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ConvERSE
European framework for Security of Supply Monitoring

Rafael Muruais Garcia, Head of Department

13 April 2026, Webinar

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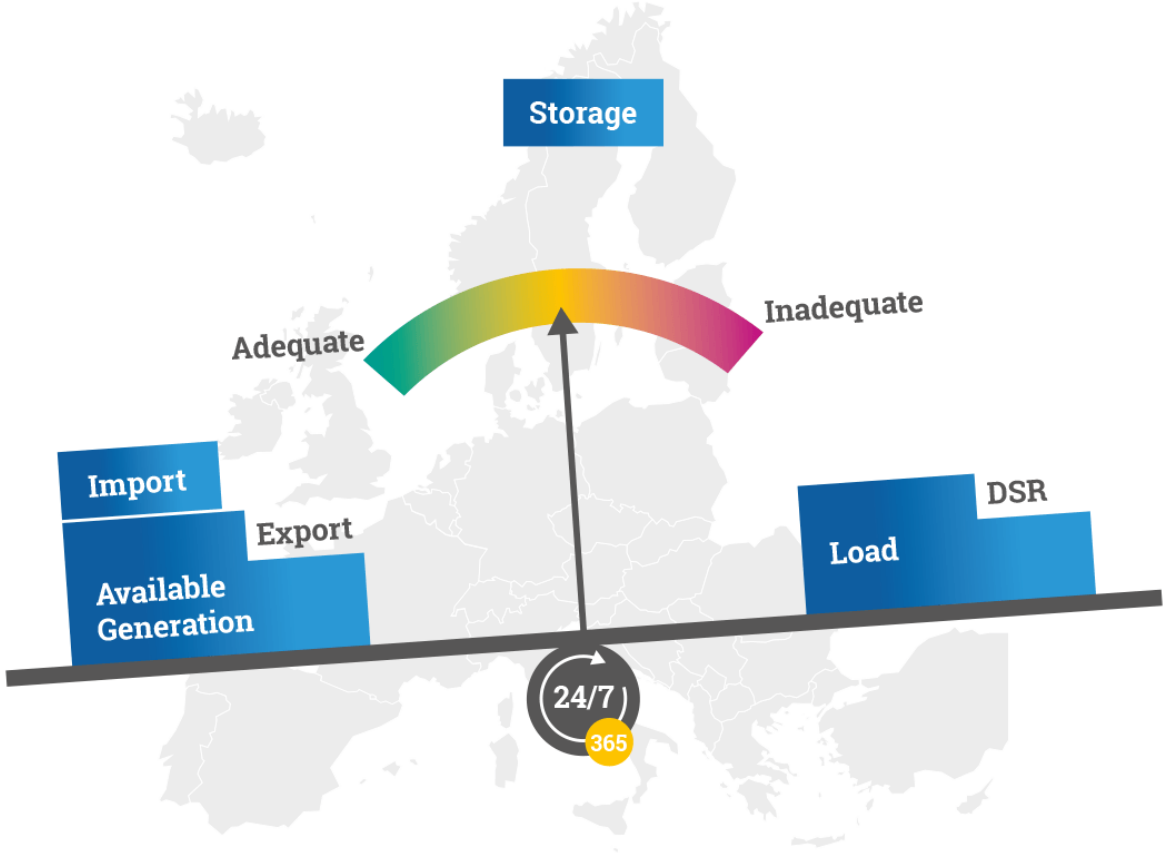
What is adequacy?

- Security of supply = keep the lights on 24/7 !

= operational security + adequacy (+ flexibility, resilience, robustness…)

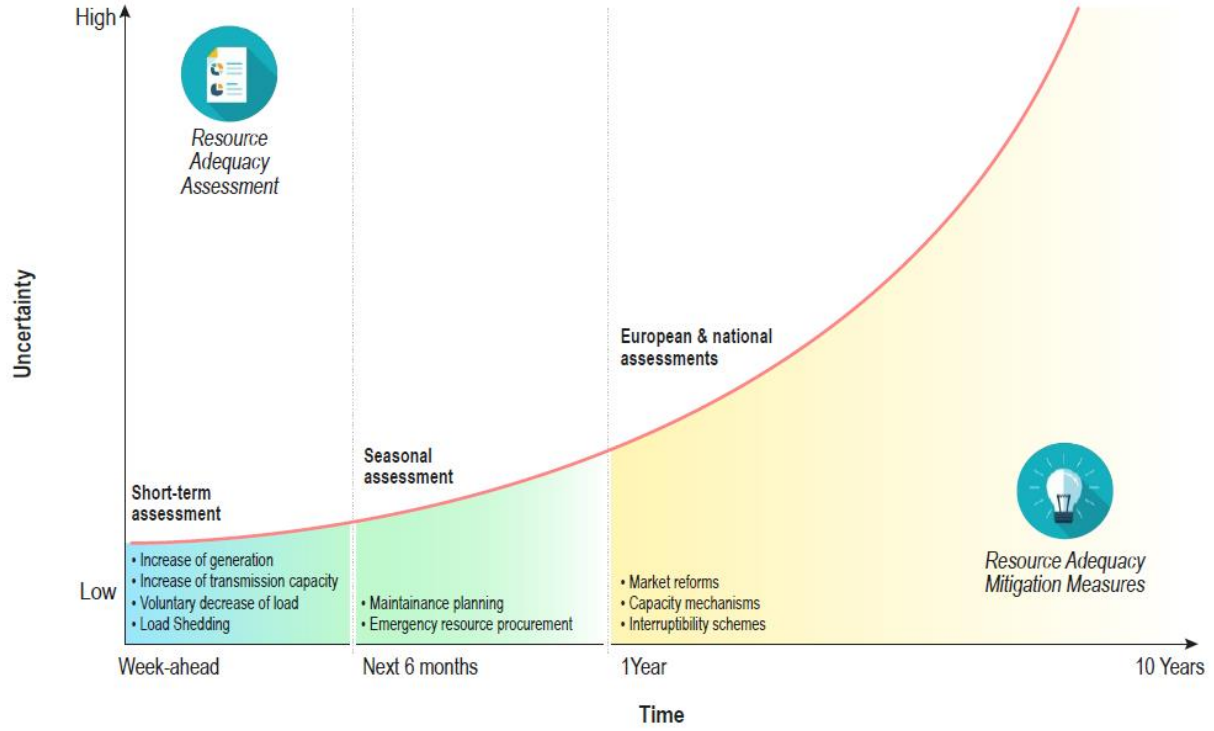
- Electricity is (still) difficult to store: forecast and deal with peaks, relying on different components (with different lead times)

