondary issues arising from the LF scheme arrangements also came to light and would be resolved in due course but were not material to this frequency excursion.

In summary, National Grid confirmed that

- there was an exceptional generation loss within a short period of time.
- the LFDD scheme worked well and protected the GB system
- analysis was still on-going in relation to the final frequency deviation on the morning of 27th May and the embedded generation performance
- a number of possible issues were identified that would be brought forward to the November Panel for the Panel to consider including frequency range resilience of embedded generation, performance aspects of the LFDD scheme and demand control by voltage reduction

Generator Panel Members generally confirmed that station auxiliaries performed well during the frequency excursion. National Grid also confirmed that the Interconnectors acted as expected during the incident. Whether any of the RoCoF relays operated was still being assessed. The E3C had established a Transmission Group to report back on the incident in October and the outcome would be shared with the Panel at the November meeting.

### **7) Regional Differences in the Grid Code**

It was agreed that this work could be rolled up with the work identified to review the existing structure of the Grid Code.

### **8) EWEA – Proposed European Grid Code for Wind Turbines**

In the absence of Sigrid Bolik, National Grid gave the GCRP a short presentation describing the work that had been undertaken to date by EWIS and Tradewind/EWEA, noting that Sigrid would hopefully be presenting in much greater depth on the European Grid Code developments at the November GCRP.

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Phase 1 of EWIS involved an initiative by 15 European Electricity TSOs to study the impact of additional wind generation on EHV Transmission System flows across Europe. The first phase of the report was published in January 2007. Phase 2 commenced in June 2007 with the aim of establishing a model for the integration of Renewable Energy Sources on the large scale expected across Europe in the four main synchronous areas. Work was being taken forward via 6 working groups.

Alongside the EWIS study, Tradewind/EWEA was also examining the integration of wind generation across Europe on behalf of the wind developers. Tradewind/EWEA published a report in 2005 and then announced in 2006 that it was taking work further in the areas of:

- European Grid Code Developments
- Grid Infrastructure Upgrade
- European Electricity Market (Regulation & Legislation)
- System Integration Studies

A position paper on European Grid Code Developments was published on February 2008 and the EWEA was contributing to the EWIS study in the area of System Integration Studies.

EWIS was expected to continue progress through its 6 working groups with a final report anticipated in October 2009. Tradewind/EWEA would continue work on the three other areas identified above with the European Grid Code harmonisation report likely to be discussed more widely within Europe and EWIS asked to examine the issues.

Other developments have included 36 European ETSOs (representing 31 countries) signing a statement of intent to form ENTSO – E which would be an EU wide organisation that would develop a more integrated electricity transmission regime – including potentially Code harmonisation.

The Panel thanked National Grid for this presentation and agreed that the Panel needed to keep in close touch with European developments and maintain this as a regular item for Panel meetings.

## **9) Embedded Generation Loss Risk on High System Frequency Incidents**

National Grid explained that there were still a number of DNOs that had not provided the information requested at the May Panel meeting. Relevant Panel Members agreed to facilitate the provision of this information to National Grid.

## **10) Review of OC2 Following Authority Decision on CAP149**

National Grid explained that the Authority had suggested in its decision letter on CAP149 (TEC Lite) that a review of OC2 should be undertaken. National Grid had established an internal group to consider process improvements to OC2. This work was ongoing and has identified potential process improvements, but the Group does not believe that any of these process improvements will require changes to the Grid Code.

## **11) Review of BC1 & BC2 - Provision of PNs from Intermittent Generation**

The Panel noted the change in the title of this agenda item – “Embedded” in the title on the agenda should have read “Intermittent”. National Grid explained that the BM Unit Data in Appendix 1 of BC1 should be subject to review by a working group with the objective of facilitating submissions from intermittent generation. The driver for this is that the growth in intermittent generation is having an increasing impact on the operation of the power system. However the submission of this data is more onerous given the intermittency of the primary energy source. The Panel agreed with the proposal and requested that National Grid should explain in a paper to the November Panel why it needed PNs, what use they would be put to and provide draft Terms of Reference for a Working Group to be set up to examine this issue.

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## 12) Multi Unit BMUs

At the May Panel meeting National Grid had agreed to liaise with Generator Panel Members to consider how the current pro-formas in use for reporting active power reduction below SEL and active power increase above MEL for Multi Unit BMUs could be revised to make the provision of information by the Generators more helpful for the System Operator and the Generator alike. National Grid circulated a paper at the meeting which incorporated comments by Panel Members and improvements to the pro-formas. The paper also confirmed that the current arrangements for gaining access to MW above MEL and reducing output below SEL would continue. Although utilisation of the arrangements was still low at about 3 faxes per week some Panel Members believed that there could be benefits from electronic submission of the pro-formas. National Grid argued that the low volume of requests for this service did not warrant major changes to IS systems. Concern was also expressed by one Panel Member that the arrangements might encourage the sub-optimal performance of plant in the context of environmental requirements. However this was just one of a number of operating regimes which could lead to sub optimal environmental performance.

The Panel noted the proposed changes to the pro-formas and requested that National Grid should report back to the November Panel on the current status of Industry work looking at system operation and environmental performance.

