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ACER Consultation on Draft Framework Guidelines on System Operation

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A EURELECTRIC Response Paper

September 2011

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ACER Consultation on Draft Framework Guidelines on System Operation

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Key messages

- EURELECTRIC welcomes the draft Framework Guidelines (FG) on System Operation defining principles for drafting of the network codes (NCs) that are to provide clear rules for the future operation of the European power system.

- We believe that the FG should provide a good basis for the NC(s) to set common binding minimum requirements that would ensure maintaining the high operational safety, security and quality of supply standards of the European power system whilst contributing to the integration of the internal electricity market through facilitation of cross-border trade, as required by the Regulation (EC) 714/2009.

- **EURELECTRIC points out that the NC(s) on system operation must provide a clear upfront view of the future system operation and its functional needs, including security criteria (e.g. N-1), amount of reserves needed, etc., and thereby justify the requirements of NC(s) on grid connection. Similarly, the FG should also outline the requirements for products which TSOs have to purchase in the balancing and reserves market.** The features of procurement of ancillary services should be addressed in the FG on Balancing. ACER could contribute to clarification in these areas by defining the interfaces & hierarchy between various FGs and NCs. Furthermore, EURELECTRIC calls for synchronisation of development and consistency of provisions among the NC(s) on system operation and the NC(s) on grid connection (and balancing, if needed).

- **EURELECTRIC strongly supports exigency that any new requirements deviating from the existing international and national standards, rules and established procedures shall be underpinned by relevant technical and cost-benefit analysis (CBA) based on transparent data.** The FG should determine the NC(s) to instruct that national regulation recognises new grid service requirements and corresponding costs.

- **Market-based approach is the most cost efficient way of procurement of ancillary services (e.g. balancing power) to TSOs and DSOs.** In this context, unbundling principles should be followed, implying a clear split between competitive rules and regulated activities without any cross-subsidising between these two areas.

- With respect to of the fact that the revision of the EU law quite a lengthy process, **EURELECTRIC deems very important that the NC(s) are formulated in a flexible way so as to ensure openness to future developments as well as regional and national implementations.**

- **As recognised by Task Force for Smart Grids of the European Commission[1], massive deployment of distributed generation (DG) demands enhanced cooperation on the TSO-DSO interface. DSOs will play an increasingly important role in ensuring operational security. Expertise and active participation of DSOs' representatives are thus necessary in the drafting of the system operation NC(s)'s provisions** in order to define rules for collaboration in power system operation and data exchanges, as well as to assess eventual implementation of smart grid applications and functionalities for secure system operation. The FG(s) should take this into account and ACER should take stock of the formulation used in the draft FG on Gas Balancing in Transmission Systems[2].

- **The FG on system operation should be clear on the roles and responsibilities of the different affected parties and state that the final responsibility for system operation** ('operate, maintain and develop' the system in the words of Directive 2009/72/EC) **lies with TSOs. This will avoid that interpretations in the NC would erode these responsibilities.**

- **In addition to adequate DSO involvement, EURELECTRIC recommends establishment of an ENTSO-E user group (as it has been done for the markets' codes) supported by stakeholder seminars/workshops on specific system operation topics.[3]**

Consultation Questionnaire

General Issues

1. ***The Initial Impact Assessment (IIA) identifies the following challenges (i) growing amount of distributed generation and variable generation (ii) increasing interdependence of control areas. Are there additional key cross-border challenges that the Framework Guidelines (FGs) and Network Code(s) on System Operation should address?***

   As stated in Article 8 of Regulation (EC) 714/2009 and in the draft FG, the FG and the NC(s) on System operation should focus on maintaining the (already very high) level of security of supply of the European power system, setting relevant rules for cross-border network and market integration issues including facilitating the integration of

[1] EG3 Deliverable; http://ec.europa.eu/energy/gas_electricity/smartgrids/doc/expert_group3.pdf

[2] The mentioned FG established that "The network code shall require Distribution System Operators (DSOs) to cooperate with TSOs to enable TSOs to comply with the requirements on information provision set out in this Section. ENTSO-G shall involve DSOs in the drafting of the relevant sections of the network code on gas balancing".

