

Report from the Expert Group 'Identification of storage devices' (EG STORAGE) - **phase 2**

Emilie Milin, Chair of EG STORAGE

16th Grid Connection European Stakeholder
Committee Meeting

12 December 2019, Brussels

EG STORAGE structure



Chair: ENTSO-E, Emilie Milin (Antony Johnson in Jan. 2020)
Vice-Chair: EASE, Noce Christian

Expert group: Identification of storage devices (EG STORAGE)

Approved by the GC ESC on [September 14, 2018](#)
Subject to possible updates on the list of members

Revised version including phase 2 work was approved by GC ESC on December 12, 2019

Chair: ENTSO-E, Emilie Milin
Vice-Chair: EASE, Noce Christian

Problem Statement

On 11 June 2018, the Grid Connection European Stakeholder Committee (GC ESC) decided to establish an expert group on the definition of storage devices. The creation of this EG was proposed by ENTSO-E to elaborate on connection network code (CNC) issues, which had been raised by stakeholders during the CNC implementation. The ENTSO-E proposal was based on a stakeholder survey to identify priority topics.

In order to prevent a confusion of the definition of the storage devices and the energy storage as defined in the forthcoming recast of the Electricity Directive a different title has been chosen for this EG, i.e. identification of storage devices.

Target (objectives)

Phase 1 – October 2018 to June 2019

The objectives of the EG Storage are to:

- identify storage technologies/applications/topologies;
- investigate the possibility of a useful definition of storage device which could lead to the definition of connection requirements at EU level (due to cross-border relevance); and
- categorize storage devices (if reasonable).

Phase 2 – October 2019 to June 2020

The EG Storage will proceed to evaluate how the CNCs can be further improved to incorporate the results of this analysis, with respect to the scope of the CNCs and implications to other NCs/GLs, if any.

EG Storage will also focus on the impact of Electric Vehicles (EVs). The objective is to exchange views on the different configurations and assess their effect in terms of connection requirements. Any other implications in terms of operations, market products identified will be included in the report to allow further dedicated studies by adequate expert groups.

Public space

EG STORAGE

Identification of storage devices.

Annex

[EG STORAGE Reporting 14th GC ESC](#)

[EG STORAGE Reporting 13th GC ESC](#)

[EG STORAGE Reporting 12th GC ESC](#)

Internal EG space

EG STORAGE

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All Documents ... Find a file

✓	Name	Modified
	Additional references	... 11 October, 2018
	archive (non-exhaustive)	... 1 October, 2018
	Kick-off meeting_181015	... 10 October, 2018
	meeting_190318_Brussels	... 10 March
	meeting_191119_Brussels	... 13 November
	report	... 4 March
	ToR and Annex	... 7 December, 2018
✓	webinar_181123	... 23 November, 2018
	webinar_181220	... 17 December, 2018
	webinar_190125	... 25 January
	webinar_190221	... 21 February
	webinar_191108	... 7 November
	180914_GC ESC_EG STORAGE_notes from preparatory call	... 1 October, 2018
	EG STORAGE draft table of requirements	... 18 March

The ToR/Annex has been updated to include Phase 2 activities

EG STORAGE meetings – phase 2



- 8 November 2019 kick off webinar
- 19 November 2019 meeting
- 10 December 2019, webinar (brainstorming on EV configurations)
- **16 December 2019, webinar**



- 37 listed members
- 15 different representative organizations
- ~50% participation of members
- >80% participation of organizations



- Overall good collaboration among the members, with useful discussions
- Good input in accordance with the agreed follow up actions
- Common space (SharePoint) and email exchanges are used to provide inputs – recommendation to use SharePoint as much as possible
- Workplan continues as agreed with no changes foreseen at the moment