## 13) Annual Report for Significant System Events (1<sup>st</sup> August to 31<sup>st</sup> July 2008)

National Grid circulated this report at the meeting and indicated that the annual summary reviewed the notified RoCoF events for the period indicated and also the need for continued reporting. During the period there were six incidents meeting the reporting requirements criteria only one of which (the incident on 27<sup>th</sup> May) resulted in the loss of embedded generation as a result of the operation of a RoCoF relay. As reported under item 7 of this Headline Report, the performance of the relays on 27<sup>th</sup> May were still under investigation.

Panel Members noted the Annual Report and requested that the reporting of such events should continue but could be restricted to the equivalent of the table (Appendix 1) on page 4 of this Annual Report (i.e. incidents in the latest year) in future.

## 14) Offshore Transmission

### **Managing Interactions between Offshore Code changes and other Grid Code changes and other Code changes – A note for Code Panels (pp08/36)**

National Grid presented pp08/36 and gave the Panel a presentation on the timescales for progression of the Offshore Codes drafting and its interaction with code drafting being progressed under “normal” Grid Code governance.

Regarding timings, the most recent Offshore consultation on 13<sup>th</sup> June included the first drafts of the Codes, the GBSQSS and the licences for OFTOs. On 25<sup>th</sup> July Ofgem also published an updated version of the offshore tender regulations. It was expected that a consultation would be issued around the middle of October covering the draft tender documentation and versions of the Codes, GBSQSS and the licences for OFTOs. This would be the final opportunity make substantive comments on the Codes. Following this consultation a “Statutory Consultation” is expected in December which will set out the near final code changes that are expected to be designated by the Secretary of State in April 2009.

In terms of the interactions between the Offshore Grid Code drafting and drafting taken forward under “normal” governance, the Offshore drafting will take into account “normal” Grid Code changes developed under the “normal” governance arrangements. “Normal” Grid Code governance need not explicitly account for Offshore changes during this period. However from December 2008 until April 2009 (the period from the Statutory Consultation to “Go-Active”) the Offshore drafting would be largely frozen and “normal” Grid Code governance would need to be mindful of the Offshore baseline given that such

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“normal” governance Code changes may be approved pre- or post-Offshore Go-Active. There could be a need to provide dual text for any proposed Grid Code changes at this stage – one reflecting the baseline with the Offshore changes and the other reflecting baseline without the Offshore changes. From April 2009 “normal” Grid Code amendments should be made against the Offshore baseline.

The Panel noted pp08/36 and the expected arrangements for Offshore drafting.

## **15) GCRP Meeting Dates (pp08/37)**

The proposed Panel meeting dates for 2009 in pp08/37 were agreed.

## **16) Impact of Other Code Modifications**

### **BSC**

A Modification on Black Start would implement changes to the BSC consequent on Grid Code consultation G/07. It was expected that National Grid would submit a modification later this year.

Issue Group 35 was considering changes to the current Gate Closure arrangements and a modification could be put forward in due course as a result of the Group's work.

P226 proposed the publication on the BMRS of data offered in connection with LCPD.

An emergency Panel had been held in the last few days to review the impact of BSC Parties entering administration in the wake of the credit crunch.

### **CUSC Transmission Access Amendment Proposals CAP161-166**

A special CUSC Panel would be held on 3<sup>rd</sup> October to consider an extension to the time available for the CAP166 Working Group (Auctions) to submit its report to the Panel.

### **CUSC Environmental Stranding Group**

The Standing Group had developed an Interim report that would be refined to produce a final report at the Group's next meeting in October. The main thrust of the report would be to provide guidelines for Industry Code Panels to assess the carbon cost of modifications to Codes.

### **Industry Codes Governance Review (ICGR)**

This Ofgem led review would consider whether any changes were necessary to the administrative arrangements for the Grid Code, the CUSC, the STC and the DCUSA. The review would also consider how to facilitate Code administration access for smaller parties. The current target was to provide a report on these issues in January 2009. The review was also considering changes in the governance arrangements for putting forward changes to the Charging Methodologies.

## **17) Any Other Business**

### **AOB1 – Target Voltage Instructions**

Several generator Panel Members indicated that they had recently received letters from National Grid requesting that a guide to target voltage reduction arrangements should be circulated to their station managers. Panel Members had been assured that no changes to the Grid Code were required to adopt these guidelines but would appreciate some further discussion and explanation as to the nature of this exercise before taking the issue further. It was agreed that National Grid would investigate the background to the letter and provide a further update to the November Panel meeting.

### **AOB2 - Changes to Arrangements for Access to TOPAM data**

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Panel Members reported that they had also received a letter from a Generation Intelligence Engineer at National Grid explaining that National Grid wanted to move to web based access to TOPAM data in due course rather than the fax based system operating at present. Panel Members supported such a change but wanted to understand the security arrangements for access to the web that National Grid were proposing. It was agreed that National Grid would discuss this issue further with relevant Panel Members to explain the security arrangements in more detail.

### **AB03 – Grid Code Copyright**

National Grid confirmed that it was considering a revised form of wording for the copyright notice at the foot of the front page of the Grid Code to enable AEOs to copy the Grid Code more easily.

### **18) Next Meeting**

The next meeting will be held on 20<sup>th</sup> November 2008 at National Grid House, Warwick commencing at 10:00am.