Union Française de l'Electricité

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REPLY

UFE's reply to the European Commission's "Have your say" consultation on the draft reviewed Regulation establishing a network code on requirements for grid connection of generators (RfG 2.0)

UFE, the association representing the French Electricity industry, thanks the European Commission for the organisation of the public consultation on the draft revised Delegated Regulation establishing a network code on requirements for grid connection of generators (RfG) as new generation and storage capacities are entering the European electricity system and need to contribute to its stable and secure operation. While UFE fully supports the Commission's goals of enhancing system security, improving grid resilience, and integrating new technologies, UFE regrets, however, that this launch only intervenes now (two and a half years after the ACER recommendation of the end of 2023) and on the basis of a proposal amending the ACER version **in an unbalanced way, without involving all stakeholders.**

The revision process led by ACER with the implication of all stakeholders between 2022 and 2023 delivered several positive developments that UFE welcomes: the extension of the Regulation's scope to storage and electric vehicles, the clarification of the framework applicable for hydro-pumped storage, the development of a harmonized certification framework and the reinforced grid forming capability for power park modules with a view to system stability. The revision process also allowed to reach agreements based on solid technical studies and simulations, for example on the RoCof criteria. These agreements should not be reopened.

However, UFE considers that the version of the draft Regulation presented by the Commission deeply alters the approach and balance of both the 2016 Regulation and of the 2023 ACER recommendation, notably by removing the key explicit distinction between existing and new generation facilities (possibility of differentiated requirements) and by not keeping some of the technical compromises reached during the process led by ACER. Therefore, **some substantial adjustments to the Commission's proposal appear necessary before the text is adopted** (see the analysis below and the draft amendment proposals in annex), **in line with what has already been compromised by ACER.**

UFE supports the development of harmonised technical requirements whenever economically and technically justified to the benefit of the interconnected European electricity system. Requirements must however remain proportionate and leave room for national adjustments (subsidiarity), as European power systems still have significantly different characteristics, whether in terms of grid architecture, operating regimes, protection systems, or of Member States' energy mixes and generation fleets. Some key characteristics of the grid, such as voltage, also have a local behaviour. Whereas it is desirable for system stability to elevate the capabilities & contribution of small generation, EV & storage, RfG v2 should strengthen system stability while preserving the flexibility needed to ensure the safety of people, customer installations & SO networks. The appropriate balance depends on local grid characteristics, including network topology, neutral earthing design & protection philosophies.

Regarding derogations, UFE notes that the possibility for relevant system operators, including TSOs and DSOs to request derogations for classes of power-generating modules connected or to be

connected to their network has been removed (former Article 63). This is regrettable and may, in some cases, be detrimental to both series new-built and existing facilities, **triggering useless additional costs for both TSOs, DSOs and power plant operators to request the derogations**.

Finally, the Regulation should acknowledge that some requirements are simply physically not possible for some technologies, or run against operational safety requirements, notably for hydropower plants and nuclear power plants (see the Technical requirements section below).

UFE also draws the Commission's attention to the non-exhaustive nature of the requirements set out in the code**. Any additional requirement, or any requirement not explicitly provided for by the code, should be set under a national framework approved by the relevant authorities and regulators**. Such a framework step is indispensable to guarantee the necessity and proportionality of the requirements imposed on generators to ensure system safety and protection of people and assets, as well as their balanced and non-**discriminatory** application across Member States and across technologies.

The balance between system stability and the protection of persons and assets

A safe and economic electricity system is based on two overarching principles.

First, the design and operation of the electricity system must ensure the safety of persons and goods, before ensuring the protection of network assets and users' installations.

Second, while system stability requires that sufficient generation remains connected under a broad range of operating conditions, protecting persons and assets at low- and medium-voltage levels often relies on enabling the detection of abnormal situations and disconnecting generation where necessary (e.g. prevention of unintentional islanding or ensuring safe working conditions on distribution networks).