- Adequacy Vs Risk Preparedness



Source: ENTSO-E

Two frameworks: Adequacy and Risk Preparedness



Risk Preparedness*

	Member State 1		
Scenario Name	**Scenario Rating**	**CBD**	**National rating**
Fuel Shortage	1	1	1
Cyberattack	2	1.2	2.4
Heat wave	1	1.2	1.2
Cold spell	0	1	0

- **Adequacy** = probabilistic assessment, taking into account best available forecast and the likelihood of a large number of possible situations.

- Yet, it is sometimes not possible to **address the likelihood of specific low probability-high impact events,** such as the one of an extreme drought.

*ACER Decision on Crisis Scenarios Methodology: Annex I: Example of regional scenario rating & Cross-border dependency rating

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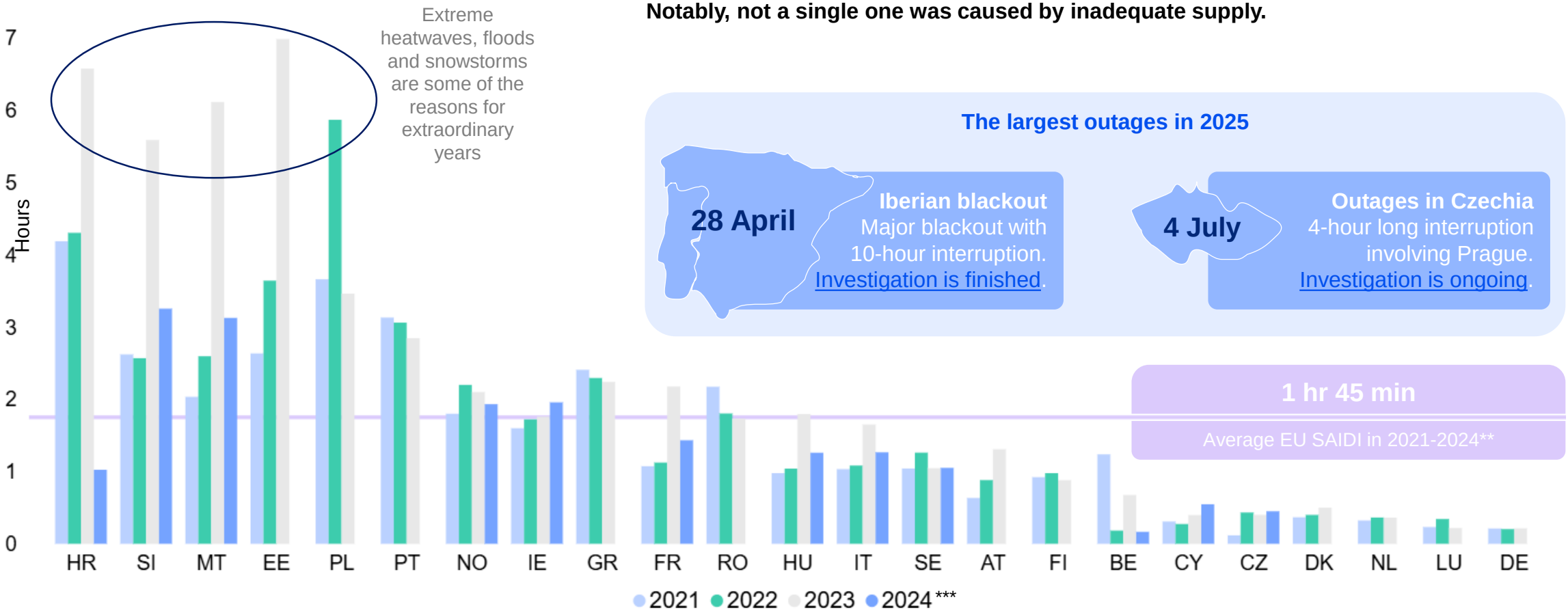
Recent outages not caused by lacking resources

How long were the lights out during the year?

System average interruption duration index (SAIDI), EU-27, 2021-2024 (hr)*



The interconnected European power system offers resilience against sudden shocks, largely thanks to its scale.

Still, outages are a reality across Europe, with the average interruption time under 2 hours. **Notably, not a single one was caused by inadequate supply.**

The largest outages in 2025

28 April

Iberian blackout
Major blackout with 10-hour interruption.
Investigation is finished.

4 July

Outages in Czechia
4-hour long interruption involving Prague.
Investigation is ongoing.

1 hr 45 min

Average EU SAIDI in 2021-2024**

Source: ACER based on NRA data. Includes unplanned and planned outages on all available voltage levels. LT, BG, LV data not available. ES does not report SAIDI.
* Reliability level 99.98% ** Average SAIDI experienced by end-users in the EU (weighed with population) is lower, at1hr 23min.
*** For 2024 multiple Member States indicate either no data available or data incomplete.

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Clean Energy Package: coordinated framework

The Package defines a **uniform framework** for resource adequacy across Europe:

- **Key goal:** harness the benefits of **sharing resources** across Member States

How?

- Harmonised monitoring of resource adequacy based on the European Resource Adequacy Assessment **(ERAA)**
- **Complementary national assessments (NRAAs)** optional

- **Well-functioning wholesale energy markets first**!

