ACER draft amendments to the Network

Code on Requirements for Generators

Fields marked with \* are mandatory.

Introduction

This consultation aims to present ACER's draft amendments to the Commission Regulation (EU) 2016

/631 of 14 April 2016 establishing a Network Code on Requirements for Grid Connection of

Generators ('NC RfG').

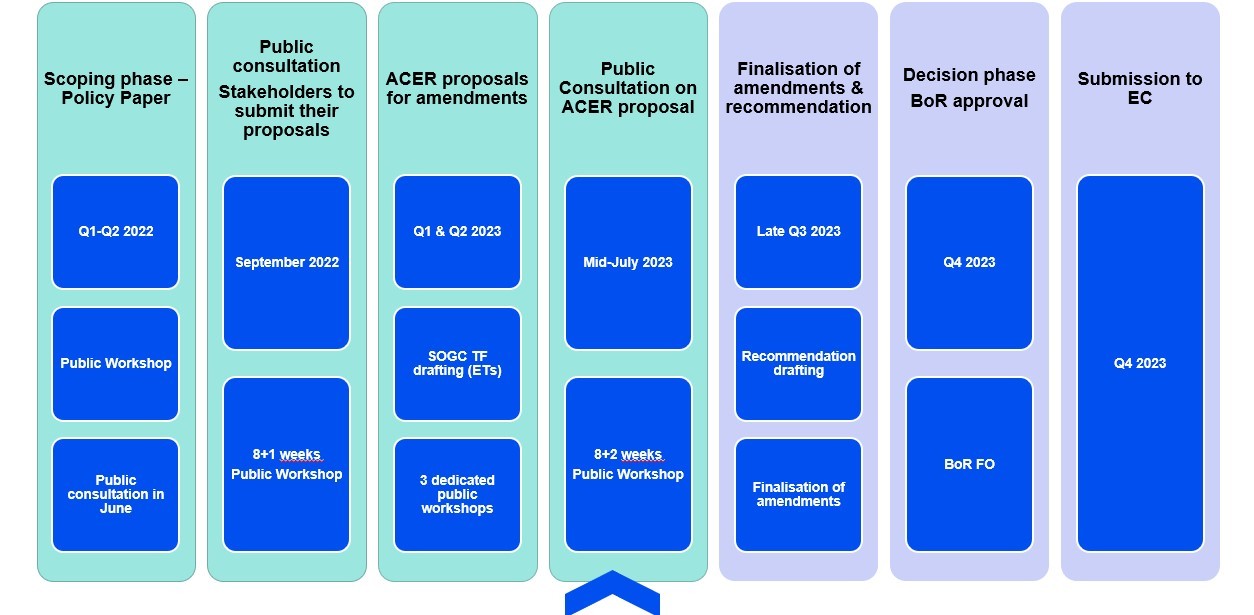
For draft amendments concerning Network Code on Demand Connection ('NC DC'), please go to the respective form: NC DC.

Responses to this consultation should be submitted by 25 September 2023.

Background

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, as presented to the GC ESC is outlined in the Figure below:



Following the scoping phase, ACER published the Policy Paper on the revision of the network code on requirements for grid connection of generators and the network code on demand connection in September 2022. The Policy Paper aimed to transparently indicate to stakeholders the key policy areas in which amendments were to be expected.

Access the ACER Policy Paper on the revision of the NC RfG and NC DC.

As a next step, ACER launched the Public Consultation to gather stakeholders’ views and concrete amendment proposals regarding the GC NCs. The stakeholders could submit their inputs by 21

November 2022.

Access the results of the Public Consultation on the amendments to the grid connection network codes.

Additionally, in the preparation of the draft amendment proposals, ACER organised three dedicated public workshops, namely:

electromobility, power-to-gas demand units and heat-pumps (held on 17 April 2023); rate of change of frequency and grid forming capabilities (held on 10 May 2023); and electricity storage (held on 11 May 2023).

After the evaluation of stakeholders' inputs, ACER has formulated its own proposal for the amendments of the GC NCs which is subject to this public consultation.

Stakeholder's details

ACER is highly committed in processing personal data in a lawful way.

Find out more how we process your data: [https://www.acer.europa.eu/the-agency/about-acer/data- protection](http://www.acer.europa.eu/the-agency/about-acer/data-)

\* Name of the stakeholder:

\* Co

\* Co

|  |
| --- |
|  |
| ntact person: |
|  |
| ntact person's email address: |
|  |

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

xAustria



Belgium



Bulgaria Croatia Cyprus Czechia Denmark Estonia Finland x France



Germany Greece Hungary Iceland Ireland



Italy



Latvia



Liechtenstein



Lithuania



Luxembourg



Malta



Netherlands



Norway Poland Portugal Romania



Slovak Republic



Slovenia



Spain



Sweden



Outside the EEA (please, specify)



Please, specify the country:

\* Type of the stakeholder:

Generator (including association) Consumer (including association)



Transmission system operator (including association) Distribution system operator (including association) Manufacturers (including association)



Academia/research institution



Regulatory authority



Other (please, elaborate)



Please, elaborate on your answer above, if necessary:

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

Yes



No



\* 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)

Instructions

Stakeholders are invited to submit their comments to the NC RfG articles amended by ACER in three mandatory steps:

1. by downloading the ACER draft amendments in the Word file provided below. The file can also be accessed on the right panel of the consultation form under the Background Documents;

2. by commenting on the ACER's draft amendments through this online consultation form and adding their alternative text proposals to the table, if any; and

3. by uploading the alterative amendment proposals to the entire NC RfG using the Track Changes

mode in the ACER draft amendments file downloaded from Step 1.