A safe and economic electricity system therefore requires an appropriate balance between these two objectives. The optimum depends on the design of national electricity networks, including aspects such as neutral earthing arrangements and protection schemes. Applying identical technical requirements across all Member States could therefore increase tensions between these two objectives, potentially affecting both system security and the protection of persons and assets.

Several provisions of the current proposal illustrate this concern. For example, the proposed overvoltage withstands curves appear to strengthen system stability without sufficiently assessing their impact on protection schemes at distribution level.

Moreover, while recognising the potential contribution of Grid-Forming technologies to future system stability, greater flexibility should be left to Member States regarding the application of these requirements to Type A and Type B units. Such flexibility would allow national authorities and system operators to take account of the actual system need for Grid-Forming capability in small-scale installations, as well as the operational and security implications associated with islanded operation of distribution network sections, oscillation phenomena in the interconnected European grid, and the potentially significant costs of adapting distribution networks to manage controlled islands. In this respect, Grid-forming requirements for small-scale units should be applied in a targeted manner, based on actual system needs and on the ability of TSOs and DSOs to manage operational and protection impacts.

More generally, by significantly increasing harmonisation while reducing the possibility for national derogations, the proposal limits the ability to achieve equivalent system benefits through alternative national solutions.

Ensuring an operationally realistic implementation

The proposal introduces substantial changes affecting technical requirements, conformity assessment, certification procedures and national implementation rules. The cumulative impact of these changes appears insufficiently assessed. Their implementation will require coordinated adaptations of industrial processes, network operation, certification schemes, national compliance scheme and national connection requirements. In this regard, the proposal does not carefully consider the complexity of the cooperation between NRAs, TSOs and DSOs, as well as the time required to develop coordinated implementation strategies.

Furthermore, the period foreseen for the implementation of the regulation (with regard to timeline for Regulation implementation and for definition and application of new compliance scheme) seems insufficient, taking into account the substantial changes that would be required. More generally, implementation should remain sufficiently flexible to reflect national network organisation and industrial constraints while ensuring a high level of operational security.Provisions on existing facilities and significant modernisations

There is an urgent need to clarify the applicable scope of the Regulation: as proposed, the draft raises high risks and disproportionate consequences for generators, with (i) the potential retroactive compliance of all existing facilities with the RfG code (Article 45) and (ii) the extended scope of significant modernisation (Article 4).

The 2016 Regulation's framework distinguished very explicitly between existing and new facilities. This distinction has been removed in the proposed draft, while opening the door to widespread retrofitting of existing facilities outside of exceptional circumstances (through Article 45, which calls for a cost-benefit analysis within two years to determine retroactive implementation). Although this provision is notably intended to allow relevant system operators, including TSOs and DSOs to retroactively apply some requirements to certain classes of facilities (implementing the lessons drawn from the Iberian blackout) in order to contribute to system stability, in its present wording it is a source of huge industrial and financial risks and uncertainties for producers after the entry into force of the Regulation, and repeatedly in the future. The notion of exceptional circumstances to resort to this measure should remain.

Furthermore, the definition of existing facilities is also more restrictive, limited to those "being connected to the network within the two years after entry into force of the new code" (Article 61). The purchase of the main generating plant (referring to the definition in Article 2(8) in RfG 1) has been removed as a criteria, although it is a very dimensioning and essential timeline element for some synchronous technologies' projects (such as nuclear or hydro) and stems from an industrial logic. This removal is also an additional unacceptable risk for already launched projects (expected to apply RfG 1) and now potentially falling under the scope of RfG 2. The criteria of being connected to the network is, moreover, a project milestone, which is less precise than the signature of the connection agreement. For the clarity of the text, the criteria should therefore be defined as the conclusion of "a connection agreement".

