

# Expert group: Advanced Grid Services and Controls for Grids with High Penetration of DER

Draft discussed at the GC ESC on 22 September 2021

Chair: TBD

Vice-Chair: TBD

## Problem Statement

In the recent years, it became clear, that for a very high penetration of inverter-based generation and less generation based on synchronous generation, new challenges evolve to maintain the stability of the European electric power system. Technical challenges and system needs have been discussed in the previous ENTSO-E technical group on high penetration which presented its results in January 2020. Several research projects, such as the “Migrate” project investigated system aspects and possible solutions for inverter dominated power systems. Meanwhile, technical commercially available solutions, further studies and first approaches for Grid forming Grid Codes have been published.

In parallel, the regulation of ancillary services and “non frequency ancillary services” have been addressed. In the coming years, decisions will have to be taken on which minimum control capabilities are to be stipulated in which power generating systems and which services are to be organized by market arrangements.

## Target (objectives)

- The main objective of this Expert Group is to provide an actual status of the discussion between the stakeholders on the necessity and an outlook on future ancillary grid services related to power systems with a high share of power electronic interfaced resources. The idea is to provide input for future developments of the RfG and consistent market regulation. Build upon existing research and publications
  - on system needs claimed by system operators, building on the work of the High Penetration of Power Electronic Interfaced Power Sources and the Potential Contribution of Grid Forming Converters report, and further resources.
  - on relevant technologies and technologies’ useful potential capabilities.
- Identify remaining system and grid services not yet covered in the Clean Energy Package (e.g. those from Directive EU (EU) 2019/944)
- Identify which services already exist across Europe and existing legislative requirements.
- Explore where minimum requirements may be needed for generators, rather than an market option and how for future Type A/B/C/D PGMs.

## Legislative background

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**Task description**

- This EG will focus on all types of power-generating modules that can be used to provide grid services and explore, through existing research, publications, and case studies across member states, how services can be provided and what needs need fulfilling. While the Clean Energy Package has been a good starting point, more needs to be done to building frame works to support new technical capabilities.
- Propose recommendations on articles of the NC RfG according to the results and observations of technical assessment

**Deliverables**

- Report to the GC ESC on possible proposals for amendments to Articles of the NC RfG, highlighting minimum requirements where necessary to provide advanced grid services and controls.

**Timing**

- estimated 9 months from October 2021.

**Team (update XX.XX.2021)**

The following nominations to participate in EG XX have been received (name and association):

<b>Name</b>	<b>Organisation</b>	<b>Representation at GC ESC</b>

**Estimated workload**

- monthly webinars;
- commitment of XX days per member.

**Target audience**

- GC ESC
- Relevant and/or interested stakeholders on the Connection Network Codes

