System Operation European Stakeholder Committee

20 March 2025

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Reliable Sustainable Connected

Agenda

1. Opening • Review of the agenda, approval of last meeting minutes • Review of actions	13.15 – 13.30	Uros Gabrijel, ACER Cherry Yuen, ENTSO-E
2. Update on the implementation actions at pan-EU level	13.30 - 13.40	Cherry Yuen, ENTSO-E
3. Baltic synchronization	13.40 – 14.00	Donatas Matelionis, ENTSO-E
4. Report on CGM implementation	14.00 – 14.20	Habir Paré, ENTSO-E
5. Report on the ICS Scale 3 incident of 21 June 2024	14.20 – 14.35	Bastien Grand & Bernard Malfliet, ENTSO-E
Coffee Break	*14.35 – 14.50*	
6. Update on Tmin FCR LER – TF LLFD	14.50 – 15.00	Luca Ortolano, ENTSO-E
7. Updates from the DSO Entity	15.00 – 15.20	Florentien Benedict, DSO Entity
8. Wind eclipse project	15.20 – 15.30	Hanna Ljungberg, ENTSO-E
9. AOB	15.30 – 16.00	

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 either in June or September.	Materials to be provided separately after RGCE approval.	Ongoing
The European Commission will provide additional information on their inertia study at the next meeting.	Update to be provided when the project starts.	Ongoing
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
Wind Eclipse project: Stakeholders are invited to contact ENTSO-E if they have relevant data or feedback to provide. ENTSO-E will follow-up bilaterally with these stakeholders.	Some Stakeholders contacted EE. See TOP 8 in agenda.	Done

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

ENTSO-E, Cherry Yuen

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

February 2025	**Successful synchronization of the Continental European electricity system with the systems of the Baltic countries (link). See TOP 3 in agenda.**
	ENTSO-E publishes the Final Report on the Grid incident in South-East Europe (link). See TOP 5 in agenda.

3. Baltic Synchronization

Donatas Matelionis, ENTSO-E

TOP. 3 - Baltic Power system synchronization with Continental Europe synchronous area

2025-02-27

Baltic PS synchronization with Continental Europe synchronous area

2007 - Prime ministers of the Baltic states confirmed strategic objective to become part of the continental European network.

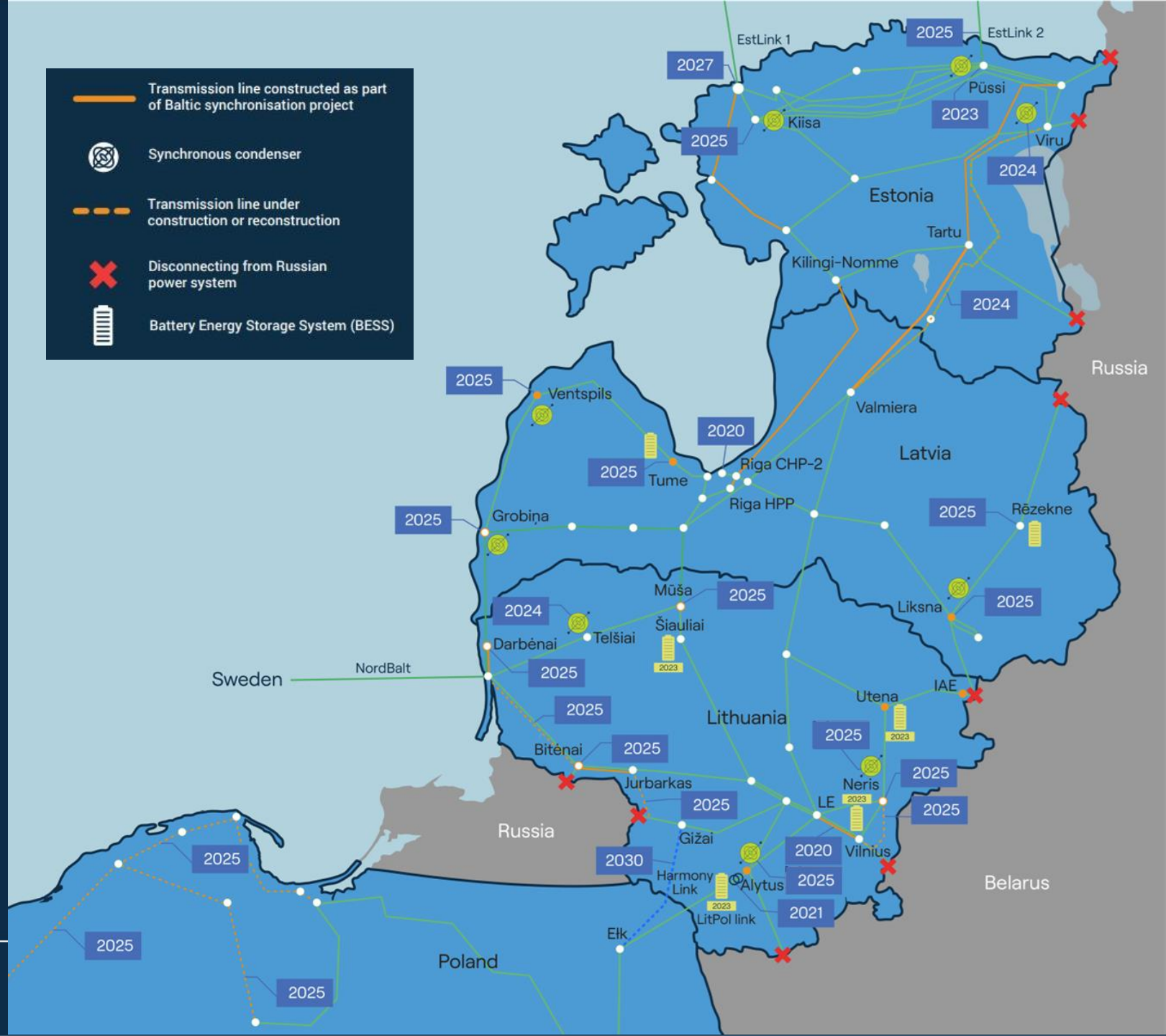
2019 – Baltic TSOs signed agreement on conditions of synchronous interconnection.