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EU pays almost 11bn EUR for a plethora of measures

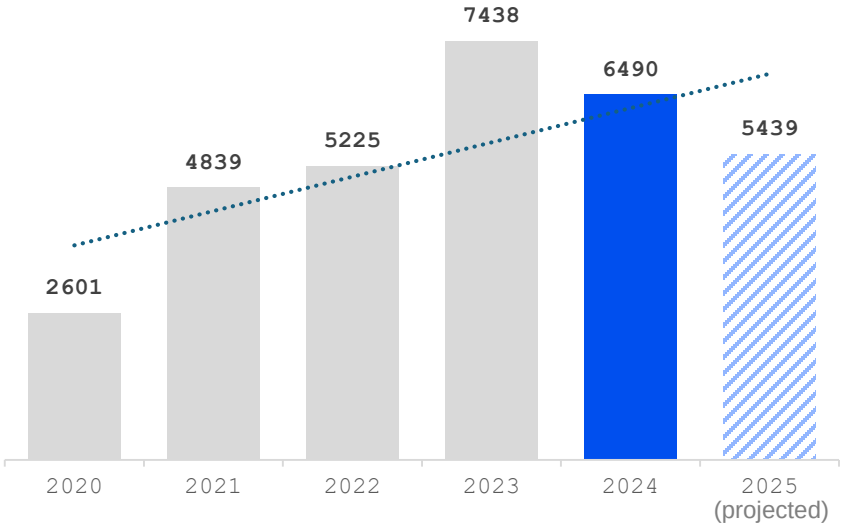
Expanding Measures, Growing Costs

EU **capacity mechanism costs** have steadily increased as more Member States adopt these measures, with costs concentrated in a few countries operating capacity markets.

Flexibility measures remain below 5% of total support costs but are set to grow. Over one-third of total costs comes from diverse **'other' measures**, mainly congestion-management schemes, interruptibility, and emergency restoration.

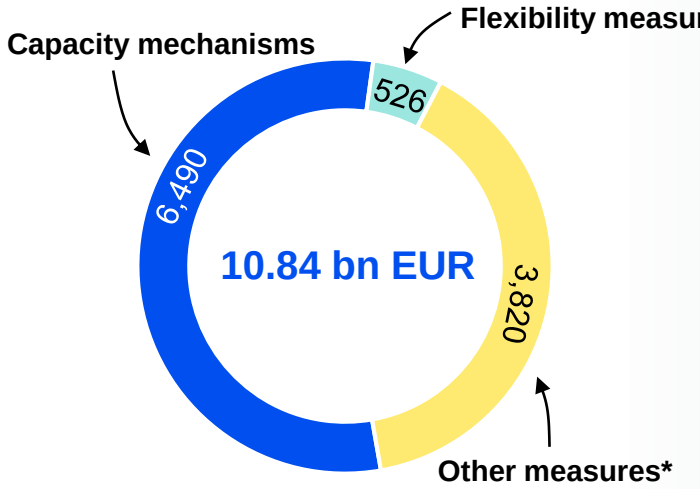
Increasing costs of capacity mechanisms

Cost of capacity mechanisms[1], EU-27, 2024 (million EUR)

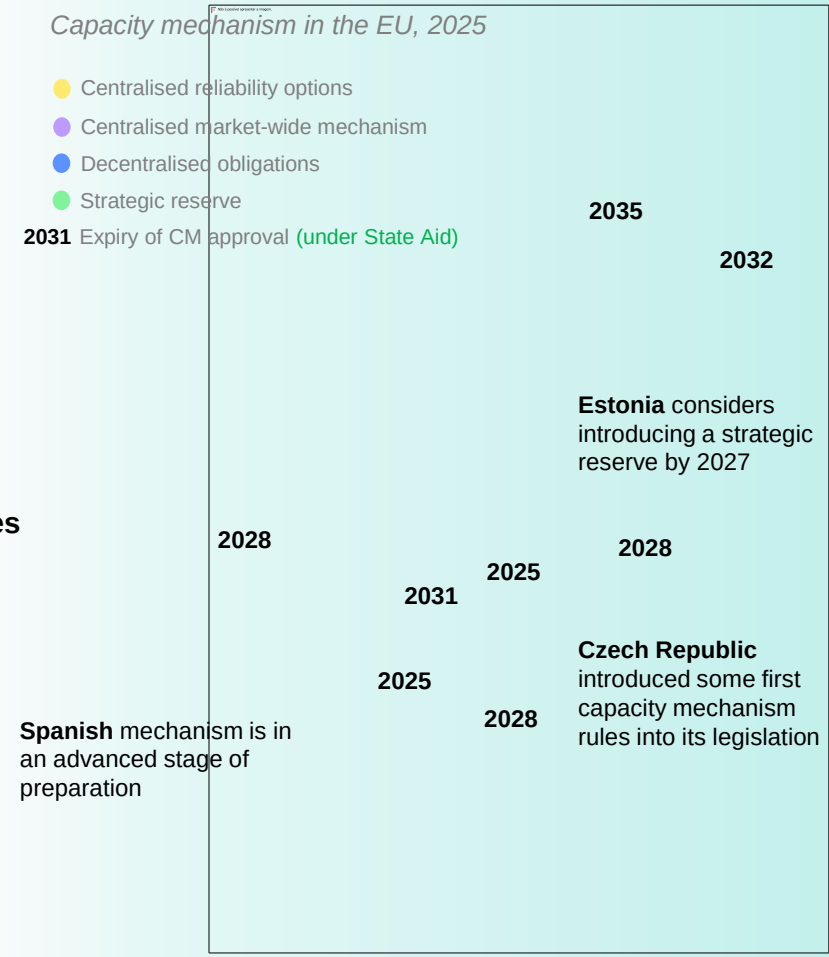


Support measures are costing the Member States a pretty penny

Cost of all support measures, EU-27, 2024 (million EUR)



Capacity mechanism in the EU, 2025



Sources: ACER based on NRA data, Estonian market reform plan, Spanish updated market reform plan, amendment of the Czech energy law.
*Other measures refer to support schemes that do not fall under the categories of 'capacity mechanisms' or 'flexibility measures'. These are defined as initiatives that relate directly or indirectly to security of supply and provide remuneration to market participants for capacity outside of balancing mechanisms.
[1] For cost calculation assumptions see note (2) in *Annex II*

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ACER regularly monitors security of supply

- ACER monitors security of supply, publishing dedicated reports since 2022.
- Some recurring topics:
  - implementation status of the adequacy framework,
  - adequacy assessments across Europe,
  - updates on the status of capacity mechanisms and other measures.
- Recent editions also offer deep-dives into capacity mechanism design features and flexibility mechanisms.

