

PPB Response to Utility Regulator Consultation Paper on Rate of Change of Frequency Modification to Grid Code

September 2013

1. Introduction

This is the PPB response to the “Rate of Change of Frequency Modification to Grid Code - Utility Regulator Decision Paper”. The “Rate of Change of Frequency Modification to Grid Code Amendments Consultation” dated 17 October 2012 which was held by SONI resulted in objections being maintained by electricity undertakings liable to materially affected by the changes. These objections have had to be passed to the Utility Regulator in accordance with the provisions of SONI’s transmission licence. There are considerable outstanding objections relating to the proposed modification and PPB believes that the Utility Regulator is not in a position to make a decision.

The planned volume of non-synchronous generation to be commissioned in Ireland and Northern Ireland far exceeds that of any other power system and therefore reliance on theory which is based on experience from existing live systems is not sufficiently robust without undertaking significant operational testing. It is unusual to propose a Grid Code modification, which is so highly contested, without the robust technical evidence and testing to be completed in order to support the modification. This must be a core tenant of the Grid Code modification and approval process.

The Grid Code should not used to set out as a roadmap to set out the preferred future operating parameters without the technical analysis to support operating the system and generating units in such a manner. The Grid Code should not become a document of future scenarios which will require a plethora of derogations if they are either theoretically or physically impossible to achieve. This would result in a Grid Code which is both difficult to operate and also, due to uncertainty in the Grid Code standard, increase the cost of new investments. PPB would therefore recommend to the Utility Regulator that modifications to the Grid Code are not made until all the necessary studies are completed.

It is important that the Utility Regulator considers all technical issues before recommending a Grid Code modification. Given the concerns in relation to generation capacity in Northern Ireland the Utility Regulator should be very cautious about directing a modification to Grid Code which could impact system security. For example an assessment of the potential impact on generating unit availability, due to increased maintenance or failures, and the potential impact on system security should be undertaken.

Given that the original proposal by SONI was for a RoCoF requirement of 2Hz/s the Utility Regulator has not informed stakeholders of how Northern Ireland will be able to reach an SNSP of 75% or indeed what level is achievable with a RoCoF standard of 1Hz/s in Northern Ireland. If the SNSP cannot be increased from 50% in Northern Ireland then the merit of the grid code modification is questionable. The commissioning of the North South interconnector would have a much greater impact for both system security and on increasing the level of SNSP.

2. RoCoF Grid Code Compliance Standard and Testing

It is important that before the Utility Regulator directs a Grid Code modification that the standard is defined more appropriately. The 1Hz/s measured over 500ms is appropriate for a protection relay setting, which is what is being discussed in GB, however the SONI standard is different in its application. Within the 500ms window changes of frequency far in excess of 1Hz/s could be realised and what is required should be defined within the standard. This is best illustrated by considering how one would test the new standard. For example, the test could be either a straight line as illustrated in Figure (1) or it could be a dynamic waveform as illustrated in Figure (2). If this is not defined then it is likely to be disputed between the TSO and the Generator.