2019-2020 agreements were signed for total 1,2 bln. EUR of EU support.

2021 – LitPol Link synchronous interconnection installed and tested.

Total 41 investment projects in Estonia, Latvia, Lithuania, Poland.

Harmony link project has been changed from offshore HVDC to onshore AC interconnection and will be implemented by 2030.



TOP. 3 - Baltic PS decoupling from IPS/UPS

Preparations:

- 16 July 2024 Baltic TSO notified BRELL parties about non-renewal of agreement
- 26 November 2024 RGCE approved Baltic TSOs synchronization and isolated operation program
- 25 December 2024 Estlink II outage
- 7 February 2025 Steering committee (Elering, AST, Litgrid, PSE, Amprion) approved readiness to start decoupling and isolated operation test according the program

Decoupling sequence:

Decoupling from IPS/UPS started at 06:00
06:04 disconnection of LN308/447 LE-Sovetskas (LT-RU)
06:18 disconnection of LN325 Bitėnai-Sovetskas (LT-RU)
06:42 disconnection of LN326 Bitėnai-Sovetskas (LT-RU) – Königsberg island operation
07:43 disconnection of LN450 IAE-Postavai (LT-BY)
08:03 disconnection of LN309 Velikoretskaja-Rezekne (LV-RU)
08:48 disconnection of LN373 Balti-Kingisepskaja (EE-RU)
09:09 disconnection of LN374 Balti-Kingisepskaja (EE-RU) – Baltic PS island operation

All time is provided in EET

disconnected 330kV tie-lines with 3rd countries on 02-08

disconnected 330kV tie-lines with 3rd countries until 02-08

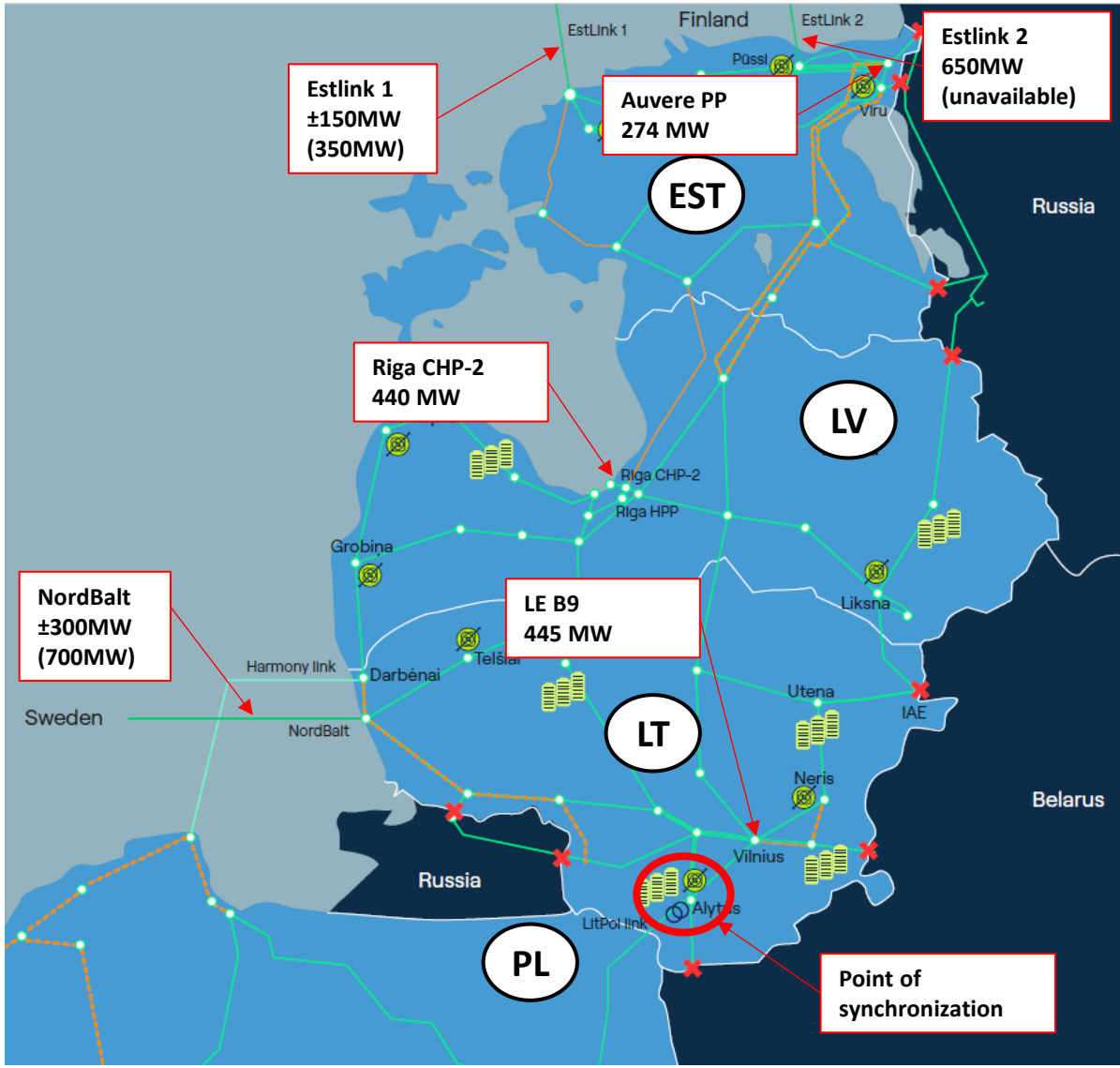
TOP. 3 - Baltic PS isolated operation test

