ACER
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WORKSHOP

on electromobility, power-to-gas demand units and heat-pumps

Monday, 17.04.2023
09:30 - 16:00 (CET)
Ljubljana and online

www.acer.europa.eu

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Agenda

09:30 – 09:40	Process on the grid connection network codes amendment	ACER
09:40 – 10:20	Electromobility, power-to-gas demand units and heat-pumps	ACER
10:20 – 11:00	EU associations' presentations	tbc
11:00 – 11:10	*Coffee break*	
11:10 – 13:00	EU associations' presentations	tbc
13:00 – 13:45	*Lunch break*	
13:45 – 15:55	Q&A session	chaired by ACER
15:55 – 16:00	Closing remarks	ACER

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Housekeeping

Post your questions and comments in the chat box, optionally indicating your affiliation

Keep your microphone muted unless the chair gives you the floor

Substance-related questions will be moved to the Q&A session; minor queries will be tackled in the chat

Slides from this workshop are uploaded to ACER website

Questions and comments will be addressed in the Q&A session at the end of the workshop

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Workshop materials

Workshop materials uploaded to ACER website:

- ACER workshop guide (slide deck)
- NC RfG draft amendments relevant to this workshop (PDF file)*
- NC DC draft amendments relevant to this workshop (PDF file)*
- Presentations of the interested European associations (ZIP archive)

* Draft amendments include some changes linked to other policy areas (e.g., RoCoF withstand capability, grid forming); these changes will be discussed during the dedicated workshops

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DISCLAIMER: The information set out in this slide deck and accompanying documents constitute preliminary views at the working level. The information contained in all public workshop documents are intended solely for the purpose of the discussion and are without prejudice to further communications.

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Public Workshop on GC NCs amendments
- electromobility, heat pumps, P2G demand units

ACER **Public Workshop**

17 April – hybrid workshop in Ljubljana

ACER proposals for GC NCs amendments concerning electromobility, heat pumps, P2G demand units

7-10 minute-long stakeholders presentations

2 weeks following the workshop for the stakeholders to provide additional input and/or discuss with ACER drafting Project Group: ACER-ELE-2022-015@acer.europa.eu

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Process on the grid connection network codes amendment

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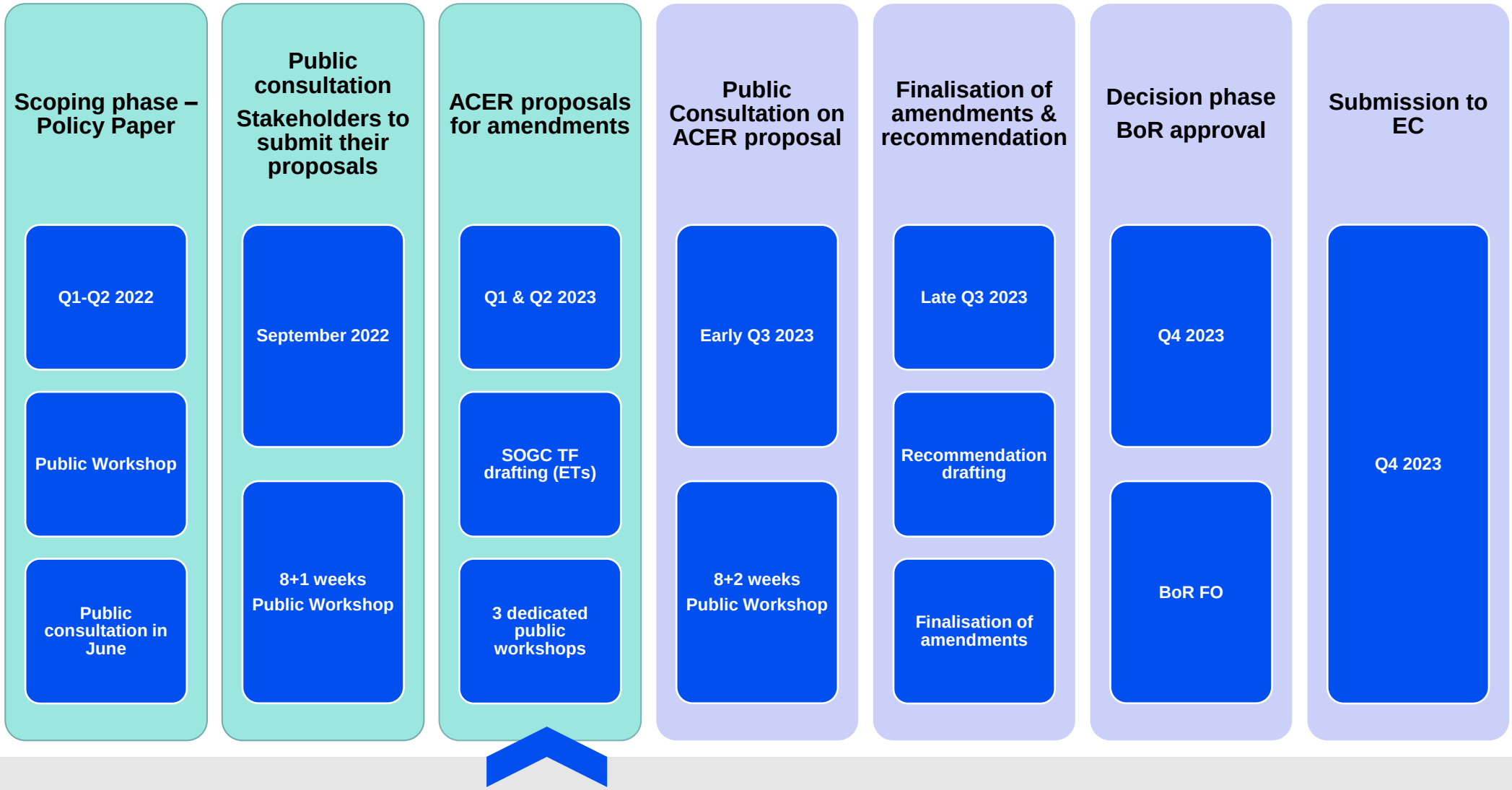
CNC - amendment process