Where the stakeholder does not have any comments regarding the amendments, the relevant cells in the consultation form can be left blank.

The mandatory steps for submitting the comments are listed below.

Step 1

Please see ACER's draft amendments in the Word file provided below. The file can also be accessed on the right panel of the consultation form under the Background Documents.

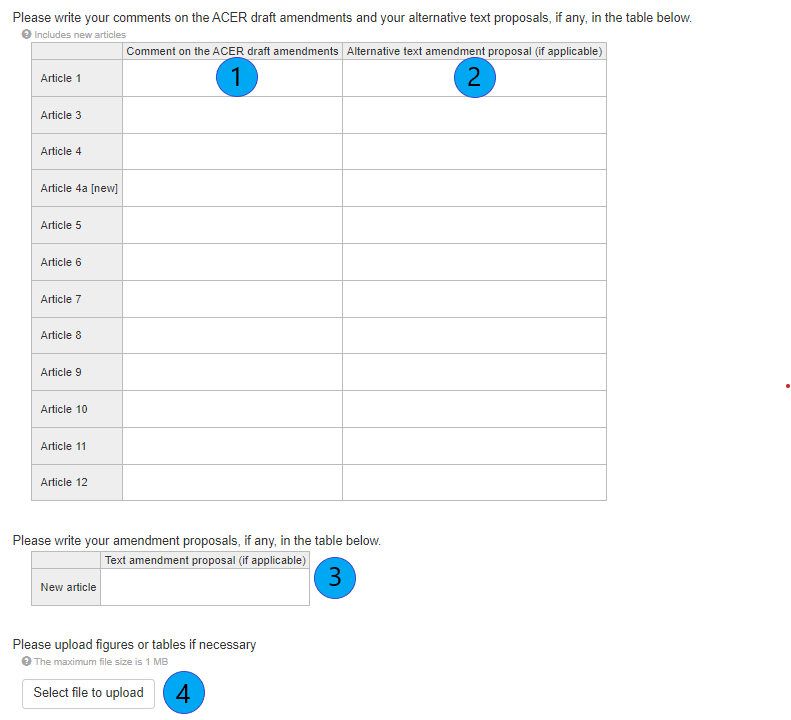
Download ACER draft amendments to the NC RfG here

Step 2

Kindly note that this consultation form follows the structure of the NC RfG amended legal text provided by ACER in Step 1.

The paragraph numbering in the form reflects paragraph numbers in the amended legal text. Nevertheless, stakeholders can comment on the deleted paragraphs/articles/titles, which are marked as [deleted]. New articles and titles are marked as [new].

Please use this form to comment on ACER draft amendments and/or to provide an alternative text proposal. The instructions are the following:



1. Leave comments on the ACER draft amendment proposals.

2. Propose (if any) alternative wording of the relevant provision, as you provided in the Word file.

3. Provide (if any) your proposals for adding new provisions to the relevant section of the NC RfG, as you provided in the Word file.

4. Upload figures or tables if necessary; text inputs should be provided directly in the consultation form.

Step 3

Where the stakeholder would like to propose an alternative amendment to the entire NC RfG, please upload the Word file (downloaded from Step 1) containing all your alternative amendment proposals in the Track Changes mode to the next FILE UPLOAD section and rename it with your

stakeholder's name ("ACER\_draft\_RfG\_stakeholder\_name"). You can also upload your justification documents, where applicable.

To facilitate the process, please, make sure that the alternative text proposals provided in this consultation form are consistent, to the extent possible, with those in the Word file you are uploading, taking into account the character limitations of each cell (max 5000 characters).

FILE UPLOAD

Please upload your file here

The maximum file size is 1 MB

Only files of the type pdf,doc,docx,odt,txt,rtf are allowed

Please also upload any other document (i.e. justifications) below, if relevant.

Please upload your file

The maximum file size is 1 MB

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Due to the significant length of this survey:

you have the possibility to edit your answer after submission. When clicking on "Submit" button, you will be given a Contribution ID which you can then use to access your answers and edit them, if necessary.

we kindly suggest that you download the entire survey as .pdf (link on the right), prepare your answers and then upload them at once in the EU Survey Tool, to avoid a session timeout on submission.

The maximum length of each cell is 5000 characters. This is the maximum technical limit set by the

EUsurvey tool, which cannot be increased.

Whereas Section

Please write your comments on the ACER draft amendments and your alternative text proposals, if any, in the table below

Numbers in the first column correspond to the recitals of the amended version of NC RfG Whereas section, including new recitals

