EWEA

THE EUROPEAN WIND ENERGY ASSOCIATION

EWEA response on the ERGEG Position Paper on Smart Grids

Question 1: Do you consider that networks, transmission and distribution, are facing new challenges that will require significant innovation in the near future?

Several factors require the significant upgrade of transmission and distribution networks, and the paper addresses most of these challenges. With respect to renewable variable generation and more specifically wind power, the paper does not consider the challenges in a balanced way; it over-emphasizes potential problems due to the so-called "intermittent" characteristics (whereas aggregated variable generation is not intermittent) and ignores the technological opportunities and benefits that these renewable technologies bring, in terms of savings in operational costs of power generation, and improvements in network efficiency and security.

The main challenges in transmission with respect to variable generation are the need for additional capacity both within, and between, EU countries, more coordinated planning for accelerated implementation of transmission upgrades and new network topologies and technologies (for example HV DC) that enable accessing the huge indigenous offshore wind energy potential in the European seas. The upgraded interconnection capacity is notably required to take full advantage of the continental character of wind power (predictability and capacity credit of wind generation). Furthermore, upgrades are needed for an improved interactive operation of decentralised plants and the system, and for an adaptation to a more flexible operation of the entire generation mix for a massive integration of variable generation interacting securely with a more responsive demand side.

The main challenge at distribution level is a modernisation of networks to adapt to the new realities where generation is implemented closer to demand and where there is a need and opportunity thanks to technical developments for improved end-user participation and massive demand-side response. Technical innovations are enabling the creation of micro grids which under certain critical circumstances (for example during a serious fault at transmission level) would be able to disconnect from transmission network and still satisfy consumer demand in a reliable way. In our opinion, this modernised distribution level is the main area for using the terminology Smart Grids.

With the creation of ENTSO-E it can be reasonably expected that the international operation of the interconnected systems in Europe will substantially improve. This process is expected to be facilitated / enabled by the adoption of European Network Codes which set out the required minimum network standards in the area of security, operation, planning as intended by the Third Package. The first discussions are taking place already (Framework Guidelines for Grid Connection) and it is clear that the scope of the network codes will extend to cross border network management for both the transmission and distribution system level.

It is highly surprising that the ERGEG paper ignores the opportunities offered by the process of Network Codes creation for spelling out 'smart grid' type requirements – which in fact is the only relevant pathway to formulate the technical minimum

standards for the networks to meet the future challenges, including the necessary network intelligence at the relevant levels. Principles and ingredients of the smart grid concept as outlined in the paper should be just essential requirements for the relevant Network Codes. It would not make sense to develop policies and regulation with respect to Smart Grids outside the framework as set out by the intended development of European Network Codes.

Question 2: Do you agree with the ERGEG's understanding of smart grid? If not, please specify why not.

The scope and definitions of the smart grids concept as developed in the paper – especially the figure 1) - are too broad to be a workable concept to be applied for regulatory purposes. In fact, the understanding presented in the ERGEG paper extends to almost all aspects of network development one can think of. The definition of smart grids as developed by IEC on the other hand is a quite good start: it is clear, and not complicated to measure (verify if a network complies to the definition by looking at its essential components). Furthermore it is inadequate that the analysis in the ERGEG paper looks at smarter distribution networks without taking into account smart metering. The figure 2 illustrates that the ERGEG view developed in the paper on smart grids should be considered as work in progress, as it does not recognise the possible existence of storage, only considers residential demand (and not industry or transport) and excludes interactions with non-electric energy uses (for example heating).

The definition of ERGEG (in view of developing regulation) as developed in the paper is a panacea of solutions at all levels. Consequently the scope of regulation with respect to smart grids becomes so broad that it is very unlikely to get any agreement with all stakeholders involved in a reasonable time. The way out of this is – as highlighted above – to connect and embed smart grid principles (some of which are described in the paper) in the relevant Network Code processes where applicable. But then the purpose of the document should be reformulated, and its link with specific Network Codes (planning, operation etc.) should be explicitly stated where relevant. In the light of the implementation of the Third Package, it does not make sense to maintain a process for regulation (including consultations etc.) on smart grids independent of, and parallel with, the development of network codes.

Question 3: Do you agree that objectives of reducing energy consumption impose the need for decoupling regulated companies' profit from the volume of energy supplied? How can this be implemented?

The principle of decoupling profits of companies (like grid operators) from the volumes they process seems quite strange, if this applies to network companies in the pure sense of the word. This at least should be better explained including the link with the subject of the paper.

Drivers

Question 4: Do you agree with the drivers that have been identified in the consultation document? If not, please offer your comments on the drivers including additional ones.

