

System Operation European Stakeholder Committee

17 June 2026



Agenda

Subject	Timing	Lead
<i>Lunch</i>	12.00 - 13.00	
1.Opening • Review of the agenda, approval of last meeting minutes • Review of actions	13.00 – 13.15	Uros Gabrijel, ACER Cherry Yuen, ENTSO-E
2.Update on the implementation actions at pan-EU level	13.15 - 13.20	Cherry Yuen, ENTSO-E
3.Frequency related topic (Tmin LER for FCR provision)	13.20 – 13.30	Luca Ortolano, ENTSO-E
4.Updates from the DSO Entity	13.30 – 13.55	Florentien Benedict, DSO Entity
5.Discussion on R250428_11 from Iberian blackout	13.55 – 14.20	Cherry Yuen, ENTSO-E
6.ACER update on SO GL2.0 work	14.20 - 14.35	Jan Kostevc, ACER
7.AOB	14.35 – 15.00	

1. Review of actions

ENTSO-E, Cherry Yuen

TOP. 1 - Review of actions SO ESC

ACTION	Comments	STATUS
ENTSO-E will present the next update on DFD at the meeting of September.	Materials to be provided separately after RGCE approval. This should be ready for March 2026. See topic #8 of March meeting.	Done
Implementation of Art.39 of SO GL and follow-up of RoCoF discussion: ACER will liaise with GC and SO ESC members to establish the Terms of References of the new Expert Group (topic: a macro-economic study is provided by TSOs for adapting system operators to a net zero emissions power system)	EC will initiate a consultation on a forthcoming study which the new EG under GC and SO ESC will aim to support.	Ongoing
ENTSO-E will report again on the CGM topic when the next implementation milestone is achieved (e.g. go-live of regional RCC task based on CGMES based CGM).		
ENTSO-E will share the link to request models for stakeholder's simulations.	Link here .	Done

TOP. 1 - Review of actions SO ESC

ACTION	Comments	STATUS
ENTSO-E to share the final version of the paper on SO GL2.0 recommendations, when available, and to present an update at the next SO ESC meeting.		
ENSTO-E to present the conclusion of the project Inertia phase 2 and the next steps when phase 2 is finalised.	Planned for October meeting.	
ACER to present the timeline for their policy paper on SO GL2.0 at the next meeting.		
ENTSO-E to investigate if there were any frequency deviation incidents in Spain in October 2025.	ENTSO-E confirms that there were no incident.	Done
ENTSO-E to assess the possibility to provide more information on the root causes for frequency deviation > 100mHz.	Identifying the single root cause is complicated. TSOs already report, under ICSm, events of: 50 mHz < Δf for 5 < t ≤ 15 min. OR 100 mHz < Δf for 2 < t ≤ 5 min	

2. Updates on the implementation actions at pan-EU level

ENTSO-E, Cherry Yuen

Pan-European or regional deliverables 2026: SOGL/NCER

Expert Panel Final report on 18 May 2025 Blackout in North Macedonia
- [link](#)

3. Frequency related topics

Luca Ortolano, ENTSO-E

Work progress on TminLER

1

TminLER

- The approval process of the “TminLER proposal” is currently ongoing.
- CE TSOs and NRAs will discuss the further steps and keep SO ESC aligned.

4. Update from the DSO Entity

Florentien Benedict, DSO Entity

SO ESC Update DSO Entity

Florentien Benedict

SO ESC 17 June 2026



SOGL 2.0 future revision

- February 2026
 - In response to ACER's informal request for input, DSO Entity has prepared **a dedicated paper for ACER** and for discussion/co-ordination with Stakeholders.
- 19 May 2026
 - SOGL the stakeholders' workshop and Q&A session
- 17 June ESC SO

DSO Entity position related to System Operations

1. Overview- the need for the SOGL 2.0 revision
2. DSO Entity's preliminary assessment
3. Deep Dives in key technical topics for DSOs

