



**Response to:**

Consultation Paper “Rate of Change of Frequency (RoCoF) Modification to the Grid Code”

Reference: CER/13/143

## Part One: Introduction

ESB Generation and Wholesale Markets (GWM) welcome the opportunity to respond to the CERs Consultation Paper 13/143, *Rate of Change of Frequency (RoCoF) Modification to the Grid Code*. The ESB GWM generation portfolio comprises of both conventional and renewable generators. The successful delivery of the DS3 programme is therefore important to the ESB GWM business.

The main points of ESB GWM's response to this consultation are summarised below. Part Two of the consultation response gives more detailed comments. Responses to the specific consultation questions raised are outlined in the Appendix.

### 1.1 Summary of Main Comments

- ESB GWM supports the delivery of Ireland's renewable energy target of 40% renewable energy by 2020 and the implementation of the DS3 programme of which RoCoF is an important variable.
- ESB GWM do not agree with approving MPID 229 in principle. The CERs own advisors, PPA Energy, "recommend that CER does not approve MPID 229" pending completion of a number of processes which are not yet complete. The CER must acknowledge that until generators' technical studies are complete that there is a real and as yet unquantified risk that it may not be feasible for generators to comply with the proposed modification.
- Conventional generators have actively engaged with OEMs to understand the implications of moving to a higher RoCoF value. The OEMs must carry out technical studies to assess the impact of the proposed change and each study is expected to take between 12-18 months to complete. The OEMs have indicated that studies will be carried out consecutively for each generating unit. Therefore, it is not feasible that generators can comply with the CERs proposed implementation phase of 18 months and the CER must adapt realistic timeframes in which the OEMs can complete the required studies. PPA Energy's report suggests "timescales of 8-10 years to study all of the plant on the system<sup>1</sup>". The CER must review the proposed implementation timeframe in light of industry feedback from discussions with OEMs and their own advisor's report.
- ESB GWM suggests that one possibility is to consider a phased approach to implementation i.e. an initial 18 month phase after which the CER assesses the results of the completed studies as well as the alternatives investigated by the TSO and determine if the proposed higher RoCoF standard appears feasible and if so,

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<sup>1</sup> PPA's RoCoF Report, Page 22

agrees the necessary time and most economic solutions for cost recovery required for completion of the remaining technical studies.

- Due to the lengthy timeframes associated with the technical studies, the as yet undetermined results of these studies including the possible inability to comply with the proposed MPID 229, the extent of any corrective actions required for each unit, the impact on operating behaviour and the current unquantifiable costs associated with mitigating any potential risks identified, ESB GWM strongly support the proposal that the TSO investigate alternative means of achieving 75% SNSP.
- It is not appropriate that a generator may be subject to a substantial GPI due to factors which it cannot control i.e. the scheduling by OEMs of generating units' studies. Without the OEMs assessment, generators cannot demonstrate compliance with the proposed new RoCoF value. It must be possible for generators to receive a derogation and not be subject to GPIs in the event that the OEMs cannot complete the studies within the 18 month timeframe.
- ESB GWM support the proposal that generators' technical studies should be managed by a co-ordinated, industry wide project as this will lead to greater efficiencies and savings. However, ESB feel that the TSO are not necessarily the best placed entity to carry out the project management role. EirGrid has considerable expertise in operating the transmission system but less familiarity with plant behaviour, generator running or mechanical integrity issues. It is suggested that an independent third party technical advisor with more detailed knowledge of generator behaviour is appointed by the CER.
- The scope of the project manager needs to be clearly defined. At present, the scope is too vague and ill defined. For example, how does the project manager determine satisfactory compliance with the proposed standard? Will this criteria be consulted at an industry level and allow generator input?
- CER/13/143 states that all generators must comply with the new standard– is there a tipping point at which any new RoCoF standard cannot be implemented due to proven inability of non-compliance by some generators as a result of technical studies? ESB GWM request clarification on how this issue will be managed and communicated to industry participants. Has the TSO determined a mandatory level of compliance required? This information should be available to market participants to provide clarity on RoCoF implementation.
- Generators have a legal requirement to act as a prudent utility and must manage their own plant safety. It is not appropriate that the TSO can determine which plant should undertake studies with the OEMs. Generators must be able to decide, from both a legal, technical and commercial standpoint, which plants require studies. Both generators and the TSO need to be satisfied with the results of the studies and that the plant can comply with the proposed standard.

