

## Grid Code Review Panel

### Grid Code Compliance Issues with Refurbishment Plant

#### I. Introduction

1. For new generation connection or modification applications, there is a process pursuant to the CUSC and/or other relevant documents to check plant compliance with the Grid Code requirements and demonstrate the Ancillary Services delivery. This ensures stable and satisfactory voltage and frequency response performance.
2. When plant items are refurbished or replaced, it is equally important that the overall performance is checked to ensure the above requirements continue to be met. However, this process is not clearly covered in the Grid Code to allow the plant dynamic characteristic to be checked and Ancillary Services performance validated.
3. Without a process to check refurbished plant performance, National Grid believes that the system security could be affected and quality of supply impaired. This paper discusses the issue and seeks GCRP's view on resolving the problem.

#### II. Background/Observations

4. Since an instability problem was experienced following a plant control refurbishment, National Grid has tried to work more closely with Generators conducting plant refurbishment to avoid the above risk. Most Generators have been co-operative in this area.
5. National Grid's experience has shown that an early involvement with Generators on plant refurbishment has been beneficial to both parties, allowing the number of validation tests to be minimized and commissioning program better coordinated. This also minimizes the impact on Generators and ensures that system security is maintained.
6. National Grid's experience has indicated that refurbishment of plant controls (ie replacing analogue with digital design) has resulted in a change in the plant dynamic.
7. National Grid believes that monitoring alone is not an appropriate mechanism for verifying plant performance following plant control refurbishment for the reasons below:
  - the system is exposed to additional risk if plant problems (eg instability or unexpected tripping) are only revealed at the time of large system disturbances.
  - the normal variations in frequency and voltage are small and will be insufficient to confirm that the plant will ride through a major disturbance without becoming unstable.
  - the frequency response holding payments and despatch scheduling are based upon large frequency deviations that rarely occur.

#### III. Key issue

8. To ensure satisfactory plant performance for system security considerations and Ancillary Service contracts performance, a revised approach is required to address the issue of refurbished plant.

**IV. Recommendations**

9. The Grid Code Review Panel is invited to:

- a) discuss the issues associated with refurbished plant and the potential risks to the system operation,
- b) discuss approaches that can be taken to resolve the concerns raised in the paper
- c) comments on the proposed Grid Code revisions shown in Appendix A.

## Appendix A

### Proposed Grid Code Text Changes

OC5.5      PROCEDURE FOR TESTING

OC5.5.1    Request For Testing

OC5.5.1.1    **NGC** may at any time (although not normally more than twice in any calendar year in respect of any particular **BM Unit**) issue an instruction requiring a **User** to carry out a test, provided **NGC** has reasonable grounds of justification based upon:

(a)    either, a submission of data, or a statement from a **User** indicating a change in plant or apparatus or settings (including but not limited to governor and excitation control systems)performance; or

~~(b) a statement from a **User** indicating a change in performance; or~~

~~(be)~~    monitoring carried out in accordance with OC5.4.2; or

~~(cd)~~    notification from a **User** of completion of an agreed action from OC5.4.2.