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Public consultation on ACER draft proposal

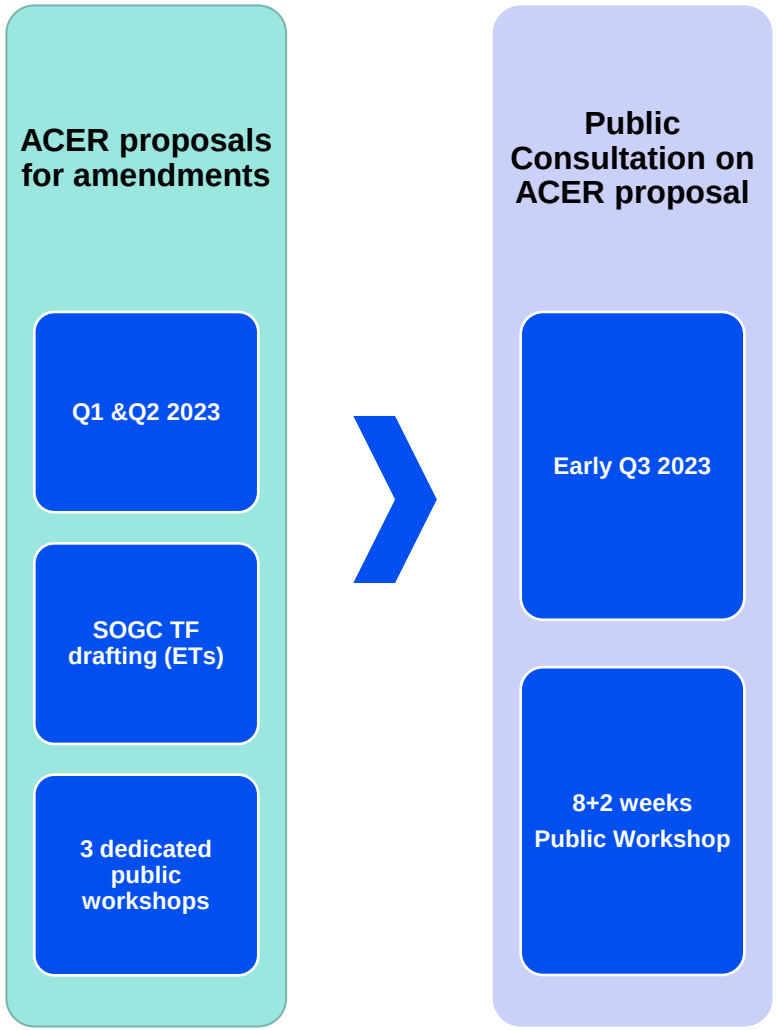
28.3.2023

Registration is open for ACER's 3 workshops related to the electricity grid connection network codes