- The CER acknowledges that the proposed RoCoF modification is likely to result in a “negative commercial impact on many conventional generators” and could be considered an “inequitable situation”. The proposed RoCoF modification is a consequence of the renewable energy targets. Costs must be recoverable otherwise this amounts to a fundamental change in the investment landscape, creates regulatory uncertainty and amounts to cross-subsidisation from one class of generator to another. ESB GWM strongly opposes the CERs preferred option of no cost recovery for completion of the required studies.
- The postalised GTUoS recovery option is not appropriate as units that are DSO connected or below the de minimis threshold value will not contribute towards the cost of studies. Potentially, thermal generators completing the studies will be faced with the greater part of increased GTUoS charges which would provide little to no actual net cost recovery for the cost of the studies incurred.
- The DS3 system services pot was calculated using a value based approach for the provision of system services. ESB GWM proposes that the CER examines the possibility of setting aside monies from the DS3 system services pot to fund generator studies. This would result in no net impact to the consumer for completion of the studies and would provide a cost recovery mechanism for generators. One possible idea is to delay the implementation of this cost recovery mechanism until October 2015 to coincide with the introduction of the DS3 system services pot.
- The proposed GPIs for RoCoF non-compliance are penal and have the ability to affect the future commercial viability of a generating unit. GPIs should not threaten the potential continued existence of a generator and undermine investment decisions made at a different time.
- The proportionality of the proposed GPI is highly questionable given it could potentially lead to the closure of a plant with an inability to meet a new standard that was not in existence at the time the plant entered the market. Introducing such an exorbitant GPI creates regulatory uncertainty for investors and the CER should be mindful of the potential implications of establishing exit signals in the market.
- ESB GWM requests that the TSO provide a frequency trace showing the worst case RoCoF event that can occur under the proposed definition of 1Hz/s over a 500ms period. The OEMs have indicated that this data is required for meaningful studies to occur. Delays in receiving this data from the TSO will result in subsequent delays in starting the OEMs’ studies.

## **Part Two: Detailed Comments**

### **2.1 DS3 and RoCoF**

In order to facilitate the 2020 renewable energy targets, SNSP level of 75% are required compared to the current operational limit of 50%. The TSOs have identified an increased RoCoF value of 1 Hz/s over a 500ms rolling period as a means of increasing the SNSP level to 60%. Increasing the RoCoF limit has not been done in any comparable system and all conventional plant in SEM are concerned with the impact of higher RoCoF on (a) operations and maintenance; (b) reduction in life time of the assets and (c) potential failure. These concerns have been validated by VGB; EPRI and OEM's. The OEMs must complete technical studies on each unit to investigate the impact of the proposed RoCoF modification. DNV KEMAs report identified that stability issues occur at full leading power factor and reinforces generators concerns regarding the proposed RoCoF standard.

Both the TSOs and the RAs must acknowledge that there is no prior international experience in this area. At present, an unquantified risk exists regarding the feasibility of moving forward with an increased RoCoF value due to potential issues which may be identified after completion of the studies such as technical constraints, timing limitations or unbalanced costs requirements for any identified corrective actions. Due to the existence of this risk and the consequential impact on wind curtailment and the 2020 renewable energy targets, ESB GWM strongly supports the proposal that the TSOs should identify and implement alternative solutions. Potential solutions include investigating the ability of generators to provide parking services, the formulation of operational policies which could prevent high RoCoF values occurring, the potential contribution of smart grid or others.