[3] The Initial Impact Assessment (IIA) demands that elaboration of NC(s) is *coordinated between TSOs, as well as between TSOs and Distribution System Operators (DSOs); and with significant grid users, where applicable in order to address the issues in* transparent, non-discriminatory and agreed way (IIA, p. 17).

RES generation to the internal electricity market (IEM). The above mentioned challenges (as detailed in the IIA, p. 14) are confirmed by the daily experiences of numerous DSOs as they handle the need of integrating high amounts of power from distributed RES (a group of small PV or wind generators sharing the same node who could due to their correlation have an even more significant impact on the control area's security of supply).

Synchronisation of power flows within synchronous areas in order to adjust power to the forecasted load calls for a better coordination between TSOs and for monitoring and control of TSOs' activities. Increased cooperation is also needed to improve the quality of frequency control.

However, European-wide/cross-border harmonisation of requirements should be limited to areas where there are proven benefits.
See also Q6.

2. ***The Framework Guidelines identify a number of actions and requirements to be included in the Network Code(s) as a solution to these challenges. Are the actions and requirements identified in the Framework Guidelines appropriate to solve these challenges?***

Information exchange

The topic of information exchange spans across the whole draft FG (mostly referred to as "real-time information exchange"). Nevertheless, EURELECTRIC believes that the approach towards this issue needs to be reviewed. In particular, we have identified the following important issues:

- **The FG should be more specific on the level of information (a list of relevant types/parameters) to be exchanged between DSOs and TSOs and to be provided by grid users to DSOs and TSOs.** The NC(s) should then define more detailed principles/requirements for data disclosure, based on consultation within the users' group mentioned above in the key messages section.

- **The FG should state that information essential for the secure operation of the system aggregated at the appropriate level should be exchanged between system operators and grid users, taking a due account of the commercial data confidentiality.** Requirements going beyond existing international as well as national standards, rules and established procedures must be justified and be underpinned by sound technical analysis and cost-benefit analysis based on relevant network data shared by all relevant stakeholders (TSOs, DSOs, regulators and grid users). Breaking the principle of self-dispatch by market participants should be limited to situations when secure system operation needs to be ensured.

- **In order to secure economic efficiency and to confine risks related to data security requirements, the FG should clearly state that the real-time exchange should be used where justified.**
  For example, better coordinated information sharing between DSOs and TSOs on decentralised production and demand is undoubtedly needed, particularly in systems with high penetration of variable RES. In the context of the demand side response, providing of the real time information will be crucial from the grid users' point of view. It should be recognized, however, that handling massive data exchange with TSOs in real-time poses serious challenges to both TSOs and DSOs. Because the existing distribution networks and adjacent telecom infrastructures are not designed for real-time information exchange, their transformation toward 'active grids' (involving implementation of smart grids elements such as smart meters, gateways or DG devices) will induce substantial costs. Therefore, the additional costs should be included in the grid tariffs.

  For details see Q11

- **As regards information exchange between TSOs and DSOs, the FG should clearly state that *"the necessary information shall be clearly and transparently defined and agreed with the DSOs"*,** as stated also in the FG on Electricity Grid Connections (Chapter 3.3). In addition, the FG should also acknowledge that the DSO is not the only intermediary party towards the TSO concerning decentralised generation and loads. It should be considered that, in the same manner as auxiliary and reserve services are provided on a TSO level, supporting services are provided at distribution level by other parties like aggregators. They can interact as well with the DSO as with the TSO.

- **The FG should determine the NCs to clearly state that "where new network equipment is required, national regulation should recognise the grid service requirements and their respective costs."**

In contrast to Article 1.4, EURELECTRIC notes that the real-time information sharing is not within the scope of the comitology guidelines on Fundamental Data Transparency (FDT). Current FDT guideline by ERGEG requires information sharing in lower than real-time frequency. Market transparency and system operation demand data exchange of different information. However, consistency between the future FDT comitology guidelines and NC(s) on system operation is necessary (to ensure that the required data are provided once and in the same way).

Redispatch and countertrade

EURELECTRIC believes that re-dispatch and countertrade as the measures for system security and congestion management should be covered by the FG SO in terms of setting out technical requirements and their justification, and be compliant with the adopted FG on CACM. Details related to market design should be then clarified in the NC on capacity calculation.

