

TOP 5: ENTSO-E Updates

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Agenda

01

Technical Group on Forced Oscillations (TG FO)

Report publication: main takeaways

02

Implementation Guidance Documents (IGDs)

Stakeholders workshop on GFM IGD

Technical Group on Forced Oscillations (TG FO)

Background

Draft NC RfG 2.0

ACER's recommendations on NC RfG 2.0 include non-exhaustive forced oscillations limitations for onshore and offshore type C-D Power Park Modules (PPMs) in the frequency range of 0.1-20 Hz: Article 21(3) and 26(2), respectively

TG FO Creation

Aiming at deep-diving ACER's proposed ranges and default values for FO requirements for wind farms, ENTSO-E created in June 2024 a joint technical group with WindEurope

TG FO Report Publication

ENTSO-E published in July the report delivered by this TG FO ([link](#)), which proposes recommendations to detect forced oscillations and assesses ACER's proposed requirements based on study cases from several wind farms

IGD on FO

ENTSO-E is currently using this report as main input for the ongoing IGD on FO, which will be published once the NC RfG 2.0 enters into force

European Commission's draft NC RfG 2.0

- The TG FO report is based on ACER's recommendations on NC RfG 2.0
- Right after the publication of the report, the EC published a draft NC RfG 2.0 for public consultation:
 - Forced oscillations requirements remain the same as those in ACER's recommendations
 - A new definition on forced oscillation has been included
- The future IGD will take into consideration the changes in the final version of NC RfG 2.0

Report overview (1)

Chapters 1 - 2

Introduction to forced oscillations from both technical and regulatory perspective (respectively)

Chapter 3

Proposal of a **non-binding methodology** to assess forced oscillations compliance with draft NC RfG 2.0 using as input wind farm's production time series



Report overview (2)

Chapter 4

Grid code compliance assessment guidelines: measurement location and data, compliance testing process and monitoring

→ Compliance analysis shall exclude operating conditions outside voltage and frequency ranges requirements as well as system support request

Chapter 5

Study cases from existing wind farms: application of proposed methodology to real wind farm's production data, both onshore and offshore

→ Different scenarios are assessed considering different values within the ranges of the draft NC RfG 2.0 requirements

Chapter 6

High-level **mitigation measures** through both electrical and structural solutions

Report conclusions

- **Default values** of draft NC RfG 2.0 ranges to remain as a solid baseline
- Nevertheless, the specified ranges are sufficiently wide to leave **room for adjustment**
- In general, the observed oscillations in the available data **damp out quickly**: damping requirements (clauses b(ii) and b(iii)) are also met with the strictest limits
- The compliance is **more sensitive to the maximum allowable forced oscillation as a percentage of maximum capacity** (clause a(ii) for offshore wind farms and a(i) for onshore wind farms). If the default values do not lead to realistic compliance, the technical group recommends more relaxed thresholds

Implementation Guidance Documents

Organisation of stakeholders' workshops

- ENTSO-E is currently drafting the 1st wave of IGDs, related to NC RfG 2.0 on forced oscillations, grid forming (GFM) and LFSM
- According to the EC's consulted RfG 2.0, ENTSO-E in coordination with the EU DSO Entity shall **develop a common structure** for the national compliance schemes. Therefore, ENTSO-E will focus on developing this new mandate pausing the work on the **IGD on Certification**
- Upon stakeholders' request, ENTSO-E is planning to organize one workshop for each IGD prior to the public consultation
- Given that the **GFM IGD** is well advanced, ENTSO-E is organizing a **stakeholders' workshop on Wednesday 21 October**. Due to the low physical participation, it will **only take place online**