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| (1) |  | |
| (2) |  | |
| (3) | Please specify if this concerns front of the meter storage only, or also behind the meter (for instance, an industrial site with a battery installed).  Moreover on (s1) Free movement (of EV’s), it is indeed essential for ACER and ENTSO-E to avoid any requirements that would impact negatively or limit to any extent the free movement of EVs in Europe. | |
| (s1) |  | |
| (s2) |  | |
| (4) |  | |
| (5) |  | |
| (6) |  | |
| (7) |  | |
| (8) |  | |
| (9) | It should also be possible to include the agregation between a synchronous PGM and a battery, not only between a PPM and a battery.    The significance of power-generating modules should be based on their size and their effect on the overall system. Synchronous machines should be classed on the machine size and include all the components of a generating facility that normally run indivisibly. An installation containing a set of synchronous machines that cannot be operated independently from each other, such as combined-cycle gas turbine installation, should be assessed on the whole capacity of that installation.  Non-synchronously connected power-generating units **~~of the same underlying technology~~**, where they are collected together to form an economic unit and where they have a  single connection point should be assessed on their aggregated capacity.  Secondly, important to note that combined-cycle gas turbines can in some case be operated independently, this depends on the specific installation. | |
|  | **~~Moreover, to ensure an appropriate harmonisation or rules for mass-market products, capacities of units of different classes, for instance, photovoltaic, electricity storage, combined heat and power installations, or V2G electric vehicles, should not be aggregated for the purpose of the determination of significance.~~**  Electricity storage integrated to a power-generating module, where module is either non-synchronously connected to the network or connected through power electronics, used solely for the purpose of meeting the requirements of this Regulation should be considered as part of such module while its capacity should not count towards the power-generating module capacity.  **Justification**: An extension of the text in the preamble makes it massively more difficult to interpret the type classification of non-synchronous power generation plants and, in the worst case, could lead to a large number of sub-power plants behind a grid connection point. | |
| (10) | A fully autonomous energy community shall not be allowed to join the main continental Europe synchronous network if it does not comply with the RfG code (even if this connection happens years after the creation of this community). | |
| (\*\*) |  | |
| (11) |  | |
| (12) |  | |
| (13) |  | |
| (14) |  | |
| (15) |  | |
| (16) | Due to its cross-border impact, this Regulation must aim at the same frequency-related requirements for all voltage levels, at least within a synchronous area, such as the synchronous areas of Continental Europe, Ireland-Northern Ireland and Nordic and the power systems of the Baltic countries. Justification: This is an important principle which unfortunately is not followed in this grid code nor is it followed in the national decisions for non exhaustive requirements. As a consequence power generator modules are often required to test for different national non-exhaustive requirements in different countries thus creating an unnecesary barrier and complicating the compliance checking for the relevant system operator. | |
| (17) |  | |
| (x) |  | |
| (18) | However, given that the most common fault clearing time in Europe, for transmission networks, is currently 150 milliseconds it leaves scope for the entity, as designated by the Member State to approve the requirements of this Regulation, to verify that a longer requirement is necessary before approving it. Justification: It should be stated that this fault clearing time is for Transmission networks only. In distribution fault clearing times may be longer. | |
| (19) | (19) (xx) On “In order to avoid potential critical system situations caused by overvoltage, it should be possible for power-generating modules to remain connected to the system for a specified high voltage-against-time profile.” Is there a specific reason to mention this for high voltage specifically? | |
| (\*\*) |  | |

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| (20) |  |
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8

Please write your amendment proposals, if any, in the table below

Text amendment proposal (if applicable)

New recital

Definitions (Article 2)

9

Please write your comments on the ACER draft amendments and your alternative text proposals, if any, in the table below

Includes new definitions

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 2(1) |  | |
| Article 2(2) |  | |
| Article 2(3) |  | |
| Article 2(4) |  | |
| Article 2(5) |  | |
| Article 2(6) |  | |
| Article 2(7) |  | |
| Article 2(8) |  | |
| Article 2(9) |  | |
| Article 2(10) |  | |
| Article 2(10a) |  | |
| Article 2(11) |  | |
| Article 2(12) |  | |
| Article 2(13) |  | |
| Article 2(14) |  | |
| Article 2(15) |  | |
| Article 2(16) |  | |
| Article 2(17) |  | |
| Article 2(18) |  | |
| Article 2(19) |  | |
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| Article 2(21) |  | |
| Article 2(22) |  | |
| Article 2(23) |  | |

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| Article 2(24) |  |
| Article 2(25) |  |
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| Article 2(53) |  |
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| Article 2(69) |  |
| Article 2(70) |  |
| Article 2(71) |  |
| Article 2(72) |  |
| Article 2(73) |  |
| Article 2(74) |  |
| Article 2(75) | ‘Electrical charging park owner’ means a natural or legal entity owning **or operating** a V1G or V2G electrical charging park. Justification: In many cases, the entity that legally owns the installation does not have the expertise to operate it, to which purpose an operator (a CPO, for instance) is responsible for securing all technical requirements in regards to the electrical installation. |

12

New definition

Please upload figures or tables if necessary

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TITLE I - General provisions

Text amendment proposal (if applicable)

13

Please write your comments on the ACER draft amendments and your alternative text proposals, if any, in the table below

