

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')**.

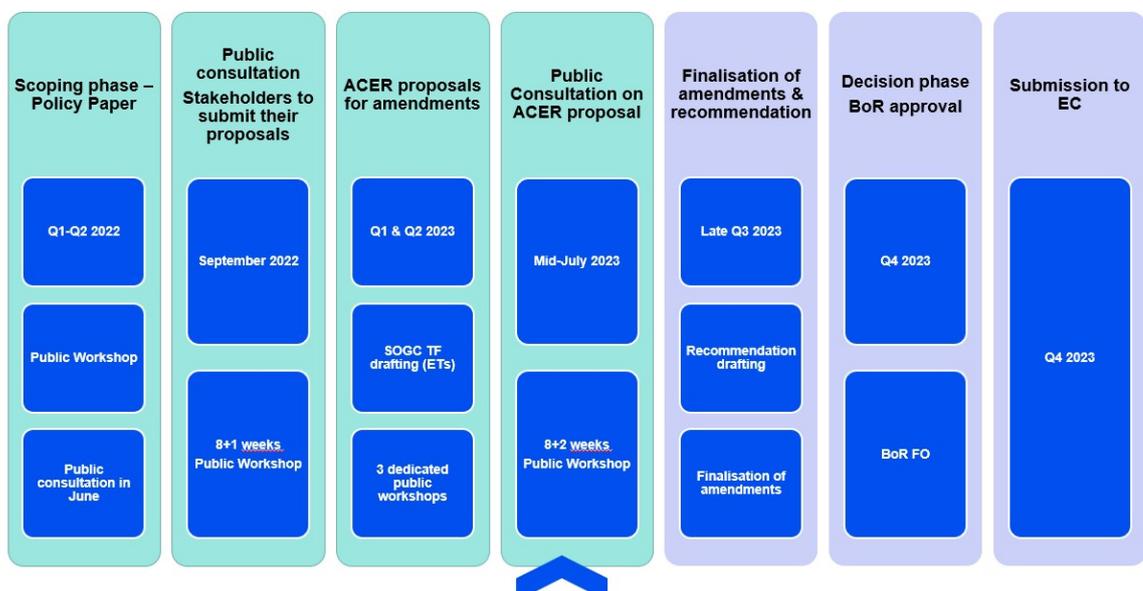
For draft amendments concerning Network Code on Demand Connection ('NC DC'), please go to the respective form: [NC DC](#).

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>

* Name of the stakeholder:

SolarPower Europe

* Contact person:

[REDACTED]

* Contact person's email address:

[REDACTED]

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

Belgium

* 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:

Trade Association

* 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 alternative 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:

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	1	2
Article 3		
Article 4		
Article 4a [new]		
Article 5		
Article 6		
Article 7		
Article 8		
Article 9		
Article 10		
Article 11		
Article 12		

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

	Text amendment proposal (if applicable)
New article	3

Please upload figures or tables if necessary

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Select file to upload 4

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.

In case the file size exceeds the 1MB limit, which is a consultation tool limit, kindly send the document to the functional mailbox shown on the right panel of the consultation form. Please rename the file with your stakeholder's name as indicated above and send it with the subject "ACER draft RfG legal text [stakeholder name]". Note that only submissions sent within the consultation deadline will be considered.

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

Kindly note that in case the file size exceeds 1MB, the file can be sent to the functional mailbox shown on the right panel of the consultation form under Contact. Please ensure that the file name and email subject are consistent with the instructions in Step 3.