1. Overview- the need for the SOGL 2.0 revision

Growing importance of distribution system operation

1. Recognizing the growing importance of distribution system operation, given the phenomenal growth of renewable resources on distribution systems, the new behaviours required of energy transition technologies (e.g. EVs and heat pumps) and DSOs' new co-ordinated legal responsibilities, **the SOGL should include all relevant rights and obligations for DSOs.**
2. **There is a general necessity for new DSO rights and obligations for DSO system operation.**
3. The **overall capacity of generation and flexible assets** connected to DSOs' networks is of the same order of magnitude as those directly connected to TSOs' networks, **whilst the number of such assets is significantly larger on DSO side.**

In the revision of SOGL, DSOs must be given the rights and responsibilities needed for the energy transition

2. DSO Entity's preliminary assessment (1/2)

1. The System Operation Guidelines (SOGL) introduced in August 2017 have been noted by ACER as now being appropriate to review.
2. ACER have indicated that they will collect issues and ideas from stakeholders in 2026, culminating in a policy paper and consultation at the end of 2026, with 2027 being devoted to detailed drafting development.
3. **The existing SOGL concentrates on the needs and rights of TSOs** for overall system operation, including obligations on DSOs and on significant grid users (SGUs) connected to DSO's networks.
4. **For DSOs to play their part** in the energy transformation, in line with DSO Entity's technical vision for serving customers through active system management, flexibility, energy sharing, the legal framework, of which SOGL is a key part, **SOGL needs to be updated and needs to give DSOs the necessary rights and responsibilities.**

2. DSO Entity's preliminary assessment (2/2)

- A. In response to ACER's informal request for input, DSO Entity has prepared a **dedicated paper for ACER** and for discussion/co-ordination with Stakeholders.
- B. The paper contains several key points, the key points are **extracted from general insights and preliminary recommendations after study Iberian Blackout**
- C. The paper has **14 key points**, but split between the three broad areas of :
 - 1. Data
 - 2. System operation
 - 3. Inclusion of new technologies

Table of Contents

1. General inclusion of DSO system management responsibilities within SOGL.....	2
2. Analysing system incidents	4
3. System operational control of assets.....	5
4. Structure of real time data management.....	6
5. Distribution islands	7
6. Non-compliance penalties	8
7. Short term power forecast.....	9
8. Definition of real time	10
9. Consequences for the KORRR.....	11
10. Scope of SOGL in relation to new technologies	12
11. Alignment with the changes of the NC RfG 2.0 and NC DC 2.0	13
12. Reactive power/voltage control	14
13. National collaborative training.....	16
14. Nested DSO Networks	17

DSO Entity is full engaged in reviewing the SOGL 2.0

3. Deep Dive- on Key items – Overview (1/9)

1. Data exchange

- Real time data management must recognize DSOs' emerging needs to have relevant real time data from all grid users and that it is appropriately managed and shared with TSOs.

2. System operation

- a. DSOs' role in the energy transition means they need new rights and tools to manage the power flows on their networks and the behaviour of users.
- b. The NC DR provides some of this, but the SOGL must catch up.
- c. Energy sharing, community energy and power island operation all require new rights and obligations for DSOs.
- d. Gaps for DSOs need to be closed in terms of voltage management and investigations into serious system incidents.

3. New technologies

- The current SOGL excludes all storage, EVs and heat pumps. The revised SOGL must consider from the ground up those technologies which have to be included to enable DSOs to manage their systems in co-ordination with the TSOs

3. Deep Dive- on Key items – Overview (2/9)

1. General inclusion of DSO
2. Analysing system incidents
3. System operation control of assets
4. Structure of data
5. Distribution islands
6. Non-compliance penalties
7. Short term power forecast
8. Definition of real time
9. Consequences for the KORRR
10. Scope of SOGL in relation to new technologies
11. Alignment with the changes of the NC RfG 2.0 and NC DC 2.0
12. Reactive power/Voltage control
13. National collaborative training
14. Nested DSO Networks

3. Deep Dive- on Key items – Overview (3/9)

1. General inclusion of DSO

1. The revised SOGL should include all relevant obligations and rights for DSOs which are needed to:
 - A. recognize the growing importance of distribution system operation, given the phenomenal growth of flexible renewable resources on distribution systems;
 - B. the emerging DSO smart grid capabilities; the new behaviors required of low carbon technologies (eg EVs and heat pumps);
 - C. DSOs' new coordinated legal responsibilities.