Includes new articles

|  |  |
| --- | --- |
| Comment on the ACER draft amendments Alternative text amendment proposal (if applicable) | |
| Article 1 |  |
| Article 3 |  |
| Article 4 | 4.2.b: it seems that the delay is 2 years for SPGMs but 3 years for PPMs. Why? Could we put 3 years for all PGMs: it would mean that if the generator has concluded a final and binding contract for the purchase of the main generating plant by 3 years after the entry into force of this Regulation, it would not apply.  Also, besides TSOs, DSOs should be included here to propose additional criteria defining a significant modernisation.  On Art. 4 (3) regarding the cost-benefit analysis we stress the importance of taking into account market parties, especially the role of the generating asset owner in this exercise, and to clarify who is expected to carry the burden of the costs – any CBA should be neutral and ensure a level playing field between the SOs and generators. |
| Article 4a [new] | Proposal to add/modify on on Art. 4a (2) a:  “an increase above the latest contractual maximum capacity of the power-generating module, whether this increase results from one modernisation or several successive modernisations, of a minimum percentage to be defined in the range **~~5-20~~** (5-**30**) %” (within this range, different percentages may be defined for different technologies depending on their constraints)  Justification: We consider that additional criteria regarding substantial modification may trigger additional Capex for some projects and thus put undue risk on some investments:  - the range 5-20% for Power Generating Modules (and not installations) may prevent some hydro power plants from investing in improvements on one machine in a multi-machine installation (e.g. + 30% on only one machine in a hydro power plant consisting of 5 machines would require compliance with RfG v2, even if at the end the Pmax increase would only amount to 30%/5 = 6%...).  -we propose to delete the criterion c) “change in frequency capabilities”, if the performances and electrotechnical capabilities for the TSOs are not changed, it should not lead to substantial modification  -regarding reactive power, there is a need to propose a minimal high value (at least 10%), otherwise, any change including an improvement in the reactive power capability would lead to a substantial modification, and thus the investment may not be made  -what is the exact definition of a component? We propose in this context to delete the criterion (d), or, at least, define exactly “component / asset”. It should exclude current practices from the modernisation procedure as generator rewind, change of control system, the transformer, the governor or the automatic voltage regulator. Furthermore, it should also exclude a change in the main transformer, a modernisation of the remote control (analogical to digital for instance), or a change of primary source of energy (example: coal to biomass, or CH4 to other gases, or Gas Oil to HVO/bioliquid, etc). |
| Article 5 | In 5.2 (b) we suggest to delete "specified by each relevant TSO" as proposals for defining thresholds between types of power-generating modules shall be subject to approval by the relevant regulatory authority or, where applicable, the Member State. In developing the proposals, the TSO shall coordinate with relevant DSOs and conduct a public consultation.  On 5.3 we suggest the following new wording:  3.   Proposals for maximum capacity thresholds for types B, C and D power-generating modules shall be subject to approval by the relevant regulatory authority or, where applicable, the Member State. In accordance with Article 10 Relevant System Operators and relevant TSOs shall carry out a public consultation, in coordinated manner among them, including also competent authorities of each Member State and taking into account the views of the stakeholders. A proposal by the relevant TSO to change the thresholds shall not be made sooner than three years after the approval of the previous proposal.  Justification/comment on the ACER remarks: The proposal of modification aim to improve and harmonise the way to work to establish the thresholds for each kind of PGMs in accordance with the article 10, where is foreseen a full coordination between RSOs and relevant TSOs at national level.  On 5.4 we suggest the following new wording:  4. For the purpose of the determination of significance as set out in paragraph 2, voltage level at the connection point shall be considered when maximum capacity of a power-generating module is above a default threshold of 10 MW. The relevant TSO may propose to amend this threshold as follows:  (a) The threshold may be decreased below 10MW down to either:  - 5MW or  - the capacity threshold at which a power-generating module is of type C as set in paragraph 3,  whichever of the two values is higher; or  (b) The threshold may be set above 10MW up to the capacity threshold at which a power-generating module is of type D as set in paragraph 3. In accordance with Article 10 Relevant System Operators and relevant TSOs shall carry out a public consultation, in coordinated manner among them, including also competent authorities of each Member State and taking into account the views of the stakeholders. A proposal by the relevant TSO to change the thresholds shall not be made sooner than three years after the approval of the previous proposal.  Justification: Similar to the previous comment on art. 5(3) this would ensure harmonisation with article 10.  Comment on the ACER Draft amendments for art. 5(6) subpar. 1( c):  The main proposal is to move the minimum level for EV3 to a higher value, at least 100 kW, is to ensure that EV3 are connected at MV level. |
| Article 6 | It seems that there is an inconsistency between point 6.2.d and 6.2.f regarding pump-storage assets. What shall be taken into account? |
| Article 7 | We propose to delete point 7.3, as this gives TSOs extensive competencies without evident justification. |
| Article 8 |  |
| Article 9 |  |
| Article 10 |  |
| Article 11 | The EU DSO Entity is now established and operational and should be therefore included here as well at a level-playing field with ENTSO-E. |
| Article 12 |  |

14

New article

Please upload figures or tables if necessary

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Text amendment proposal (if applicable)

TITLE II CHAPTER 1 - General Requirements

General requirements for type A power-generating modules

15

Please write your comments on the ACER draft amendments and your alternative text proposals, if any, in the table below

