

ACER Public Consultation on the Policy Paper on the revision of NC RfG and NC DC

Fields marked with * are mandatory.

Important developments in the policies of decarbonisation of the European Union (EU) energy and transport sectors have taken place since the inception of the development of the first European Grid Connection Network Codes (GC NCs) in 2012.

In the framework of the Grid Connection European Stakeholder Committee (GC ESC), the European Commission proposed for ACER to initiate the process towards the amendment of the existing GC NCs in September 2022. The amendment process process, as presented to the GC ESC is outlined in the Figure below:



Please note that this public consultation belongs to the **first** phase of the process (scoping phase) that will be followed by the call for stakeholders to submit their proposals in September 2022 during the 8-week long consultations.

For the avoidance of doubt, the Commission Regulation (EU) 2016/1447 of 26 August 2016 establishing a network code on requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (NC HVDC) is out of the scope of this consultation as the work on its amendment is expected to start in 2023.

The purpose of this consultation is to gather views, feedback and input from all stakeholders on the Policy Paper (link) drafted within the scoping framework of the process. This consultation is addressed to all interested stakeholders. Consulted Policy Paper, planned to be published by September 2022, aims to transparently indicate to stakeholders the areas in which amendments are to be expected, as regards:

- Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators (NC RfG) - [link](#)
- Commission Regulation (EU) 2016/1388 of 17 August 2016 establishing a Network Code on Demand Connection (NC DC) - [link](#)

Replies to this consultation should be submitted by 10 June 2022 23:59 CET.

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* 2 Name of the stakeholder:

WindEurope

* 3 Contact person:

Vasiliki Klonari

* 4 Contact person's email address:

vasiliki.klonari@windeurope.org

* 5 Country of the stakeholder's headquarters or main country of operation:

Belgium

* 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
- Other (please, elaborate)

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

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

- 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)

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

Direct impact on WindEurope's members

* 11 Do you consent to the publication of the stakeholder's name?

- Yes
- No

* 12 Do you consent to the publication of provided answers?

- Yes
- No (please, note that your answer, without your name and organization, may be shared with the EU institutions and national authorities, drafting team members, and other persons or entities involved in the adoption process of the consulted Policy Paper)

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:

The Policy Paper suggests many important additional areas that need to be developed and integrated in the current NC RfG and NC DCC. However, experience and lessons learnt from the development and national implementation of the NCs in the past years has shown that several improvements are required to facilitate grid integration and make it cost-effective and several gaps need to be addressed in core areas that are already covered by the current version of the NCs. The Policy Paper is very weak when it comes to recommendations on how to improve these core areas with the upcoming revision. Our reply to question 16 lists items that should not miss of the opportunity of this revision.

Moreover, the paper misses a clear introductory notice on the process that will be followed for the consideration of the outcomes of already completed and ongoing Expert Groups: which ones will be considered in the revision, when, which will not make it for this revision round and why. This should be clarified and presented concretely in the paper together with a short overview/update on the progress and objectives of each Expert Group. Several experts, companies (including TSOs and DSOs) and associations are dedicating significant resources in these activities with the hope of creating immediate positive impact on integration requirements for their assets and this must be acknowledged and their work must be seriously considered in the revision process.

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

- Yes
- No
- Other

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

- (1) After the release of NC RfG and DCC in 2016, national connection rules have been adapted and established the non-exhaustive requirements at national level which led to large variety of requirements across the EU. Lessons learned from this implementation must be considered and a mindful minimisation of non-exhaustive requirements must be driven. Definitions of non-exhaustive requirements need to be aligned across the EU at an adequate level of detail. This will be crucial for a better level playing field in the EU and will drive significant benefits for consumers.
- (2) The revision should investigate NC improvements and seek for stakeholder suggestions on how to harmonise and simplify certification procedures. An Expert Group has been ongoing (Harmonization of Product Family Grouping and Acceptance of Equipment Certificates in European Level - EG HCF) since the beginning of 2022, will its recommendations be considered?
- (3) The revision should consider and clarify the role of international standards (mainly CENELEC and IEC) in the NC development and implementation. Gaps between NC requirements and standards are growing (e.g. voltage range requirement as per NC RfG and relevant equipment standards) and several definitions missing in the current NCs could be covered by the ones already suggested in international standards. ENTSO-E and the standardisation bodies have made serious efforts to bring their work together but it seems that a more targeted effort is needed to improve the NC requirements.
- (4) A good example is the grid compliance process and its link to IECRE. Member States introduce country specific grid compliance certification requirements which makes it extremely complex and costly for technology suppliers and asset owners (with a direct impact on grid integration costs for consumers) to monitor and assess these requirements, perform relevant tests and simulations and certify according to varying requirements. IECRE and the work of WG010 should serve as a baseline.
- (5) Another crucial point is the need for the updated NCs to clarify requirements and procedures in assets where different facilities/technologies share the same grid connection. The recommendations in the Policy Paper about Mixed Customer Sites and Storage do not seem to address combined renewables power plants with or without storage or renewables co-located with storage. Requirements for renewables sharing the same grid connection with storage (where storage is not connected only for self-consumption but as an autonomous unit directly supplying power to the grid) must be explicitly described in the NC. This should include the co-location of renewables with short- and long-term storage, EV charging stations, large heat pumps and of course electrolysers. Both new combined assets and existing assets being hybridised must be covered.
- (6) Ancillary services must be addressed also from the grid compliance point of view. Details provided in question 33.
- (7) Advanced capabilities/grid forming. Details provided in question 33.
- (8) The EG CROS has identified the need for NCs to assess system tolerance on (active, reactive) power oscillations caused by DC connected systems. This issue might be even more relevant in the case of AC connected system and should be considered in the revision.

