Headline Report – Grid Code Review Panel

Meeting Name	Grid Code Review Panel
Meeting Number	32
Date of Meeting	15th May 2008
Time	10:00am – 3:00pm
Venue	National Grid House, Warwick

This note sets out the headlines and key decisions of the Grid Code Review Panel held on the 15th May 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 7th February 2008 were APPROVED. The minutes will be accessible from the Grid Code website in due course.

2) New Grid Code Amendments

Load Factors for Embedded Generators in Scotland Less than 100MW (pp08/14)

National Grid presented pp/08/14 and explained that the aim of the proposed Grid Code amendment was to ensure that forecast generation output for Large Exemptable Power Stations of less than 100MW in Scotland at the time of system peak was provided by the Scottish DNOs as part of the week 24 data submissions required under the Grid Code. At present this information was provided informally by the Scottish DNOs since the output of such stations was netted off from the grid supply point demand in Scotland and therefore were not identified separately in the week 24 data. In England and Wales the issue did not arise since the definition of large was over 100MW and such generation was modelled discreetly. Generation below 100MW was netted off by the DNO from their embedded demand submission to National Grid. However, large embedded generators in Scotland (over 10MW in SHETL's area and over 30MW in SPTL's area) are neither modelled in the ICRP Transport Model nor included in the demand data and therefore have to be added back as negative demand in order to ensure consistency in the transport model. The aim of the amendment was to formalise the provision of data from the Scottish DNOs within the Grid Code to ensure consistency within the Transport model and the charging arrangements.

Panel Members expressed concern that a number of different capacity terms were employed in the paper which could be confusing. An example of this was the use of "Load Factor" in the paper. It was agreed that for consistency only a single description of capacity should be employed. Several Panel Members considered that the capacity figure for large exemptible embedded generators in Scotland was available in the BELLAs for such stations and that there was therefore no need for a Grid Code amendment as the figure could be derived direct from the agreement with the Generator. National Grid argued that the figure provided in the BELLAs would be inconsistent with a chargeable figure that could be incorporated into the transport model and would introduce inconsistencies with the approach taken in England and Wales. Panel Members also suggested that there were some inconsistencies in the legal drafting between the schedules and the proposed text and requested clarification of any differences between the position of such stations with either BEGAs or BELLAs. It was agreed that these points should be resolved with Panel Members before the consultation paper was issued.

System to Generator Operational Intertripping Schemes (pp08/15)

National Grid explained that it had been agreed at previous Panel meetings that there was a need for additional information about System to Generator Operational Intertripping Schemes in the Grid Code for the benefit of Users. Paper pp08/15 therefore proposed that the existing Grid Code provisions in this area should be amended to provide extra information on the four categories of System to Generator Operational Intertripping

Schemes, the type of information about such schemes specified in the Bilateral Agreements and Generic Intertrip timings.

Panel Members were broadly supportive of the proposals. JN agreed that the proposals were a step in the right direction but believed that the Grid Code should provide a framework for the details that could be included in a Bilateral Agreement. Thus the range of items that appear in the Bilateral Agreement could be specified in the Grid Code e.g. Scheme Category, location of the trip signal, planned or unplanned basis and specification of the overloaded circuits. DW suggested that the current references in the Grid Code were less than helpful and agreed that providing more detail would improve matters. JN also suggested that consideration could be given to providing some brief information on Commercial Intertrips in the Grid Code. It was noted that some information on Commercial Intertrips was already provided in the Procurement Guidelines and it might be better for the Grid Code to refer to the Procurement Guidelines. It was agreed that JN and DW would provide comments on the drafting to National Grid. National Grid would then go out to consultation. The consultation would also ask Users whether more information on commercial intertrips should be provided in the Grid Code or the Procurement Guidelines.

Grid Code Requirements for Power Park Modules Voltage Control and Reactive Power Capability (pp08/27)

National Grid explained that a number of minor inconsistencies had been introduced into the Grid Code as a result of the implementation of G/06 (Power Park Modules and Synchronous Generating Units). The inconsistencies mainly concerned the description of the reactive range for embedded generation in Scotland connected at 33kV in CC6.3.4, CC.A.7.2.2.4 and an amendment to CC.A.7.2.2.7 to replace “reactive power” with “reactive current”. Paper pp08/27 proposed minor changes to regularise the position in the Grid Code.

