

# ACER draft amendments to the Network Code on Demand Connection

Fields marked with \* are mandatory.

## Introduction

This consultation aims at presenting ACER's draft amendments to the **Commission Regulation (EU) 2016 /1388 of 17 August 2016 establishing a Network Code on Demand Connection ('NC DC')**.

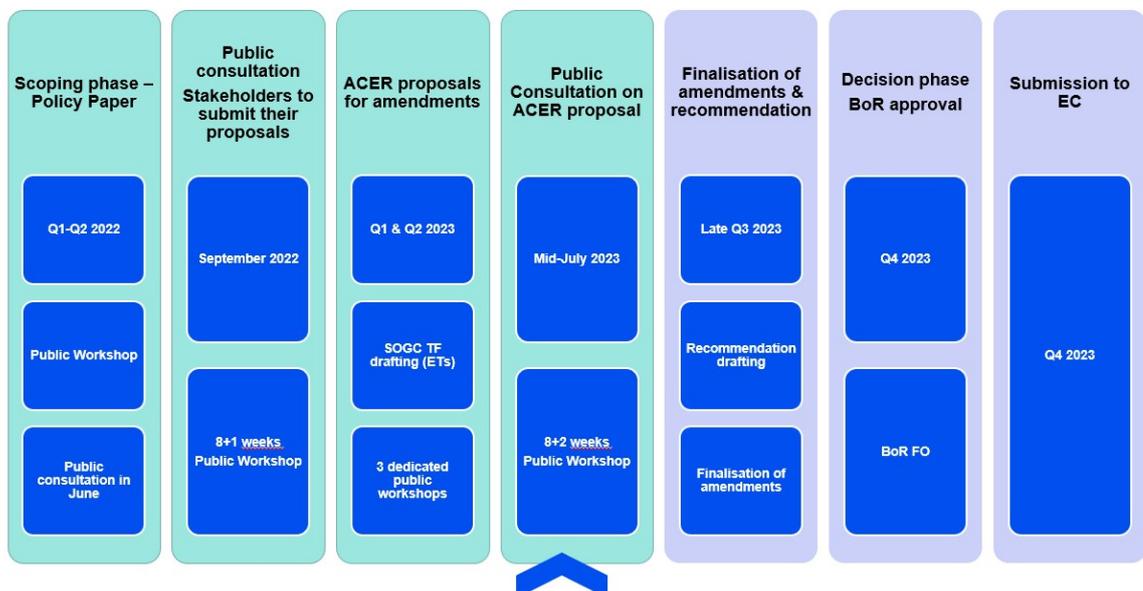
For draft amendments concerning Network Code on Requirements for Generators ('NC RfG'), please go to the respective form: [NC RfG](#).

**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.

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## Stakeholder's details

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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:

CharIN e.V.

\* Contact person:

[REDACTED]

\* Contact person's email address:

[REDACTED]

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

Germany

\* 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)

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## Instructions

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

1. by downloading the ACER draft amendments in the Word file provided below. The file could 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 DC** 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.

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## Step 1

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

[Download ACER draft amendments to the NC DC here](#)

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## Step 2

**Kindly note that this consultation form follows the structure of the NC DC 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

The maximum file size is 1 MB

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 DC, 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 DC**, 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\_DC\_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**

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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

**27c15ef9-230c-4676-baf6-e00cb1b3689f/ACER\_draft\_DC\_CharIN.docx**

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

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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 DC Whereas section, including new recitals

	Comment on the ACER draft amendments	Alternative text amendment proposal (if applicable)
(1)		
(2)		
(3)		
(4)		
(5)		
(6)		
(7)		
(**)		
(8)		
(9)		
(10)		
(11)		
(12)		
(13)		
(14)		
(15)	LFSM-UC requirements have to be fulfilled by V1G electric vehicle and the associated V1G electric vehicle supply equipment. An AC electric vehicle supply equipment alone is able	Frequency-related requirements should support the stable operation of the energy system which is being transformed to accommodate the green transition. In the future, the effectiveness of existing low frequency demand disconnection (LFDD) schemes is expected to be reduced due to the increased penetration of distributed generation. Therefore, a new limited frequency sensitive mode for various demand units (LFSM-UC) is being introduced to account for these changes. Furthermore, V1G electric vehicles

	to adjust the charging current according to IEC 61851-1:2017 but the power electronics in the electric vehicle has to react upon this signal.	and associated V1G electric vehicle supply equipment, power-to-gas demand units and heat-pumps are usually technically capable to fulfil such a requirement without negative consequences for the grid user.
(16)		
(17)		
(18)		
(19)		
(20)		
(21)		
(22)		
(23)		
(24)		

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

	Text amendment proposal (if applicable)
New recital	

## Definitions (Article 2)

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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(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)		
Article 2(20)		
Article 2(21)		
Article 2(22)		
Article 2(*)		
Article 2(**)		
Article 2(***)		



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

	Text amendment proposal (if applicable)
New definition	'V1G electric vehicle supply equipment' means the stationary and permanently connected infrastructure necessary to safely conduct electrical energy from the electricity supply grid to the electric vehicle with demand-only behaviour. Electrical wirings are not deemed part of an electric vehicle supply equipment.