* 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)
- 2 (disagree)
- 1 (strongly disagree)

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

Amendment of the existing rules shall address identified disproportions between technical requirements and actual PGMs' effect on the overall system while ensuring its stable operation. Moreover, potential changes shall be linked with the appropriate transitory rules.

* 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:

Amendment of the existing rules shall address identified disproportions between technical requirements and actual PGMs' effect on the overall system while ensuring its stable operation. Moreover, potential changes shall be linked with the appropriate transitory rules.

* 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:

A possible amendment of the NC RfG shall consider:

- a) Relevant features of the MSCs, including properties of installed units, operating modes, provided services and topology;
- b) Proper balance between the requirements for the connection of the MCSs and the system needs as well as the impact on the implementation of the NC RfG and the NC DCC in the different Member States;
- c) Examination of the reference to connection point, considering situation when MCS is connected to CDS;
- d) Possible application of voltage criteria only above specific maximum capacity threshold
- e) Alignment of respective requirements both in NC RfG and NC DCC

* 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:

A harmonisation of thresholds between type A and type B PGMs across the EU should be assessed, considering power system needs, to increase the cost-effectiveness of grid integration by standardising requirements for the capabilities of different technologies and enable technology manufacturers to optimise their production and list of technologies. In addition, with the ramp-up of renewable generation and the fulfilment of expanded requirements, such as FRT capability, system security should be further enhanced.

* 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:

Further assessment and clarifications are needed to define, in a harmonised manner across the EU, the criteria for “significant modernisation”.

These criteria should list the ranges of modification of the relevant technical characteristics which could be considered as significant modernisations and the minimum requirements of the GC NCs which should apply in these cases. The exact modification criteria and the requirements of the GC NCs applying in the case of significant modernisation will have to be defined at national level in the same way as the requirements of general application.

The hybridisation of assets (addition of another generation technology or storage) should also be considered when setting such criteria.

* 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:

The requirements should consider both short- and long-term storage and also the colocation of storage with renewables. Requirements for assets combining renewables and storage should not only consider cases where the storage unit is only integrated for self-consumption in the generation facility but also assets where both generation and storage (sharing the same grid access point) can both supply power to the grid independently. Requirements should also address cases of integration of storage in existing generation (or demand) facilities and not only stand-alone storage units or completely new assets. Requirements should also differentiate between synchronous and asynchronous units. Certain forms of electricity storage devices may be exempted from the requirements (e.g., synchronous flywheels, synchronous compensators, regenerative braking systems, batteries used for internal services, etc.) without prejudice to the Member States’ right to establish specific requirements at national level.

* 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:

It is important to differentiate requirements between V1G and V2G charging points and align requirements for V2G with the upcoming ones for storage. It is recommended that the technical requirements are set at the connection point of the EV charging station. However, the scope of application of GC NCs should not be extended to the EVs and their on-board devices unless their on-board V2G bidirectional converter is used to inject power into public grids and their maximum exporting capacity is equal or above 0,8 kW or the concerned EV (either equipped with V1G or V2G technology) is to provide demand response services. Also, the electrical charging facility owners shall have the right to choose the EV or equivalent technology to employ for compliance testing.