2. Analysing system incidents

Key ask! Include DSO Entity/ DSOs in the expert panels analyses on system incidents



DSO ENTITY
DSOs FOR EUROPE

**Joint Workshop on the Expert Panel Investigations of 2025
Focus on the Iberian Incident**

ESG GC and ESC SO
Florentien Benedict
04 May 2026

Contents

1. DSO's Strategic Learnings on Iberian Incident
2. Key Insights and Recommendations
3. Deep Dive on Key Technical Aspects for DSOs
4. DSO Entity Asks for the Next Steps

2. Analysing system incidents (1/5)

7.1 Scale 2 or scale 3 incident reporting, and classification

11. When **a scale 2** incident affects only one TSO, the first ICS Expert Panel meeting is conducted as usually. If in this meeting, it is undoubtedly confirmed that the incident affected only one TSO, the investigation proceeds as an internal investigation led by the affected TSO. The original Expert Panel members may, at their request, continue to participate in the investigation as members. The reports of the internal investigation shall be shared with ENTSO-E, the TSOs, RCCs, ACER, NRAs and the impacted DSOs. The internal reports shall follow the timeline set for the ICS Expert Panel reports.

- What kind of scale 2 incident?
- There are 10 kind of incidents registered in chapter 5
- To which incident is this paragraph (7.1 11) referring to?
- To 'incidents of loss of loads' L2 (5.2) as well?
- Please mind that 'scale 2 L2' means: $15 \% < L \leq 70 \%$ loss of load in a TSO's control area
- It is hard to understand that DSOs are not involved, what about general inclusion of DSOs?

2. Analysing system incidents (2/5)

7.2 ICS Expert Panel formation

1. The ICS Expert Panel conducts the scale 2 or scale 3 incident investigation. The **expert panel shall consist of the following members:**
 - a. **The convener of the expert panel:** ENTSO-E shall nominate an expert from a TSO not affected by the incident as the leader of the expert panel to ensure neutrality of the investigation;
 - b. **Expert panel members:** each TSO affected by the scale 2 or scale 3 incident shall appoint an expert to represent the TSO in the expert panel. Furthermore, at least two members from TSOs not impacted by the incident shall be included in the expert panel;
 - c. **RCC members:** At least one RCC member if the RCC Investigation Threshold was met based on the preliminary data in accordance with Article 5 of the RIAR Methodology. In addition, at least one RCC member from an RCC whose region was not affected by the incident shall be included. In the event that all RCCs were affected, all RCCs shall agree on the RCC members that participate in the ICS Expert Panel;
 - d. **WG ICS representative:** WG ICS shall nominate 1 or 2 representative(s) from the group to ensure that the procedure for the investigation of scale 2 and scale 3 incidents is followed;
 - e. **Representatives of the regulatory authorities and ACER** as nominated per their request; and
 - f. **Depending** on the nature of the incident and its impact on distribution grids, the ICS Expert Panel **may** decide to invite technical experts from the DSO(s) in the affected area(s) to participate to the investigation, provided that they comply with the requirements of Article 35 of Directive (EU) 2019/944, and/or experts from the EU DSO Entity. In the latter case, the representative shall be employed by a DSO complying with the requirement of Article 35 of Directive (EU) 2019/944 or by the EU DSO Entity secretariat.

2. Analysing system incidents (3/5)

7.2 ICS Expert Panel formation

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- d. **WG ICS representative:** WG ICS shall nominate 1 or 2 representative(s) from the group to ensure that the procedure for the investigation of scale 2 and scale 3 incidents is followed;
- e. **Representatives of the regulatory authorities and ACER** as nominated per their request; and
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2. Analysing system incidents (4/5)

7.2 ICS Expert Panel formation

1. The ICS Expert Panel conducts the scale 2 or scale 3 incident investigation. The expert panel shall consist of the following members:
 - **Analyzing this sentence:** What about the reasoning of this sentence?
 - **See b. Expert panel members,**
 - that means that the expert panel shall consist expert panel members? But if you are under a. c. d. etc you are an expert panel member as well? Is this legally correct?
 - **Under b. experts that represent ENTSOE**
 - **See f.**
 - Depending on the nature of the incident and its impact on distribution grids, the ICS Expert Panel may decide to invite technical experts from the DSO(s) in the affected area(s) etc etc.....
 - That means; the ICS Expert panel may decide to invite technical expert from the DSO(s)

2. Analysing system incidents (5/5)

2026

- North Macedonia
- Czech Republic
- Iberian black out

The DSOs have not been invited to the panels.