JN queried the use of the term “reactive current” in CC.A.2.2.7. HU and other Panel Members confirmed that it was used in the Grid Code and elsewhere and in engineering terms was a well defined term. The Panel agreed that pp/08/27 should proceed to industry consultation.

3) Working Group Reports

Compliance

Technical Performance (pp08/16)
Terms of Reference (pp/08/17)

National Grid explained that pp08/16 was a report on the first tranche of work undertaken by the WG to codify the technical performance requirements currently contained in the Guidance Notes. There had been constructive discussions in the Working Group on the particular performance requirements to be codified. A key area the Group had discussed was how to express the distinction between “Verification” and “Validation” of the manufacturer’s model for the relevant plant in the legal text and a solution to the issue had been agreed within the WG. HU indicated that the issue would also need to be addressed again in due course in the context of that element of the WG’s work relating to the OC5 review.

DW indicated that he would like to understand better the nature of the conclusion that the WG had reached on the “Verification” and “Validation” issue as he was not a Member of the WG. He would liaise with HU on the matter before the consultation paper was issued. The Panel agreed that subject to the outcome of the discussion between DW and HU the issue should proceed to consultation.

The revised draft Terms of Reference for the Group (pp08/17) ware agreed and HU briefly outlined the forthcoming work of the Group which would focus on finalising the codification of the compliance process for new directly connected generators, the review

of LEEMPS responsibilities and life time compliance aspects. The next meeting of the Group would be on 23rd June 2008.

Data Exchange (pp08/18)

National Grid presented the Working Group's findings and recommendations to the Panel. The Working Group had discussed the merits of a number of potential solutions and categorised them into two groups – Code governance working processes and formal Codification in the Grid Code. The main disadvantages with the governance working processes solutions were that they relied on effective and efficient cross-governance arrangements and did not fully address Users' concerns about the transparency of User data that would be exchanged. Formal codification did not have these disadvantages and therefore the Group considered that this was the best long term solution to the issue.

The Grid Code would therefore specify exactly the data that was being exchanged with the relevant TOs focussing on the Week 24 data submission. The relevant DRC Schedules would describe the data items, cross reference with the Grid Code text and indicate if the data was exchanged on a GB System Basis or Relevant Unit basis. The remit of the TOs in the Grid Code would also be amended to reflect the data exchange provisions. National Grid stressed that the solution would not place any new obligations on Users in terms of the data submitted nor would it result in more data being transferred to the TOs. National Grid also asked the Panel to note that there were other data streams under schedule 3 of the STC that this proposal did not address e.g. compliance process data provided under TO Construction Agreements.

The Panel agreed that the Working Group had fulfilled its remit and that the issue should proceed to industry consultation. The covering e-mail to the consultation should stress that no new obligations on Users were being created as a result of the proposals. Working Group Members thanked LM for the significant amount of work she had undertaken on behalf of the Group in identifying and developing the preferred solution.

Rated MW

National Grid reported that the Working Group was continuing to evaluate possible generic solutions, identifying the associated advantages and disadvantages for each. The key area of the Group's focus was the provision of reactive power at above Rated MW output. At the same time the Balancing Services Standing Group (BSSG) had also been contacted to identify commercial approaches. The Group would report back to the September GCRP. It was likely that an interim solution for existing plant would be proposed for requirements specified in Bilateral Agreements and that work associated with new plant would be taken forward by a separate Working Group that would be proposed arising from the discussion on New Technologies.

Gas Insulated Switchgear
Terms of Reference (pp08/19)

The next meeting of the joint Grid Code/CUSC GIS Working Group is scheduled to take place on 10th June 2008. Good progress had been made at the first meeting of the Group. The issues raised by GIS had been discussed and categorised under three main headings:

- Construction
- Operation
- Enduring Ownership Boundary

The Group would also focus on the issues surrounding maintenance at its next meeting.

The Working Group Terms of Reference (TORs) had been expanded to include a proposed definition of GIS since one did not appear in the Grid Code at present. The scope of the Group's work had also been expanded and a diagram illustrating the formal governance process that would be followed under the CUSC and the Grid Code had been added as Annex 1. Finally a target timescale of February 2009 for completion of the

Group's work had been added. This timescale had not been formally agreed by the Group yet but would be discussed at the meeting on 10th June.

AC requested confirmation that the Group's proposals would only apply to GIS substations which had an interface between National Grid and Generators or DNOs. DB confirmed that this was the case and that substations within the DNO's network would not be within the scope of the Group's work. The Panel agreed these revised TORs.