### **2.2 CER Proposed Decision**

#### **2.2.1 Evaluation and Implementation of the Modification**

The CER has proposed to approve the modification in principle but not to give effect to the Grid Code standard until EirGrid confirm compliance from a significant number of generators. Due to the uncertainty associated with technical capability of the Irish generation fleet, ESB GWM does not believe that this is an appropriate response from the CER. If this modification is approved in principle, a future process is created whereby generators will need to seek a derogation for non-compliance with a standard that is not yet established as being feasible. Generators can only establish their level of compliance post completion of the technical studies. The CER has indicated that it expects an 18 month leadtime for implementation of the new Grid Code standard. Our extensive discussions with the OEMs has indicated a leadtime of 12-18 months per generating unit. Studies will be carried out consecutively and

consequently, an eighteen month total implementation timeframe is unachievable. Generators will be unable to state their level of compliance before the studies are complete and this will create an inefficient and time consuming derogation process involving the majority of generators, the TSOs and the RAs. It is recommended that no modification is approved for inclusion in the Grid Code until completion of the technical studies confirm that the proposed modification is both realistic and realisable.

ESB GWM welcomes the introduction of a centrally managed entity to project manage the process of completing the required technical studies. A centrally co-ordinated and managed industry wide project should result in process efficiencies and cost savings which is beneficial to all stakeholders. We would request that the scope of the project manager is clearly defined as this is not available in the current consultation and may lead to future complications. EirGrid has significant experience in the operating the transmission system however as they do not have the same level of experience regarding generator running and plant behaviour, we would suggest that an entity with more experience in plant behaviour is assigned as project manager.

### **2.2.2 Generator Studies and Cost Recovery**

We are extremely concerned with the proposition that EirGrid can determine through a risk based assessment which generating units need to undergo technical studies. In the TSOs report "Analysis of the Frequency Response of the Power System Following Large Disturbances (August 2012)", examples of historic events on the system are discussed. ESB GWM requested further information at the time of the report regarding which units were on the system at the time of the event and this information was not available. We do not believe adequate records exist from the last 30 years to undertake a comprehensive assessment of which units should undergo further studies. As already stated, concerns regarding the proposed higher RoCoF standard encompass both plant safety and the potential negative commercial impact on the generating unit. Generators must act in accordance with prudent utility practise and have an obligation to determine if their plant can operate safely, including the determination of which studies are required. It is not sufficient that a third party determines the need for studies while the generator remains solely exposed to the full extent of any potential safety or commercial risks associated with the proposed higher RoCoF standard.

This consultation also requests that generators must demonstrate compliance with the current Grid Code standard of 0.5 Hz/s. From our discussions with the OEMs, a RoCoF value of 0.5 Hz/s is accepted as a global industry standard and OEMs are satisfied that their units can comply with this standard. In the majority of cases, generators will not have specific studies from the OEMs which can demonstrate compliance with the current RoCoF requirement. If

these studies are required, then the scope of work, the timelines and the costs associated with the technical studies would be expected to increase.

CER/13/143 states that “if generators cannot deliver this flexibility or choose not to make investments to deliver this flexibility, then this is a clear exit signal for generators who no longer offer the type of supply which the system demands” [page 11/17]. This statement does not take adequate consideration of generators who are in existence in the market before the proposed higher RoCoF value was proposed.

This consultation acknowledges that delivering compliance will potentially result in a negative commercial impact for thermal generators while benefiting wind generators. Incurring the cost of the technical studies is, in effect, a potential cross subsidisation from one class of generator to another. Traditionally Grid Code modifications have been retrospective with no cost recovery mechanism available. However, the proposed RoCoF modification is as a result of government policy and generators are not in a position to assess their compliance until the OEM studies are complete. Due to the atypical nature of this proposed modification combined with the fact that conventional generators will not derive any benefit from making the required investment, ESB GWM feel that cost recovery is both appropriate and required in this instance.

