

**Grid Code Review Panel
Meeting 16 September 2015**

GC0079 Frequency Changes During Large System Disturbances – Revised Terms of Reference

Paper by
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Background

The Panel is aware of the work of GC0079 as it is a joint DCRP/GCRP working group. Phase 1 of the work has assessed the benefits, risks and costs of desensitizing RoCoF protection on embedded generators in the size range 5MW to 50MW (no generator above 50MW is believed to be fitted with RoCoF protection, in accordance with industry rules). DNOs and Generators are currently engaged in applying these revised settings.

Phase 2 of the work is exploring the same issues in terms of benefits, risks and costs, of extending the approach to power stations less than 5MW. The research is still ongoing.

Phase 2 also included the specific requirement to set a RoCoF withstand value that all new generating equipment (above 800W, ie all generation directly affected by the EU Network Code Requirements for all Generators (RfG)).

In early thinking on the challenges of specifying a withstand value, it has become clear that there are allied concepts that need to be considered too. This short paper explains these and attached is a revised Terms of Reference that captures them.

Revised Terms of Reference

In determining a RoCoF withstand value, this clearly can be related to the maximum RoCoF which the system is expected to experience for secured events. Ideally the withstand will be well in excess of the maximum that the system is operated to. In which case the two values, of withstand and operating limit, should be established together. However we also want the system to be as robust as economically possible, taking into account that some events are more testing and onerous than those which are included in the specific considerations of securing the system. The revised Terms of reference recognizes these issues and separates them for appropriate consideration.

The terms of reference pose three phases to the work. Phase 1 is underway as described above. Phase 2 is also underway, and as phase 1 is concerned with RoCoF protection settings. Phase 2 also will specify the withstand capability to be designed into new generation equipment. Phase 3 will consider all relevant factors and recommend what the RoCoF operating limit will be, recognizing that this will naturally apply to all existing generation equipment too.

The terms of reference also highlight other areas of work which the GC0079 proposals interact with. These include GC0048, the joint DCRP and GCRP Workgroup on GB Application of the RFG, and GC0062. The GC0062 Workgroup is responsible for considering fault ride through issues. GC0062, or such Workgroup formed under the GC0048 work-plan, will examine local effects of transmission faults including actual or apparent frequency variations.

Finally it is worth noting that protection settings and withstand are not the same thing. Protection settings are one aspect of withstand, and within GC0079 are being dealt with explicitly because they are that aspect of withstand with the lowest threshold.

Recommendation

The Panel is asked to note the development of thinking in GC0079 and to approve the revised terms of reference.