4) Embedded Generation Loss Risk on System High Frequency Excursions

National Grid recorded its thanks to MK and AC who had been very helpful in liaising with the DNOs to provide the information about embedded generation that could give rise to a risk to the total security of the GB Power System as described at the February 2008 GCRP. Three owners of DNOs had responded. HU requested that the outstanding information from 4 owners of DNOs should be provided to National Grid no later than the end of June 2008. AC explained the ease by which this could be achieved.

5) Issues arising from the Authority's Decision on Grid Code Consultation D/07 (pp08/20)

DB indicated that National Grid had been considering the implications of the Authority's decision to reject D/07 and had summarised its views in Paper pp08/20. National Grid proposed a pragmatic way of assessing the capabilities of current plant to provide frequency response in accordance with the Grid Code requirements. This approach was set out in paragraph 7 of pp08/20 as follows:

- where the initial delay was less than two seconds this will be deemed compliant and National Grid will work with the Generator to minimise any control delays;
- where the initial delay is greater than two seconds but reflects the physical plant capability this will be deemed compliant;
- where the initial delay is greater than two seconds and National Grid believes that it can be reduced National Grid will work with the Generator to minimise the delay. If in National Grid's view the delay is not minimised the Generator will be deemed non-compliant.

National Grid asked the Panel to note the approach it would take to the provision of frequency response in accordance with the Grid Code. National Grid were also still keen to pursue the suggestion made in D/07 that work should be undertaken to identify whether alternative arrangements for the provision of frequency response can be identified and were therefore recommending the establishment of a joint GCRP/BSSG Working Group to take this work forward also linking in with the work recommended in connection with the introduction of new technologies (see item 6). In response to a question from JN, DB confirmed that National Grid's view was that any alternative arrangements needed to be pursued via the Working Group in a transparent manner. The GCRP noted the approach that National Grid would adopt and agreed that a joint GCRP/BSSG Working Group should be established.

6) New Technologies

Initial Review of Grid Code Compliance Capability for New Generation Technologies (pp08/21)

National Grid gave the GCRP a presentation describing the issues raised in the context of new generation technologies. The overriding driver for the deployment of new technologies was environmental, in particular the need to drive down CO2 emissions to meet EU targets whilst a large proportion of existing GB generating plant (perhaps 30%) was expected to close. The key technologies were renewables where the adoption of converter technology was an issue, gas, new nuclear, and coal (both supercritical and IGCC) with CCS on the horizon.

For renewables, revised Grid Code requirements were introduced in 2005 and the required flexibility for Grid Code compliance was broadly being provided. A large volume of renewables was expected to connect by 2020 and beyond up to 25GW. This could

include significant amounts of wave and tidal stream technologies by then. Renewables employ asynchronous generators and the outlook for Grid Code compliance in the short term was good. However, the increasing adoption of converter technology will involve the decoupling of the rotor from the system leading to a lack of inertia. This will make it more difficult for the system to contain a maximum frequency excursion and recover from large system frequency disturbances. One approach to the problem was the creation of synthetic inertia and improvement of power system oscillation damping also looked promising. Other issues for consideration were the impact of the European Wind Integration Study (EWIS) and the EU's desire to harmonise all Grid Codes for wind.

Gas generation technology was now compliant with the Grid Code in terms of provision of 10% frequency response under the Grid Code but a significant remaining issue was the ability to reduce output rapidly if isolated in a smaller exporting island.

For new nuclear, National Grid had examined some of the plant designs but not all of them. The plant appeared to provide good flexibility in the context of the Grid Code requirements but the key challenge was provision of primary frequency response. The size of the standard unit i.e. up to 1800MW would provide some compliance issues in relation to the Short Circuit Ratio (SCR), which was closer to 0.4 than the required 0.5 and a lagging power factor of about 0.9 rather than the required 0.85.

The new coal technology likely to be deployed first in the GB was supercritical steam with IGCC following a few years behind. The most significant issue for supercritical steam plant was the absence of the stored energy provided by the drum of a conventional plant. As a result the plant would struggle to produce the 10% frequency response requirement in the Grid Code quickly enough. 3-7% primary response was likely to be the norm although this might be enhanced by the use of certain storage techniques. Provision of frequency response from IGCC plant also looked as if it would be similarly problematic. There was no standard available for CCS and therefore no application to date.