New Applications

Many of the technical elements listed in the draft FG (p. 27) are already part of the current system operation practice in several Member States. In general, we believe that the NC(s) should be formulated in a technology-neutral way in order not to hinder integration of new applications at a later stage. Separate NC on this topic then might not be necessary. Clarification is needed as to where European wide rules are really beneficial and necessary.

3. ***Are the proposed levels of harmonisation sufficient to solve these challenges?***

We generally agree with the framework levels of harmonisation as proposed in the draft FG (Table 1, p. 6). However, we believe a link is missing between the objectives listed in the part 'Scope' of the draft FG and those listed in the part 'Structure' (taken from the IIA's section 'Specific Objectives'). Bridging this gap would shed further light on the required scope and content of the NC(s).

The objective "to apply same principles for different systems" identified in table 1 (page 6) and in the list on page 7 is not justified as harmonisation is not an objective in itself but rather a tool that should help achieve the set objectives (as the table does by listing the objectives and providing for the necessary level harmonisation associated with each of them).

Table 1 should be more specific and better describe the level of harmonisation required by each NC(s) against the general objectives listed on page 5: 1) maintaining security of supply; 2) supporting the completion and functioning of the IEM; (hence delivering benefits to the customers); 3) facilitating the integration of RES. In other words, the system operation NC(s) should support the achievement of the European energy policy.

See also Q4&6.

4. Should the Framework Guidelines be more specific with regard to areas that need to be harmonised, both across and within synchronous areas?

The FG should provide clear principles on how to define the necessary harmonisation within synchronous areas. Analysis is needed to determine those cases in which national or even regional differences pose challenges to the security of supply (while taking in consideration integration of RES) and cross-border trade. Whereas some measures are to be coordinated at synchronous area/European-wide level (e.g. frequency plan), others need to be tailored to the specific needs of the given control area or region (e.g. reactive power services). In order to maximise benefits from further market integration, it should be ensured that TSOs operate their systems in a compatible ways (e.g. obligation to net area control error should be introduced). The same principles should be applied for different systems (as stated in the FG 1.3) respecting the *different system characteristics* and the principle of subsidiarity.

The FG should also tackle the technical basis for short term (i.e. day-ahead and intraday) congestion management which is currently dealt with in various ways throughout the EU. The requirements depend on the quality of the system stability (big systems have fewer requirements than small ones).

The issue of harmonisation of reserve levels should be mentioned in the FG System Operation and elaborated in detail in the FG Balancing. Some harmonised definitions of reserve products, details about how they are used, and indications as to how and when reserve can be procured and dispatched across borders would be beneficial. A common set of rules would prevent distortions to the market and make it more likely that where unavoidable, such distortions remain restricted to particular areas.

5. Should the Framework Guidelines require the development of common rules for System Operation between synchronous areas?

Yes, indeed. As the need of coordination between synchronous areas increases, the FG should require definition of common rules for operating the interconnection lines (HVDC but also AC) on issues such as scheduling, emergency reserve, etc., in order to bring as much capacity as possible to the market and minimise distortions to market prices while ensuring system security. No additional burden or costs for DSOs (by requiring changes in existing distribution networks and operational rules) or grid users should be created as a result of these rules.

6. Considering the current arrangements of the system operation rules and procedures throughout the EU, what would be an appropriate level of detail for the Network Code(s) on System Operation?

The NC(s) on System Operation should represent a common binding set of minimal rules that are necessary for preserving the level of system security and inciting EU market integration. To a large extent, the NC(s) should build on the currently legally non-binding interoperability and operational security rules of the EU synchronous areas (Operational Handbook of UCTE, Nordic Grid Code etc.). As regards distributed generation connected to DSO networks, only frequency-related requirements should be covered in more detail. *See also Q4&6.*

EURELECTRIC fully agrees that introduction of *any* new requirement going beyond current standards and established procedures should be based on benefits clearly demonstrated by cost-benefit analysis. A CBA should be part of an impact assessment that *shall* accompany the NC(s). Harmonisation needs to be perceived as a means to achieve the objectives arising from the Third Package legislation and not as a goal in itself.

7. What key benefits and types of cost would you expect for compliance with these requirements? Please quantify from your point of view.

As mentioned in Q1and 6, maintaining the security of the system operation, quality of supply, human and power plants safety and ensuring support for the IEM in a more efficient and effective way are the intended major benefits according to EURELECTRIC.