- **10 May 2023** – rate of change of frequency (RoCoF) and grid forming capabilities
- **11 May 2023** – technical requirements for electricity storage

Register to public workshops:
https://acer.europa.eu/news-and-events/news/registration-open-acers-3-workshops-related-electricity-grid-connection-network-codes

Public consultation on ACER draft proposal



- **10-week** long public consultation
- Planned for early Q3 2023
- Stakeholders to comment on ACER draft amendment proposals
- In the course of public consultation, ACER will organise **public workshop** to present key proposals

NC RfG

NC DC

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ACER preliminary views
on electromobility, heat pumps, P2G

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Rationale of the amendments

- Electromobility, heat pumps, P2G demand units are expected to be connected *en masse* in the future
- Currently, the connection rules for these units follow on the divergent national approaches
- Harmonisation at the EU level can provide for the economies of scale and the level-playing field

Electromobility

- Mass market
- Electric vehicles (EVs) are non-stationary devices that are expected to move across Member States
- Second-hand market for EVs

Heat pumps

- Mass market

P2G demand units

- Demand units can support the system due to their inherent capabilities

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Electromobility – applicability of GC NCs

New definitions (non-exhaustive list)

- **'V1G electric vehicle**' means the vehicle that is powered, fully or in part, with electricity and can only withdraw electricity from the grid.
- **'V2G electric vehicle**' means the vehicle that is powered, fully or in part, with electricity and is equipped with technology enabling the vehicle to provide electricity to the grid.
- **'Electric vehicle charging point or installation**' means the infrastructure necessary to safely conduct electrical energy between the electricity supply grid and the electric vehicle. Domestic electrical wirings are not deemed part of an electric vehicle charging point or installation.
- **‘Electrical charging park’** means the installation that has a single connection point to the relevant network and where one or more electric vehicles can be simultaneously connected.

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Application of NC RfG

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Electromobility – applicability of NC RfG

Bidirectional electric vehicles and associated bidirectional electric vehicle charging points or installations

0,8 kW ≤ capacity < 2,4 kW

V2G type EV1

2,4 kW ≤ capacity ≤ 42 kW

V2G type EV2

42 kW < capacity < 1 MW

V2G type EV3

Article 13a of NC RfG
– exhaustive requirements (same for both EV1 and EV2)

- frequency and voltage (LV) ranges
- RoCoF withstand capability
- data interface for charging infrastructure
- autonomous connection
- LFSM-U EV and LFSM-O EV
- voltage robustness/FRT

Article 14a of NC RfG

- requirements applicable to type EV1 and EV2
- voltage ranges for MV/HV/EHV
- system management
- reactive power capabilities
- post-fault active power recovery
- (grid forming capabilities)

Electromobility – applicability of NC RfG

Bidirectional electric vehicles and associated bidirectional electric vehicle charging points or installations

0,8 kW ≤ capacity < 2,4 kW

V2G type EV1

2,4 kW ≤ capacity ≤ 42 kW

V2G type EV2

42 kW < capacity < 1 MW

V2G type EV3

Beyond 1 MW, EV and associated charging point or installation are regarded as electricity storage module (ESM)

Article 13a of NC RfG
– exhaustive requirements (same for both EV1 and EV2)

- frequency and voltage (LV) ranges
- RoCoF withstand capability
- data interface for charging infrastructure
- autonomous connection
- LFSM-U EV and LFSM-O EV
- voltage robustness/FRT

4a of NC RfG

- requirements applicable to type EV1 and EV2
- voltage ranges for MV/HV/EHV
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Electromobility – applicability of NC RfG

Bidirectional electric vehicles and associated bidirectional electric vehicle charging points or installations

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V2G type EV3

Article 13a of NC RfG
– exhaustive requirements (same for both EV1 and EV2)

- frequency and voltage (LV) ranges
- RoCoF withstand capability
- data interface for charging infrastructure
- autonomous connection
- LFSM-U EV and LFSM-O EV
- voltage robustness/FRT