Objectives:

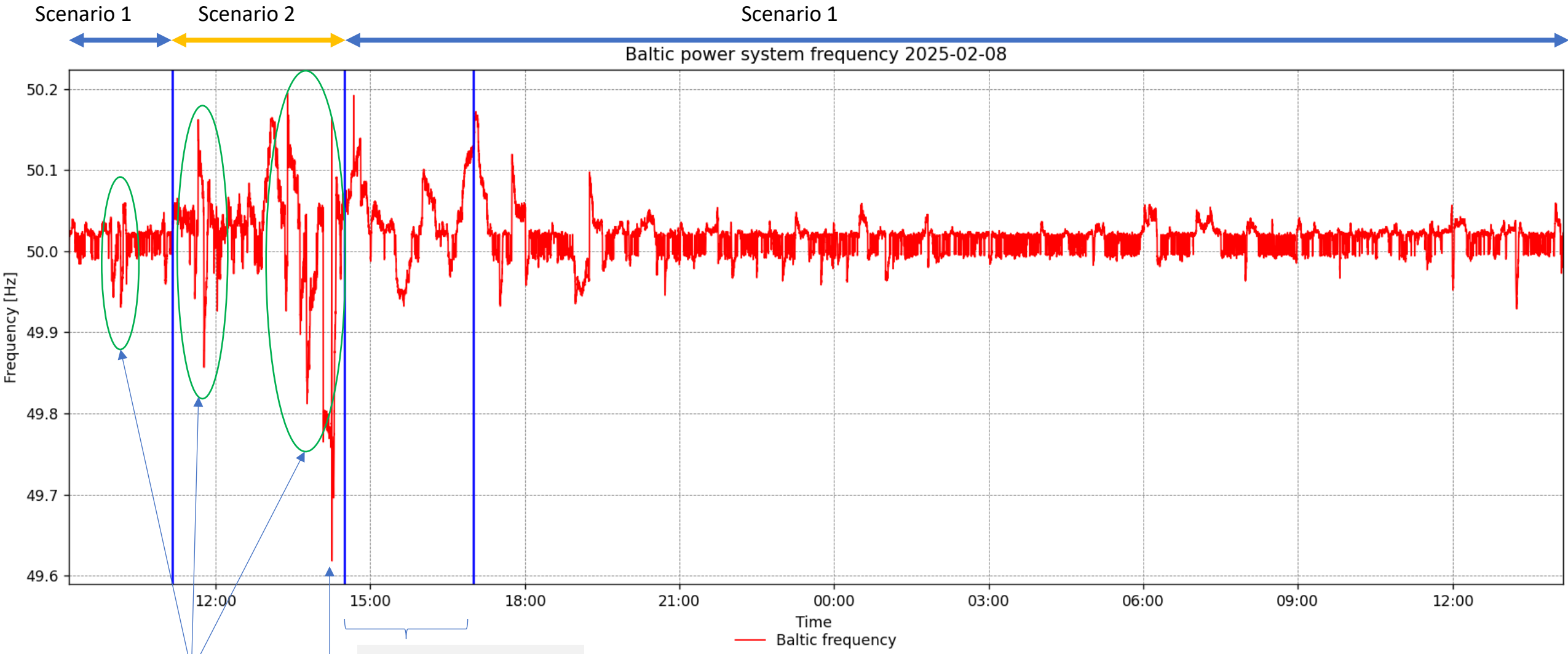
- Implementation of connection agreement requirements
- Verification of Baltic PS capabilities to operate in the isolated mode
- Verification of Baltic PS capabilities to perform frequency and voltage control:
  - 8 frequency deviation tests
  - 3 voltage deviation tests

Main parameters:

- Energy market and balancing markets operate as normal
- Limitation of HVDC interconnection capacities (NordBalt, Estlink I)
- Frequency control reserves:
  - ± 200MW FFR provided by BESS
  - Frequency support via HVDC:
    - ± 100MW NordBalt FFR, ± 200MW Estlink I
    - ± 200MW LitPol Link in emergency situation
  - ±150MW FCR
  - ±120MW aFRR
  - +726MW/-423MW mFRR
- Isolated operation length 29 hours
- 94% of demand was covered with local generation