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

Please upload your file

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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)		
(s1)		
(s2)		
(4)		
(5)		
(6)		
(7)		
(8)		

(9)	<p>It's crucial to allow use of the Flexibility in hybrid installations / Mixed customer sites (e.g. PV /Storage / PV/Wind). For these applications, it is important to allow them to be controlled and operated as one system, e.g. to optimize plant operation or keep a maximum power infeed limit.</p> <p>On the other side, it is important to allow to address independent systems separately.</p> <p>The suggested change will enable that other electrical equipment, such as capacitor banks and power electronics can be used to fulfil the requirements in this regulation. The solely needs to be deleted. Otherwise it will not be possible to use the capabilities of Energy storage and other electrical equipment across more power-generating modules. PV inverters will very likely be used to deliver reactive power for power generating modules with another underlying technologies in hybrid plants. It should be noted, that if Energy storages are used for other purposes e.g. providing system services, they will still need to fulfil the requirements in this regulation.</p>	<p>After "on their aggregated capacity" ADD "Non-synchronously connected power-generating modules consisting of different underlying technologies, where they are collected and controlled together to form a single power-generating module and an economic unit and where they have a single connection point should be assessed as one power-generation module."</p> <p>After "Electricity storage" ADD " and other electrical equipment"</p> <p>Delete "solely"</p>
(10)		
(**)		
(11)		
(12)		
(13)		
(14)		
(15)		

(16)		
(17)		
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(19)		
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(20)		
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(22)		
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(23)		
(24)		
(25)		
(**)		
(26)		
(27)	European standardization and harmonization are crucial for a cost-effective energy transition, especially with regard to mass-market products	Substitute "should" with "shall": "Development of non-exhaustive requirements shall, to the extent possible, be carried involving European standardisation organisations; therefore, permitting the evolution of product standards and, as a consequence, the adoption of the same by the industry."
(28)		
(29)		
(30)		
(31)		
(32)		

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

	Text amendment proposal (if applicable)
New recital	<p>ADD NEW After (9): When determine the significance and the capacity of a power-generating module, system operators must take into consideration specific site limitations and grid export limitation capabilities to reflect the impact on the electricity system caused by the power-generating module.</p> <p>Explanation: It's crucial to allow use of the Flexibility in hybrid installations / Mixed customer sites (e.g. PV/Storage / PV/Wind). For these applications, it is important to allow them to utilize synergies between different underlying technologies.</p>

Definitions (Article 2)

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)	It should be possible to determine the maximum capacity to be the maximum infeed capacity and to allow the use of the Flexibility in hybrid installations / Mixed customer sites (e.g. PV /Storage / PV/Wind / PV/demand facility)).	<p>After "continuous active power which a power-generating module" ADD: "is allowed to inject into the network at the connection point, having discounted any demand (or limitation by a power control system) "</p> <p>And DELETE: "can produce, less any demand or losses associated solely with facilitating the operation of that power-generating module and not fed into the network"</p>
Article 2(17)	<p>It's crucial to allow use of the Flexibility in hybrid installations / Mixed customer sites (e.g. PV /Storage / PV/Wind). For these applications, it is important to allow them to be controlled and operated as one system.</p> <p>On the other side, it is important to allow to address independent systems separately. The definition of PPM does not reflect Whereas (9) allows this separate consideration. See also suggested changes to whereas [9] and [9x]</p> <p>It should be clarified, that in case the PPM consists of units of different underlying technologies, the requirements apply in the proportion of the installed capacity of each technology and that the PPM's control may utilize the PGU's capabilities to fulfil those requirements.</p>	<p>After "ensemble of units" ADD "of the same underlying technology, or of different underlying technologies if they are controlled to form a single power park module"</p> <p>ADD at the end of (17): "In case the PPM consists of different underlying technologies forming a single operational unit, the requirements apply in the proportion of the installed capacity of each technology. The PPM's control may utilize the PGU's capabilities to fulfil those requirements."</p>
Article 2(18)		
Article 2(19)		
Article 2(20)		
Article 2(21)		

Article 2(22)		
Article 2(23)		
Article 2(24)		
Article 2(25)		
Article 2(26)		
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Article 2(31)		
Article 2(32)		
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Article 2(62)		
Article 2(63)		
Article 2(64)		
Article 2(65)		
Article 2(66)		
Article 2(67)		
Article 2(68)		
Article 2(69)		
Article 2(70)		
Article 2(71)		
Article 2(72)		
Article 2(73)		
Article 2(74)		
Article 2(75)		

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

	Text amendment proposal (if applicable)
New definition	

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TITLE I - General provisions