The DSOs are willing to cooperate in rewriting the ICS methodology.

Key ask! Include DSO Entity/ DSOs in the expert panels analyses on system incidents

3. Deep Dive- on Key items – Overview (4/9)

3. System operation control of assets

The **SOGL** should establish the **general principle that the DSO** should, by default, be in **sole direct control of the generation and demand connected** to its system in order to manage voltage control and congestion with some possible exceptions:

- a. Where an NRA approved framework, and associated processes are in place for provision of some system services to the TSO, from appropriate DSO customers.
- b. Use of reactive power from DSO connected customer to contribute either directly or indirectly to TSO voltage stability is agreed on a site-specific basis, between the TSO and DSO.

4. Structure of data

1. The exchange of relevant, appropriate **and high-quality data** remains a key area of focus and improvement.
2. DSO Entity notes that the existing arrangements for the collection of **real time data** are largely determined on a national basis, as required by the KORRR
3. However, given the future significant growth that will occur in DSO connected flexible assets etc, including down to domestic customers, it may be appropriate to **consider more adaptability in DSOs collecting more data directly** for the purposes of managing their networks.

3. Deep Dive- on Key items – Overview (5/9)

5. Distribution islands

1. Draw up requirements for **management of distribution islands**, which are intended to minimize outage duration in the distribution grid. For example, to be used during restoration after severe weather events.
2. **DSO Power Island Management:**
 - A. Obligation on all DSO customers to provide planning, scheduled and real time data
 - B. Obligation on selected DSO customers to implement the DSO's dispatch instructions
 - C. Provide clarification on who is responsible for frequency management – particularly for Planned Islands

6. Non-compliance penalties

1. There is not necessarily any incentive on parties to comply with the **data provision requirements** of SOGL (or KORRR).
2. DSO Entity underlines the **importance to guarantee** that all relevant parties subject to SOGL scope comply with their obligations.
3. Establishing sanctions in case of **non-compliance** could help to achieve it.

3. Deep Dive- on Key items – Overview (6/9)

7. Short term power forecast

1. DSOs have a need to **manage the flows** on their networks much more actively.
2. At the same time the interaction between TSO and DSO systems continues to grow and is becoming of increasing importance for voltage and congestion management.
3. One area of varying practice around Europe is the exchange of short-term **power forecast data** between TSOs and DSOs.
4. DSO Entity believes it would be useful for the SOGL revision to include some broad requirements for the sharing of **relevant data**. At national level, system operators shall define the time horizons for processes.

8. Definition of real time data

1. Noting the existing range of definitions of real time for data gathering, for operation and for analysing incidents
2. DSO Entity proposes that DSOs may define the resolution of real time data obtained from the following:
 - SGUs
 - PGMs
 - V2G/EVs- EVSEs
3. Demand facilities with maximum consumption capacities $\geq 1\text{MW}$. and which are connected to that DSO's network.

3. Deep Dive- on Key items – Overview (7/9)

9. Consequences for the KORRR

- Given the role, responsibilities and rights of DSOs, we would advocate the involvement of DSO Entity in the KORRR

10. Scope of SOGL in relation to new technologies

1. The SOGL currently focusses on SGUs, which is a term also used within the NC on Emergency & Restoration (NC ER), but defined subtly differently in that code.
2. In both codes the definition of SGU does not include electricity storage
3. This particular omission will be rectified when the NC Requirements for Generators (NC RfG) 2.0 is enacted, as electricity storage modules are clearly defined as being considered as power generating modules.
4. This same accommodation may apply to V2G EVs – as they are also power generating modules via being also classed as electricity storage modules.
5. However, the question also exists for power-2-gas units, heat pumps, and EVs which are not capable of V2G.