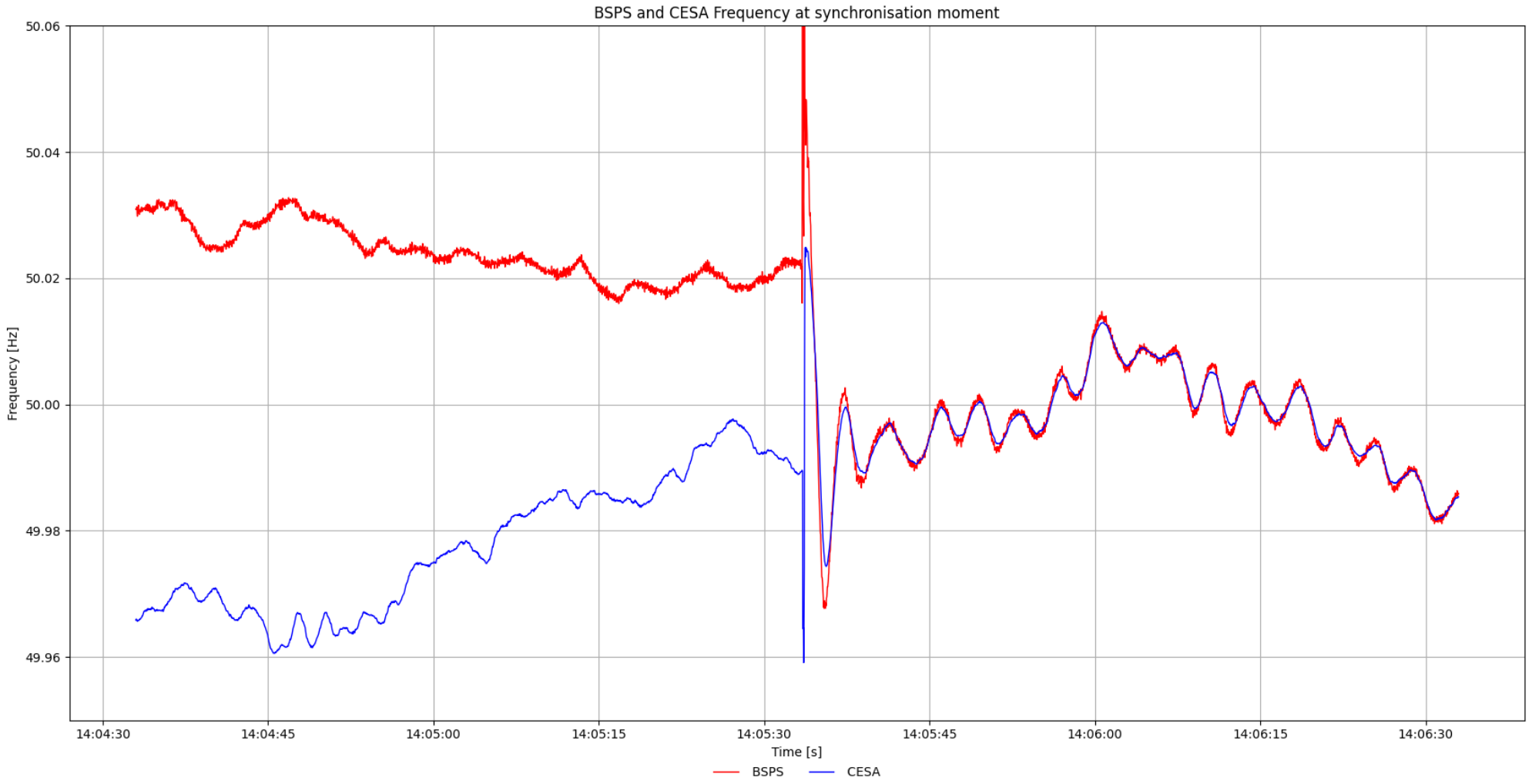


TOP. 3 - Baltic PS Isolated operation mode



TOP. 3 - Baltic PS synchronization with CESA

Baltic PS successful synchronization with CESA 2025 02 09 14:05:33 (EET)




Thank you!
SIEMENS

4. Report on CGM implementation

Habir Paré Nsangou, ENTSO-E

Achievements and Challenges

Main achievements during the period (December 2024 – February 2025)

1. **CGM action plan**:
   i. Preliminary conclusion for the approved streamlined governance.
   ii. Draft of architectural review of OPDE platform.
2. **CGM completeness and TSOs/RCCs Inter-Operability Sessions:**
   i. All 35 IGMs published successfully included into CGM during the 2025 year-ahead CGM creation.
   ii. Success on including about 30 of 32 published IGMs into merged CGMs on January session.
3. **CGM timing amendment:**
   i. Process timing alignment between CGM merging process and CSA process submitted to all TSOs.

