Existing European Grid Connection Network Codes amendments

A Eurelectric response paper

June 2022

Eurelectric represents the interests of the electricity industry in Europe. Our work covers all major issues affecting our sector. Our members represent the electricity industry in over 30 European countries.

We cover the entire industry from electricity generation and markets to distribution networks and customer issues. We also have affiliates active on several other continents and business associates from a wide variety of sectors with a direct interest in the electricity industry.

We stand for

The vision of the European power sector is to enable and sustain:
- A vibrant competitive European economy, reliably powered by clean, carbon-neutral energy
- A smart, energy efficient and truly sustainable society for all citizens of Europe

We are committed to lead a cost-effective energy transition by:

investing in clean power generation and transition-enabling solutions, to reduce emissions and actively pursue efforts to become carbon-neutral well before mid-century, taking into account different starting points and commercial availability of key transition technologies;

transforming the energy system to make it more responsive, resilient and efficient. This includes increased use of renewable energy, digitalisation, demand side response and reinforcement of grids so they can function as platforms and enablers for customers, cities and communities;

accelerating the energy transition in other economic sectors by offering competitive electricity as a transformation tool for transport, heating and industry;

embedding sustainability in all parts of our value chain and take measures to support the transformation of existing assets towards a zero carbon society;

innovating to discover the cutting-edge business models and develop the breakthrough technologies that are indispensable to allow our industry to lead this transition.

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7 Type of the stakeholder:
Note: Please, choose the type of organisation that is the most accurate description of the stakeholder

- [ ] Generator (including association)
- [ ] Consumer (including association)
- [ ] Transmission system operator (including association)
- [ ] Distribution system operator (including association)
- [ ] Academia/research institution
- [x] Other (please, elaborate)

8 Please, elaborate on your answer above, if necessary:

Eurelectric represents power generation, distribution and supply and the response covers the views of all three areas.

9 What is the impact of the NC RfG or NC DC legal requirements on your organisation?

- [x] Direct impact (provisions are applicable to my organisation)
- [ ] Possible direct impact (e.g., applicability in the foreseeable future)
- [ ] Indirect impact (e.g., provisions apply to my contractors)
- [ ] No relevant impact
- [ ] I do not want to specify the impact
- [ ] Other (please, elaborate)

14 Knowing that the exact proposals for amendments will be sought during the public consultation starting in September, please, provide your general comments or views on this Policy Paper, if any:

We note that some of the proposals here have not been debated through the European Stakeholder Committee meetings, and are probably less mature in terms of their effects being understood.

Due to the ongoing increase of connection of small PGMs and storage units, especially electric vehicles, to the distribution grids it is important that the requirements in the NC RfG are designed in a balanced way, not inappropriately relaxing rules for these small installations. Relaxing of requirements could lead to the impossibility for DSOs to guarantee a reliable and secure operation of their grids. Further discussion on this matter is needed.

The TAR High Voltage (VDE-AR-N 4120) is part of the design of European Network Codes for Germany (National Implementation for Germany). The existing TAR High Voltage must be taken into account when revising the requirements of the European Network Code "Requirements for Generators" (RfG) for high-voltage generation plants published in 2015.

It is without doubt that distribution system operators are at the centre of current transformation, as the distribution network is the place of connecting on unprecedented scale new RES sources - photovoltaic panels and wind turbines and equipping network users with smart meters and

systems, thus enabling the development of new services and products. In parallel, it should support customers that want to actively participate in the energy market, through aggregation, demand management, peer-to-peer trading, etc. Also DSO must organise base for electro mobility load connections.

15 Is there any area that you consider important but has not been covered by this Policy Paper?

- [x] Yes
- [ ] No
- [ ] Other

16 Please, elaborate on your answer above, if necessary:

We do not see any reference to the ongoing work regarding certification harmonisation and the use of equipment certificates throughout Europe for the smaller power generating modules. We think this would support the market and lower the barriers for connection to the EU grids.

For instance, identical frequency withstand requirements for generators, since presently there are different settings, according to the country, for generator frequency withstand which should be revised as the frequency throughout a synchronous area is identical, and so should be the requirements. This is one of the causes that there are multiple generator national certificates and contributes to a barrier in the internal market.