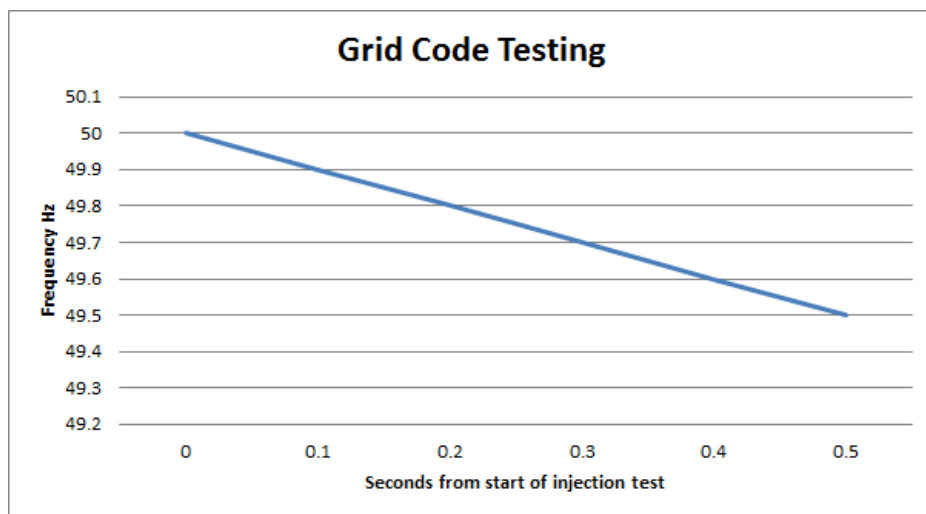


Figure 1 Straight Line Grid Code Test

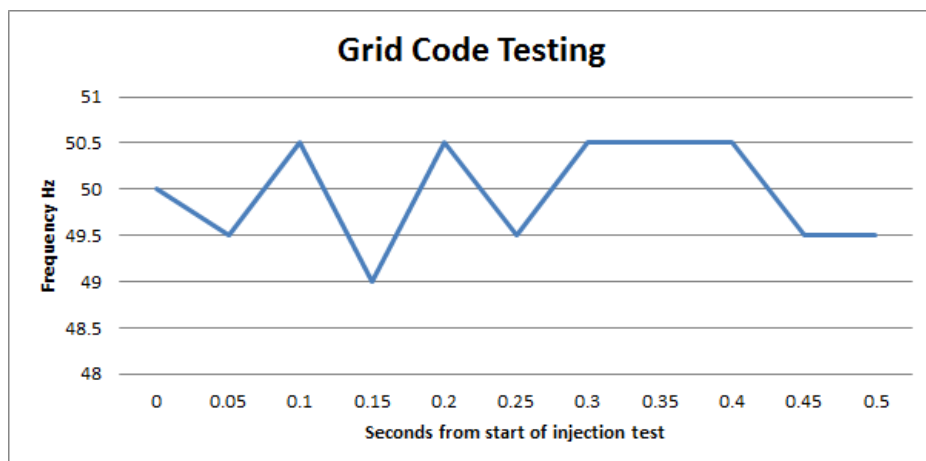


Figure 2 Dynamic Waveform Grid Code Test

The Electricity Safety, Quality and Continuity Regulations (Northern Ireland) 2012 which came into operation on 31 December 2012 state that a variation not exceeding 1 per cent above or below the declared frequency shall be permitted. However a 2Hz/s RoCoF measured over 500ms would represent a frequency delta of 1Hz. The Utility Regulator is suggesting testing generating units for a 2Hz/s standard however this would be difficult to include in the SONI Grid Code as it is likely to contradict the Regulations.

3.0 Treatment of different Grid Users and Electricity Undertakings

An interconnector has the capability of causing one of the largest RoCoF events on the system due a single point of failure. The tripping of an interconnector could also create significant harmonic disturbances on the system. Whilst the UR is proposing a Generator Performance Incentive for conventional generating units it is not proposing that all Grid Code Users are financially incentivised to minimise the number or magnitude of RoCoF events. This is despite the fact that the East West interconnector is the greatest risk. Further, whilst system separation is a major risk for the Northern Ireland system, there is no financial incentive being considered for either NIE or SONI to ensure that such an event does not happen.

PPB would welcome the publication of the methodology which has been used to value the proposed Generator Performance Incentive (GPI). PPB would also welcome an analysis to be completed, using the same methodology, to value a performance incentive for interconnector and tie-line owners in relation to:

- (i) the mal-operation of an interconnector (up to 1000MW) which may cause a RoCoF event; and
- (ii) a system separation which may cause a RoCoF event.

As discussed at the time of the introduction of the Harmonised Ancillary Services arrangements PPB still believes that the TUoS Agreement is not the correct agreement to contain Generator Performance Incentives. For example, disputes in relation to RoCoF GPIs could end up being referred to the Utility Regulator as a Licence breach. Interconnector owners have also argued that GPIs should not be applicable to them as they do not sign up to a TUoSA.

4.0 Interaction with DS3 Arrangements

The proposed DS3 arrangements will only compensate Generating Units which provide inertia to the system if they have a SIFR of more than 15s. However there is no differentiation between types of thermal units in the existing Transmission Constraint Group in Northern Ireland. The Transmission Constraint Group for NI Thermal Units applies to all thermal units and seeks to ensure that “at least 3 of these thermal units are synchronised at all times. This is required to ensure there is system stability in the SONI control area”. Thermal Generating Units with an SIFR of less than 15s should therefore be compensated. This is because, with the introduction of a RoCoF standard, a thermal generator could be liable for a GPI because it cannot meet the 1Hz/s standard however it will still be providing inertia, without any compensation, to the System Operator.

PPB - Power NI