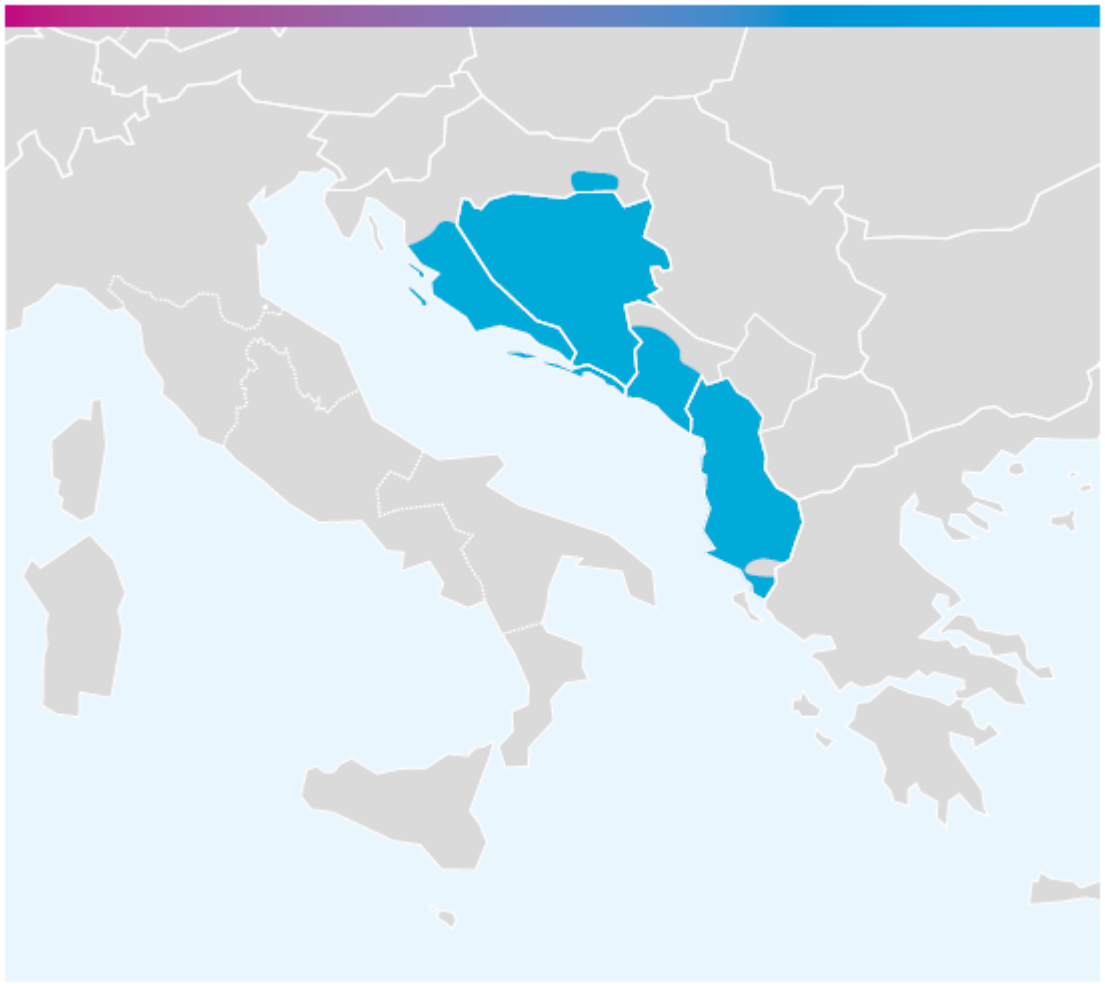
Main challenges identified (December 2024 – February 2025)

1. **Completeness of CGMs for Operational readiness** ensuring inclusion of all TSO IGMs
2. **CGM action plan**: Revamp of OPDE architecture to support all operational needs

5. Report on the ICS Scale 3 Incident of 21 June 2024

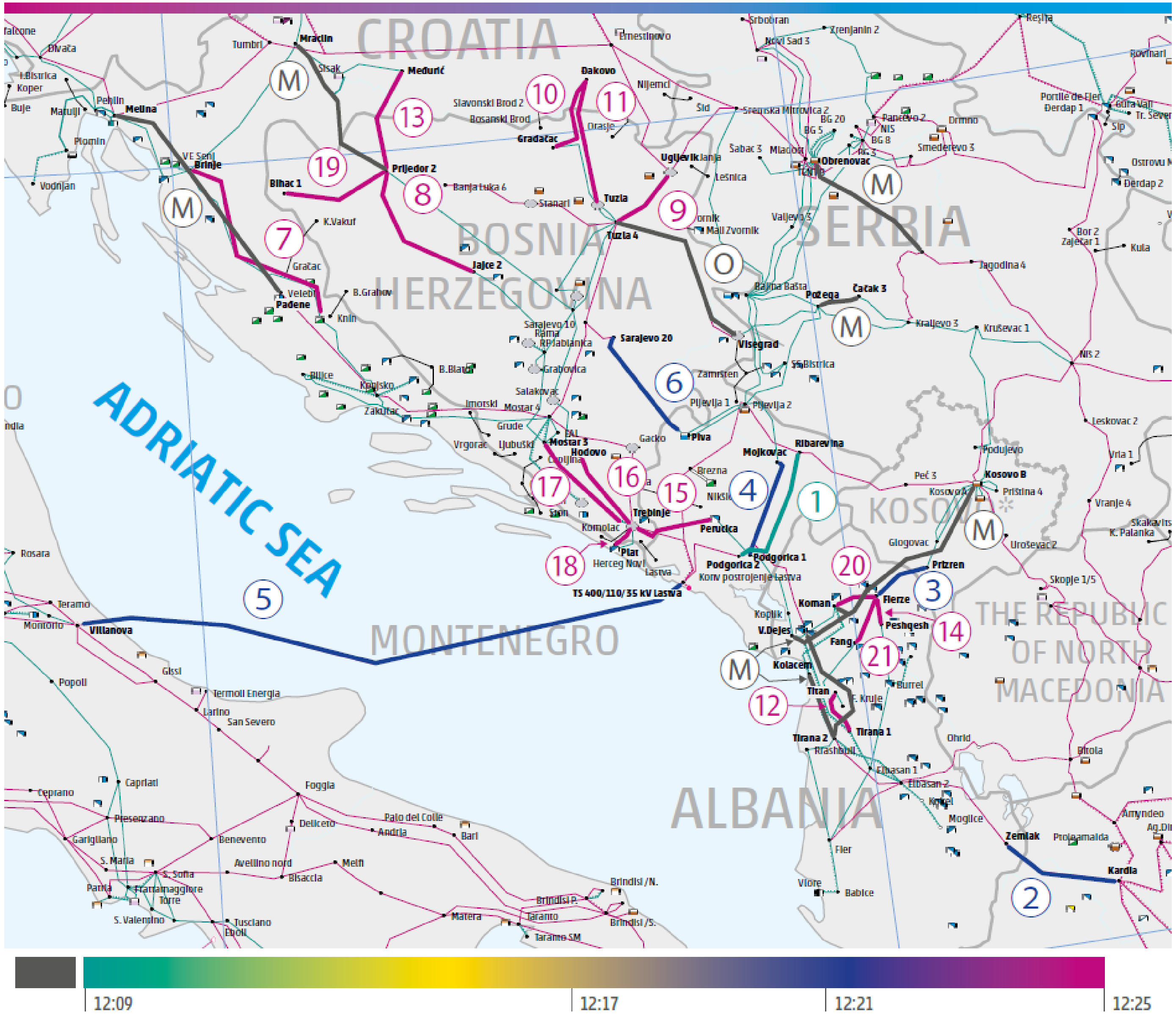
Bastien Grand & Bernard Malfliet, ENTSO-E