We also suggest the inclusion of standardised grid user interfaces, i.e. equipment that should guarantee the proper bilateral communication between the grid and user appliances. For example there should be a Type A Generator to DSO communication standardisation, since although the network code already establishes the right of the DSO to communicate with type A generators (typically for emergency switch off) more advanced capabilities require a digital communication to take full advantage of the data and control capabilities supported by modern inverters. It is our opinion that this topic should be addressed in a RfG revision. Communication standard could be proposed by EU DSO Entity and approved by ACER.

Generator Life-Long compliance – There should be a topic of the code on how to ensure code compliance during the power plant life cycle addressing topic such as firmware updates, observation needs for incident analysis, penalties for infringement (specially for type A, B and C where the current code displays no penalties while for type D it is clear that the infringement can lead to disconnection).

We should ensure that there is an individual approach to certain technologies allowed, such as pumped-storage hydro mentioned in detail below, but also other low-carbon technologies such as nuclear (e.g. regarding reactive power).

17 To what extent do you agree with the policy analysis and recommendations on the **requirements for pump-storage hydro PGMs**:

- [ ] 5 (strongly agree)
- [ ] 4 (agree)
- [ ] 3 (neutral)
- [x] 2 (disagree)

☐ 1 (strongly disagree)

18 Please, elaborate on your answer above, if necessary :
The main findings of the final report of the expert group "Requirements for pump-storage hydropower generation modules" set up by the GC ESC should be included in the ACER AND CEER POLICY PAPER (draft) (Structural and operational characteristics of pumped storage power

plants). In the amendment of the NC RfG as well as in the amendment of the national implementation TAR Hochspannung (VDE-AR-N 4120) applicable to Germany, it must be ensured that regulation for PGM - pumped storage power plants can be complied with and that the special features of PGM - pumped storage power plants as energy storage facilities relevant to the energy industry are taken into account. The technical requirements of the NC RfG that apply to pumped storage plants must reflect their inherent limitations and possibilities. PGM - pumped storage power plants contribute to the stability of the grid and thus to the stability of the overall system due to their diverse modes of application (energy storage, secondary control power, black start capability / grid reconstruction). The cumulative nature of the capacity and voltage criteria in their current form leads to some disproportionate technical requirements for PGM pumped storage compared to their actual impact on the system. This needs to be adjusted in the amendment to avoid disproportionate technical requirements on PGM pumped storage. A final comment is only possible once further concrete information is available in the course of the consultation process. Due consideration must be given to the relevant characteristics and limitations of pumped storage technology.

19 To what extent do you agree with the policy analysis and recommendations on the **determination of significance of PGMs** :

☐ 5 (strongly agree)
☒ 4 (agree)
☐ 3 (neutral)
☐ 2 (disagree)
☐ 1 (strongly disagree)

20 Please, elaborate on your answer above, if necessary:
The unmodified application of the Type D voltage rule is clearly causing significant problems in some cases.

We agree that the complete removal of voltage criteria for all types of PGMs seems an easy change of the requirement, but is probably not the best solution.
Since the NC RfG is now implemented in all MS, the significance of PGMs has been determined. Especially the limit between type A and type B PGMs is very different in the MS and covers a whole range of thresholds. All MS have found a way to deal with 'determination of significance' of PGMs for their grids that generally works, but does lead to problems of classification because of the voltage rule. Changing or removing the voltage criterion might trigger other needed changes and they can be very different in each MS. This is also linked with the issue of mixed customer sites.

The Expert Group's proposals for a national threshold determined between the Type B and Type C thresholds is a pragmatic solution to the issues and appropriate careful drafting of wording on this is needed.

A specific attention should be paid to the proportionality and fairness of requirements. All units should contribute to the electrical system safety, not only the bigger ones.

In Italian experience of RfG and DCC implementation, once the thresholds for any type of PGMS are established, as foreseen by RfG, specific rules (national standard) to drive the connection process were determined at MV and LV level. These rules are directly applied by DSOs and the definition of each type of generator and what kind of proof, tests and certification have to be implemented are clear and completed in accordance with the general requirements (mandatory or not) of RfG or DCC. So we agreed with the policy and recommendations to or DCC and we agreed with the policy and recommendations to determine the significance of PGMs.