In addition, the draft introduces a fundamental change to the regime currently applicable to significant modernisation (Article 4) that is detrimental to generators:

– the provision whereby "the requirements of this Regulation shall apply to the entire power-generating module and not only to the modernised part of the power-generating module" may

deter investments and efforts to modernise or extend the lifetime of existing facilities, even though these investments contribute to security of supply and the energy transition;

- the criteria for classifying a modernisation as significant have been enriched beyond the increase in active power: under the terms of the proposal, the change of components (excluding maintenance) for categories C and D would now also be considered a significant modernisation, which does not reflect the compromise reached during the consultations conducted by ACER with stakeholders. UFE strongly suggests stating clearly in the text that "repair activities" and "spare parts" are not considered a significant modernisation, to remove any uncertainty for operators in the regular operation and maintenance of their power-generating modules. With the proposed formulation, there is a strong risk that maintenance would be neglected as unnecessarily too costly, thus triggering an additional risk for the European electrical system stability, which is not the objective of this code;
- Finally, the cost-benefit analysis should not only capture costs for the producer, but it should also capture all material costs and technical impacts, including producer retrofit costs, protection-system adaptations, operational procedures and impacts on the safe operation of distribution networks.

Hybridisation and co-located storage must not automatically trigger a full re-compliance of the site

The addition of complementary equipment on an existing site, in particular co-located battery energy storage systems (BESS), must not automatically trigger full re-compliance of the existing facility. UFE opposes any approach that would systematically require an existing installation to be brought into full compliance with the new code on the occasion of the addition of a storage system or of any other hybridisation equipment. Such a requirement would amount to applying new technical prescriptions retroactively to installations that have been duly authorised and are already in operation, creating unjustified legal and economic uncertainty. A more nuanced approach is necessary.

A non-nuanced approach would also be liable to discourage the development of hybrid projects and the integration of storage capacity, precisely at a time when these are needed to deliver flexibility, to integrate renewable generation and to optimise the use of existing grid connection capacity. **Compliance obligations should in general be limited to the newly installed equipment, or to the equipment directly affected by the envisaged modification, while compliance of the whole site could be required if the addition of new equipment significantly alters the behavior at the connection point.**

The three additional proposals raised by the Commission

During the stakeholder workshop held on 3 July, the Commission put three further proposals up for discussion. These proposals are not supported by UFE.

Harmonisation of banding thresholds across synchronous areas

UFE points out that this point had already been discussed and resulted in the ranges proposed by ACER. Harmonising thresholds across different synchronous areas should not apply here, as the concept of "significance" differs between, for instance, the Continental Europe synchronous area and the Nordic area: these areas differ vastly in terms of electrical size, meaning that power plants of the same capacity have vastly different impacts relative to the system as a whole. This argument remains true even within a single synchronous area: the area shares a common frequency (barring severe transient events), but local grid characteristics, such as voltage, mean that an approach to

categorising installations that works in Italy may not necessarily be suitable for France, and vice versa. Local grid behaviour also depends on each country's electricity generation mix. This further supports the case for flexibility regarding thresholds. National thresholds should remain under the responsibility of the designated national authority/regulator, based on a TSO proposal and with appropriate coordination with DSOs where distribution-network impacts are material. **UFE considers the ranges proposed by ACER to be appropriate and suggests retaining them.**

Further national harmonisation, at least for Types A and B

This proposal does not seem relevant to UFE, particularly considering the impacts on small-scale renewables plants or considering the difference in protection at LV and MV levels across Europe. For instance, micro-hydro plants have capacities ranging from 20 to 500 kW, while mini-hydro plants range from 0.5 MW to 2 MW. If the threshold between categories A and B in France were lowered rather than kept at 1 MW, a number of these plants would fall into category B; this would increase regulatory requirements and, consequently, the additional costs associated with the necessary upgrades. This could hinder investment decisions or capacity expansions for this dispatchable low-carbon energy, which is highly valuable to the French and European electricity systems. Requirements of type B could also be incompatible with protections in MV or LV networks. As above, it should remain under the responsibility of the designated national authority/regulator, as this concerns distribution connected assets.