TOP. 5 - ENTSO-E Awareness System (EAS)

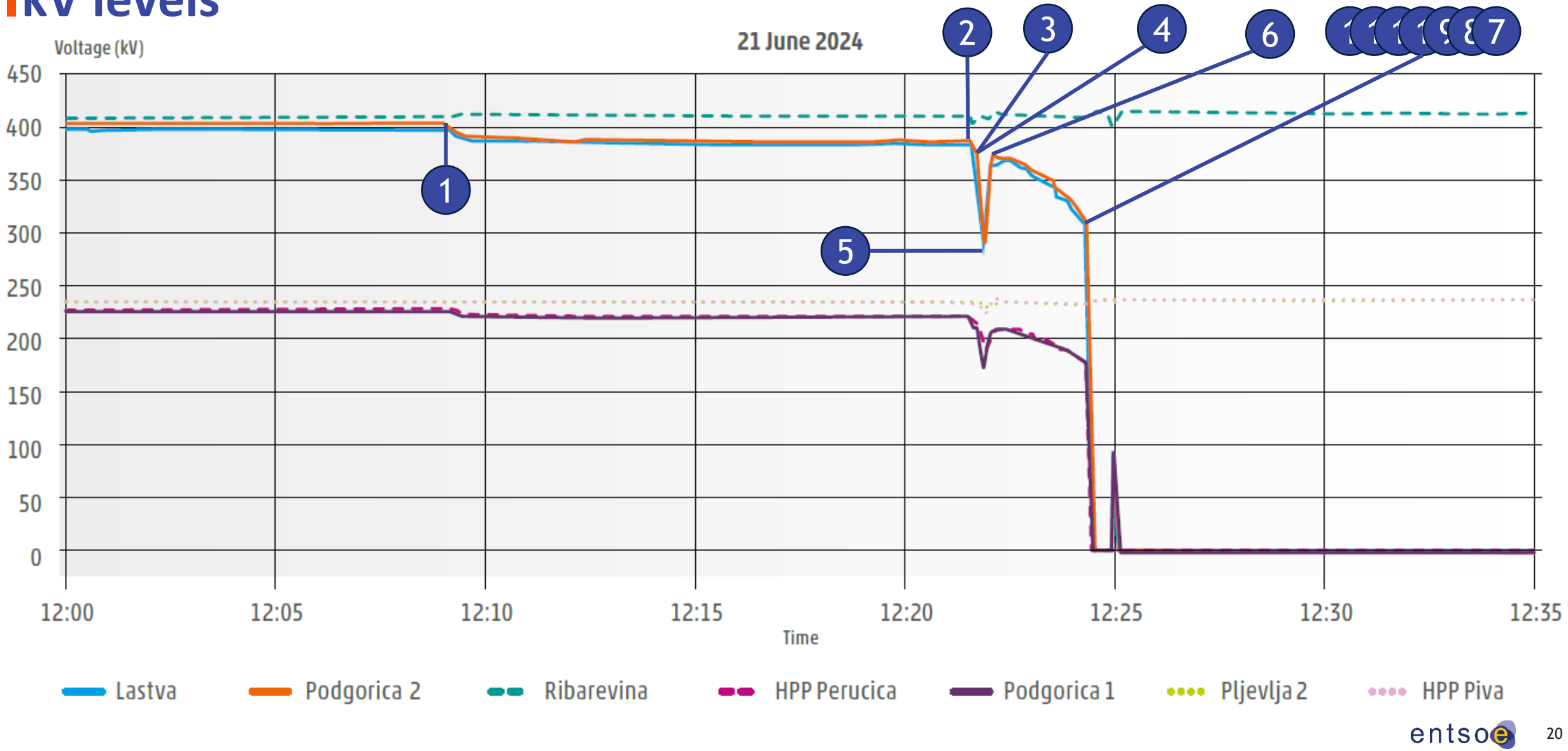


- June 21, 2024 at approximately 12:20 CET
- Blackout in Albania, Montenegro, Bosnia and Herzegovina and parts of Croatia
- Power restored within approximately 3 hours
- General cause, voltage collapse following multiple trips