It's important to set in a clear way the reference dates and criteria to define the scope of revised Codes application (i.e. distinguishing new plants from existing ones). Previous experience with RfG is positive but attention should be paid to avoid that national delays in implementing the revised codes determine uncertainty in some countries. European surveillance over the application of these criteria is necessary to avoid as much as possible regulatory uncertainties that would discourage new plant development.

21 To what extent do you agree with the policy analysis and recommendations on the **technical requirements for mixed customer sites with generation, demand and storage**:

- ☐ 5 (strongly agree)
- ☐ 4 (agree)
- ◉ 3 (neutral)
- ☐ 2 (disagree)
- ☐ 1 (strongly disagree)

22 Please, elaborate on your answer above, if necessary:
We consider that this point is all the more important that many upcoming mixed sites projects need clarification.

A derogation system is acceptable only in exceptional cases, not when it is used in a systematic way, which has been done in some MS. We agree that this is not a proper solution in the long run.

Issues of significance and of mixed customer sites were both resolved in the proposals of the Expert Group: "Mixed customer sites with generation, demand and storage, and definition of system users." Moreover, MSCs (mixed customer sites) connected within a CDS (Closed distribution systems) should not represent an additional discriminatory treatment versus other distributed resources in this regard. As with Q20 above, we believe that the recommendations of the Expert Group can usefully be adopted to relieve the problems caused by these issues.

NB : The RfG ad DCC are two different and distinct codes, probably not coordinated in depth. The state of art of the two Codes renders it difficult in terms of implementation. In Italy, this is not so,- there are two rules, elaborated directly by NC. These two standards / rules define the common rules to connect to the distribution system the power plant (consumers), and there are additional rules in case of generators installed (the customers became producers or prosumers). The basic part of standard, as said, is common for all customer types. This part it was modified immediately after the publication of DCC. In the same way, the part regarding the PGMs was modified too, implementing the RfG after its entry in force (within the deadline foreseen by EU

Commission). Furthermore the Italian standards, applying also to EESSs, define in detail the technical requirements, technical specifications and so on. From Italy's point of view, it is not necessary to remove the voltage criteria to determine the type D generators; eventual PGMs installed into MCSs lower than the threshold established at national level for Type D (10 MW), in Italy does not represent a problem, because the PGMs have to implement general requirement for Type C or Type B directly connected to HV grid; those requirements are defined directly in a National Grid Code Annex. implementing RfG and are defined directly by TSO and consequently approved by NRA.

B. -In Spain, the voltage criteria is not included in the self-consumption installations in order to avoid very demanding technical requirements for small PGMs connected to the highest voltage in distribution (110kV) or in the transmission.

Nevertheless, a potential issue arises where the same connection point to the grid is used for a mix of technologies (e.g. wind and solar –compensating among each other day/night) without increasing the capacity of the existing connection.

23 To what extent do you agree with the policy analysis and recommendations on the **requirements for type A PGMs**:

- ☐ 5 (strongly agree)
- ☐ 4 (agree)
- ◉ 3 (neutral)
- ☐ 2 (disagree)
- ☐ 1 (strongly disagree)

24 Please, elaborate on your answer above, if necessary:
Again, all MS have chosen the threshold between type A and type B PGM's in such a way that this suited their specific situation. Some MS (e.g. Italy) have chosen a very low threshold between A and B PGM's to include also in smaller PGMs the additional requirements of a type B PGM.

Adding type B requirements to type A seems a logical evolution, especially FRT but also active power control. In fact, EN 50549-1:2019 already goes beyond the requirements being considered in this topic. It should be considered levelling the type A characteristics with those already present in EN50549-1:2009 or, at least, consider including reactive power injection to the requirements of type A generators. At the same time we have to be careful for specific technologies that might not be able to reach all (new) requirements. Exemptions should be part of the solution.