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	<p>4(2)(b) the two years lead to a requirement to retrofit plants which are built fast, such as PV / Wind / Storage. In order to coordinate it with Articles 7(4) and 71, it should be changed to at least three years. In RfG 1, this paragraph created extensive discussion and individual complicated regulations in the member states. It can be expected, that national implementation will take longer than 2 years, meaning that when manufacturing and planning, the requirements are not known. This imposes a significant risk for plant operators and manufacturers.</p> <p>The time span should be set to three years, the application date of the RfG 2.0</p> <p>As the time for providing proposals of the TSO (Article 7(4)) is 24 months plus the time for the designated party to take decisions is another 6 month, the actual requirements for the devices are not known to the owner by the time of purchasing the units.</p> <p>A defined time to implement new requirements is needed.</p>	<p>On 4(b) Substitute "two years" with "three years"</p> <p>After "into force of the Regulation" ADD "or by two years after the designated entity made and published a decision on requirement proposals according to Article 7(6), whichever is the later"</p>
	<p>4a (2b) reasoning: We propose to DELETE 4a (b) because a deviation, especially an increase of the reactive power capability should not be a</p>	

Article 4a [new]

criterion for significant modernization, since it may discourage someone to replace e.g. a defect inverter by a new one if this leads to an application of the new regulation. - If NOT deleted: the minimum range should be 30...50%

4a (2c) reasoning: A change in active power management capabilities should not lead to having to comply overall with the new regulation

4a (2) reasoning: The criteria for significant modernisation are exhaustive in the document. Individual additional national or sub-national criteria shall not be added.

4a (3): In this regard, it should be mentioned that there should be a balance between the cost and the benefit of a need to fulfil the new requirements as a whole, especially when they originate in the Member States GridCode rather than in the RfG (e.g. the need to comply with new safety regulations of the switchgear, just because the PGM has more reactive power capability)

In any case the new requirements shall be specific to the modernized or new or additional part of the plant. Especially when talking about PPMs: e.g. An existing PPM of 100kW (PV designed according to the existing RfG). At the same connection point a new 100kW PV system shall be added. With the RfG definitions this would be a 200kW PPM and depending on the TSO it can be defined that the old and the new

4a(2b) - Delete the full (b). If 4a (b) is not deleted: "X-Y%" should be substituted with "30 - 50%"

4a(2c) - Delete " and active power management capabilities, whether"

4a (2) - Delete the sentence "In the proposal, TSO can propose additional criteria defining a significant modernisation"

4a(3) - ADD in the end: "In case of PPMs the requirements of this Regulation shall only apply to the modernised or new part of the PPM."

	<p>part of the system must fulfil the new requirements (e.g. GFC). In such a scenario the new part would just not being built, because of the high costs of exchanging all existing inverters.</p>	
<p>Article 5</p>	<p>5 (1): To align with paragraph "whereas (9)". In addition, the list of classes should be exhaustive</p> <p>5(2) Table 1: Continental Europe Harmonization is crucial for a cost-effective energy transition, especially with regard to mass-market products. Therefore a harmonized Type A/B threshold is proposed. As the effort is increasing rapidly, and the market segment is very sensitive to the time a project takes, this limit is proposed to be 500kW.</p> <p>Alternative: In case the fixed limit of 500kW is not acceptable, adding at least a lower limit of 300kW is proposed, resulting in a range of 300 – 500kW for the Type A/B threshold to be defined on the national level.</p>	<p>5(1) - ADD in the end: "The determination of significance is carried out specific to each class of PGM, which are photovoltaic, electricity storage, wind energy converter, thermal power installations, V2G electric vehicles or other. "</p> <p>5 (2) Table 1:</p> <ul style="list-style-type: none"> - ADD on the title after "Limits" the word "/Range" -ADD on the 2nd Column title: after " Limits" the word "/Range" AND after "type" the word " A" - Change the Continental Europe range for type "A/B" to "0,3-0,5 MW"
<p>Article 6</p>		