RoCoF requirements will be subject to a separate discussion

Article 14a of NC RfG

- requirements applicable to type EV1 and EV2
- voltage ranges for MV/HV/EHV
- system management
- reactive power capabilities
- post-fault active power recovery
- (grid forming capabilities)

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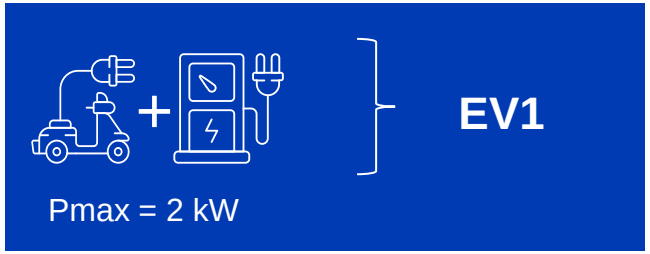
Application of technical requirements

Examples

1



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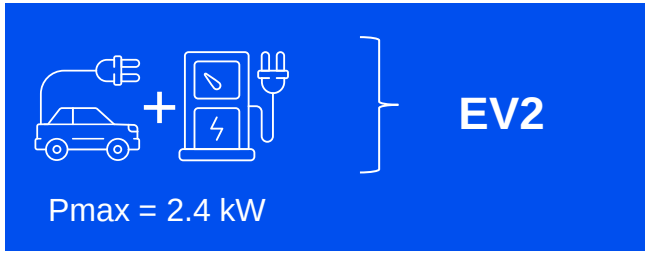

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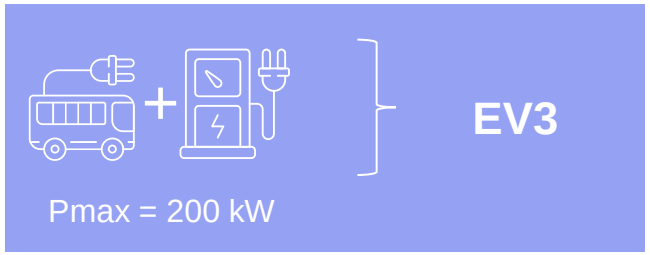

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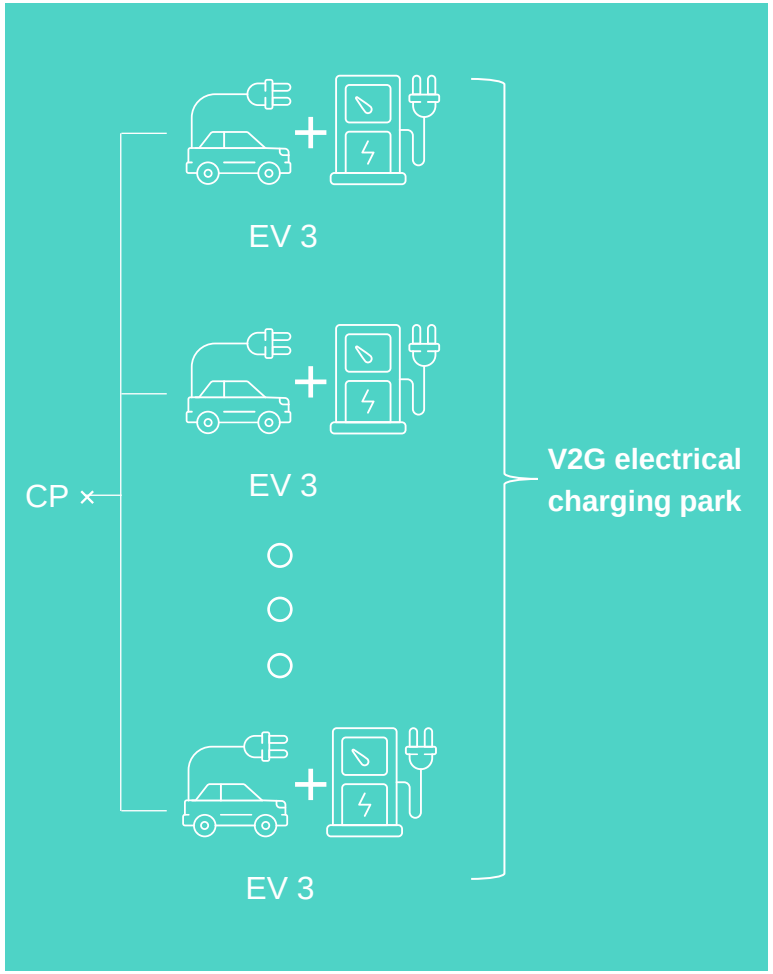