National Grid would welcome input from GCRP Members on these issues. Meanwhile National Grid were proposing the following actions:

- to bring forward a proposal to the September GCRP to overcome the SCR restriction;
- the establishment of a joint GCRP/CUSC Working Group on Frequency Response with the BSSG which would examine the frequency response issues identified and pick up the issues outstanding from D/07. National Grid to bring Terms of Reference to the first Working Group meeting subsequently confirmed at the September GCRP;
- a joint GCRP/CUSC Working Group to be established after the September GCRP to consider reactive power capabilities;
- National Grid to keep under review issues associated with islanding performance, synthetic inertia and power oscillation damping and initiate GCRP discussions as appropriate.

Supercritical coal fired plant requirements and the Grid Code (pp08/26)

CM presented pp08/26 and explained that the paper examined the performance of supercritical coal fired plant in meeting the Grid Code requirements in greater detail than the National Grid paper (pp08/21) and therefore should be seen as complimentary to it.

As indicated in the National Grid paper the supercritical boiler did not have the energy storage advantages of the sub-critical drum boiler. However, as pp08/21 explained the choice of the operating mode of supercritical coal fired plant making best use of the inherent plant characteristics could improve the performance in providing frequency response and other methods to provide an energy store could be adopted. The paper agreed with the National Grid conclusion that a GCRP Working Group should be convened to consider these issues.

The GCRP noted papers pp08/21 and pp08/26 and agreed with the actions identified in the papers. DB confirmed that he would raise the issue of BSSG involvement in the Frequency Response Working Group at the CUSC Panel meeting scheduled for 16th May.

7) Note on Operational Metering for LEEMPS (pp08/25)

National Grid presented pp08/25 outlining the Operational Metering arrangements for LEEMPS where it had been identified as required under the relevant BCA with the DNO. The paper was in response to a request from MK for more information on the topic. The main feature of the arrangements was the use of the internet as a communication medium employing a dedicated data concentrator at a National Grid site. The arrangements would involve minimum disruption to existing systems and National Grid did not believe there was a need for any Grid Code changes to implement the arrangements.

CMc asked if the arrangements would interface with the Generator's control system. BT believed that the interface would be with the EMC but agreed to review the arrangements and respond to CMc's point in due course by e-mail. BV indicated that she would provide the paper to AEP Members and provide any feedback to the GCRP.

8) Multi-Unit BMUs (pp08/22)

National Grid presented pp08/22 and explained that the GCRP had requested that they should be informed of any updates or changes to the treatment of multi-shaft BMUs, be notified each September that the current arrangements for gaining access to MW above MEL will continue and in each May that the current arrangements for reducing output below SEL will continue. National Grid used the information to determine whether generating capacity was available above and below that indicated by the MEL and SEL respectively within the Balancing Mechanism. National Grid agreed that letters should be sent to all owners of CCGT BMUs to continue the process until the end of May 2008 but queried the need for the arrangements in the future.

JN agreed that the arrangements had not been as useful as originally envisaged. It was agreed that BT, JN and CMc would review the current arrangements and advise the GCRP in due course as to whether they should continue or not.

9) GB Transmission System Study Network Data File (pp08/13)

National Grid presented pp08/13 and explained that the GBTSS Network Data File was routinely provided to Network Operators as allowed for under OC2. This included National Grid's view of the expected output from Generators based on submitted OC2 data. This enabled Network Operators to study the operation of their system with that of the transmission system. However, a number of Network Operators had requested that National Grid update the File on a weekly basis for the week-ahead timescale using a new form of network modelling data. National Grid was obliged to provide updates under OC2 and anticipated that such requests would increase in the future given the projected increase in embedded generation and the consequential additional complexity this would introduce for interconnected sub-transmission networks. However, the requirement appears in the section of OC2 headed "Operational Planning Phase" rather than under the section headed "Programming Phase" which Users might have expected. The GCRP were therefore asked to note that the current obligations regarding the exchange of the File applies to the "Programming Phase" and consider whether the provisions could benefit from greater clarity regarding the scope of the existing clauses.

In response to a question from DW, BT indicated that the User information exchanged included information about outages and generation output. LM informed the Panel that NS had expressed support for the recommendations in pp08/13 prior to the meeting. AC indicated that he would raise the issue at the Distribution Code Review Panel (DCRP) meeting scheduled for 21st May and provide feedback. It was agreed that GCRP Members should provide any comments on pp08/13 to BT who would report the outcome to the Panel by e-mail in due course.