Please upload figures or tables if necessary

The maximum file size is 1 MB

## TITLE I - General provisions

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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	<p>1. (e) Definition of "new" is unclear!</p> <p>The requirements set in this article for demand unit "V1G electric vehicle and associated V1G electric vehicle supply equipment" (operating behavior for frequency (Annex I) and voltage (Annex II), ROCOF withstand capability, LFSM-UC, fault-ride-through capability) are not covered by the relevant product standards for V1G electric vehicles (ISO 17409/ISO 5474-series) and associated V1G electric vehicle supply equipment (IEC 61851-1/-23) and therefore are not taken into consideration in V1G electric vehicle homologation/certification and the conformity assessment of the V1G electric vehicle supply equipment.</p> <p>There must be a long enough transition period to guarantee the revision of these standards!</p>	
Article 4		
Article 4a [new]		
Article 5		
Article 6		
Article 7		
Article 8		
Article 9		
Article 10		



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

	Text amendment proposal (if applicable)
New article	

Please upload figures or tables if necessary

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## **TITLE II - Connection of transmission-connected demand facilities, transmission-connected distribution facilities and distribution systems**

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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 12		
Article 13		
Article 14		
Article 15		
Article 16		
Article 17		
Article 18		
Article 19		
Article 20		
Article 21		
Article 22		
Article 23		
Article 24		
Article 25	<p>"AC charging: How are simulation models possible for V1G EVs, which move from connection point to connection point? How to handle different V1G EVs charging at a charging point or installation?</p> <p>DC charging: Inverter in EVSE, so simulation can be easily done with EVSE only."</p>	<p>3. (b) An update of the applicable technical data, simulation models and studies proving compliance of electric vehicles and associated V1G electric vehicle supply equipment, power-to-gas demand units and heat-pumps, where applicable.</p>
Article 26		

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

	Text amendment proposal (if applicable)
New article	

Please upload figures or tables if necessary

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## TITLE III - Connection of demand units used by a demand facility or a closed distribution system to provide demand response services to system operators

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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 27		
Article 28		
Article 29		
Article 30		
Article 31		
Article 32		
Article 33		

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

	Text amendment proposal (if applicable)
New article	

Please upload figures or tables if necessary

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**[NEW] TITLE XXX - Connection of V1G electric vehicles and associated V1G electric vehicle supply equipment, power-to-gas demand units and heat-pumps**

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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 XX	<p>3. (a) Requirements are not specific enough and can be misunderstood. Clarify, that Pref is meant by "current active power" just as in requirement 3e.</p> <p>Keep in mind that charging will not start if frequency is below 49.8 Hz (or 49.5 Hz in IE), because "current active power" would be 0 kW before charging start.</p> <p>3. (e) align with rest of document. Pref not defined - use as in RfG: Pref is the actual active power at the moment the LFSM-U threshold is reached.</p> <p>Align requirements of NC RfG with NC DC regarding LFSM-U.</p> <p>3. (i) For AC charging, it is not clear/possible how to implement it.            Option 1: Use PWM or ISO15118-2 to send "limit" from EVSE to EV. However, this is only an upper limit and EV can decide to charge less. Also: EV has up to 5s to respond to PWM-signal. Then the EV still needs to adjust the power. So it can be done only in up to 10s.            Option 2: Use ISO 15118-20 amendment with grid codes and transmit P(f) curve to EV, which can react according to its own frequency-measurement. But: Also V1G EVSE/EV would</p>	<p>3. (a) The V1G electric vehicle and associated V1G electric vehicle supply equipment and the power-to-gas demand unit shall be capable of reducing the consumption from the current active power input (Pref) automatically down to the minimum technical operational level according to the indicative Figure XX at a frequency threshold and with a droop setting:</p> <p>3. (e) If the minimum technical operating level is larger than 20% of Pref, the V1G electric vehicles and associated V1G electric vehicle supply equipment or the power-to-gas demand unit should disconnect when reaching its minimum technical operating level; Pref is the actual active power at the moment the LFSM-U threshold is reached.</p> <p>3. (i) The response time for LFSM-UC shall be less or equal to 10 seconds. The relevant system operator has the right to request the demonstration of technical evidence of the response time.</p> <p>5. (c) When the network voltage resumes, after</p>