As a consequence of these additional requirements for type A PGM's some MS will probably change their threshold between type A and type B PGMs.
Potential impact on commissioning and testing for active power control would have to be considered for the compliance process.
The Expert Group reporting on this issue provided some excellent analysis, but ultimately some of the choices about the application to different types of technology cannot be easily informed by technical and economic analysis and the Expert Group's report presents some policy options in relation to both thresholds and equipment type. It is likely that decisions on implementing these recommendations have a political dimension and should also be informed by wider consultation. It is the DSOs' assumption that the development of these proposals will need to include appropriate stakeholder consultation.

If harmonisation is made, it should be made carefully to avoid deterring useful investment for the electrical system.

The main findings from the final report of the expert group GC ESC Baseline for Type A power-generating modules should be included in the ACER AND CEER POLICY PAPER (draft). It will only be possible to comment on the threshold values once further concrete information is available in the course of the consultation procedure. Protection of the status quo must be ensured.

Country specific information:
A. In Italy, during the implementation of RfG the threshold between type A and B was identified as 11,08 kW, within the range allowed by RfG itself. With this bottom threshold for Type B generators, all PGMs directly connected to MV system and a large number (and consequently a large amount of power) of PGMs connected to the LV grid, are considered SGUs and the have to implement all requirements and functionalities requested for Type B generators; requirements able to reach the perspectives of Energy system policies. Probably, defining a lower value for threshold of Type B, could be assumed the Type B functions for all new generators connected to distribution systems of MSs for which the beginning thresholds of Type B PGMs have been assumed high. Eventual retrofitting should be evaluated by MSs (NRAs).

25 To what extent do you agree with the policy analysis and recommendations on the **significant modernisation**:

- ☐ 5 (strongly agree)
- ☐ 4 (agree)
- ☉ 3 (neutral)
- ☐ 2 (disagree)
- ☐ 1 (strongly disagree)

26 Please, elaborate on your answer above, if necessary:
The current text in the NC RfG and NC DC does not specify any criteria for significant modernisation, which leaves a lot of room for interpretation and MS have implemented totally different approaches. We agree that defining strict criteria for significant modernisation may not be appropriate for some MS. It is better to define general principles regarding the electrical characteristics to be considered and/or ranges of possible values of the thresholds concerning the significant modernisation criteria, which will have to be specified at national level by the TSOs and approved by the competent authority. This leaves room for some flexibility on MS level.

The Expert Group working on this issue provided valuable development of the principles that should underpin this issue and developed practical approaches to implementation in Member States.

We think that only general principles should be written in the code, and that subsidiarity principle should prevail in order to define criteria for substantial modification as well as the requirements that they would trigger. This way, it would be possible to set more precise rules for smaller generation modules while leaving sufficient space for bigger (more complicated) installations. The criteria according to which an amendment must be considered a substantial revision of the follow-up agreement, nor in relation to what is considered a substantial revision, are to be specified in order to avoid significantly different requirements in the Member States and thus to align the level of requirements and the resulting costs. The exact change criteria and the NC

requirements of the AVs that apply in the case of significant modernisation must be defined at national level in the same way as the generally applicable requirements. A final comment is only possible once further concrete information is available in the course of the consultation process.

However, it is important to assure that the rules for determining significant modernisation should be kept simple. Rules that are based on the existing power plant characteristics should be avoided since it may prove difficult to ascertain these characteristics, which may lead to stalemates and indecision, or even, to appearance of non-equal treatment by system operators.

Country specific information:
A. The article 4 of RfG , in Italy was fully implemented and the NR considered the aspect of modification and 7 or modernisation of plant (partially also), and taking into account the national technical standard, by dedicated Acts, the drivers to all stakeholders to understanding what is considered a "substantial revision".

B. In Spain we tried to define the potential implications on the technical capacities from the replacement of specific devices in each generator. We were not able to agree on a table, as most of the cases are strongly dependent on the manufacturers from each generator, the technology, the age of the generator, etc. As alternative, we defined “substantial change” related with the replacement of the turbine+alternator for synchronous generators, and the accumulative replacement of inverters (in PV) or windmills for PPM. This was the less ambiguous approach we found .

In Belgium overall, we need to ask for a simple procedure in case of a replacement of a spare part, as there seems to be no such simplified procedure in place right now (at least not in Belgium). This lack of a short procedure could be a burden for the development of COGEN as it is very common practice to use “engine swaps” for these technologies. Since an engine swap for COGEN is by definition the replacement of a spare part, it should never be considered as a “modernisation” of any kind.