<p>Article 7</p>	<p>On 7 (3f) Split (f) into 3: (f) is dealing with 3 different topics and shall be addressed separately and differently</p> <p>(f1) European standards and technical specifications shall not just be considered. European standardization and harmonization is crucial for a cost effective energy transition, especially with regard to mass market products.</p> <p>(f2) Implementation guidance documents developed by ENTSO-E in accordance with Article 59(15) of Regulation (EU) 2019/943, shall have a transparent process, with results that are agreed by all relevant stakeholders.</p> <p>After 7(3g) add proposal text because It should be clarified, that the designated entity has the right to request an explanation from the relevant system operator or the relevant TSO on how the principle in this regulation has been taking into account</p> <p>7(4) - The timing of the RfG Amendment is one of the most critical points. Even for RfG 1st Ed. with relatively easy to fulfil because of state of the art requirements, the timing (2+1 years) caused massive chaos in the national implementations. Allowing the Member States to provide even shorter time periods is not seen as useful.</p>	<p>7(3f) - Delete the original f and ADD 3 fs below: " (f1) follow agreed European standards and technical specifications to the highest extend, with respect to local system needs. (f2) consider implementation guidance documents, if they are developed in a transparent way, with the agreement of the relevant stakeholders; (f3) take into consideration relevant nuclear safety rules;"</p> <p>After 7(3g) - Add "To fulfil the obligations of the competent entity according to Article 7(3), the competent entity is entitled to request documentation from member states and system operators on, how Article 7(3) is applied."</p> <p>7(4) - Delete "The Member State may provide for a shorter time period for all or parts of the requirements or the methodologies. In this case, the Member State shall communicate the shorter time period to the European Union Agency for the Cooperation of Energy Regulators (ACER). "</p>
<p>Article 8</p>		
<p>Article 9</p>		

Article 10		
Article 11		
Article 12		

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

	Text amendment proposal (if applicable)
New article	

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TITLE II CHAPTER 1 - General Requirements

General requirements for type A power-generating modules

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)		
Article 13(3)	<p>13 (3gii)The relevant TSO could require the response time to be less than one second, which is not feasible for electricity storage modules today (which will fall under this provision). Therefore it needs to be clarified that the response time can't be set to less than one second for electricity storage modules, alternatively via an exception for electricity storage modules. Additionally, the requirements should not be established by the relevant TSO but by the relevant European entities to ensure a Single Market at least for type A power park modules.</p>	<p>13(3g ii) change ii for: "for power park module: between 1 and 2 seconds for an active power setpoint change of 50% maximum power. "</p>
Article 13(4)		
Article 13(5)		
Article 13(6)		

Article 13(7)	<p>Art. 13 para. 7 RfG requirements should only apply to type B power-generating modules or bigger and not to small type A units. Type A units are typically found in household level storage systems. The requirements that the TSO can impose will be costly to implement and would pose an unnecessary burden on European consumers.</p>	<p>13(7) - After "The electricity storage modules" ADD "of type B or bigger"</p> <p>13(7) - After" at the input port. (...)" ADD " ACER, after consultation with the relevant stakeholders." AND delete " The relevant system operator"</p>
Article 13(8)		
Article 13(9)		
Article 13(10)	<p>"It's ok to stipulate reactive power capability for Type A, however, ""voltage control"" is not well defined. What seems to be meant is reactive power control functions.</p> <p>Those mentioned today just for Type C PGMs in Article 21 should become the reactive power control modes already for Type A PGM.</p> <p>Voltage control (continuous fast control with fast fault current) may be stipulated as a substitute for Grid forming capability for small PPM.</p> <p>Specifying the reactive power provision from PPMs when importing active power (e.g. from PV at nighttime) leads potentially to additional power losses and inefficiencies. If reactive power is needed in such situations, it should be obtained via the mechanisms of the Directive (EU) 2019/944 as a non-frequency ancillary service.</p> <p>"</p>	<p>The text should be: The relevant system operator shall have the right to specify the capability of a power-generating module to supply or absorb reactive power when exporting active power, used by the following capabilities:</p> <p>(a) Reactive power control modes as specified in European Standards (Q setpoint mode, Q (U), Cos ϕ setpoint mode, Cos ϕ (P), Q(P))</p> <p>(b) For PPMs, this function may include the fast fault current capability as specified in Article 20 (2)(b)</p>