GTUoS does not provide an adequate cost recovery mechanism as generators that are DSO connected or less than the de minimis threshold will not contribute towards any cost recovery. These generators are typically the generators that do not need to carry out any technical studies. Potentially, thermal generators completing the studies will be faced with the greater part of increased GTUoS charges which would provide little to no actual net cost recovery for the cost of the studies incurred. As the delivery of the higher RoCoF value is required to achieve the targets established under the DS3 process, an alternative cost recovery mechanism is to set aside a once off deduction from the DS3 system services pot valued at €355M by the TSO. This deduction could be delayed until the implementation of the new system services in October 2015.

### **2.2.3 Generator Performance Incentive (GPIs).**

The proposed GPIs for RoCoF non-compliance are penal and have the ability to affect the future commercial viability of a generating unit. Further clarification is required regarding the methodology used in determining that the proposed GPI values are proportionate to the costs underperformance imposes on the TSOs. In addition, the proportionality of the proposed GPI is highly questionable given that it could potentially lead to plant closure for the inability to meet a Grid Code standard that was not in existence at the time the generating unit entered the market.

This consultation proposes the GPI will be introduced 18 months after the date of the CERs decision. Given the issues already highlighted with the timelines associated with the OEMs completing the technical studies, it is not reasonable to expect generators to demonstrate compliance with the proposed higher RoCoF value in 18 months. It is unreasonable to impose such a penal GPI on generators given the circumstances of the RoCoF modification.



## **Consultation Questions**

Please refer to the main body of this response in conjunction with the response to the questions below.

### Q1. Do you agree with the CERs proposal to approve MPID 229 in principle?

ESB GWM do not agree with approving MPID 229 in principle. The CER's technical advisors, PPA Energy, recommend that the CER do not approve MPID 229 pending the results of a number of processes. These processes are not yet complete. The CER has provided no justification as to why they have selectively used, rejected or ignored PPA's recommendations.

The CER must acknowledge that until the technical studies are complete that there is a real and as yet unquantified risk that it may not be feasible for generators to comply with the proposed modification. The CER should not make any decision regarding the proposed modification until the results of the technical studies including any required corrective actions are known. In addition, it is strongly recommended that that all options including but not limited to RoCoF are analysed in more depth including the completion of a cost benefit analysis of each the various options before a proposed modification is approved.

### 2. Do you agree with the conditions for giving MPID effect in the Grid Code?

No. The consultation proposes that the CER will not implement the new RoCoF standard until EirGrid confirms that a sufficient number of generators can comply with the new standard such that the system can be operated in a safe and secure manner. CER/13/143 states that all generators must comply with the new standard– is there a tipping point at which any new RoCoF standard cannot be implemented due to proven inability of non-compliance by some generators as a result of technical studies? Has the TSO determined a mandatory level of compliance required? ESB GWM request clarification on how this issue will be managed and communicated to industry participants.

This consultation proposes that generators have 18 months to make a declaration to EirGrid regarding their level of compliance. As already discussed, due to timing and resource constraints outside the control of generators, it will not be possible for a large number of generators to provide a declaration to the TSO within 18 months. The OEMs have provided quotations that indicate a single study will take between 12-18 months to complete. Studies will be completed consecutively for each generating unit. PPA Energy's report suggest "timescales of 8-10 years to study all the plants on the system". Thus, the 18 month

implementation timeframe is unfeasible and the CER must recognise the timelines already indicated by their own advisor, PPA Energy as well as generators feedback from OEMs .

It is suggested that a phased implementation timeline be considered where after 18 months the CER assesses the results of any generator studies completed at that point and evaluate if the new proposed RoCoF standard appears feasible as well as the TSOs progress regarding alternative options. If the technical studies for the units assessed indicate that the new RoCoF standard is feasible for these units, the timeline must be substantially extended to allow for other generating units to complete the technical studies. In addition, the CER should analyse the alternatives proposed by EirGrid as these may provide a quicker and more cost efficient means of ensuring 75% SNSP is reached. A cost benefit analysis of all options should be completed by the CER before any changes to the Grid Code are approved.