Conclusions from phase 1 and follow-up actions

- Definitions
- Storage operation in an analogous mode of demand
 - *The template was updated with the results of the GB group and is being further updated by the rest of the EG members*
- The EG discussed about classifying the different storage technologies into:
 - *Synchronous Electricity Storage module – similar requirements to SPGMs*
 - *Non-Synchronous Electricity Storage module – similar requirements to PPMs*
- If necessary, a separate category can be introduced for certain storage technologies e.g. flywheels or superconducting storage (SMES)
- Additional requirements coming from DCC or/and HVDC or storage specific requirements (e.g. switching) will be considered
- Analysis of existing IEC and CENELEC standards is within the actions

Conclusions from phase 1 and follow-up actions

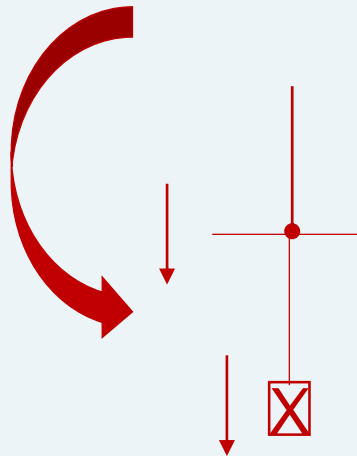
- Definitions – Clean Energy Package

energy storage means, in the electricity system, deferring the final use of electricity to a moment later than when it was generated, or the conversion of electrical energy into a form of energy which can be stored, the storing of such energy, and the subsequent reconversion of such energy into electrical energy or use as another energy carrier.

DIRECTIVE (EU) 2019/944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL Article 2, pt. 59

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DIRECTIVE (EU) 2019/944 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL Article 2, pt. 59

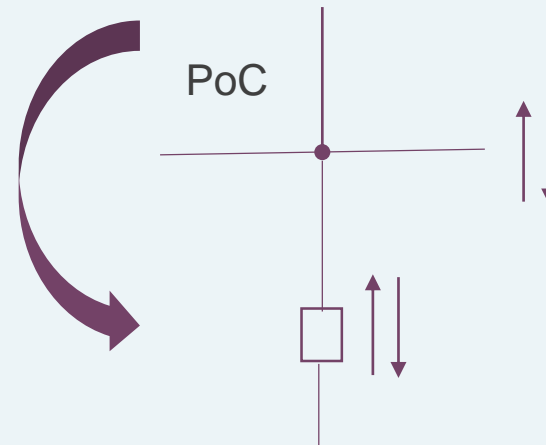


From a grid connection perspective, it's like a demand facility

- Application DC NC (or national regulation*)

*DC NC scope do not cover demand facility connected to DSO or CDSO, except in case of Demand Side Response (DSR)

To be addressed during Phase 2 :
Need to extend NC DC scope of application to cover demand facilities connected to DSO/CDSO, which don't provide DSR ?



From a grid connection perspective, it's stationary electricity storage.