<p>Article 13(11)</p>	<p>The relevant TSO could require the response time to be less than one second, which is not feasible for electricity storage modules today (which will fall under this provision). Therefore it needs to be clarified that the response time can't be set to less than one second for electricity storage modules, alternatively via an exception for electricity storage modules. Additionally, the requirements should not be established by the relevant TSO but by the relevant European entities to ensure a Single Market at least for type A power park modules.</p>	<p>13(11e): After "for PPM:" ADD "between 1 and 2" AND Delete "less or equal to 0,5 s"</p>
<p>Article 13(12)</p>		
<p>Article 13(13)</p>		
<p>Article 13(14)</p>		

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

	Text amendment proposal (if applicable)
New provision	

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

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)		
Article 13a(4)		
Article 13a(5)		
Article 13a(6)		
Article 13a(7)		
Article 13a(8)		
Article 13a(9)		
Article 13a(10)		
Article 13a(11)		

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

	Text amendment proposal (if applicable)
New provision	

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General requirements for type B power-generating modules

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)		
Article 14(3)		
Article 14(4)		
Article 14(5)		

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

	Text amendment proposal (if applicable)
New provision	

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[NEW] Requirements for type EV3 electric vehicles and associated V2G electric vehicle supply equipment and V2G electrical charging parks

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)		
Article 14a(5)		
Article 14a(6)		
Article 14a(7)		
Article 14a(8)		

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

	Text amendment proposal (if applicable)
New provision	

Please upload figures or tables if necessary

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General requirements for type C power-generating modules

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 15(1)		
Article 15(2)		
Article 15(3)[deleted]		
Article 15(3)		
Article 15(4)		
Article 15(5)		

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

	Text amendment proposal (if applicable)
New provision	

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General requirements for type D power-generating modules

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 16(1)		
Article 16(2)		
Article 16(3)		
Article 16(4)		

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

	Text amendment proposal (if applicable)
New provision	

Please upload figures or tables if necessary

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TITLE II CHAPTER 2 - Requirements for synchronous power-generating modules

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

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 X		

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

	Text amendment proposal (if applicable)
New provision	

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Requirements for type B synchronous power-generating modules

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 17(1)		
Article 17(2)		
Article 17(3)		

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

	Text amendment proposal (if applicable)
New provision	

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Requirements for type C synchronous power-generating modules

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 18(1)		
Article 18(2)		

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

	Text amendment proposal (if applicable)
New provision	

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Requirements for type D synchronous power-generating modules

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 19(1)		
Article 19(2)		
Article 19(3)		
Article 19(4)		

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

	Text amendment proposal (if applicable)
New provision	

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TITLE II CHAPTER 3 - Requirements for power park modules

[NEW] Requirements for type A power park modules

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)		
Article Y(4)		
Article Y(5)	<p>Y(5): GFM capability is of very low Technology Readiness for Wind and PV Systems.</p> <p>In addition, making grid forming a mandatory requirement down to Type B bears risks for DSOs, especially in terms of unintentional Islanding and potentially too much short circuit power in the distribution grid, leading to diverging requirements for plant operators / manufacturers (stabilize Island vs. destabilize Island).</p> <p>The stipulated capability to turn GF on or off bears the risk for the manufacturer, that the capabilities are implemented, tested and certified (all requirements would have to be complied with in GFM and GFL mode) with high effort in devices, but never be used.</p> <p>SPE therefore proposes the Manufacturer Draft language of ACPPM Report for Article Y.5 (open the door for GFM according to the specification, but don't make it mandatory).</p>	<p>Substitute Y(5) for the proposed text: "The relevant TSO with the agreement of the relevant DSO shall have the right to allow that type A power park modules be capable of providing grid-forming capability at its connection point as defined by the following paragraphs."</p>