The analysis of how to reach the objectives 202020 has several shortcomings. The position of renewable energy in the networks is incorrectly described in the ERGEG paper. Wind power – the principal variable renewable generation - is connected both at distribution and at transmission level. In this moment, a significant share of the presently 75 GW installed wind power capacity is connected at distribution level, however, this does not correspond to the concept of distributed generation outlined in the consultation paper. In fact distributed generation has several sizes, which also determine the impacts on the networks. More active management of distributed networks is one of the major drivers for smart grids. In the list of drivers the numbers 1 and 2 are the same driver, namely increased distributed generation and variable (not intermittent) generation at transmission and distribution level. That ERGEG mentions the need for new smart technologies for connecting offshore wind again illustrates the ERGEG concept of smart grids is very confusing and ill defined. Strong drivers for the implementation of "smart grid" technologies which are not mentioned in the list are recent innovations in the ICT sector.

End-user participation in modernised networks is essential. However, when mentioning Electrical Vehicles (EVs) as a form of energy storage on distribution level, it should be mentioned that this requires additional technical developments and metering requirements. As it is going now, EVs only draw electricity from the grid (which could be time shifted) but are not designed to feed this energy back in the grid at moments of higher demand.

Market: besides the fact that better integrated markets require more information flow, it should be mentioned that faster markets (with shorter gate-closure times) also require a more intensified information exchange.

Operational security: in addition the more universal use of dynamic line rating to optimise the utilisation of existing transmission capacity should be mentioned as an example of more intelligence in transmission networks.

Opportunities and regulatory challenges

Question 5: Do you agree that a user-centric approach should be adopted when considering the deployment of smart grids?

User centric approach from SOs: This should be reflected in the Network Codes. (and hence should be spelled out in the relevant Framework Guidelines). The so-called user centric approach does not only apply for Smart Grid principles.

Question 6: How should energy suppliers and energy service companies act in the process of deploying smart grids solution?

The role and duties of energy suppliers and energy service companies can only become more clear if the concept of smart grids is defined in a more focused and clear way.

Question 7: Do you think that the current and future needs of network users have been properly identified in Section 3.3?

Several of the (listed) new services should be clarified / added

- Services needed by generators: which generators do need balancing services that manage intermittent generation? Normally it is a system operator who needs balancing services, and then only the net system unbalance has to be cared for, not unpredicted production of individual generation. (again an erroneous use of the term intermittent). What are access products for intermittent generation? The ERGEG paper should clarify this point, in particular in relation to wind power generation.
- Services needed by customers: essential services enabled by smart grid solutions and not mentioned in the list are (a) the possibility of more flexibly choosing a supplier and (b) shifting parts of the load to other point of time triggered by price signals.
- Services provided by network operators: if decarbonisation will lead to price increases, then this is caused by improper market functioning – By the same token European Energy regulators should acknowledge that *insufficient* decarbonisation will lead to price increases due to the expected shortage of fossil fuel.

Question 8: Do you think that the main future network challenges and possible solutions have been identified in Section 3.4 and 3.5 respectively? If not, please provide details of additional challenges/solutions.

Challenges are adequately described (if the term intermittent is replaced by variable). As to the described smart grid solutions, we would like to make the following remarks:

- Network planning does not seem an area for smart grids in the proper sense of the word. Again, intelligence obviously should be a basic ingredient for planning and should be embedded in the network planning codes.
- As regarding the network operation solutions only the 1st, 5th and 8th bullet are really typical smart grid solutions – the other bullet points are objectives or main tasks/actions requiring a range of technical and management solutions. Again this illustrates the confused use of the definition in the paper.
- Regarding the solution for generators, the second and third bullet point mentioned (voltage control) as such are not smart grid solutions but aspects that can benefit from improved intelligence in the network. The first bullet point with respect to variable (not intermittent) generation includes the exchange of forecast information.
- Regarding the solutions for end-users, the second bullet point is typically a higher level solution, closer to the system operator than to the customer.

Question 9: Do you expect smarter grid solutions to be essential and/or lower cost than conventional solutions in the next few years? Do you have any evidence that they already are? If so, please provide details.

In the implementation of technical innovations, the overall cost/benefit ratio should be considered. For reasons mentioned above, more intelligence in the network, especially at distribution level is essential to enable a smooth and economic co-operation of generation and consumers. More intelligent networks will enable the integration of more renewables, which will lead to lower generation costs. This justifies the use of higher quality (and probably more expensive) infrastructure. On the other hand at distribution level, a more intelligent grid could be helpful in optimisation processes and lead to reduction of investment costs.

Question 10: No opinion

Priorities for regulation

Question 11: Do you agree that regulators should focus on outputs (i.e. the benefits of smart grids) rather than inputs (i.e. the technical details)?