10) Offshore Transmission

BM reported that work to incorporate the drafting for the Offshore Transmission regime in various Codes had progressed over the last few months in anticipation of progress on the

Energy Bill. Ofgem would issue a consultation on the drafting shortly. Ofgem were considering whether a workshop at which the changes could be described and discussed would be useful for Users. BM requested views from Panel Members in due course as to whether Users would find such a workshop helpful or not and the format it might take e.g. line by line approach or themed explanations.

11) GB SQSS Review Group (pp08/23)

National Grid confirmed that Headline Reports from the GB SQSS Review Group would be circulated to the GCRP in future to help inform the Panel of developments in this area. The key development at the April meeting of the Group was the establishment of a Working Group to review Infeed Loss Limits in the light of new generation technologies. The first meeting of the Working Group would be on 12th June 2008. The next meeting of the GB SQSS Review Group would be on 12th July 2008 in Perth. LM noted that the GB SQSS would also require consequential changes if any of the Transmission Access Modifications CAP161-166 were approved (see item 12).

12) Impact of Other Code Modifications

The Panel noted that a number of Transmission Access Modifications CAP161-CAP166 had been submitted to the April CUSC Panel and would be developed by 3 separate Working Groups. Significant consequential changes to the Grid Code would be required should the Authority approve any of these Modifications.

The Panel NOTED that the Consultation Alternative Amendment 2 for CAP149 (TEC Lite) was approved by the Authority on 23rd April 2008. National Grid was considering any consequential changes to the Grid Code arising from the approval of CAP149 and would bring proposals to the September GCRP. National Grid confirmed to JM that an issue he had raised in connection with generator forecasting Output Useable in the context of the CAP 149 decision would be taken into account during National Grid's consideration of consequential changes to the Grid Code arising from CAP149.

KC indicated that the cash-out Modifications in the BSC were progressing but there were no consequential changes envisaged to the Grid Code.

DB suggested that the work of Black Start Group in the BSC could be of interest to GCRP Members. The Group had decided that consequential Modifications to the BSC would be required in due course.

13) Ofgem Proposed Guidance – Environmental Issues and Code Objectives (pp08/24)

pp08/24 was the letter from Ofgem dated 15th April setting out Ofgem's proposed guidance on the treatment of carbon costs within the existing code governance framework and in particular to the code objective governing economic and efficient network operation within the industry codes. BM explained that the thrust of the guidance was to try to ensure that the environmental impact of a Modification to the Codes was quantified in future just like any other cost of a Modification. It was important to expose these costs associated with any Modification to the Authority given the background of the Government's commitment to emission reductions. DB explained that his understanding from Ofgem was that the guidance did not place an environmental objective on the industry. The aim was simply to make sure that the costs of carbon intensity arising from a Modification was adequately captured. DB suggested that the notion was therefore straightforward but in practice it might be difficult to calculate the impact. As a result the CUSC Panel had decided to establish a sub-group on environmental issues to examine options for impact calculation. It was intended that the Group should be cross-codes as the issues were common and therefore GCRP Members would be invited to put forward nominations for Membership of the Group in due course.

14) Any Other Business

AOB1 - Electricity Generation from Gas Networks (Blue LNG)

BV asked if the Ofgem consultation on electricity generation from gas networks had any implications for the Grid Code. National Grid agreed to report back to the next meeting of the GCRP on the issue.

AOB2 - Delegations of Authority (DOA) for Busbar Switching Contracts

RW (National Grid) explained that there were currently contractual arrangements with Generators and DNOs that allowed for multi-user switching. The contracts listed all the equipment subject to switching and the relevant control person but have over time become seriously out of date. These contracts would be augmented in due course with Site Responsibility Schedules (SRS) detailing the delegated responsibilities for existing and new plant and the intention was to roll this new approach out across the country in due course. The SRS would therefore also record the DOAs for new equipment going forward. Timescales for completion of the exercise had not been identified. The ENA had been involved in the development of the new arrangements given the high level of switching that DNOs undertook on behalf of National Grid. To date there had however been minimal discussions with the Generators.

JN suggested that Generators needed to understand fully the potential benefits of this approach to Users before they committed to detailed involvement. RW agreed to provide a further progress report to the September GCRP.

15) Next Meeting

The next meeting will be held on 18th September 2008 at National Grid House, Warwick commencing at 10:00am.