27 To what extent do you agree with the policy analysis and recommendations on the **technical requirements for storage**:

- ☐ 5 (strongly agree)
- ◉ 4 (agree)
- ☐ 3 (neutral)
- ☐ 2 (disagree)
- ☐ 1 (strongly disagree)

28 Please, elaborate on your answer above, if necessary:

We think it is important to include storage in the connection network codes. In some MS requirements have already been integrated in their national/regional legislation.
Many of them based their requirements on what is provided by the EN 50 549-1 & -2.
So integrating storage in NC RfG and NC DC should not ignore the existence and the relevance of these standards.

We support in full the work undertaken by the Expert Group on this topic. However we now believe that the work is not quite complete in that although the Expert Group made provisions for how storage should respond to frequency falling below norms in an emergency event, it did not

address how that storage should behave as the frequency recovers. Although not a particular technical challenge, there does need to be clarity of response in these conditions to both avoid unintended unhelpful behaviour, and also so TSOs can be certain about how the contribution from storage will change as frequency rises. Appropriate development for this characteristic should be built into the developments of proposals.

Since storage would mainly be integrated in the NC RfG, it is important to point out that also the new proposed type A requirements for PGMs, as mentioned above, would be applicable to storage units, especially the possibility to modulate/control active power.

This would ensure equal treatment of network users and existing power plants. In this respect, the relevant characteristics and limitations of storage technologies shall be duly taken into account.

Country specific information:
The Italian standards defining the technical rules to connect a plant to the distribution network take into account already the ESSs in terms of: technical requirements, technical specification, connection process, functionalities requested and so on ... Italian stakeholders, like ENEL, could share country specific experience. In general, it would be very useful to define the general requirements and functionality needs considering the EESS in writing the RfG . At the same time, the general preference is to harmonise the requirements established on new version of RfG with technical standards of CENELEC (EN 50549 part 1 and 2) that will define the technical specifications. Nevertheless, BTM solutions should be carefully analysed!

29 To what extent do you agree with the policy analysis and recommendations on the **electromobility**:

- ☐ 5 (strongly agree)
- ☐ 4 (agree)
- ◉ 3 (neutral)
- ☐ 2 (disagree)
- ☐ 1 (strongly disagree)

30 Please, elaborate on your answer above, if necessary:

The Expert Group on storage took the view that V1G should be seen as controllable loads, and compliant with the NC DC, to the extent that each V1G installation met the scope requirements of the NC DC. Similarly V2G installations would be treated under the NC RfG as any other non-synchronous generation would be. The EG made no distinction between a single vehicle or an installation comprising many V2G vehicles. Compliance would be at the connection point and be the responsibility of the site owner.

If we understand the consultation correctly, ACER and CEER are proposing that V2G is treated separately under the NC RfG and that any thresholds so developed are also used in the application of the NC DC.

We believe this conflates two issues: whether a new NC RfG threshold is appropriate for V2G and whether any threshold should apply to V2G (and V1G?) in demand mode. We don't believe that either of these possibilities were explored by the Expert Group on Storage.

Whilst not ruling these out, the proposals would need further development and analysis. Our initial view is to reflect that of the Expert Group: a collection of V2G vehicles constitute a power park module of type A or B (or theoretically even C) based purely on the aggregation of the capacities at the connection point. If there is sufficient capacity of V2G vehicles connected, then at the connection point the installation will need to behave like a type B power park module. This implies that the installation owner might need to procure appropriate ancillary equipment to ensure that all the type B requirements are met. This should preclude the need for derogations.

Option 1 of the consultation paper's proposals does not seem to acknowledge that once over the ad-hoc threshold, type B performance will still presumably be required. Quite separately it is not clear what is being proposed for NC DC compliance. Is the proposal to use the same threshold as proposed for the ad-hoc type A/B threshold? Would electric vehicles be exempt from NC DC compliance below this threshold?