The regulators in the first place should facilitate and not obstruct the process that proper standards and proper minimum requirements are implemented for the network infrastructure. The appropriate road towards this goal seems to be (a) the development of Network Codes and (b) the development of specific additional international standards by CEN/CENELEC, to be implemented through the relevant legislation. Furthermore, continued R&D efforts are needed in line with the recommendations of the relevant technology platforms.

Questions 12 and 13: Which effects and benefits of smartness could be added to the list (1) - (7) presented in Section 4.1, Table 1? Which effects in this list are more significant to achieving EU targets? How can medium and long-term benefits (e.g. generation diversification and sustainability) be taken into account and measured in a future regulation? Which output measures should be in place to incentivise the performance of network companies? Which performance indicators can easily be assessed and cleansed of grid external effects? Which are suitable for European-level benchmarking and which others could suffer significant differences due to peculiar features of national/regional networks?

The Consultation process on the Network Codes is the proper process to provide input on the items of the list which are not directly related to Smart Grids in the proper sense of the term (IEC). This regards more specifically items 3, 6 and 7. For the other items, there is a need for a more focused analysis of the application of the Smart Grids concept on distribution level – to identify aspects that are not covered by the Third Package process of Network Code development.

Questions 14-15: Do you think that network companies need to be incentivised to pursue innovative solutions? How and what output measures could be set to ensure that the network companies pursue innovative solutions/technologies? Do you consider that existing standards or lack of standards represent a barrier to the deployment of smart grids?

The modernisation of the networks, especially at distribution level, in order to enable a more effective interaction between the network users and achieving higher levels of network security, should be accompanied by a process of standardisation. There is a need to make an inventory of the gaps in the existing standards. The process of Network Code development in principle offers an opportunity for the stakeholders to identify the relevant standards, and need for further standardisation. The issue is that this process might have to be accelerated to timely achieve solutions necessary for reaching the 2020 targets.

Question 16: Do you think that other barriers to deployment than those mentioned in this paper can be already identified?

An important barrier in this moment is the present confusion on the scope and definition of the term "smart grids". This should be resolved as a matter of urgency.

Question 17: No opinion

Question 18: What do you consider to be the regulatory priorities for electricity networks in relation to meeting the 2020 targets?

With respect to 2020 targets the following priorities are perceived as the most important:
At system level:

- Interconnection: regulatory measures that facilitate the necessary upgrade of land and sea interconnection capacity and facilitate cross-border trade of electricity
- Transmission planning onshore: regulatory measures that facilitate the implementation of identified required upgrades to integrate variable renewable generation
- Transmission planning offshore: regulatory measures that facilitate power exchanges together with combined trade and transport of marine renewable generation (offshore wind power etc.)
- Flexible generation: regulatory measures that support the development of future generation mix towards higher flexibility to adequately complement increased variable generation

As mentioned above, the proper forum to formulate adequate regulatory measures at European level complementing the codes of practice and standards is the Network Code development.

At distribution level:

- Regulatory measures that support the modernisation of distribution grids, creation of micro grids etc. a.o. by implementation of so-called smart grid solutions.

It should be investigated where in the process of Network Code development this area could get sufficient attention.

Conclusion

Integration of a significant share of variable renewable generation should be considered in the frame of a modernisation of the power system towards more sustainable generation, higher security, and fair energy prices for the network users.

Whereas at transmission level this modernisation process should be actively taken up by ENTSO-E – to be supported by the regulators by adequate measures enabling the necessary innovation - the development at distribution level is much more "dispersed". There is a need for workable set of minimum technical requirements in order to implement more intelligence and micro-grid concepts at distribution level, accompanied by a consistent set of regulation at European level in order to ensure the proper interoperability of the networks and achieve a traceable level of security. In this domain there is obviously a task for the European regulators. The present ERGEG paper should be refocused in order to provide a workable start to formulate the scope of this task.

ERGEG/CEER should see that network intelligence (the so-called "smart grid" concepts) is implemented in the Network Codes formulation process where relevant. In addition, there is a need for a more realistic and technically justified view of ERGEG on the impact of variable renewable generation on the networks. There is sufficient experience and literature available in the public domain to underpin such a view.

For further information please contact: Paul Wilczek, EWEA: pw@ewea.org or Frans van Hulle, EWEA: fvh@ewea.org

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The European Wind Energy Association (EWEA) is the voice of the wind industry, actively promoting the utilisation of wind power in Europe and worldwide. It now has over 600 members from 60 countries, including manufacturers with a 90% share of the world wind power market, plus component suppliers, research institutes, national wind and renewables associations, developers, electricity providers, finance and insurance companies and consultants. This combined strength makes EWEA the world's largest and most powerful wind energy network.