EWEA

THE EUROPEAN WIND ENERGY ASSOCIATION

EWEA response on the ERGEG consultation on the Pilot Framework Guidelines on Electricity Grid Connection

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1. General remarks

EWEA welcomes the ERGEG consultation on the Pilot framework guideline on electricity grid connection and recognises it as a step towards the achievement of the goals outlined in the third Liberalisation Package. The consultation should bring additional benefits with regard to the quality of this very first framework guideline and subsequent network codes on grid connection requirements. This topic is of highest importance to the European wind industry in view of the way in which grid code requirements in Europe have developed, and in the envisaged increase of wind power generation in the EU.

In this response, EWEA wishes not only to address the listed questions for consultation, but also to express its observations on the overall structure and scope of the Pilot framework guideline, particularly in view of the process ongoing in parallel on the Pilot Network Code. It has been stated clearly by stakeholders such as the European Commission as well as by ENTSO-E that the framework guideline and network code priorities for 2011 should be based on the need to ensure secure network operation, the integration of RES and market integration, and on the other hand on enough clarity and consensus between the relevant stakeholders on goals and methods[1]. In this context, EWEA fully supports the priority work on the "pilot" framework guideline and network code on grid connection with a special focus on wind generation, and welcomes the ambition to complete this work by early 2011.

In general, EWEA urges the European Energy Regulators to ensure:

- that the stated goal of ENTSO-E's first pilot code "identifying and developing European rules harmonising grid code requirements particularly relevant to wind power generation"[2] can be achieved within the scope of this Pilot framework guideline; and
- that previous and ongoing work from the wind industry on this subject is properly taken into account[3].

The TSOs have set up ENTSO-E prior to the full implementation of the third Package in March 2011 with a dedicated organisational outline and responsibilities whereas the European Energy Regulators are set to convene the new Agency for the Cooperation of Energy Regulators (ACER) only in spring 2011. Within the interim ENTSO-E setup, accelerated deliberations have already taken place on the scope of a very first pilot code with special focus on wind generation. Consequently, EWEA was pleased that the

[1] See ENTSO-E work programme 2011, page 4:
https://www.entsoe.eu/fileadmin/user_upload/_library/consultations/Closed_Consultations/Work_program/WP_2010-2011/100701_ENTSOE_Overall_WP_2010-2011_consultation.pdf

[2] Ibid., page 5

[3] For more detailed information on EWEA's position on harmonising grid code requirements for wind power generation in Europe, see:
http://www.ewea.org/fileadmin/ewea_documents/documents/publications/position_papers/091210_EWEA_Harmonising_Europes_GCs_for_the_Connection_of_Wind_Power_Plants.pdf

urgent topic of grid connection requirements was taken up formally by ENTSO-E and ERGEG, with support from the European Commission and the Florence Forum, as the very first subject for a Pilot framework guideline and subsequent pilot network code. This decision took due account of the fact that wind energy is set to be the largest contributor to meet the EU's 2020 targets following the adoption of the 2009 EU Renewable Energy Directive (2009/28/EC) [4].

In view of this high share of wind power in the EU electricity generation, EWEA emphasises the need for harmonised connection requirements for wind generation. Presently, network connection requirements in Europe are specified at national level in different national grid codes, both at transmission and distribution level. Not surprisingly the historical process of Grid Code development in the gradually liberalising electricity sector has resulted in a quite diverse set of codes all over Europe. The diversity is reflected in the structure and organisation of these codes as well as in the actual technical requirements.

The envisaged deliverables in the third Liberalisation Package in terms of EU-wide rules for network management through framework guidelines and subsequent network codes provide an unprecedented window of opportunity to agree upon binding requirements, carry out a process of structural harmonisation as described in the answer to question 3, and create a strong precedent for the rest of the world.

In addition, recent studies and experiences conclude that in order to facilitate the technical and economic integration of substantial amounts of renewable generation, the flexibility of the entire generation fleet should be increased[5]. Future connection requirements for thermal plants should reflect this need for additional flexibility in the power system.

Overall, EWEA wishes to express its support to the European Energy Regulators in this interim phase of the third Liberalisation Package and for the demanding tasks mandatory in this piece of legislation, which will require stakeholders to work closely with both organisations, ACER and ENTSO-E. This will facilitate progress on the issues of most interest to EWEA, particularly this Pilot framework guideline and the subsequent pilot code on grid connection with special focus on wind generation.

2. Questions for consultation on the Pilot Framework Guidelines document

General issues:

1. Are there additional major problem areas or further policy issues that should be addressed within the Grid Connection Framework Guideline?