<p>Article Y(6)</p>	<p>Y(6b) - The propose change on Y(6b) is ONLY in case the proposal above for Y.5 is ACCEPTED: In case of an allowance, there is no need for a defined transition period, as this would be part of an individual contract.</p> <p>Y(6c) - ONLY in case the proposal for Y(5) is NOT accepted add the proposal new text for a Y (6c) after the original (b). Reason: There should be a guaranteed minimum transition period of at least two years after the specification is published. It should not be the problem of the industry if the responsible entity doesn't finalize its specification within two years according to Art. 7.4</p>	<p>Y(6b) - Substitute Y(6b) text with this proposal text if Y(5) proposal is accepted: "The power-generating facility owner has concluded a final and binding contract for the purchase of the main generating plant by two years before the relevant TSO with the agreement of the relevant DSO has allowed to provide grid-forming capabilities at its connection point and have defined all parameters and performance (as defined in Art Y.8).</p> <p>Y(6c) - ADD a 6c if Y(5) not accepted with the following text: " the power-generating facility owner has concluded a final and binding contract for the purchase of the main generating plant by two years before the relevant TSO with the agreement of the relevant DSO has specified that the park module shall be capable of providing grid forming capability at its connection point and has defined all parameters and performance as defined in Art Y.8 (c). "</p>
<p>Article Y(7)</p>		
	<p>Y (8) before (8a)This would be only valid if the GFM capability is provided either on the basis of ancillary services, or as a requirement.</p> <p>Y8(a) change ONLY in case proposal for Y(5) is Accepted: in case of market based provision (comment Y. 5): It is nearly impossible on a neutral basis, to verify, to which amount the capability should be</p>	

Article Y(8)

able to be provided with a given hardware. The concept of a mandatory minimum requirement within the capabilities should be replaced by market-based provision of guaranteed contributions of grid forming capabilities
In case GFM capability is provided market based, also specific contributions of a PPM can be defined. This can then be provided either by the PPM itself or dedicated storage units within the PPM. The added text is because it neglects the necessary capability of the voltage source to synchronize with the network's voltage

Y(8c) deleted text ONLY in case the proposal for Y.5 is Accepted: in case of market based provision (comment Y.5):

It is nearly impossible on a neutral basis, to verify, to which amount the capability should be able to be provided with a given hardware. The concept of a mandatory minimum requirement within the capabilities should be replaced by market-based provision of guaranteed contributions of grid forming capabilities
In case GFM capability is provided market based, also specific contributions of a PPM can be defined. This can then be provided either by the PPM itself or dedicated storage units within the PPM.

Y(8ci): The relevant system operator in coordination with the TSO shall specify the temporal parameters of the dynamic performance regarding voltage control. "this carries the risk of requirements that are not

Y(8) - Change the text before (8a) by this proposal " If grid forming capability is provided by the park module, it shall be provided as specified below and as agreed with the relevant system operator and the TSO "

Y(8a) - ONLY if - Delete" at the terminals of the individual unit(s)" and ADD in the end "During normal operation, the amplitude and phase angle is not necessarily constant, but can change to keep synchronism with the network voltage"

Y(8c) - Delete " ,and inherent energy storage capabilities of each individual unit."

Y(8ci) - ADD in the end "The specifications must be set within the parameter range of European standards. Any change in a specification must be done with a suitable transition time considered to be not less than 1 year (Article 7 especially Article 7.3(f))."

Y(8d) - Change the text to "If a power park module is providing grid forming capabilities, the RSO may specify that there shall be no fast fault current contribution if the grid voltage is reduced to a defined value."

standardized, are provided at a very late time not giving the chance to be implemented in time, will be changed later without sufficient time for adaption.

Y(8d) - turning on and off GFM capability means consequently, that all other requirements have to be verified in both modes. In order to minimize the interference with the DSO's protection system, there may be a current blocking capability.