ACCESS ACER **SoS MONITORING PAGE**

Thank you.
Any questions?

The contents of this document do not necessarily reflect the position or opinion of the Agency.

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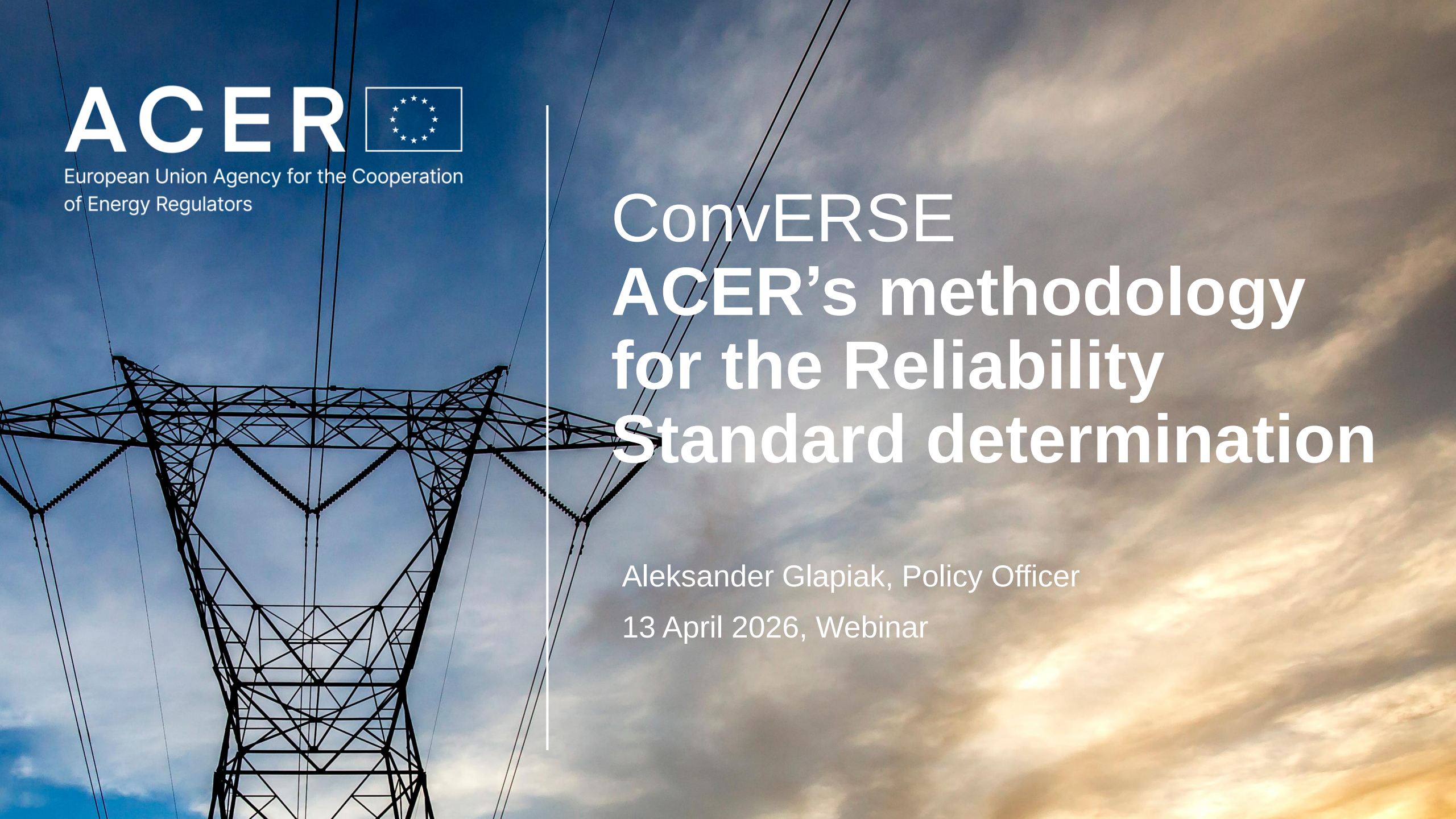

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ConvERSE
ACER's methodology for the Reliability Standard determination