Narrowing the range of what constitutes significant modernisation

According to UFE, this proposal does not seem relevant either. Here again, narrowing the range leaves less leverage at national level, whereas national TSOs, under the supervision of the regulator, are best placed to determine the appropriate levels in consultation with stakeholders. It also risks curbing investment in capacity upgrades for low-carbon generation (nuclear or hydropower plants) at the very time they will be needed – a long-term consideration linked to the expansion of electrification.

Technical requirements

From a general standpoint, any change in the capabilities required from generation facilities regarding voltage behaviour, frequency behaviour, new control functionalities are likely to have significant implications for equipment design and protective devices, from the standpoint of producers or system operators to ensure protection of people and assets. The benefits for overall system security while preserving protection of people and assets therefore need to be demonstrated in each case, given the costs those requirements are likely to entail.

The future Regulation should ensure that the requirements adopted remain compatible with the constraints of all generation technologies expected to make a sustainable contribution to the European electricity system. The cumulative approach of the RfG requirements between categories A, B, C and D has been amended: synchronous category D facilities (Article 27(1)) are now subject to all the requirements applicable to lower-category facilities, without the exemptions identified in RfG 1. These few exemptions are needed for category D because the requirements are technically not feasible – as acknowledged in the ACER 2023 version of the RfG. In addition, some of these technical requirements directly challenge specific safety, security and operational rules for nuclear or hydroelectric plants. UFE highlights the following challenges in the newly drafted requirements:

- the requirement to be equipped with a communication interface for remote power reduction (combination of Articles 15(11) and 15(13)) is not suitable for hydropower plants or thermal generation. For nuclear power plants, giving the system operator the possibility to remotely

decrease the active power of the plant, affecting the functioning of the primary circuit as defined in the general operating rules, would contravene nuclear safety principles. For other thermal generation in categories D, operating rules does not allow for remote control for security reasons. For hydro power plants, the output active power has a direct impact on river flows and water levels in reservoirs and rivers; the management of these flows and levels incorporates a range of constraints (environmental, safety-related, and impacts on third parties) that are not compatible with external, context-independent control of power output;

- the requirements for autonomous grid connection (Article 16) are not feasible for nuclear power plants and should apply to generators incidentally disconnecting from the grid with no on-site operators, which is not the case of nuclear power plants. A requirement for an autonomous connection of a nuclear power plant without the plant operator being in charge is not acceptable, here again not aligned with nuclear safety principles ;
- Similarly, requirements for appropriate reconnection should encompass consistency with relevant prerequisites, such as the proper functioning of the telecommunication network to ensure the needed commandability and observability of generation. Telecommunication networks may be down after a blackout and restoration requires command and control of generation.

In addition, UFE (i) does not support the tightening of the requirement regarding the voltage parameter Urec2, set at 0.85 pu for all categories, and (ii) identifies a possible mistake in Article 27, which exempts category D assets from the robustness requirement of Article 22(3): the reference should instead concern an exemption from the requirement of Article 24(3) related to voltage dips, as previously provided in RfG 1.0.

More specifically, UFE identifies additional challenges exclusively concerning hydro facilities. The LFSM-O requirement (Article 15(5)(b)(i)) stipulates that the response time of synchronous power-generating modules to change the active power setpoint by 45% shall be under 8 seconds: all hydro facilities must be exempted from this time-domain requirement and should only be required to perform as stated at the beginning of the sentence, i.e. “as fast as technically feasible”. This modification is needed to ensure that (i) flow variations upstream and downstream of hydro facilities and (ii) transients inside penstocks are kept under control.