EWEA regards it as relevant to address the transition process from national codes to a European network code and how to avoid possible confusion in this period. This could be especially pertinent for some countries in view of increasing diversity of rules and

[4] Pure Power: Wind energy targets for 2020 and 2030. EWEA. 2009 http://www.ewea.org/fileadmin/ewea_documents/documents/publications/reports/Pure_Power_Full_Report.pdf

[5] See IEA Task 25: http://www.ieawind.org/AnnexXXV.html

codes, for example in Germany where grid connection requirements are linked with support systems (e.g. SDL). There should be a clear distinction between mandatory minimum requirements and voluntary retrofitting to provide system services, linked for example to support schemes.

Any new requirement should be introduced at a European level in the Framework Guideline and subsequent Network Code with the requirements agreed and specified at an EU level first and rolled out to the national level. This is to avoid many different forms of new requirements emerging in different networks and having to be reconciled later at an EU level.

Concerning the outlined scope of these framework guidelines (page 4 in the consultation document), EWEA regards it as highly confusing to include DSOs also as a grid user per se. Instead, it should be clearly stated if a DSO is in the context of the framework guideline considered as a grid operator, a grid user or both.

Furthermore, the questions in the consultation are generally too narrow and do not address important issues, such as outlined in our response to question 5.

2. **What timescale is needed to implement the provisions after the network code is adopted? Is 12 months appropriate or should it be shorter or longer?**

EWEA regards a transition period of 24 months as appropriate. 24 months is a minimum, as this is considered to be the minimum period of time for performing the iteration in the design cycle after imposing the requirements in a new code.

3. **Should harmonisation of identified issues be across the EU or, perhaps as an interim, by synchronous area?**

EWEA has published a concept of 'structural harmonisation'. This is intended to be followed over time by a more gradual 'technical harmonisation', where the structure in place might be completed technically. The geographical area for harmonisation should be the whole of the EU for the structural part, whereas technical harmonisation areas could be carried out after further thorough analysis in the synchronous areas.

In EWEA's view, the above mentioned two-step harmonisation process for the network connection requirements for wind power should be described and implemented as follows:

The first step, structural harmonisation, consists of agreeing on a template Grid Code for wind power, with a well defined structure of chapters, and a rational common system of designations, definitions, parameterisations, and associated verification. EWEA published a first "Generic Grid Code Format" in December 2009[6].

The second step, technical harmonisation, is seen as a process in the longer term, enabled only if the first step is properly carried out. Specific parameter values may vary

[6] EWEA published in December 2009 a first "Generic Grid Code Format for Wind Power Plants": http://www.ewea.org/fileadmin/ewea_documents/documents/publications/091127_GGCF_Final_Draft.pdf

from (synchronous or control) zone to zone if reasonably justified. The concept of such a two-step harmonisation process for the network connection requirements starting with structural harmonisation has also been rightly taken into consideration by ENTSO-E in their deliberations on the Pilot code[7].

EWEA recommends therefore that, in order to achieve the structural harmonisation, there is a clear grouping of wind power related grid code requirements in a separate chapter in the future Network Code for grid connection. This would ensure the maximum level of clarity in the specifications and an adequate valuation of the specific power plant capabilities of wind power. The above mentioned "Generic Grid Code Format" can be regarded as a fast track to a specific section within such a Network Code. The Pilot Framework Guideline has rightly included a separate section dubbed "connection regime for large-scale intermittent generation", assuming that variable generation from wind power plants, and other forms of generation, is meant to be covered by this section[8].

Grid Users related aspects:

4. **Should the requirements apply to existing grid users? How should it be decided? To which existing users should the requirements apply? How should timelines for transitional periods be set? Who should bear any costs of compliance?**

The requirements should not apply to existing grid users. Schemes like the voluntary retrofitting, such as the German EEG and SDLWindV-ordnance, should be regarded as a more appropriate approach.

In addition, there should be a differentiation between the transmission and distribution level, and a separate section for offshore wind power generation could be considered as well. Decisions on timelines should be set in close consultation with the main stakeholders concerned. Generally, any decisions on allocation of cost of compliance should be decided with stakeholder involvement to clarify specific responsibilities with respect to grid services.

Overall, the application of such requirements to all kinds and sizes of generation must be justified so that generators are not required to deliver requirements that are unnecessary, putting additional costs onto the market, and onto customers. A worst case example of this can be found in the UK where the grid code requires a reactive power capability even for smaller generators connected to medium voltage distribution networks where the reactive power capabilities can never be delivered because of voltage constraints in the distribution networks – hence a significant investment is made in equipment and compliance verification for no purpose.

5. **The framework guideline identifies intermittent generation, distributed generation and responsive demand as requiring specific grid connection guidelines. Is it appropriate to target these different grid users? How should the**

[7] See ENTSO-E work programme 2011, page 5.

[8] The term "intermittent" is inappropriate for system wide wind power and the qualifier "variable" generation should be used, as at power system level wind power does not start and stop at irregular intervals (which is the actual meaning of "intermittent").

requirements for intermittent generation, distributed generation and responsive demand differ from the minimum requirements? Is there a need for more detailed definition / differentiation of grid users?