We expect **the information exchange and the compliance monitoring requirements to be among the most relevant cost drivers for DSOs and grid users**. As stated above, economic and technical feasibility should be reconsidered before determining the rules concerning these areas to be set in the NC(s). It would be appropriate and beneficial to discuss the functional requirements with the relevant bodies of CEN/CENELEC/ETSI currently working under Mandate 490 on the review of existing and needed standards for smart grids.[4] Furthermore, operational planning activities (forecasting and calculating tools) and eventual network instrumentation would incur substantial costs on DSO side.

The system operation rules should enable generators to plan power plant schedules in a market-oriented way, with minimal restrictions due to system management or security criteria. (*See also Q8.)* Laying down increased requirements for system services such as black-start capability, reactive power, load frequency control, etc., in the NC(s) would entail higher investment costs even for existing power plants.

A market solution is the most effective way to secure, develop and integrate the European electricity market. It is the system operator's responsibility to organise this market and to secure that the necessary ancillary services are provided at the minimum cost. Therefore, the FG should require that the NC(s) recognise that any new specifications (or system requirements) needing additional investments for suppliers of ancillary services might create a temporary scarcity of the services and that this will result in increasing market prices for the delivery of these services necessary to attract additional suppliers of the upgraded service.

8. Should the Framework Guidelines be more precise on organisational aspects of operational security, in particular with regard to security assessment?

The FG should require the NC(s) to encompass the "operational philosophy", i.e. to define the "satisfactory level of system security" that is aimed at and the means by which it should be achieved. The security criteria and calculation methods as well as the data used for setting the reliability margin have to be made transparent. Consistency should be ensured between NC(s) on system operation and NCs on CACM (capacity calculation). The reliability margin must be set at the appropriate

[4] http://ec.europa.eu/energy/gas_electricity/smartgrids/doc/2011_03_01_mandate_m490_en.pdf

level so that maximum capacity can be allocated to the market while complying with safety standards of secure network operation (Article 16.3 of Regulation (EC) 714/2009). This is not just a technical issue, but to a large extent also a regulatory and market issue. If the margin is too high, little trading capacity will be left; if it is too low, the risk of outages can be high. Criteria should be developed taking account of the interdependence and contribution of different parts of the system to the overall reliability.

As pointed out in Q2 in relation to information exchange, the FG should determine the NC(s) to take into account the aspects of data security. In addition, TSOs should make available information on important parameters such as frequency online.

In terms of organisation, the FG and NC(s) SO should ensure seamless cooperation of TSOs, including further development and consolidation of coordination centres as well as obligations on sharing reserves and netting system positions.

Specific Issues

9. Are the implications for significant grid users clear and relevant?

EURELECTRIC reiterates that system operation FG and NC(s) requirements must legitimise the requirements in the area of grid connection. Therefore, the definition and the process for identification of *significant grid users* should be consistent across the FGs and NCs on system operation and grid connection. The ACER FG on Grid Connection states that the respective NC(s) should be applied only to significant users and that the NC(s) should define criteria for the 'significance test' to be undertaken by individual TSOs. This draft FG does not provide a clear picture of the process, stating only that *"definitions* [are] *to be coordinated between adjacent system operators"* (p. 21). In addition, section 'General System Operation characteristics' (p. 15) defines obligation for data delivery for 'grid users'. This requirement would not be legally possible if the NC(s) apply to 'significant grid users' only (1.2). EURELECTRIC would urge clarification on this point.

Furthermore, pursuant to Article 6 (2) of Regulation (EC) 714/2009 the FGs do not have a legally binding status and thus cannot be directly applicable. Section 1.2, paragraph 1 should thus refer to *"the network code(s) developed according to these framework guidelines"*.

10. Are the roles and responsibilities sufficiently addressed?

System security responsibilities of all affected market participants should coincide with corresponding powers of enforcement.