The fixed Type A HVRT requirement of 1.3 pu for 100 ms and 1.2 pu for 1 minute should be removed or, at minimum, proportionate national values should be allowed. The proposed values may be incompatible with LV/MV customer installations and protection devices and their system benefit has not been sufficiently demonstrated. Similarly, the requirements for LFSM-O and LFSM-U (delay), for low voltage ride through (threshold at 0.05 pu), for ROCOF (rate and thresholds) are incompatible with the design, operation and protection of the French distribution network at low and medium voltage, without any viable or even identified solution to enable the proposed requirements of RfGv2. Whereas the constructive capacity of the equipment can be standardized at European level according to the proposed RfG v2, the settings and configuration of the equipment must be defined at national level to ensure protection of people and goods.

Some new requirements appear to have been designed primarily with the characteristics of power park modules (PPM) in mind. While this development responds to the rapid growth of these technologies, it must not lead to disregarding the specific constraints of other means of generation. Regarding hydro-pumped storage, UFE welcomes the clarification provided in Article 6 to distinguish between fixed-speed and ternary machines (equivalent to synchronous modules) and variable-speed machines (equivalent to power park modules), but draws attention to the specific requirement for doubly-fed machines in Article 6(6), which must refer to Tables 7.1 and 7.2, applicable to synchronous machines, and not to those dedicated to PPM. Indeed, the slow operation speed of the shut-off and control valves of the hydraulic circuit, designed to avoid overpressure phenomena, is a

safety requirement which does not allow the machine to perform a fast change of its power setpoint.∑

Grid forming capability should be need-based, not systematic

UFE welcomes the recognition of grid forming capability as a contributor to system stability, in a context of rapidly increasing power-electronics-based generation. For Type C and Type D power park modules, UFE understands that grid-forming capability is required without imposing oversizing of the installation itself, and therefore with little or no additional cost. This approach is pragmatic because it allows asynchronous generation and storage assets to contribute to network stability — in terms of short-circuit power, voltage signal strength, and inertia — at minimal cost. However, a TSO may additionally require oversizing of the installation to deliver enhanced grid-forming performance (article 31.4.b.). This would have significant consequences on converter sizing, on the storage or headroom needed to deliver the instaneous power contribution, and therefore on the cost of projects. UFE considers that such requirements should remain proportionate and duly justified by the TSO, given their material impact on projects.

For Type A and Type B power park modules, any mandatory deployment of grid-forming capability should be based on a national roadmap identifying system needs by voltage level. It should not be presumed that all Type A and B modules will automatically become subject to the requirement, notably considering potential islanding, protection and safety impacts on distribution networks.

Grid forming requirements should be based on an objectively justified system need, explicitly identified by the relevant system operator and validated by the competent regulatory authority, taking into account the characteristics of the synchronous area, the local grid situation and the alternative means available to deliver the same service. A need-based, proportionate approach would ensure that the stability benefits genuinely outweigh the costs borne by generators and, ultimately, by consumers.

In general, UFE emphasizes that the new technical capabilities required (provision of synthetic inertia, grid-forming capabilities, oscillation damping, etc.) come at a cost and must therefore be appropriately sized.

Electric vehicles and charging stations

UFE supports maintaining the categorisation of electric vehicles and charging stations already present in the ACER recommendation, as well as the clarification that no power aggregation should take place for these assets (Article 5(3d)).

UFE does, however, question the wording of Article 5(3b), which is not as clear as that of Article 5(3d) on this point. UFE proposes amendments to emphasise that no aggregation of the capacities of V2G EVs and EVSEs should take place behind the same connection point and suggests complementing definition 66 in Article 2.

Finally, UFE welcomes Annex III on the certification framework for V2G.

National organization of the networks

UFE notes that the draft regulation uses a harmonized 110 kV threshold to define the scope of certain technical requirements. However, the division of responsibilities between transmission and distribution system operators varies significantly across Member States. A uniform threshold may therefore not reflect the realities of different national electricity systems. They propose allowing Member States to apply, where justified, national thresholds that align with their actual transmission-distribution network separation.