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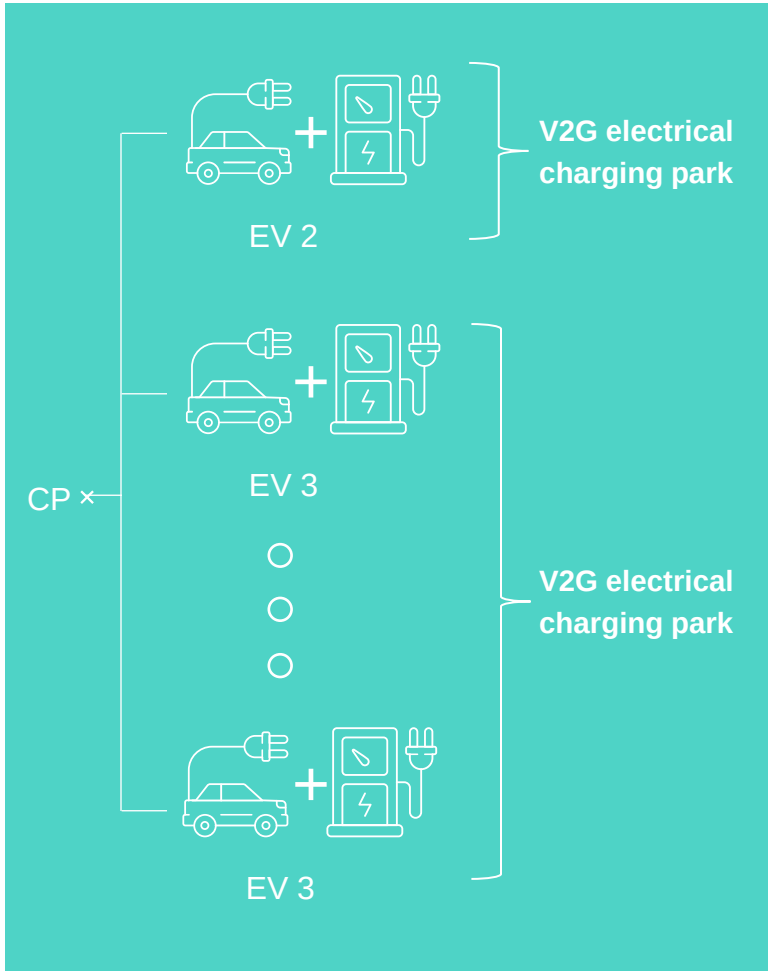

Pmax = maximum capacity, CP = connection point

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Electromobility – NC RfG compliance

Bidirectional electric vehicles and associated bidirectional electric vehicle charging points or installations

0,8 kW ≤ capacity < 2,4 kW

V2G type EV1

Equipment certificates only, no connection agreement required in the NC RfG
(however national connection rules may require a connection agreement)

2,4 kW ≤ capacity ≤ 42 kW

V2G type EV2

Connection agreement between the system operator and electrical charging facility owner

Operational notification procedure and requirements to demonstrate the compliance *(Article 30a, RfG)*

(potential dynamic/fixed power limitations)

42 kW < capacity < 1 MW

V2G type EV3

Connection agreement between the system operator and electrical charging facility owner

Operational notification procedure and requirements to demonstrate compliance *(Article 30b, RfG)*

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Electromobility – NC RfG compliance

Bidirectional electric vehicles and associated bidirectional electric vehicle charging points or installations

0,8 kW ≤ capacity ≤ 2,4 kW

V2G type EV1

- **Connects to a domestic socket**
- **No professional installer needed**

Certificates only, no connection agreement required in the NC RfG

(however national connection rules may require a connection agreement)

2,4 kW ≤ capacity ≤ 42 kW

V2G type EV2

- **Connects to a dedicated charging point (e.g. wallbox or street pillar)**
- **Professional installer required**

Connection agreement between the system operator and electrical charging facility owner

Operational notification procedure and requirements to demonstrate the compliance *(Article 30a, RfG)*

(potential dynamic/fixed power limitations)