Modalities of EV charging stations with regard the employment of the on-site technologies (stationary batteries, V1G and/or V2G) will need to be reflected in the application of the GC NCs. For example, distribution connected V1G electrical charging parks, not providing demand response services to system operators, should not need to be compliant with the respective requirements.

* 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:

Possible amendment of the NC RfG and NC DC could introduce common requirements for simulation models requested by system operators, considering the confidentiality and encrypted level (including cross-border network stability studies), validation of the models, and future maintenance if needed. The outcomes of the EG Interaction Studies and Simulation Models should be considered including the recommendations for the simplification and cost-effectiveness of the validation methods (which are included in the report of the EG but not mentioned in the Policy Paper).

* 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:

Full support is given to any initiative for making distribution systems smarter and utilising the assets more efficiently. Moving to a smarter approach seems the more efficient solution in the long term. Some investments are needed at the beginning to install new intelligent and control devices, but in the long term the benefits in terms of flexibility and less costly infrastructures would overcome the initial costs. We expect that is development also demands updates on the regulatory regime and the introduction of specific ancillary services for distribution systems. Ancillary services are not just a matter of system operation requirements, contracting options with the system operator and market design but need to be addressed also from the grid compliance point of view. The large variety of terms, definitions and units used to describe the different capabilities of grid connected assets (normally covered by the NC RfG) and the lack of common definitions of non-exhaustive requirements makes it impossible to establish an EU framework for scaling up ancillary services. The Grid Connection Codes need to define to an adequate level of detail capabilities and which are mandatory (which will necessarily clarify which are non-mandatory and should be remunerated) in a common way across the EU so that this basis can afterwards be used by other regulatory items for designing all market and remuneration related aspects. This applies not only for “advanced capabilities” but also for all other core capabilities such as voltage control which are today required and addressed in a large variety of ways by the different NRAs and System Operators. Certification for grid compliance should result in certification to participate in ancillary services market, avoiding redundant certification processes and not justified discrimination of technologies.

Specifically about advanced capabilities including grid forming: before defining such advanced capabilities and integrating any relevant requirements in a revised NC, it is crucial to create a common basis for terms and definitions of capabilities, whether advanced or not, across the EU, going to the necessary level of detail. Considering the progress of work in the specific EG, this will most probably not be possible for the foreseen timeline of the revision. Moreover, as agreed in the EG, defining advanced capabilities requires a clear identification of respective power system needs that can only be achieved with a very active engagement and coordination of the work by several TSOs and DSOs which is currently not the case in the specific EG. Therefore, we agree that there is a major benefit in defining such advanced capabilities in the NCs but this requires some important steps before which are not yet on track.

* 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:

Proportionate requirements could deliver enhanced system resilience to unusual weather events capable of compromising generation at a reasonable cost. The probability of risks and cost-effectiveness of the adopted measures shall be analysed based on the experience of interested parties and available historical records or performance studies.

* 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:

All resources shall comply with the NC RfG or NC DC or both according to their own nature. Active customers and mixed customers sites are equivalent and thus the same rules and requirements should apply. Members within energy communities should comply with the requirements of the Grid Connection NCs at their point of common coupling with the grid as all other resources.

* 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:

The review of NC DC technical requirements for units providing DR services shall not hinder their effective and non-discriminatory participation in DSO local ancillary services markets. Both the System Operation Guidelines and the Demand Connection code could be potentially problematic as: 1) they might require for units providing demand response services to demonstrate that all of their equipment will be able to tolerate certain system variations (e.g. frequency variations). The problem is that:

- The ability to withstand changes in the network would be really difficult if not altogether impossible to demonstrate for clients that do not have brand new assets and equipment.
- These stringent requirements are imposed only when grid users decide to provide flexibility services to the grid.

As such, we ask for general connection rules that are feasible to implement and most importantly, that are equally applied to everyone and not just on those that provide DR services.

Another issue is the definition of significant grid users that is present in the System Operation Guidelines, that might come up in the Demand Connection code: those grid users who have a strong influence on the transmission system (e.g. big sites) are required to provide real-time telemetry, forecasts, and other granular data so as to allow the system operators to correctly estimate and take into account their impact on the grid. The problem is that these requirements are imposed automatically on DR providers, regardless of their size and impact on the network: in fact, Article 2(d) of SOGL states that significant grid users are “existing and new demand facilities ... if they provide demand response directly to the TSO in accordance with the criteria in Article 27 of the Demand Connection Code”, which effectively captures most DR.

For this reason, the definition of “significant grid usage” should 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

Vestas

Contact

[Contact Form](#)