3. Do you agree with the proposal to establish an implementation project to co-ordinate the activities of generators and system operators?

Yes, a centrally managed industry wide project is suitable as the benefits should include increased efficiencies when carrying out the generators studies as well as reduced costs. The scope of the project manager needs to be clearly defined. At present, the scope is too vague and ill defined. For example, how does the project manager determine satisfactory compliance with the proposed standard? Will this criteria be consulted at an industry level and allow generator input? ESB GWM requests further clarity on this issue.

4. Do you agree with the proposed high level governance structure?

No, the proposed high level governance structure suggest that EirGrid will act as project manager for the generator studies. ESB GWM feel that the TSO are not the best placed entity to carry out the project management role. EirGrid has considerable expertise in operating the transmission system but have less familiarity with plant behaviour, generator running or mechanical integrity issues. It is suggested that an independent third party technical advisor with more detailed knowledge of generator behaviour is appointed by the CER.

5. Do consider that the costs for the technical studies should be recoverable?

Yes, it is crucial that generators are compensated for the cost of the technical studies. The studies are required to assess the feasibility of moving a higher RoCoF requirement in the Grid Code and to support the policy of achieving 40% renewable energy by 2020. The proposed modification will have a forecasted negative commercial impact for thermal generators. To ensure continued confidence in the investment and regulatory landscape of

SEM and to prevent potential cross-subsidisation of wind generators by thermal generators, it is essential that a cost recovery mechanism is established. ESB GWM proposes that the CER examines the possibility of setting aside monies from the DS3 system services pot to fund generator studies. This would result in no net impact to the consumer for completion of the studies and would provide a cost recovery mechanism for generators

6. Do you agree with the proposed introduction of a GPI for ROCOF

A GPI for RoCoF should not be introduced as It is not appropriate that a generator may be subject to a substantial GPI due to factors which it cannot control i.e. the scheduling by OEMs of generating units' studies. Without the OEMs assessment, generators cannot demonstrate compliance with the proposed new RoCoF value. It must be possible for generators to receive a derogation in the event that the OEMs cannot complete the studies within the 18 month timeframe.

The proposed GPI is highly questionable given it could potentially lead to the closure of a plant for an inability to meet a new standard that was not in existence at the time the plant entered the market. Introducing such an exorbitant GPI creates regulatory uncertainty for investors and the CER should be mindful of the potential implications creating exit signals in the market.

7. Do you agree with the proposal to require EirGrid to explore and implement alternative solutions?

Yes, please see main body of the response and note that the PPA Energy report recommends that "that the TSOs provide further information about the alternatives to changing the ROCOF standard that exist, describing the potential impact of these on system operation and the electricity market, and detail the likely limitations of any alternatives on the level of SNSP that can be achieved in 2020. This is likely to include reference to methods of maximising the amount of conventional generation connected to the system at times of maximum wind penetration, including a qualitative assessment of the implications for system dispatch and the cost of electricity in the market" [page 37].

8. Are there any other issues you wish to raise?

- (i) To facilitate meaningful OEM studies, ESB GWM requests that the TSO provide a frequency trace showing the worst case RoCoF event that can occur under the

proposed definition of 1Hz/s over a 500ms period. The OEMs have indicated that this data is required for studies to occur.

- (ii) PPA's report outlines a number of recommendation which the CER has selectively included or excluded from its consultation. ESB would request that the CER is mindful of PPA's recommendations and do not approve MPID 229 until the results of these recommendations are available. For example, further clarity is requested from the TSO regarding "exploring the level of ROCOF that arises over a 100ms period in a range of scenarios that show an average ROCOF of 1.0 Hz/s over 500ms, to enable further consideration of the short term impact of potentially higher rates of ROCOF over this shorter period by generator manufacturers" [page 37].