42 kW < capacity < 1 MW

V2G type EV3

Connection agreement between the system operator and electrical charging facility owner

Operational notification procedure and requirements to demonstrate compliance *(Article 30b, RfG)*

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Electromobility – NC RfG compliance

Bidirectional electric vehicles and associated bidirectional electric vehicle charging points or installations

0,8 kW ≤ capacity < 2,4 kW

V2G type EV1

Certificates only,
no connection agreement required in the NC RfG
(however national connection rules may require a connection agreement)

2,4 kW ≤ capacity ≤ 42 kW

V2G type EV2

Connection agreement between the system operator and electrical charging facility owner

Operational notification procedure and requirements to demonstrate the compliance *(Article 30a, RfG)*

(potential dynamic/fixed power limitations)

42 kW < capacity ≤ 1 MW

V2G type EV3

Connection agreement between the system operator and electrical charging facility owner

Operational notification procedure and requirements to demonstrate compliance *(Article 30b, RfG)*

Beyond 1 MW, EV and associated charging point or installation follow operational notification procedure of ESM

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Application of NC DC

Electromobility /demand units – applicability of NC DC

V1G EVs and associated one-way EV charging point or installation

> 0,8 kW capacity at all voltage levels

heat pumps,

power-to-gas demand units

> 0,8 kW capacity at all voltage levels

New Article in NC DC – exhaustive requirements:

- Frequency and voltage ranges
- RoCoF withstand capability
- LFSM-UC

0,8 kW – capacity threshold follows the current NC RfG determination of significance rules

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Electromobility/demand units – NC DC compliance

Connection point below 1000 V

Equipment certificates only, no connection agreement required

Connection point above 1000 V

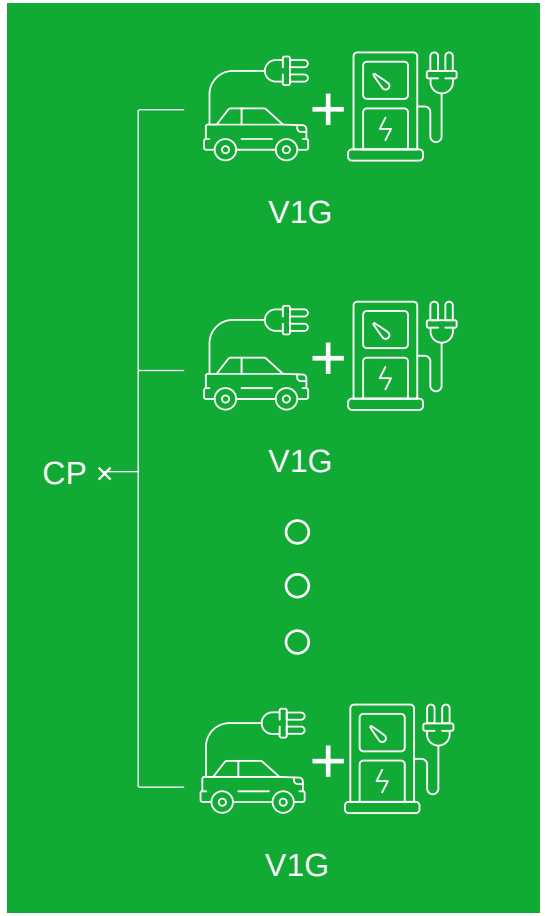
Operational notification procedure using demand unit document specified by the relevant system operator

1000 V – voltage criterion follows the current NC DC approach to the compliance rules

(see Articles 32 and 33)

Electromobility – NC DC compliance

Unidirectional electric vehicles and associated unidirectional electric vehicle charging points or installations



V1G electrical charging parks:

- For the determination of compliance purposes, when **three** or more V1G EVs and associated one-way electric vehicle charging points or installations are within a demand facility the operational notification procedure for demand units connected above 1000 V applies

V1G = unidirectional EV and associated unidirectional EV charging points or installations, CP = connection point

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Stakeholders' presentations

on electromobility, heat pumps, P2G demand units

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Coffee break

11:00 – 11:10

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Stakeholders' presentations

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Lunch break

13:00 – 13:45

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Q&A session

Chaired by ACER | 13:45 – 15:55

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Closing remarks

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Thank you.
Any questions?

The contents of this document do not necessarily reflect the position or opinion of ACER.

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Thank you.
Any questions?

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