	<p>need to support ISO15118-20.</p> <p>Figure XX: Curve in Figure XX shall be improved: Correct the droop in the figure from 1% to 5%. Intersection lines in terms of frequency/power shall be added. Since it is NC DC, only the consumption part shall be drawn. Axes descriptions shall be more detailed (in terms of power).</p> <p>5. (c)</p>	<p>the fault has been cleared, to a value within the voltage range of 0,85 pu – 1,1 pu, a V1G electric vehicle and associated V1G electric vehicle supply equipment shall recover its active power consumption level to its pre-fault value. The recovery time shall not exceed a maximum of 1s.</p>
<p>Article XX+1</p>		
<p>Article XX+2</p>	<p>V1G electric vehicles move around whole Europe and have to be compliant with several grid codes. So it is beneficial if a central certification (or even better homologation) according to a central European standard like EN 50549-10 is done.</p> <p>Also, Article 24 Interim operational notification 3c says: "equipment certificates issued by an authorised certifier in respect of transmission-connected demand facilities including any V1G electric vehicle supply equipment, power-to-gas demand units, heat pumps of the facility, transmission-connected distribution facilities and transmission-connected distribution systems, where these are relied upon as part of the evidence of compliance;" No EV is mentioned here.</p>	<p>V1G electric vehicles and associated V1G electric vehicle supply equipment, power-to-gas demand units and heat-pumps shall possess equipment certificates, proving compliance with this regulation. V1G electric vehicles and associated V1G electric vehicle supply equipment provide compliance with this regulation by certification with a harmonised European standard.</p>

Article XX+3

1. V1G electric vehicles move around whole Europe and have to be compliant with several grid codes. So it is beneficial if a central certification (or even better homologation) according to a central European standard like EN 50549-10 is done.

Also, Article 24 Interim operational notification 3c says:

"equipment certificates issued by an authorised certifier in respect of transmission-connected demand facilities including any V1G electric vehicle supply equipment, power-to-gas demand units, heat pumps of the facility, transmission-connected distribution facilities and transmission-connected distribution systems, where these are relied upon as part of the evidence of compliance;" No EV is mentioned here.

2. same formulation as in Art. 28) 2. e)  
(...) "The relevant system operator shall make publicly available the technical specifications"  
(...)

1. V1G electric vehicles and associated V1G electric vehicle supply equipment, power-to-gas demand units and heat-pumps shall possess equipment certificates, proving compliance with this regulation. V1G electric vehicles and associated V1G electric vehicle supply equipment provide compliance with this regulation by certification with a harmonised European standard.

2. (...) The relevant system operator, in coordination with the relevant TSO, shall specify the content required for the DUD and make the requirements publicly available. (...)

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

	Text amendment proposal (if applicable)
New article	XX [new]: the actual consumption of active power frequency response in LFSM-UC mode shall be capable of taking into account, if applicable: — ambient conditions when the response is to be triggered, — the operating conditions of the V1G electric vehicle and associated electric vehicle supply equipment, in particular limitations on operation near maximum and minimum capacity at low frequencies and the respective impact of ambient conditions, and — the need for consumption.

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## TITLE IV - Compliance

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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 34		
Article 35		
Article 36		
Article 37		
Article 38		
Article 39		
Article 40		
Article 41		
Article 42		
Article 43		
Article 44		
Article 45		
Article 46		
Article 47		

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

	Text amendment proposal (if applicable)
New article	

Please upload figures or tables if necessary

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## TITLE V - Applications and derogations

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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 48		
Article 49		
Article 50		
Article 51		
Article 52		
Article 53		
Article 54		
Article 55		

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

	Text amendment proposal (if applicable)
New article	

Please upload figures or tables if necessary

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## TITLE VI - Non-binding guidance and monitoring of implementation

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 56		
Article 57		

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

	Text amendment proposal (if applicable)
New article	

Please upload figures or tables if necessary

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## TITLE VII - Final provisions

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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 58		
Article 59		

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

	Text amendment proposal (if applicable)
New article	

Please upload figures or tables if necessary

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## ANNEX I

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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)
Annex I		

Please upload figures or tables if necessary

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## ANNEX II

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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)
Annex II		

Please upload figures or tables if necessary

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## Other additional provisions

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

	Text amendment proposal (if applicable)
Other new provisions	Demand units, which do not provide bi-directional power flow, are not required to provide reactive power while dynamic grid support.

Please upload figures or tables if necessary

The maximum file size is 1 MB

### Background Documents

[NC DC ACER draft amendments for PC 2023 E 07.docx](#)

### Contact

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