We accept that these issues are significant because of the scale of electric vehicle roll-out. Time should be allowed for the development of these proposals and their socialization with stakeholders. Unless there is a clear technology reason why owners of V2G installations (i.e. commercial operators of charging hubs etc) should be excluded from the obligations that all other owners of storage face, this becomes a political decision rather than an economic or technical one.

Furthermore, in case 2 with an on-board charger we do not see how this fits in the static NC RfG-procedures. We need to establish that injection is only possible through a beforehand determined access point which is in line with the NC RfG. In paragraph 57 it is stated CGC NCs are only applicable when an EV with on-board charger injects in the grid, but injecting in an internal installation is also injecting in the grid, otherwise there will a discussion regarding which electrons have been 'self-consumed' over and which ones were injected. There is only a distinction to be made for end-users with a physical injection limitation.

According to the paper, V1G chargers which do not deliver demand response are not supposed to respect the NC DC requirements. We think however this might be an added value, meaning that each charging point (maybe as from a certain uniform threshold) should be obliged to deliver demand response in extreme circumstances.

Also, it is worth noting that the DCC code is only applicable to the transmission grid and to DSR providers. Including the role of the DSO in the electromobility would necessarily lead to a major review of the DCC code as well.

31 To what extent do you agree with the policy analysis and recommendations on the **simulation models and compliance monitoring**:

- ☐ 5 (strongly agree)
- ☐ 4 (agree)
- ☐ 3 (neutral)
- ☒ 2 (disagree)
- ☐ 1 (strongly disagree)

32 Please, elaborate on your answer above, if necessary:

A validated simulation model is useful. However, several points need to be clarified
a.) For which systems / components are simulation models required?
b.) Simulation scope/scope
c.) Clear specifications on the scope and content of the simulation in order to avoid multiple loops during simulation creation.
d.) Cost bearing / cost sharing in case of iteration of the simulation models in the course of component development or due to further simulation requirements on the part of the grid operator
e.) Duration of the final simulation coordination between power plant operator / plant manufacturer and grid operator in the case of replacement of plants or new plants.
f.) Protection of the status quo for simulations already created or cost bearing by the grid operator

A final comment is only possible once further concrete information is available in the course of the consultation process.

We recognise that this is a key issue for TSOs, and are generally content to recognise their need to have the appropriate accurate modelling capabilities. We also recognise that the growth of distributed generation is increasing the needs of TSOs and DSOs to be able to model better the individual and combined effect of that generation. However the requirements need to be mindful of the mass market and lower complexity/capability of equipment and process at DSO level, and not specify requirements that are impractical. The burden on smaller generators should be kept in mind in setting these requirements. To facilitate this a certification of the model supplied by the manufacturer through testing and comparison between test results and model expected output, should be required from the manufacturer (independently of generator size). A standardisation of the model formats would also be advantageous as it would simplify studies Europewide. Standards could be proposed by EU DSO Entity and ENTSO-E and approved by ACER.

33 To what extent do you agree with the policy analysis and recommendations on the **advanced capabilities for grids with high penetration of DER**:

- ☐ 5 (strongly agree)
- ☉ 4 (agree)
- ☐ 3 (neutral)
- ☐ 2 (disagree)
- ☐ 1 (strongly disagree)

34 Please, elaborate on your answer above, if necessary:
It is hard to comment on this. The consultation paper states the evolving situation as many stakeholders see it. However it does not make any clear recommendations. As a context under which new proposals are developed we do fully agree with it, but we do not see any concrete proposals to react to. Does this refer to grid forming capabilities?
Smarter approaches will be needed in the future, but we can question if this needs to be embedded in EU legislation such as a NC. Due care needs to be taken to the possible added requirements to avoid any restriction to future developments and innovation.

Investments needed to improve DSO capabilities and face the new role include grid real time monitoring and control devices, such as functionalities for flexibility services planning and management (DERMS tool), and TSO DSO flexibility services coordination system. All those

system improvement related cost should be duly considered by NRA in DSO remuneration, as foreseen by EU Directive 944/19. And not only regarding power flows and steady state conditions (for instance voltage), but also operation aspects (islanding). However, we consider that, this seems quite challenging to set common rules for very heterogeneous distribution grids across MSs.