3. Deep Dive- on Key items – Overview (8/9)

11. Alignment with the changes of the NC RfG 2.0 and NC DC 2.0

1. DSOs may need to identify customers in relation to:
2. The existing SGU definition in SOGL 1.0;
3. Those currently excluded from the SGU definition, and whether these should be subdivided according to their capabilities: e.g.
 - A. Large storage installations;
 - B. Domestic scale storage installations
 - C. EVs, maybe split between V1G and V2G
 - D. Large demand sites;
 - E. Relevant domestic demand, i.e. smart appliances, heat pumps etc;
4. Whether any customers in the existing SGU definition should be transferred to classes for the above sub-bullets;
5. Whether the definition of SGU should depend on the presence or otherwise of certain contracts – although this might be an NC ER issue.

12. Reactive power/Voltage control

1. The dynamics of wholesale market schedules can have a direct influence on system stability, particularly during steep ramps associated with 15-minute market transitions.
2. This becomes more relevant in hours with negative prices in the wholesale markets because some generators may not be cleared in the wholesale markets or storage operators aim to benefit from arbitrage between day-ahead or intraday markets.
3. These abrupt changes in scheduled generation and demand can interact with prevailing voltage conditions, especially in the distribution networks that are very resistive.
4. This underscores the importance of considering market driven ramping behaviour as a potential stability factor and integrating these dynamics into future operational planning and risk mitigation strategies.

3. Deep Dive- on Key items – Overview (9/9)

13. National collaborative training

1. DSOs should be included in nationally specified training sessions to improve the knowledge of the characteristics of the system.
2. As well as the communication and coordination between TSOs and DSOs.
3. DSO Entity expects that such training would be organized on national level, although some EU level training may be appropriate.

14. Nested DSO Networks

1. The SOGL 1.0 responsibilities need to be checked to ensure that all DSOs without a transmission connection, i.e. “nested” DSOs and including closed DSOs, fulfil all the appropriate SOGL requirements.
2. The NC DR has explicitly addressed this issue and uses appropriate language to ensure the necessary liaison and co-ordination between DSOs.

Strengthened DSOs' Role in future SOGL Revision
Ensuring Full Collaboration with All Stakeholders

**Thank you for your attention
Questions?
Please contact us!**

5. Discussion on R250428_11 from Iberian Blackout

ENTSO-E, Cherry Yuen

Investigation on behaviour of non-observable embedded generators

Recommendation description:

TSOs and DSOs, together with the electrical industry, should further investigate the disconnection and reconnection behaviour of inverters, in particular distribution-connected inverters (including rooftop PV systems and other embedded generation <1MW). For this purpose, the Grid Connection and System Operation European Stakeholder Committees (GC ESC and SO ESC) should be used as a platform to exchange knowledge and experience.

Justification:

The data the Expert Panel received from PV system manufacturers during the investigation showed that many inverters tripped due to overvoltage during certain periods on 28 April. The Expert Panel also identified an important role of the reconnection time of the non-observable PV systems in the loss of generation.

However, the Expert Panel was unable to conduct an in-depth investigation and considers it beneficial to continue and intensify the exchange with DSOs and inverter manufacturers on this matter at the European level to better understand the voltage-related behaviour of non-observable embedded generators.

Delivery owners:

GC ESC and SO ESC (chaired by ACER), TSOs and DSOs.