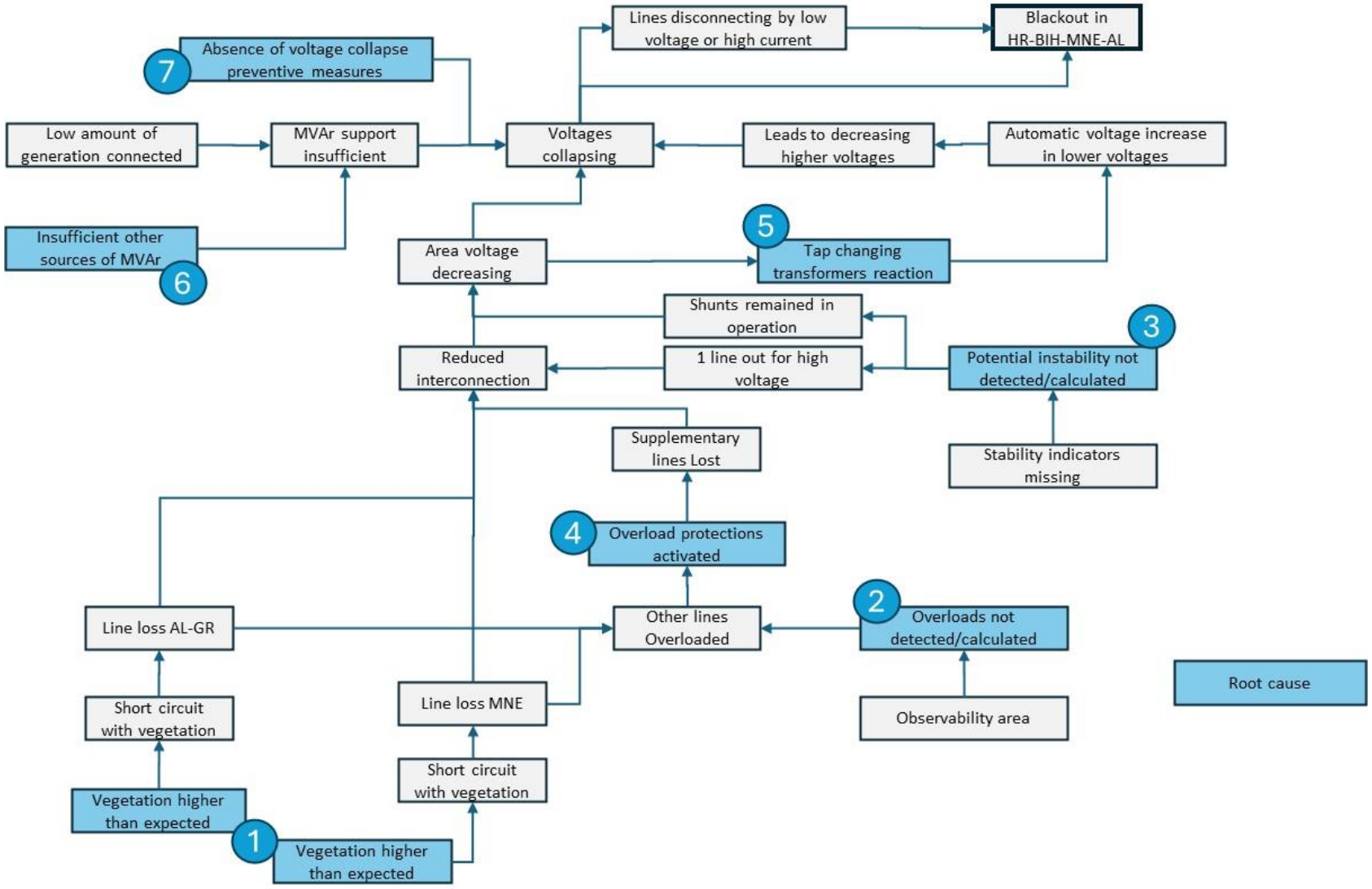
TOP. 5 - Factual Sequence of Events



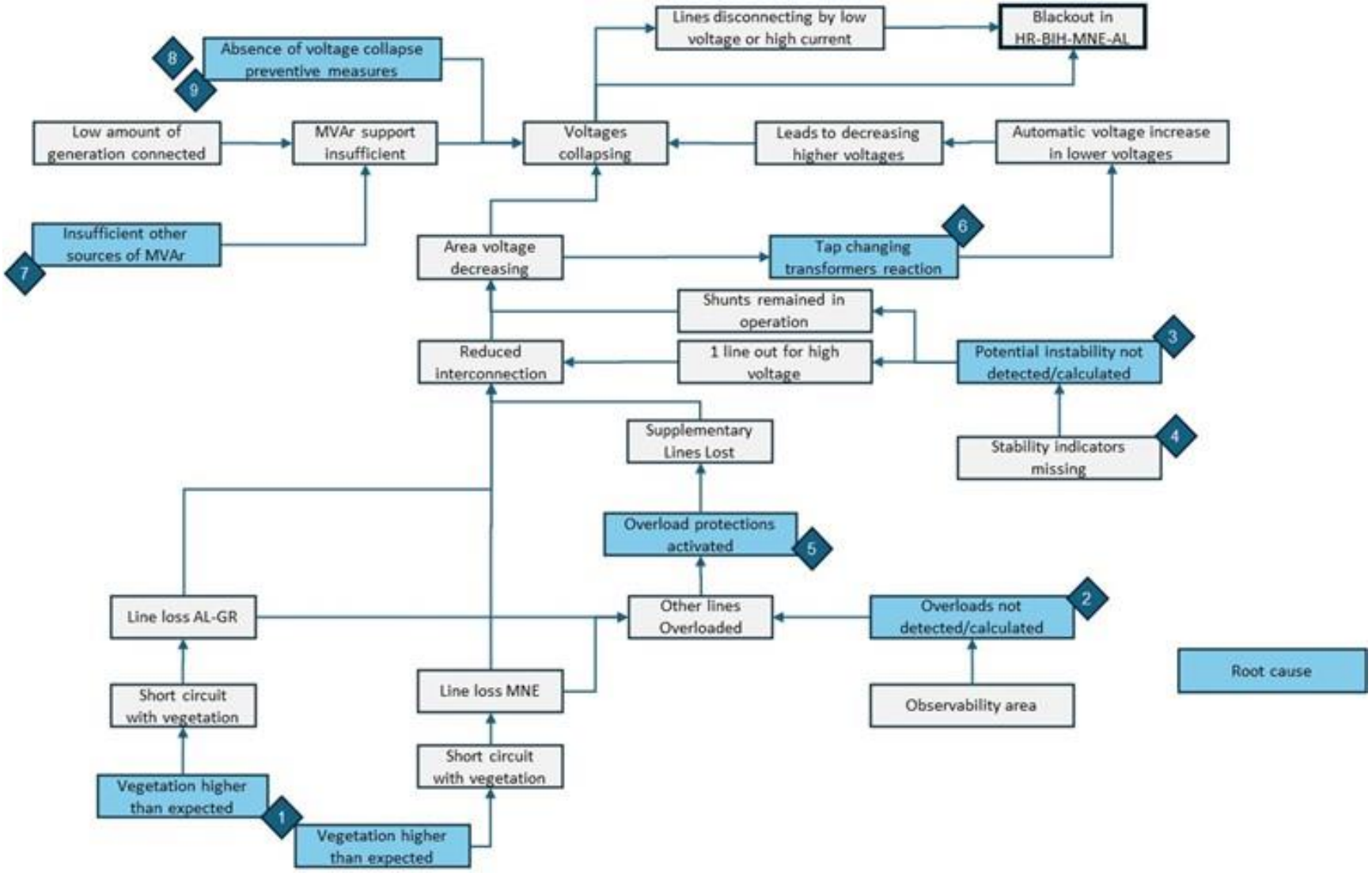
TOP. 5 - Voltage evolution in CGES network on the 400 kV and 220 kV levels