Includes new paragraphs

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 13(1) |  | |
| Article 13(2) | We propose to suppress point 13.2.c (generators are free to choose their own protections for their materials) as they will be responsible for it in fine.  We propose to erase the new requirement regarding the 51,5 Hz-52,5 Hz frequency range. It is not justified, and was initially only created to take into account the new Rocof profile in the overfrequency range. No real analysis was performed about it.  We again underline that the “Unlimited” requirement for the frequency range 49Hz-51Hz may seem irrelevant, during the 2006 huge grid incident, the frequency has not stayed for more than one hour in the vicinity of 49Hz.  In table 2, delete "to be specified by each TSO" as any individual TSO decision on this topic goes against the spirit of paragraph (16) of the recital. It is not justifiable that for a synchronous area each country should have a different frequency withstand criterion. The diverse requirements in each country would create an artificial barrier and entail various MS conformity checking by the equipment suppliers.  On 13.2 (d), we propose to delete this part as it is not justified or explained anywhere and as a matter of form this requirement should be anyhow in the table as are all other frequency requirements.  Other values might be adopted given that they are uniform for a synchronous area. ENTSO-E should play an important part in bringing together the TSOs to define these criteria for each synchronous area. | |
| Article 13(3) | 13.3.g: we propose to erase this paragraph, as the required use of TOR signals for LFSM-O may arise legal responsibility topics and cybersecurity issues. | |
| Article 13(4) |  | |
| Article 13(5) |  | |
| Article 13(6) |  | |
| Article 13(7) |  | |
| Article 13(8) |  | |
| Article 13(9) | Within the capability defined in paragraph (7), the default settings for an autonomous connection, **unless otherwise specified by the relevant system operator,** shall be as follows:  Justification: It is not clear the entity that will decide on the autonomous settings for reconnection as well as recognize that some member states may already have national regulation on this topic. This code should clarify that. | |
| Article 13(10) | Art. 10: Please be aware that, depending on the type of PGM, reactive power capability is not functional during maintenance or standstill (of a wind turbine for example). Manufacturers will not design and program a specific functional algorithm for each different TSO triggering a risk of a patchwork of requirements across the EU. | |
| Article 13(11) |  | |
| Article 13(12) |  | |
| Article 13(13) |  | |
| Article 13(14) |  | |

16

New provision We propose to propose to add a new provision Article 13(x) covering requirements for power quality as power quality affects both the

consumers, producers and grid

components

|  |  |  |  |
| --- | --- | --- | --- |
| Article 13(9a) | Typ A power-generator modules shall be capable of providing reactive power with regard to U/Un  specified by the relevant DSO. |  |  |
| Article 13(9b) | Typ A power-generator modules shall be capable of providing active power with regard to U/Un  starting at 110% Un. |  |  |

Please upload figures or tables if necessary

The maximum file size is 1 MB

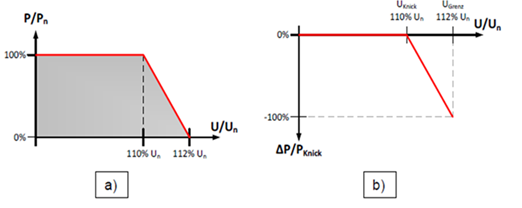
**Article 13(9a):**

Ein Bild, das Reihe, Diagramm, parallel enthält.

Automatisch generierte Beschreibung



**Article 13(9b):**



The maximum file size is 1 MB

Text amendment proposal (if applicable)

[NEW] General requirements for type EV1 and EV2 V2G electric vehicles and associated V2G

electric vehicle supply equipment

17

Please write your comments on the ACER draft amendments and your alternative text proposals, if any,

in the table below

|  |  |
| --- | --- |
| Comment on the ACER draft amendments Alternative text amendment proposal (if applicable) | |
| Article 13a(1) |  |
| Article 13a(2) |  |
| Article 13a(3) | New line c) to be included: Voltage between 90%Vrated and 110%Vrated. Justification: No voltage requirements were set for autonomous reconnection which is dangerous as the LV network may be experiencing low voltages and the EV charging station will only worsen this. Therefore, a voltage setting should be included in the requirements. |
| Article 13a(4) | New line c) to be included: Voltage between 90%Vrated and 110%Vrated. Justification: No voltage requirements were set for autonomous reconnection which is dangerous as the LV network may be experiencing low voltages and the EV charging station will only worsen this. Therefore, a voltage setting should be included in the requirements. |
| Article 13a(5) | On Subparagraph (f): Switching from consumption to generation and vice versa should be as fast as technically feasible, **safeguarding the integrity and conservation of associated components** Justification: EVs and EVSE may differ on how fast the switch from consumption to generation and vice versa can be done… In addition to the “technically feasible” criteria, it may also be relevant to acknowledge that such switch must take into consideration the safe utilization and conservation of the components associated (EV battery and EVSE). |
| Article 13a(6) | Subparagraph (a): “A type EV1  and EV2 V2G electric vehicle and associated V2G  electric vehicle supply equipment which is consuming  active power during an overfrequency event shall  increase the level of active power consumed according to  the LFSM-O characteristic, to the extent  that is technically feasible. […]”  The phrase "to the extent  that is technically feasible" should also include that the  EV, not the grid or the charging station, determines the  power consumption of the EV. |
| Article 13a(7) |  |
| Article 13a(8) |  |
| Article 13a(9) |  |
| Article 13a(10) |  |
| Article 13a(11) |  |

18

New provision

Please upload figures or tables if necessary

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Text amendment proposal (if applicable)