- **The FG should provide a clear assignment of TSOs and DSOs roles and responsibilities, taking into account new operational security requirements for system integration of DG (*see EC TF Smart Grids EG3, chapter 3.2 as referred above*).**
  In accordance with Article 25 of the Directive 2009/72/EC, DSOs are responsible for operating and maintaining their system. The final responsibility for system operation lies with TSOs. However, DSOs no longer deal with consumption only. The share of distributed generation embedded in their grids surges. So does the importance of DG and DSOs for operation of the whole system. DSO might participate in local electrical system management (load, voltage, power factor etc.) in coordination with TSOs in the future. As correctly pointed out in the IIA, new challenges demand greater TSO and DSO collaboration and coordination (the IIA, p.15). Therefore, DSOs should be a partner to the TSOs in system operation, and not just the executors of the TSOs' instructions. Overall, the NCs should not only prescribe the DSOs' obligation to execute TSOs' instructions, but rather to define what characteristics DSO system should have on the TSO interface and what data should be available in order to accommodate TSO needs. The FG should also clearly state that all new requirements for DSOs going beyond existing standards and established procedures should be agreed between DSOs and TSOs.

- **The FG should also determine the NC(s) to address the roles and responsibilities in system operation of national regulators, significant grid users and market participants** (including balancing responsible parties, aggregators or VPP).

  The FG should more accurately define the role of regulators to ensure adequate regulatory framework for eventual new investments and compliance monitoring. Regulatory oversight reduces the risk that the imposed requirements are not necessary for operational security.

  The FG should also be more precise on the role of the Balance Responsible Party and how system operation can influence balancing. Indeed, operational measures (like re-dispatch of generating units) in normal, alert or critical grid state, directly impact the Balance Responsible Party. EURELECTRIC points at a specific problem of a direct operational collaboration between TSOs and DSOs without taking into account the effect upon the balance responsibility at TSO level: the Balance Responsible Party acts as an intermediary and aggregates the loads and generations in the portfolio of suppliers and generators. A DSO could intervene in these loads and generations without being confronted with the impact this has on the balance responsibility towards the TSO (penalties for imbalance). A DSO intervention should therefore be neutralised/compensated on the market/balancing level.

11. ***Are the individual provisions under Scope & Objectives, Criteria, Methodology & Tools, Roles & Responsibilities, Information Exchange and Implementation Issues, associated to the particular topic, adequate? Should there be any additional elements?***

Criteria

The FG should clearly state that where the lack of system-related performance is identified on the basis of technical and economic investigations and cost benefit analysis, **the system operation requirements postulated to eliminate the identified lack of performance should make use of market solutions to the largest possible extent**.

In this context, the respective provisions of the FG should more explicitly state that:

- Procurement of ancillary services required for network needs, such as reactive power management and black start capacities, etc., should be adequately provided by the market and remunerated through market-based mechanisms. Where such mechanisms neither exist nor are under development, NRAs should be required to set appropriate incentives.
- Planned outages shall be co-ordinated between grid operator and grid users; forced sudden changes in the plan shall be compensated by the grid operator.
- The NC(s) should enforce cooperation of TSOs.

Information Exchange

As addressed under Q2, the FG should further determine the NC(s) to address:

- Definition of real-time (e.g. latency) and required real-time data of consuming and producing systems.
- Characteristics of grid users ('significant grid users' versus grid users – *see also Q9*) and data disclosure requirements applicable to them.
- Newly required functionalities and related standards to carry out measuring and control functions.
- Needed standards for algorithms and information exchange.
- Roles and responsibilities of new market actors (e.g. aggregators, VPPs) with regard to system security.
- Necessity to comply with data security and data privacy principles (see e.g. recommendations of European Commission's Taskforce for Smart Grids EG2).

Methodology and Tools

Topic 2: Operational Planning and Scheduling

- A minimum harmonisation on the maintenance scheduling procedures across Europe is desirable. The FG should determine the NC(s) to define principles, requirements and methodology in order to achieve optimised scheduling of network maintenance and minimise the impact on generation availability (not to damage the reserve margins).

Topic 3: Load-Frequency-Control

- *"TSO's requirements for the implementation of controllable generation"* should be part of the NC on grid connection.

Topic 5: Emergency and restoration

- In addition to the restoration of the grid, it is necessary to define the restoration of the market (exchange programmes, scheduling, etc).

12. Could you foresee any other relevant New Applications which should be mentioned in these Framework Guidelines?

See Q2.

Confidentiality

EURELECTRIC agrees that ACER can treat this contribution as non-confidential.

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