Aleksander Glapiak, Policy Officer

13 April 2026, Webinar

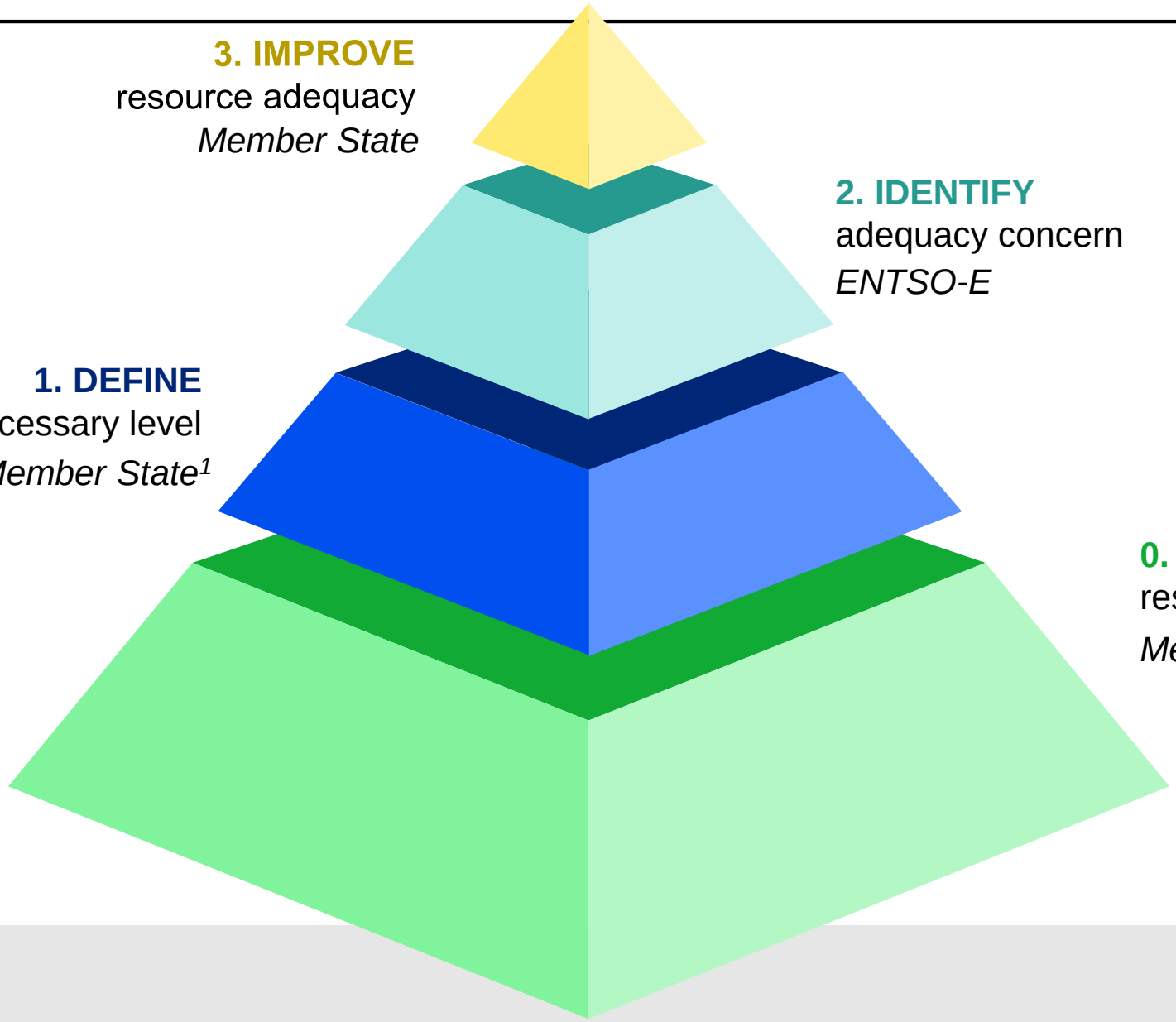
Framework for ensuring resource adequacy

3. IMPROVE
resource adequacy
Member State

2. IDENTIFY
adequacy concern
ENTSO-E

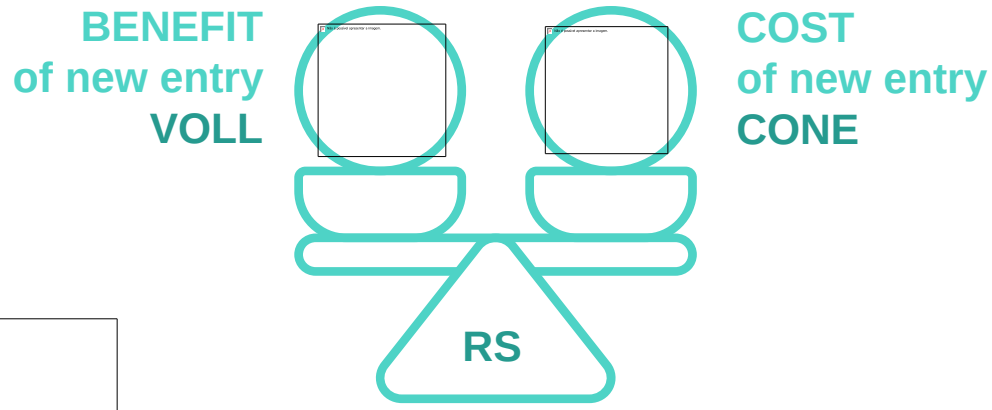
1. DEFINE
necessary level
Regulator and Member State[1]

0. MONITOR
resource adequacy
Member State



Adequacy Metrics Methodology in a nutshell

- The methodology seeks to calculate a socioeconomically efficient reliability standard
- It **strikes a balance** between the cost of having additional capacity (CONE) and the benefits of having less demand disconnections (measured by the VOLL).
- VOLL estimates how consumers value uninterrupted electricity supply.
- CONE is based on techno-economic information of all possible resources that can be deployed to reduce demand disconnections (incl. DSR/storage).



VOLL – Value of Lost Load
CONE – Cost of New Entry

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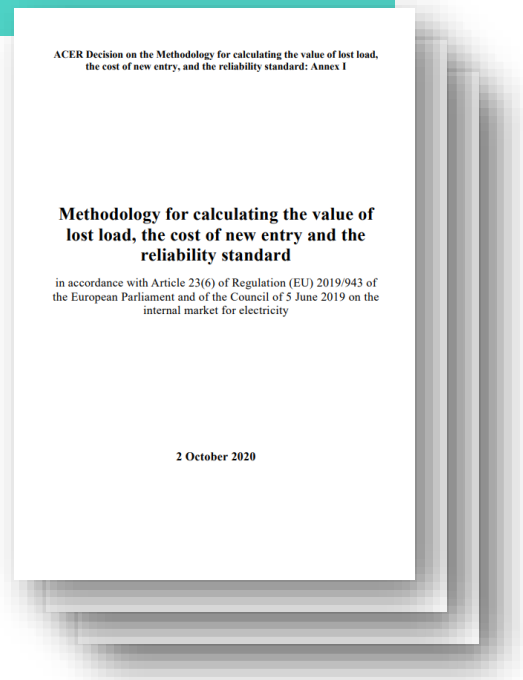
$$RS = \frac{CONE}{VOLL}$$