General requirements for type B power-generating modules

19

Please write your comments on the ACER draft amendments and your alternative text proposals, if any,

in the table below

|  |  |
| --- | --- |
| Comment on the ACER draft amendments Alternative text amendment proposal (if applicable) | |
| Article 14(1) |  |
| Article 14(2)[deleted] |  |
| Article 14(2) | On 14.2 (a) (ii): “the TSO may specify shorter periods of time…” This could risk having too stringent and also divergent requirements across Europe. |
| Article 14(3) | On (b): delete "specified by each TSO" as this regulation should strive for having uniform requirements on this subject so to facilitate all conformity checking processes and remove unduly barriers to cross border equipment sales. Instead, ENTSO-E should reach a decision on this subject. |
| Article 14(4) | On (a): we suggest the addition in bold:  The use of autonomous connection function shall be subject to prior authorisation by the relevant system operator and to the reconnection conditions specified **by the relevant system operator (DSOs or TSOs) considering the owner of network where Type B PGM is connected;**  Further, as an alternative text proposal for this article we suggest:  4.   The power-generating module shall fulfil the following requirements relating to system restoration:  (a) the use of autonomous connection function shall be subject to prior authorisation by the relevant system operator responsible of network where PGM is directly connected. The reconnection conditions specified always by the Relevant System Operator;  (b) within the capability defined in Article 13(7), the relevant TSO, in coordination with the relevant system operator, shall specify the settings for an autonomous connection. If no settings are specified, the default settings for an autonomous connection of Article 13(8) shall apply.  (c) in case of change in the network leading to the minimum short-circuit level as defined in the connection agreement, the PGM shall be able to ensure robustness to its control system.  Justification/comment on the ACER Draft amendments for art. 14(4):  Automatic reconnection should be subject only by SO authorisations where the PGM (or PGF) is directly connected.  Conditions for reconnection are specified by the SO where the PGM (or in general PGF) is directly connected. |
| Article 14(5) | It seems that there is an inconsistency in the point 14.5.d.iii, it is unapplicable to type D machines.  It looks like there is a lag in the references due to the facts that some articles were deleted compared to the initial RfG version in this ACER’s proposal. |

20

New provision

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Text amendment proposal (if applicable)

[NEW] Requirements for type EV3 electric vehicles and associated V2G electric vehicle supply

equipment and V2G electrical charging parks

21

Please write your comments on the ACER draft amendments and your alternative text proposals, if any,

in the table below

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 14a(1) |  | |
| Article 14a(2) |  | |
| Article 14a(3) |  | |
| Article 14a(4) | On (b): installation of automatic reconnection systems shall be subject both to prior authorisation by the relevant system operator, **which should inform the operator of the charging point of the expected timeline of approval**, and to the reconnection conditions specified by the relevant TSO. Justification: As it will depend on prior authorization, should there be an indication of a timeline for such authorisation to be granted. Ideally, such information should become available to the charging point installer/operator through the course of the grid connection request. | |
| Article 14a(5) |  | |
| Article 14a(6) |  | |
| Article 14a(7) |  | |
| Article 14a(8) | Comment on the ACER draft amendments for art. 14a(8) letter c:  It should take into account the suggestion to define a higher minimum threshold for EV3 | |

22

New provision

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Text amendment proposal (if applicable)

General requirements for type C power-generating modules

23

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in the table below

|  |  |
| --- | --- |
| Comment on the ACER draft amendments Alternative text amendment proposal (if applicable) | |
| Article 15(1) |  |
| Article 15(2) | The old formulation in RfG v1 about 15.2.d was quite relevant, why not keep it?  At 15.2.d.iv, the formulation “shall be as short as feasible” is too vague, and extensive, which may lead to technical debates.  The point about LFSM-U at 15.2.c does not seem justified, we should erase it. |
| Article 15(3)[deleted] |  |
| Article 15(3) |  |
| Article 15(4) | On 15.4. (a) regarding Black Start capabilities, in the case of pumped storage with BS capability, it cannot be guaranteed that the power-generation module will be able to be operational for the full system restoration phase in case this would go beyond the pumped storage availability, hence only a certain amount of MWh can be guaranteed for such assets, similar to large battery storage systems with BS capability.  On 15.4.(b).vi, we need some clarification of what is expected from PGMs for their operation between 0 and their Minimal Operating Point? How long, in which conditions? |
| Article 15(5) | Art 5 (c) (III) Under condition that such a simulation model exist for a specific type of PGM. At least a preliminary consultation would be advisable between parties. |

24

New provision

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Text amendment proposal (if applicable)

General requirements for type D power-generating modules

25

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in the table below

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 16(1) |  | |
| Article 16(2) |  | |
| Article 16(3) |  | |
| Article 16(4) |  | |

26

New provision

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Text amendment proposal (if applicable)

TITLE II CHAPTER 2 - Requirements for synchronous power-generating

modules

[NEW] Requirements for type A synchronous power-generating modules

27

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in the table below

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| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article X | What is the justification for 0,85 pu ? The 0,9 value regarding voltage FRT capability had been discussed during a long time, but not this new value, which may trigger technical problems. | |

28

New provision

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Text amendment proposal (if applicable)

Requirements for type B synchronous power-generating modules

29

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in the table below

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| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 17(1) |  | |
| Article 17(2) |  | |
| Article 17(3) |  | |

30

New provision

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Text amendment proposal (if applicable)

Requirements for type C synchronous power-generating modules

31

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in the table below

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|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 18(1) |  | |
| Article 18(2) |  | |

32

New provision

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Text amendment proposal (if applicable)

Requirements for type D synchronous power-generating modules

33

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Includes new paragraphs

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 19(1) |  | |
| Article 19(2) |  | |
| Article 19(3) |  | |
| Article 19(4) | All type D SPGMs, and not only the ones with a power of more than 400 MW, shall be exempted from the toughest Rocof withstand capability requirements. | |

34

New provision

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Text amendment proposal (if applicable)