EG storage - phase 1

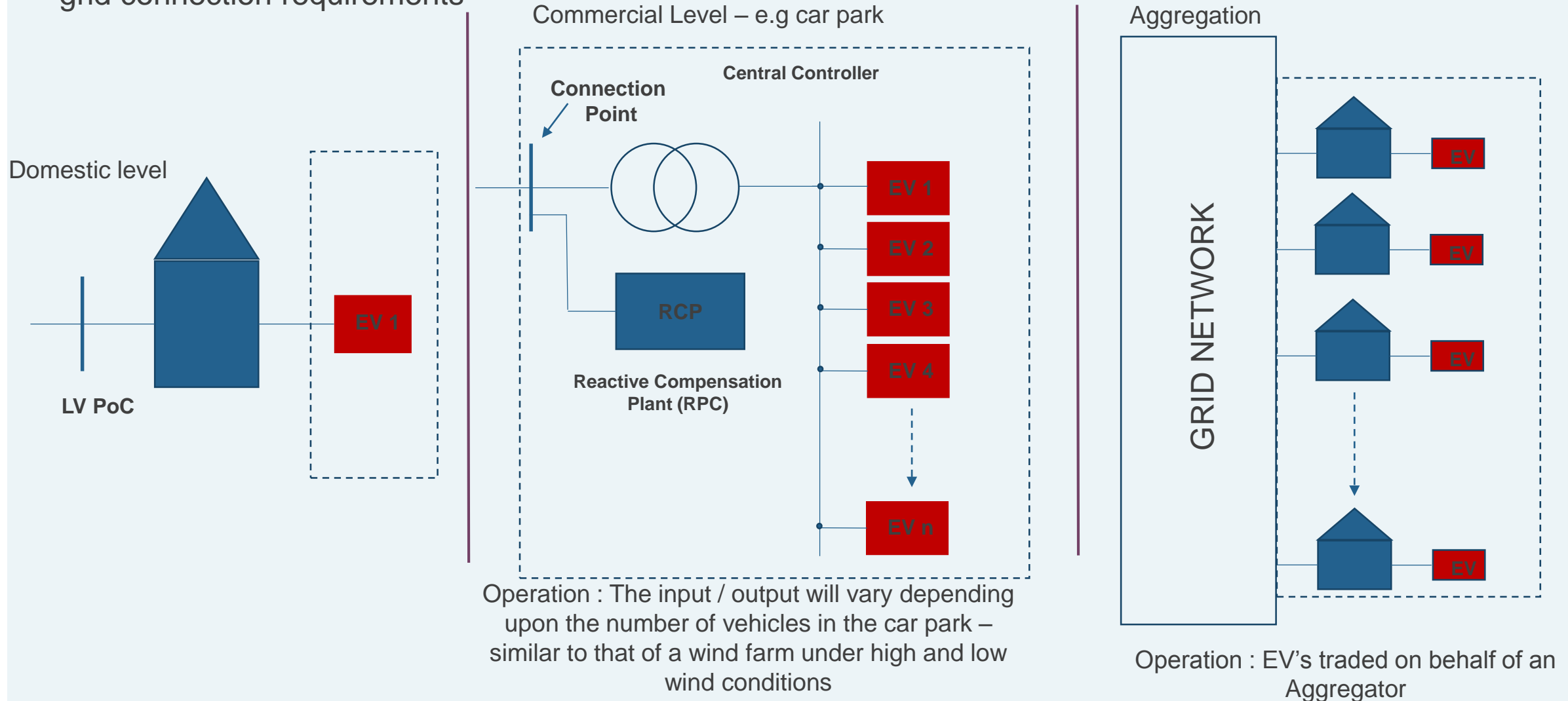
- Different kind of technologies : **Synchronous Electricity Storage Module / Non Synchronous Electricity Storage Module.**
- Requirements for grid connection

Phase 1 technical recommendations and follow-up actions

- Treatment of storage under the Emergency and Restoration Code (transition from import to export under low frequency conditions)
 - GB, DE examples were shared
 - From a system operator point of view, preferable behavior will be to switch from import mode to export mode (to support the network by injecting power). If switching is too long, then tripping could be an alternative solution (depending on technology).
=> Amendment related to this capability will be prepared.
- SOGL impact assessment
 - ACE control
 - Communication requirements, KORRR methodology
⇒ Topic to be addressed by EG storage during phase 2.

Focus on electric vehicles

- High level considerations – different technologies (V1G or V2G) and configurations => different need for grid connection requirements



Workplan

2019/2020	44	45	46	47	48	49	50	51	52	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Meetings/ webinars		STORAGE		STORAGE				STORAGE																											
PMO (ENTSO-E)		Ongoing PMO support																																	
Drafting CNC amendment proposals based on phase 1 recommendations																																			
EV : Identification of different configurations																																			
EV: impact on grid connection, need for grid connection requirements																																			
Ensure proper links with EG MCS																																			
Compile information/Proposa l																																			