ACER Decision on the Methodology for calculating the value of lost load, the cost of new entry, and the reliability standard: Annex I

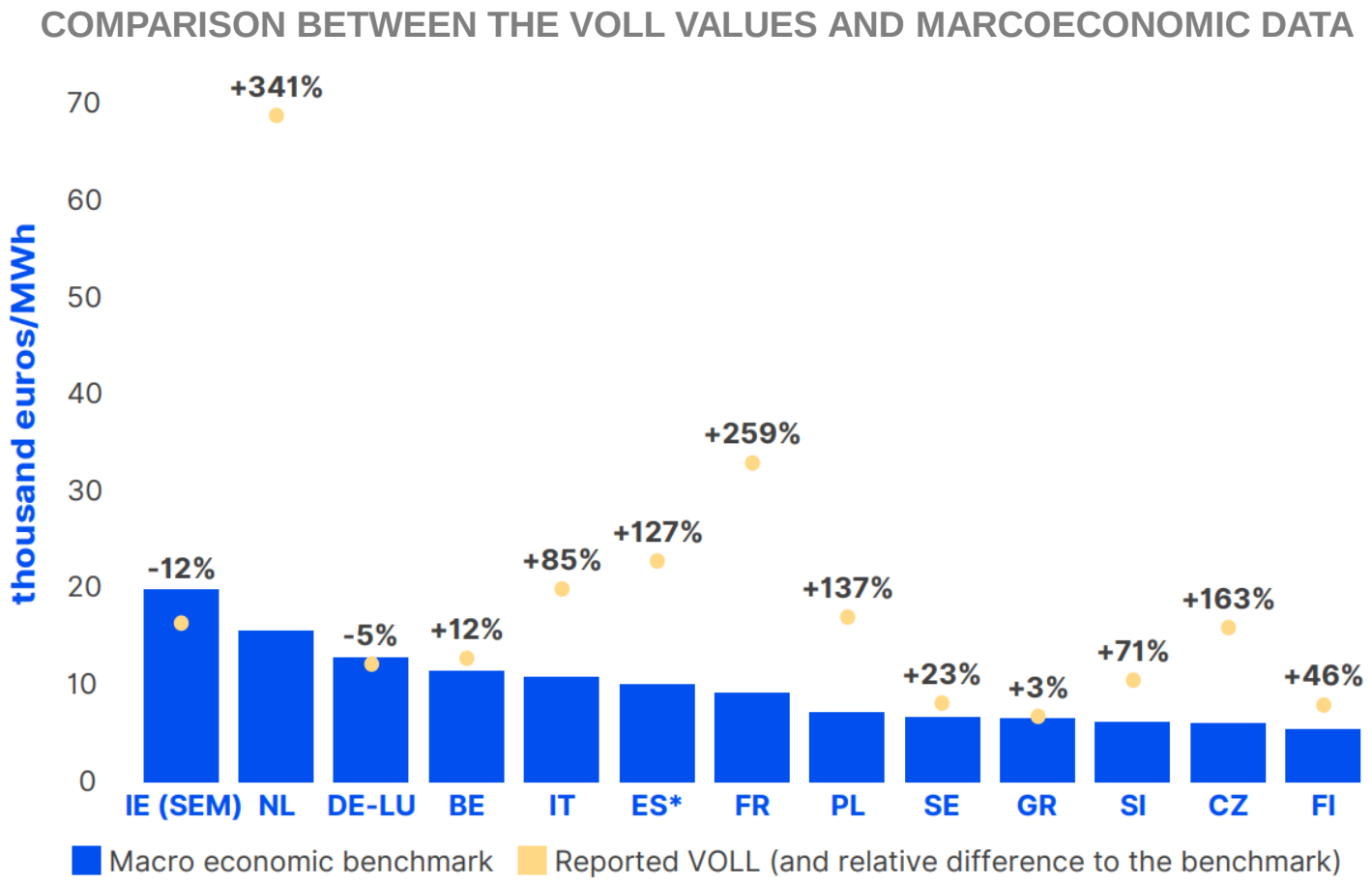
Methodology for calculating the value of lost load, the cost of new entry and the reliability standard

in accordance with Article 23(6) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity

2 October 2020

VOLL – Value of Lost Load
CONE – Cost of New Entry

What have we learned about VOLL?



- Large interval of relative differences ranging from -17% to +341%
- The macrodata-based VOLLs show a consistent and coherent pattern that is missing in the survey-based VOLLs.
- This hints to:
  - differences in implementation decisions and
  - the diversity of outcomes inherent to survey method.