TITLE II CHAPTER 3 - Requirements for power park modules

[NEW] Requirements for type A power park modules

35

Please write your comments on the ACER draft amendments and your alternative text proposals, if any,

in the table below

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article Y(1) |  | |
| Article Y(2) |  | |
| Article Y(3) | Alternative Text proposal for art. Y (3):  3. Each Relevant System Operator per each PPM, shall specify and make publicly available the pre-fault and post-fault conditions for the fault-ride-through capability in terms of:  (a) the calculation of the pre-fault minimum short circuit capacity at the connection point,  (b) pre-fault active and reactive power operating point of the power-generating module at the connection point and voltage at the connection point, and  (c) calculation of the post-fault minimum short circuit capacity at the connection point;  Justification/comment on the ACER comment: The list of conditions and calculation can be made only by the SO where the PGM (and in general a PGF) is directly connected). | |
| Article Y(4) | Question for clarification: Were there any studies regarding the voltage profile for DFIG pump-storage ? | |
| Article Y(5) | Proposal to add:  The Member state or designed entity of member state, shall put the relevant TSO in charge and the relevant system operator to evaluate in agreement if is necessary and under which conditions type A power park modules shall be capable of providing grid forming capability at the connection point, in accordance with al requirements established by Y(8).  Furthermore, the relevant TSO in agreement with the relevant system operator shall require activation or deactivation of grid forming capability if any, as established in Article Y(8)(d).  Justification:  TSOs and DSOs should first evaluate if it is really necessary to implement all requirements related to GFC operating permanently for small and very small PPMs before requiring it firmly in this NC, in order to avoid unnecessary burden on these smaller generators. | |
| Article Y(6) |  | |
| Article Y(7) |  | |
| Article Y(8) | On (d): (d) The power park module shall have the capability to activate or deactivate grid-forming mode. T**he relevant system operator shall have the capability of remotely activate or deactivate this mode.** Justification: With the number of type A power park modules forecasted for the network it would be operationally impossible to manually activate or deactivate the grid forming mode. Therefore, it is important that this functionality could be remotely activated or deactivated. | |

36

New provision

Y.9 The Rocof withstand capability requirement shall apply for type A- PPMs- pump storage, except the 4 Hz/s during 250ms

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Requirements for type B power park modules

Text amendment proposal (if applicable)

37

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Includes new paragraphs

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 20(1) | Proposal to modify:  Type B power park modules shall fulfil the requirements laid down in Article 13, Article 14, and Article Y(6), (7) **~~and (8)~~,** except for Article 13(2)(b) and Article 13(8). Requirement laid down in Article Y(8)~~(~~**~~d)~~** shall **~~not~~** apply to power park modules with maximum capacity larger than or equal to 10 MW.  Type B PPMs with maximum capacity lower than 10 MW, The Member state or designed entity of member state, shall make in charge the relevant TSO and the relevant system operator to evaluate in agreement if is necessary and under which conditions power park modules shall be capable of providing grid forming capability at the connection point, in accordance with al requirements established by Y(8).  Justification: Similar argument as previously explain in Y(5), it might not be necessary for type B PPMs to introduce this GFC (normally with size no more 10 MW and connected to Medium voltage or Low voltage gird) | |
| Article 20(2) | On (a): with regard to reactive power capability, the relevant system operator shall have the right to specify the capability of a power park module to supply and absorb provide reactive power, **and to send setpoints**. Justification: It is not specified that the DSO is able to send setpoints through the communication channels to achieve an optimized reactive power flow in the network. This is very important as reactive power flows can vary daily, seasonally and from network to network. Control of the reactive power output is important to compensate for the network reactive power flow. | |
| Article 20(3) |  | |
| Article 20(4) |  | |

38

New provision

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Requirements for type C power park modules

Text amendment proposal (if applicable)

39

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Includes new paragraphs

|  |  |
| --- | --- |
| Comment on the ACER draft amendments Alternative text amendment proposal (if applicable) | |
| Article 21(1) |  |
| Article 21(2) [deleted] |  |
| Article 21(2) |  |
| Article 21(3) |  |
| Article 21(4) | On (a): delete "The relevant TSO, in coordination with the relevant system operator, shall specify" Justification: This is not coherent with paragraph (16) of the recital and can create distortions between countries.  ENTSO-E should be mandated to present a proposal for synthetic inertia requirements for all synchronous areas.  On (b): 21 4(b), we would like a clarification on what is behind the provision of additional energy above the inherent energy storage. The costs incurred by such requirement from a relevant TSO have to be correctly covered and paid. |

40

New provision

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Requirements for type D power park modules

Text amendment proposal (if applicable)

41

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|  |  |  |
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|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 22(1) |  | |
| Article 22(2) |  | |

42

New provision

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Text amendment proposal (if applicable)

TITLE II CHAPTER 4 - Requirements for offshore power park modules

43

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in the table below

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 23 |  | |
| Article 24 |  | |
| Article 25 |  | |
| Article 26 |  | |
| Article 27 |  | |
| Article 28 |  | |

44

New article

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Text amendment proposal (if applicable)