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

	Text amendment proposal (if applicable)
New provision	

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Requirements for type B power park modules

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 20(1)		
Article 20(2)	Keep Article 20.2(b) from RfG 1.0 for non-GFM-PPM. Fast Fault Current capability for non-grid forming plants should be kept.	
Article 20(3)	add a new 20(3c) because it may be useful to introduce defined robustness against voltage phase angle changes/steps to increase synchronization robustness	New 20(3c) proposal text: The relevant TSO shall have the right to specify the capability of a PPM to ride through a maximum sudden voltage phase angle change capability without tripping.
Article 20(4)	<p>20 (4) and 20(4a) changes should ONLY be applied in case the proposal for Y.5 is accepted. Inherit market-based approach from article Y</p> <p>20(4b) - Delete it because this section only refers to voltage control and can't be used to influence synthetic inertia. The sentence taken from the original ENTSO-E proposal doesn't fit the ACPPM proposal</p>	<p>20(4)</p> <ul style="list-style-type: none"> - After "With regard to grid forming capability, type B power park modules" ADD "may" and delete "shall" - After "fulfil the following additional requirements in relation to grid forming capability" ADD "as agreed with the TSO in coordination with the RSO:" <p>20(4a) - After "The relevant TSO, in coordination with the relevant system operator" ADD " and the owner may agree on" and Delete " shall specify" and after "synthetic inertia" ADD " In that case"</p> <p>20 (4b) - Delete text</p>

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

	Text amendment proposal (if applicable)
New provision	<p>New 20(3c) proposal text: The relevant TSO shall have the right to specify the capability of a PPM to ride through a maximum sudden voltage phase angle change capability without tripping.</p> <p>Because it may be useful to introduce defined robustness against voltage phase angle changes /steps to increase synchronization robustness</p>

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Requirements for type C power park modules

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 21(1)		
Article 21(2) [deleted]		
Article 21(2)		
Article 21(3)		
Article 21(4)	Inherit market based approach from article Y	<p>21(4) After "With regard to grid forming capability, type C power park modules" ADD " may" and delete "shall"</p> <p>After "forming capability" ADD "as agreed with the TSO in coordination with the RSO:"</p> <p>21(4a) After "The relevant TSO, in coordination with the relevant system operator" ADD "and the owner" and substitute "shall specify" with "may agree on"</p> <p>21(4b) - Delete text</p>

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

	Text amendment proposal (if applicable)
New provision	

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Requirements for type D power park modules

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 22(1)		
Article 22(2)		

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

	Text amendment proposal (if applicable)
New provision	

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TITLE II CHAPTER 4 - Requirements for offshore power park modules

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 23		
Article 24		
Article 25		
Article 26		
Article 27		
Article 28		

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

	Text amendment proposal (if applicable)
New article	

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TITLE III - Operational notification procedure for connection

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 29		
Article 30		
Article 30a [new]		
Article 30b [new]		
Article 31		
Article 32		
Article 33		
Article 34		
Article 35		
Article 36		
Article 37		
Article 38		
Article 39		

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

	Text amendment proposal (if applicable)
New article	

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TITLE IV - Compliance

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 40		
Article 41		
Article 42		
Article 43		
Article 44		
Article 45		
Article 46		
Article 47		
Article 48		
Article 49		
Article 50		
Article 51		
Article 52		
Article 53		
Article 54		
Article 55		
Article 56		
Article 57		
Article 58		
Article 59		

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

	Text amendment proposal (if applicable)
New article	

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TITLE V - Derogations

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 60		
Article 61		
Article 62		
Article 63		
Article 64		
Article 65		

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

	Text amendment proposal (if applicable)
New article	

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[DELETED] TITLE VI - Transitional arrangements for emerging technologies

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)
Title VI [deleted]		

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 70a [new]		

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

	Text amendment proposal (if applicable)
New article	

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TITLE VII - Final provisions

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 71		
Article 71a [new]		
Article 72		

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

	Text amendment proposal (if applicable)
New article	

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Other additional provisions

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

	Text amendment proposal (if applicable)
Other new provisions	

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Background Documents

[NC_RfG_ACER_draft_amendments_for_PC_2023_E_07.docx](#)

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