EWEA wishes to express its concerns with regards to the applied structure and level of detail stated in this framework guideline in the response to this question: Different generation technologies have different capabilities. There is a danger in writing a standard for all technologies as it may exclude some technologies or technology variations. In addition, the advantages offered by certain technologies, or variations of those technologies, will not be appropriately rewarded if they are obliged to provide a capability that other competing technologies are not obliged to provide. EWEA therefore favours a system where capabilities are rewarded through contracting or trading of ancillary services and capabilities, so that technologies or variations with specific advantages can be rewarded for these additional services by the TSO, without forcing newer or less capable technologies, or variations of a technology, out of the market.

EWEA therefore regards the distinction and nomenclature of the categories as confusing and inappropriate. The term intermittent generation should not be used (see also footnote 8). Generation technologies should be mentioned simply by name instead, according to their primary energy source. The category Distributed Generation is confusing and should not be used, because it cannot be well defined, as variable RES generation can be found on both levels, distributed and bulk generation. The level of definition should accord solely to the grid voltage. Moreover, a specific set of requirements for wind power should be mentioned (see answer to question 3). Other renewable generation technologies should also state any specificities if needed and relevant. There needs to be a specific set of requirements for the grid users category "thermal generation" in order to enable introduction of requirements on provisions for increased generation flexibility.

Specifically on point 3.1.4 (page 9), EWEA believes that the involvement of renewable generation in balancing should neither be in the scope of the framework guideline nor the Pilot connection network code. Balancing is a task (of the system operator), not a technical connection requirement. Generation units need to have provisions to enable the system operator to execute this task. In this respect it has to be explicitly stated that connection requirements for conventional generation need to specify also provisions for balancing in a power system with substantial renewables, needing more flexibility.

Moreover, such requirements must clearly distinguish between normal system conditions and emergency situation/disturbances. It makes full sense that variable generation may be forced to contribute to power system security in case of a large disturbance and provide frequency control services. But variable RES and any other generation must not be forced to provide ancillary services for free to the TSO and DSO.

EWEA would like to underline that framework guidelines are supposed to provide the high-level and non-binding umbrella in terms of clear and objective principles and parameters for developing network codes, contributing to the overall goals of non-

discrimination and effective competition[9]. In EWEA's view the overall structure and level of detail stated in this consultation paper - both in general throughout the document, and in the specific section on wind power - is therefore inadequate.

Implementation:

6. **Is it necessary to be more specific regarding verification, compliance and reinforcement?**

It would be useful to be more specific regarding verification, compliance and enforcement. Repeated compliance testing can be avoided by working with a certification scheme. A paragraph on verification should therefore also contain requirements for certification schemes for grid compliance. Furthermore, the harmonisation of verification, compliance and enforcement is needed across EU.

7. **What are the key benefits and types of costs (possibly with quantification from your view) of compliance with these requirements?**

When assessing key benefits and types of costs of compliance with certain requirements, it should be considered what types of requirements typically lead to high costs and are therefore not reasonable from an economic point of view. Not economically reasonable can be defined as any requirement to base technical solutions on using components that are not widely commercially available.

Instigation of inappropriate requirements in network codes must be avoided as these impose extra costs on generators and therefore consumers e.g. fault ride through for high voltage, medium or low voltage faults where voltage dip due to the fault does not propagate widely and pose a system risk, as compared to the propagation of an extra high voltage fault which does cause a system risk.

Moreover, when looking at possible requirements in the future, wind plants can be very fast in providing certain services. The associated costs depend on site and wind regimes among other factors. However, there has been no quantification carried out on this by the wind industry so far.

8. **How should significant generation and consumption units be defined?**

This definition should be assumed by the system operators. In principle, it should be related to a percentage of the minimum load in a synchronous zone or in a part of a synchronous zone if the TSO is able to justify this criterion in a transparent way.

9. **For what real-time information is it essential to improve provisioning between grid users and system operators? Do you envisage any problems such greater transparency? What are the costs (or types of costs) and benefits you would see associated with this?**

[9] See Article 6(2) of Regulation (714/2009/EC) on conditions for access to the network for cross-border exchanges in electricity.

A list of essential real-time information for Wind Power Plants may be structured along the following lines:

- Measurements at Point of Connection (POC):
  - Active power
  - Reactive power
  - Voltages
  - Currents
- Status:
  - Circuit breakers' status at POC
  - Disconnectors' status at POC
  - Status of On-Load-Tap-Changers
  - Available installed capacity
  - Available power, if plant is operated in an unconstrained way
  - Wind speed
  - Wind direction
- Set points:
  - Voltage respectively. Reactive Power respectively. Power Factor
  - Maximum active power

We do not see any issues regarding transparency or costs. TSO and generating systems should pay their costs to exchange real-time information at the POC (Point of Connection).

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