Source: ACER consultancy study

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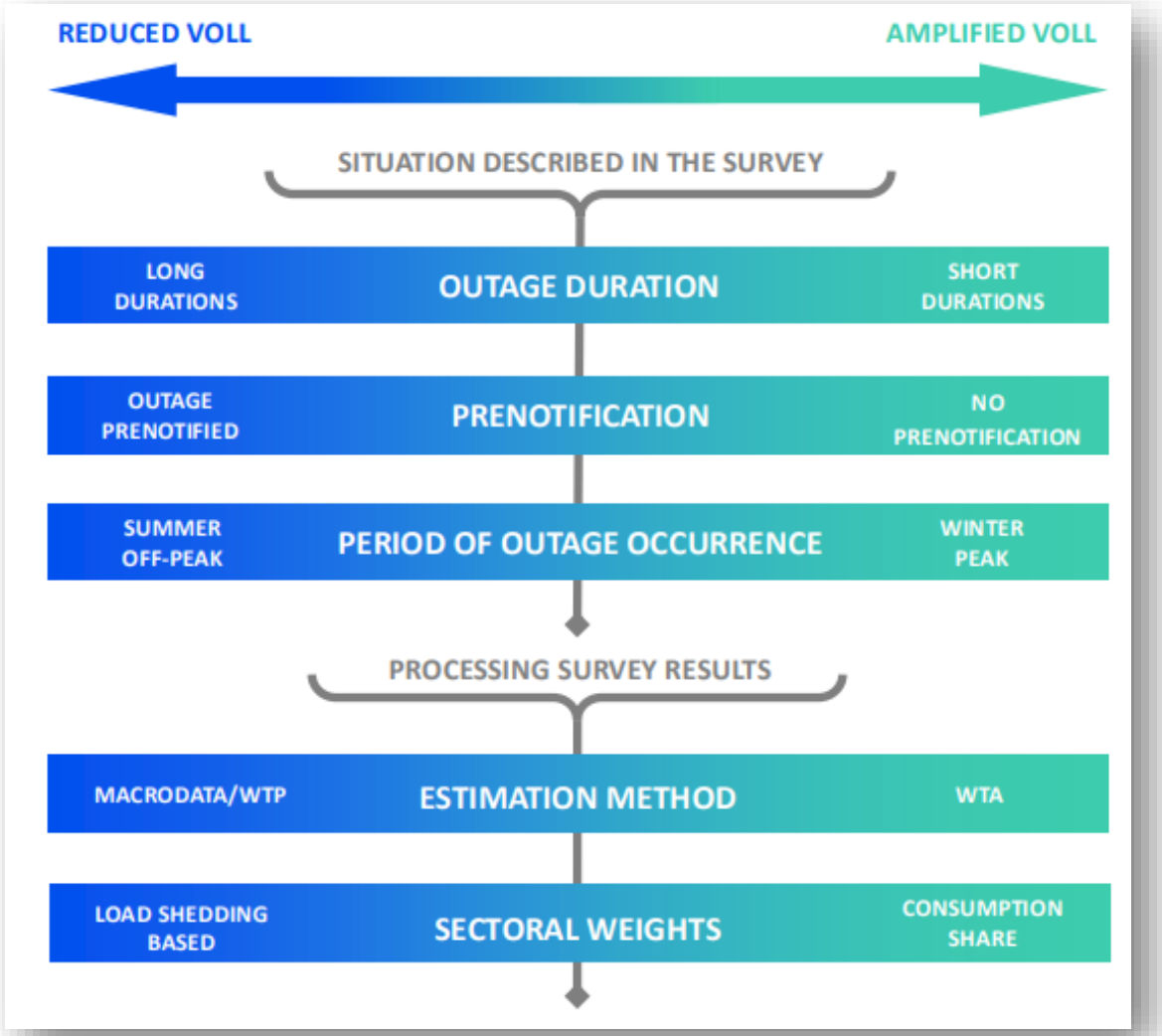
Factors influencing the value of lost load



Source: ACER Monitoring Report

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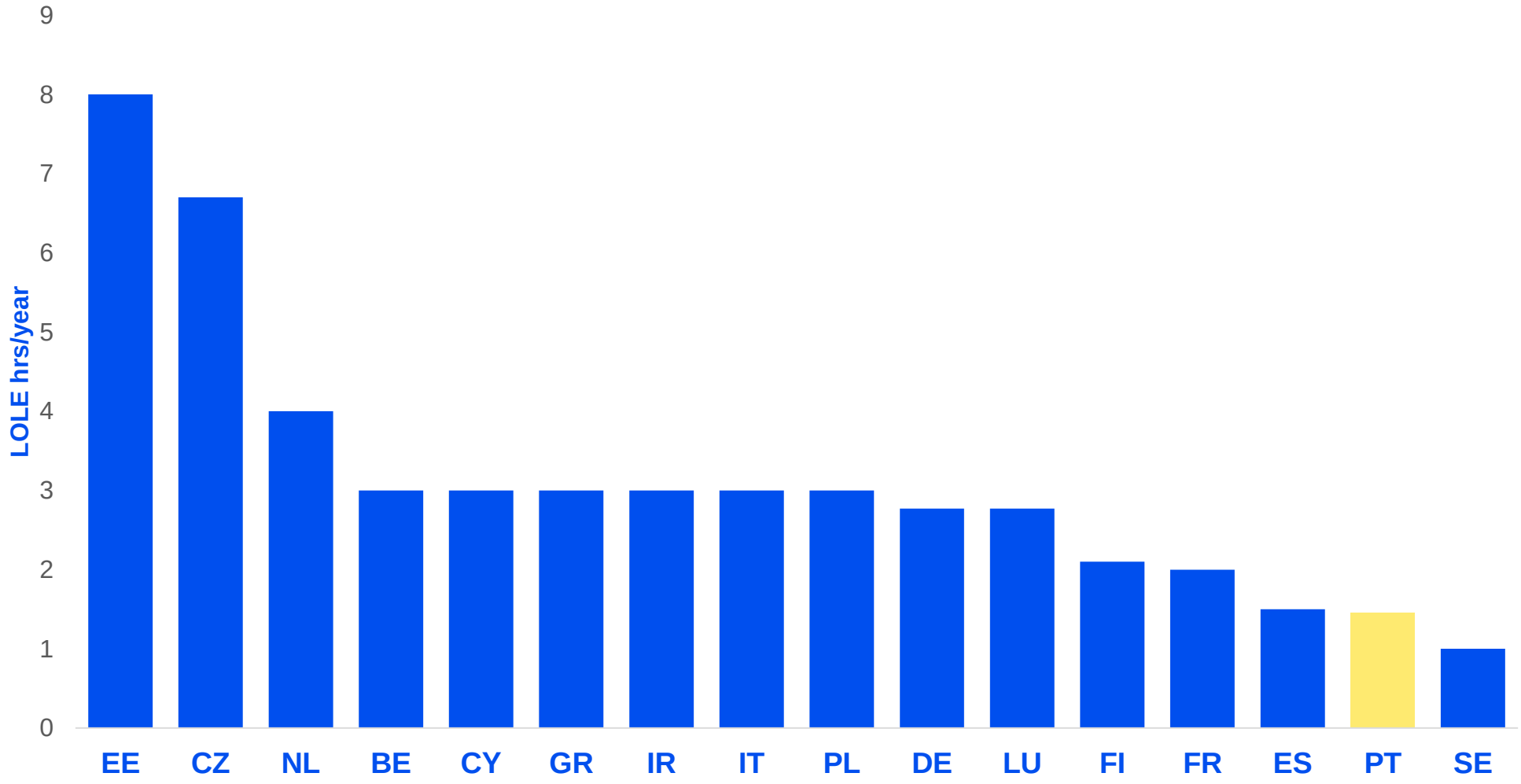
Reliability Standards across the EU