TOP. 5 - Conclusions on the incident



TOP. 5 - Recommendations on the incident



TOP. 5 - Recommendations

1. Check the national policy and operational process of vegetation growth control near the OHL and if needed review them.
2. Evaluate the N-1 calculations of incidents in the neighbouring grid in the real-time SCADA-EMS systems.
3. Regular assessment of voltage stability aspects in operational planning.
4. Analyse the possibility to identify easy to use KPI to detect reduced voltage stability and risk of voltage collapse
5. Review the already existing guidelines of ENTSO-E with respect to overcurrent protections in OHL to analyse a potential update if said guidelines with the findings of this incident.
6. Blocking of ULTC (under-load tap changers) of Transformers (V)HV-MV and VHV-HV, where appropriate (depending on renewable infeed and load characteristic).
7. Voltage and reactive power assessment for potential low voltage situations. Review installation of support means where a risk of voltage collapse could occur. This is a system design issue.
8. Study the possibility of implementing of an automatic emergency control concept for reactive power compensation devices on Mvar sources (capacitors IN, inductors OUT) at preset extreme voltage levels.
9. Assessment and installation of under-voltage load shedding (UVLS) at loads with a positive contribution on voltage in cases where insufficient other means of voltage support are available.

Priorities

High Medium Low

6. Probabilistic FCR dimensioning and TminLER proposal

ENTSO-E, Luca Ortolano

TOP.6 - Update on Probabilistic FCR dimensioning and TminLER proposal

- On 17 January 2025, the **CE NRAs approved** the proposal by the CE Transmission System Operators (TSOs) for **probabilistic dimensioning of Frequency Containment Reserves (FCR),** in line with Article 153(2) SO GL.
- The approval process at national level is ongoing.
- The approved methodology includes the **change introduced by the NRAs** in relation to the approach to **Limited Energy Reservoir (LER) depletion**. The CE TSOs are assessing the impacts of this change.

- The CE TSOs have **submitted the TminLER proposal to the NRAs**, which are evaluating the proposal.
- The CE TSOs remain available towards the NRAs and the Stakeholders for any further detail or information on the TminLER proposal.

Please see separate slideset.

7. Update from DSO Entity

Florentien Benedict, DSO Entity

8. Wind Eclipse project

Martijn Backer and Hanna Ljungberg, ENTSO-E

TOP. 8 - Project initiation and scope

Sudden and Large Swings in vRES Infeed Induced by Market/Regulatory Causes

❖ Discussed in SO ESC in 2023, resulting in the initiation of a project:

Key objective
Analyze and evaluate sudden and large swings in vRES infeed.

Focus areas
Root causes, extent and impact assessment.

Preparation of a questionnaire distributed to 12 TSOs on current practices

Data analyses to understand the relation between the change in vRES infeed and market/ regulatory triggers

Evaluation of any operational impact from such changes

TOP. 8 - Analysis and key findings

Questionnaire key findings

The majority of TSOs experience large changes in vRES infeed. Identified Root Causes:

- Negative prices in Day-Ahead market often coupled with the existence of a support scheme;
- Negative imbalance prices and reactive balancing;
- Wildlife protection regulations to a limited extent.

Data Analysis Insights

There is a potential link between occurrence of negative prices in Day-Ahead market and changes in infeed:

- Seemingly no critical operational impact;
- TSOs reported impact on ACE as well as voltage and congestions issues.

✓ Majority of TSOs consider it part of normal operation today and cover any change with existing reserves.
✓ TSOs are already using and developing mitigation measures. Situation is expected to deteriorate in the future.
✓ Continuous monitoring and collaboration of TSOs to address the topic.

9. AOB