TITLE III - Operational notification procedure for connection

45

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Includes new articles

|  |  |
| --- | --- |
| Comment on the ACER draft amendments Alternative text amendment proposal (if applicable) | |
| Article 29 | On 29.3.: The power-generating facility owner, **independent of the year of entry into service**, shall notify the relevant system operator or the competent authority of the Member State about the permanent decommissioning of a power-generating module in accordance with national legislation.  Justification: This is an important addition and should also be applicable to existing power generation facilities as it does not entail any added costs. |
| Article 30 | On 30.2 (f): Suggest to delete, as this requirement is excessive considering that the EV3 type begins at 40kW, and can be a barrier. |
| Article 30a [new] |  |
| Article 30b [new] | On 30b (1): For the purpose of operational notification for connection of each new type EV3 V2G electric vehicle supply equipment, a supply equipment document (‘SED’) shall be provided by the electrical charging park owner **or operator** to the relevant system operator and shall include a statement of compliance. Justification: In many cases, the entity that legally owns the installation does not have the expertise to operate it, to which purpose an operator (a CPO, for instance) is responsible for securing all technical requirements in regards to the electrical installation. |
| Article 31 |  |
| Article 32 |  |
| Article 33 | Include in title: Procedure for type **B, C and** D power-generating modules. Justification: The procedures defined for type D should also be applicable for types B and C to facilitate the connection of these generators.  Also to include in article: The operational notification procedure for connection of each new type **B, C and** D power-generating module shall comprise (..), same justification as above. |
| Article 34 |  |
| Article 35 |  |
| Article 36 |  |
| Article 37 |  |
| Article 38 |  |
| Article 39 |  |

46

New article

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TITLE IV - Compliance

Text amendment proposal (if applicable)

47

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in the table below

|  |  |  |
| --- | --- | --- |
|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 40 |  | |
| Article 41 | There is no definition on what actions should the relevant system operator carry out if the generation station is proven to no longer comply with the code and does not rectify the situation in the agreed deadlines.  This is important as the generation station owner does not have an incentive to rectify the source of the non-compliance.  Proposal for new point 7 in this Article: 7. **If compliance tests or simulations cannot be carried out as agreed between the relevant system operator and the power-generating facility owner due to reasons attributable to the power-generating facility owner, then the relevant system operator will withhold the operational notification referred to in Title III, and disconnect the generation facility.** | |
| Article 42 |  | |
| Article 43 |  | |
| Article 44 | The requirement of Article 44 shall include compliance testing of the information exchange system:  **The testing of power-generating modules of type B should only be preformed if required by the relevant system operator.**  Justification:  Information exchange between the relevant system operator and the power-generating module is critical  for the system operation. Testing of the information exchange ensures the relevant system  operator that the communication works as intended.  A large part of the power generating plants of type B does not have a power plant controller, if  there is no power plant controller the LFSM-O testing is difficult, as a simulated frequency signal can't be  send to the inverters. | |
| Article 45 |  | |
| Article 46 |  | |
| Article 47 | The requirement of Article 47 shall include compliance testing of the information exchange system.  **The testing of power-generating modules of type B should only be preformed if required by the relevant system operator.**  Justification:  Information exchange between the relevant system operator and the power-generating module is critical  for the system operation. Testing of the information exchange ensures the relevant system  operator that the communication works as intended.  A large part of the power generating plants of type B does not have a power plant controller, if  there is no power plant controller the LFSM-O testing is difficult, as a simulated frequency signal can't be  send to the inverters. | |
| Article 48 | 1. the power park module's technical capability to provide leading and lagging reactive power capability in accordance with point~~s~~ **~~(b) and~~**(c) of Article 21(3) shall be demonstrated;   Justification:  Please remove the testing requirement of reactive power capability for the U-Q/Pmax -profile, because it is not posible to change the voltage in the grid to make a sufficient test. | |
| Article 49 |  | |
| Article 50 |  | |
| Article 51 | Art 51 (6): We would recommend to elaborate a specific test strategy for this feature in order to consolidate this with the manufacturer of the PGM | |
| Article 52 | The requirement regarding simulation of island operation following Article 52(4) should only be required if stated by the relevant system operator.  Justification:  Operation during islanding can be required by the relevant system operator. If island operation is not required, a simulation of island operation should neither be required. | |
| Article 53 |  | |
| Article 54 |  | |
| Article 55 | The requirement regarding simulation of island operation following Article 52(4) should only be required if stated by the relevant system operator.  Justification:  Operation during islanding can be required by the relevant system operator. If island operation is not required, a simulation of island operation should neither be required. | |
| Article 56 |  | |
| Article 57 |  | |
| Article 58 |  | |
| Article 59 |  | |

48

New article

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TITLE V - Derogations

Text amendment proposal (if applicable)

49

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in the table below

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|  | Comment on the ACER draft amendments | Alternative text amendment proposal (if applicable) |
| Article 60 |  | |
| Article 61 |  | |
| Article 62 |  | |
| Article 63 |  | |
| Article 64 |  | |
| Article 65 |  | |

50

New article

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Text amendment proposal (if applicable)

[DELETED] TITLE VI - Transitional arrangements for emerging

technologies

51

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in the table below

Title VI [deleted]

Comment on the ACER draft amendments Alternative text amendment proposal (if applicable)

52

[NEW] TITLE VI - Transitional provisions

53

Please write your comments on the ACER draft amendments and your alternative text proposals, if any,

in the table below

Article 70a [new]

Comment on the ACER draft amendments Alternative text amendment proposal (if applicable)

54

New article

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TITLE VII - Final provisions

Text amendment proposal (if applicable)

55

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Includes new articles

|  |  |
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| Comment on the ACER draft amendments Alternative text amendment proposal (if applicable) | |
| Article 71 |  |
| Article 71a [new] |  |
| Article 72 |  |

56

New article

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Other additional provisions

Text amendment proposal (if applicable)

Please write your amendment proposals, if any, in the table below

Text amendment proposal (if applicable)

Other new provisions

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57