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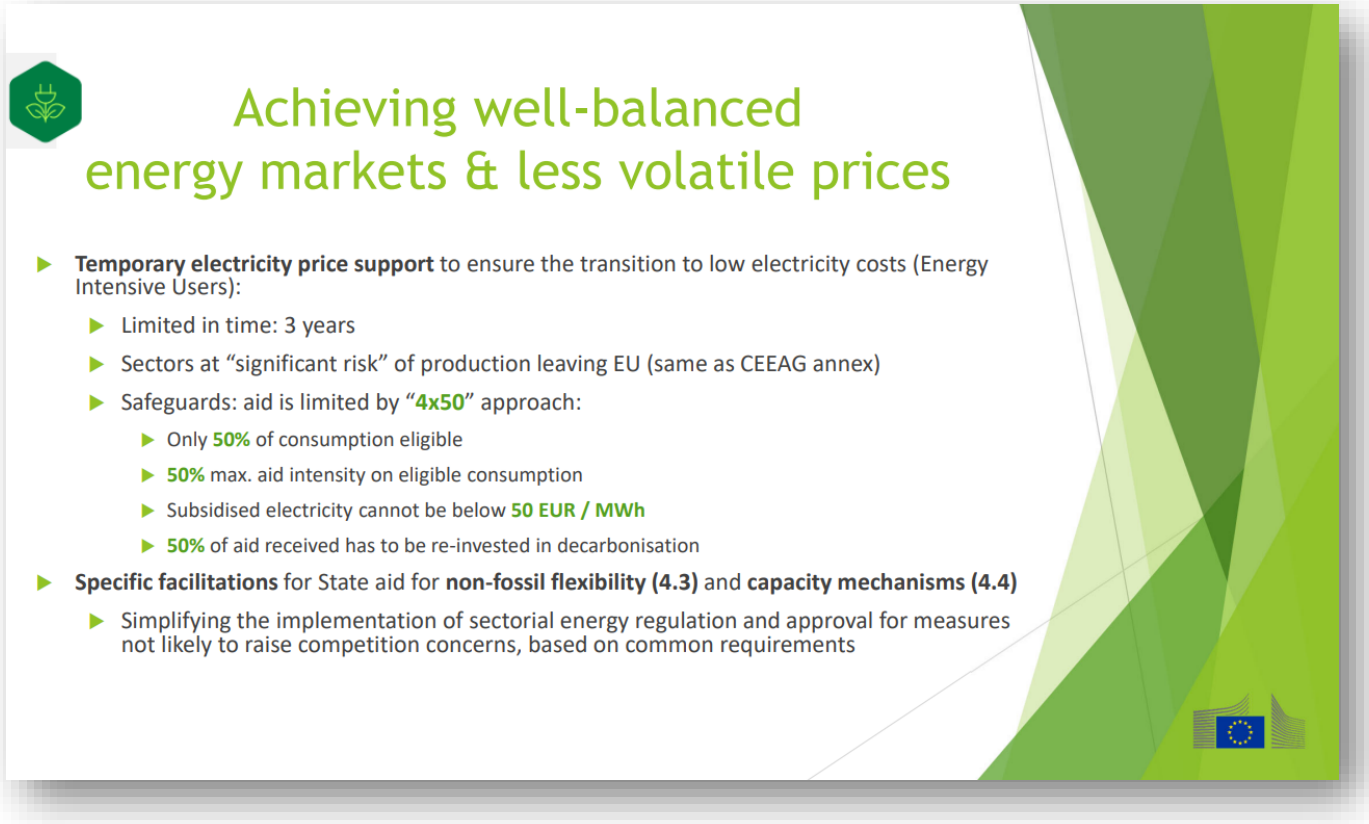
Streamlined approval of capacity mechanisms

Fast-track approval for “target model” strategic reserve or market-wide mechanism.

- One-stop-shop assessment: target models are **pre-aligned** with Electricity Regulation, ACER rules, and State aid criteria.
- Member States justify the **need** for a mechanism in a simple fashion, using ERAA and EU-level adequacy metrics determined by ACER.
- Clear, standardised **design checklist** (technology-neutrality, competitive tenders, open participation, minimum entry 1 MW, no discrimination).



ACCESS info about ACER’s **CONE Study**

Source: European Commission

Thank you.
Any questions?

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ACER role and governance

- **Supporting the integration of energy markets in the EU** (by common rules at EU level). Primarily directed towards transmission system operators and power exchanges.
- **Contributing to efficient trans-European energy infrastructure**, ensuring alignment with EU priorities.
- Monitoring energy markets to ensure that they function well, **deterring market manipulation and abusive behaviour**.
- Where necessary, **coordinating cross-national regulatory action**.
- Governance: **Regulatory oversight is shared** with national regulators. **Decision-making** within ACER is collaborative and joint (formal decisions requiring 2/3 majority of national regulators). **Decentralised enforcement** at national level.
- Headquartered in Ljubljana, Slovenia. **Engaged across the EU**.