35 To what extent do you agree with the policy analysis and recommendations on the **requirements for weather hazards resilience of generators**:

- ☐ 5 (strongly agree)
- ☐ 4 (agree)
- ☐ 3 (neutral)
- ☒ 2 (disagree)
- ☐ 1 (strongly disagree)

36 Please, elaborate on your answer above, if necessary:
The overall system must be set up in such a way that resilience to weather hazards can be improved and generator failures can be compensated for. However, this cannot be achieved by continuously increasing the requirements for generators of existing plants with the revision of regulations. As expected, this will only be possible within narrow limits. Protection of existing plants must be taken into account.
A final comment is only possible once further concrete information is available in the course of the consultation process.

Country specific information:
In Italian experience, there were not so many problems regarding the operation for extreme weather conditions for PGMs. In any case what is being implementing in terms of Observability and data exchanging, in accordance with how requested by SO GL and others NCs, it will allow to know the criticalities of PGMs during particular condition of operation related to specifical climatic conditions. In being aware that in some MSs the climate condition (extreme heating or storms and so on…) could determine criticalities in operation for PGMs, any further specification, considered needs, in terms of characteristics and conformity to requirements have to be defined directly in the standards of products, not into the Codes.

Probably, instead, could be so much interesting understanding how the PGMs could support the SOs during the critical condition of grid (controlled island to counter fed portion of system and improve the continuity of system and improve the continuity of supply indexes). An oriented system's resilience improving/increasing approach.

We note the effect that extreme weather has had on electricity generating infrastructure globally and recognize the need to ensure appropriate mitigations in Europe.
It seems obvious that temperature conditions as well as storms should be considered, for example considering power electronics that need cooling to operate.

We have however no expertise to comment on the detail of mitigation approaches to be applied to generation equipment.

37 To what extent do you agree with the policy analysis and recommendations on the **technical requirements for active customers/energy communities**:

- ☐ 5 (strongly agree)
- ☒ 4 (agree)
- ☐ 3 (neutral)
- ☐ 2 (disagree)
- ☐ 1 (strongly disagree)

38 Please, elaborate on your answer above, if necessary:

We indeed see no reason for differentiation between technical connection of energy communities and other customers of grids.

We believe the legal structure and applicability is already clear. The DSOs note that application of the EU NCs will also be dependent on the connection point, i.e. whether the local network is owned by a DSO or CDSO or a third party. In the latter case the connection point is in a different place to the former – and non-synchronous generating units downstream of the connection point will need to be aggregated to form a power generating module.

39 To what extent do you agree with the policy analysis and recommendations on the **requirements for units providing demand response services**:

- ☐ 5 (strongly agree)
- ☐ 4 (agree)
- ☐ 3 (neutral)
- ☒ 2 (disagree)
- ☐ 1 (strongly disagree)

40 Please, elaborate on your answer above, if necessary:

Eurelectric thinks that a European regulatory framework for demand response shall at least provide a set of common overarching principles ensuring a coordinated access to resources and allowing their optimal utilisation.

ACER is currently drafting framework guidelines on demand response following an official request from the EC to start drafting a new NC as set in article 59(1) of the Electricity regulation. Eurelectric intends to provide further input on this in its reply for he ongoing consultation for the framework guideline on demand response. In this regards, eurelectric will assess whether there is the need to move the existing requirements on demand response (at the moment housed in the NC DC) to this new NC, at least for assets connected to the distribution grids and not (only) moving them to the Guideline System Operation.

As a general principle, the review of NC DC technical requirements for units providing Demand Response services shall not hinder their effective and non discriminatory participation in DSO local ancillary services markets.

Nevertheless, another issue is the definition of significant grid usage that is present in the System Operation Guidelines, that might come up in the Demand Connection code. For this reason, the definition of “significant grid usage” may be reviewed so as to apply only to those grid users

actually big enough to strongly impact the grid and we should avoid a possible uptake and application of the definition so worded also in the Demand Connection Code.

Eurelectric pursues in all its activities the application of the following sustainable development values:

Economic Development

- Growth, added-value, efficiency

Environmental Leadership

- Commitment, innovation, pro-activeness

Social Responsibility

- Transparency, ethics, accountability

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