6. ACER update on SO GL2.0 work

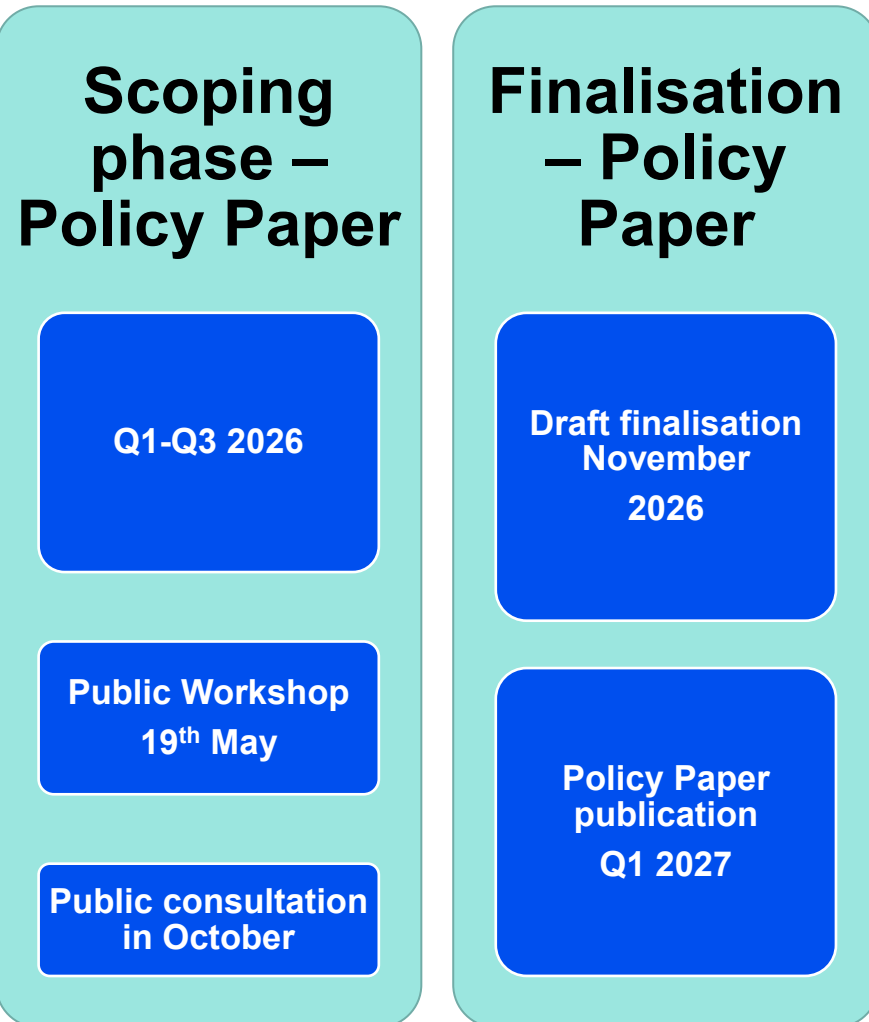
ACER, Jan Kostevc

SOGL Revision

17.6.2026, SO ESC

- **Main inputs relevant for SOGL policy paper:**
 - Short circuit & grounding
 - Retroactive applicability of SOGL 2.0
 - System state definitions
 - Accessibility of real-time data
- **Topics relevant for Balancing Policy Paper:**
 - Inertia as a market product?
 - Costs of Tmin LER not to be pushed on grid users





- **SOGL policy paper:**
 - First general ideas by end of April
 - Excluding Part IV (via Balancing Policy Paper)
 - Stakeholder Workshop 19 May
 - **Concrete proposal (problem definition) by end of June + policy options by September**
 - **Public consultation after summer**
 - **Draft finalisation in November**

Main areas – Problem definition

Coordination

- Between system operators (vertically and horizontally),
- Improve observability (across voltage levels, including SGUs, include dynamic behaviour)

Operational

- Voltage limits/control
- protection/control settings, HVDC impact area

Planning

- Include mid-term System design (system needs, CBA assesses solutions, NRA approval)
- 1–5-year time horizon
- Technology/Solution neutrality (e.g. include Grid Enhancing Technologies)
- TSO vs DSO system design (scope, timescale...)

General improvements

- Improve clarity & structure
- Align with other legislation
- Enlarged scope of significant grid users (SGUs)
- Explicit obligations for SOs and SGUs

Main system operation inputs for the Balancing PP

Inertia and/or FFR

- What is the required inertia limit?
- How can it be meaningfully paired with fast frequency response?
- Island operation requirements versus pan-European requirements?

Ramping restrictions

- frequency stability
- voltage stability
- HVDC + SGUs ?

Congestion

- Structural limits dependant on DSOs.
- Besides power flows, how to account for other local-structural issues, e.g. voltage (drops)?



European Union Agency for the Cooperation
of Energy Regulators

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7. AOB