

# ERAA 2026 Stakeholder webinar: Methodology



1 July 2026

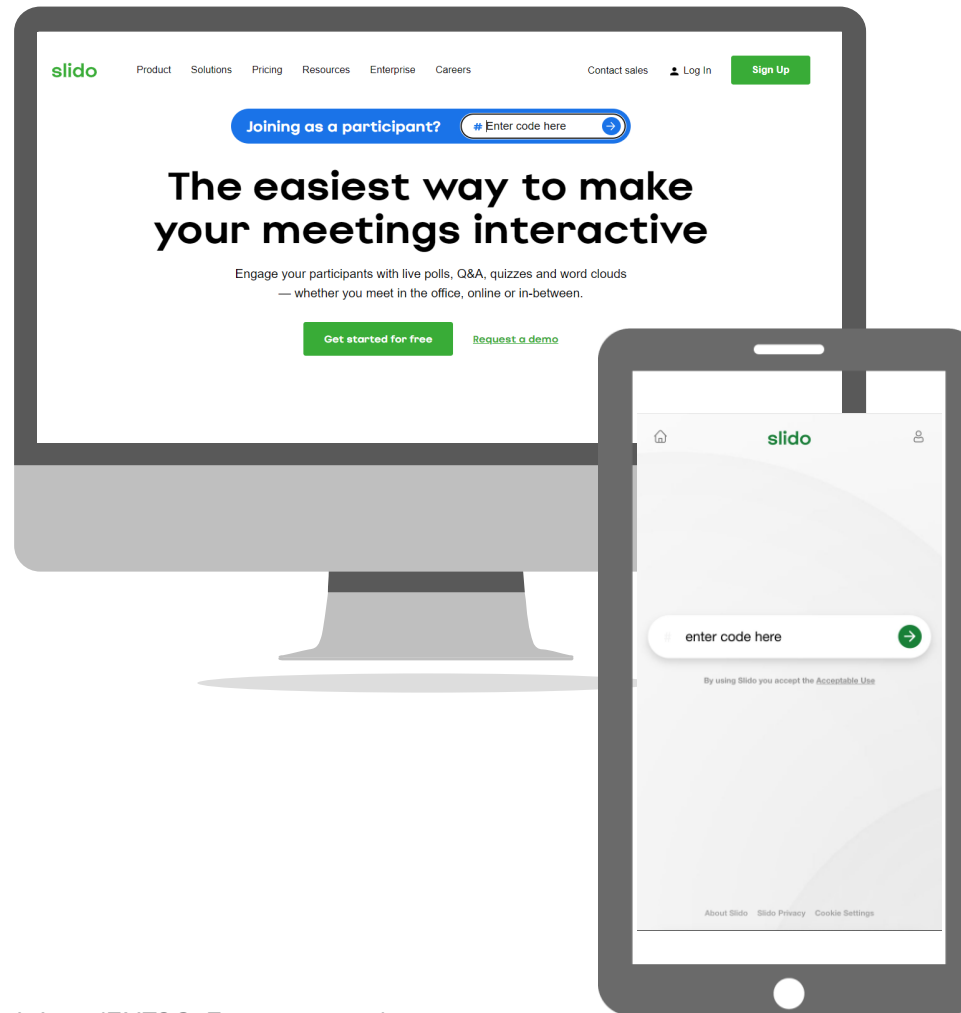
# Houskeeping rules

ERAA 2026 Public Stakeholder Webinar on Methodologies

## Webinar rules

- The Webinar will be recorded
- Ask questions directly through sli.do
- Enter your name & company details
- Vote for the most relevant questions
- The moderator will select most relevant questions and ask the speakers to comment
- The teams “chat” and “hand raising” features will not be used.

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# Agenda

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- |   |  |                           |
|---|--|---------------------------|
| 1 | Welcome  | Sylvain Ramelot, ENTSO-E  |
| 2 | Introduction, Methodology used & ERAA 2026 scope | Ralph Pfeiffer, Amprion   |
| 3 | Revenue-based EVA                                | Marco Pancrazi, Terna     |
| 4 | Risk aversion                                    | Ilyes Abdellouli, ENTSO-E |
| 5 | Battery investment candidates                    | Ilyes Abdellouli, ENTSO-E |
| 6 | ED modelling improvements                        | Gabriel Magny, ENTSO-E    |
| 7 | Methodology implementation plan                  | Sylvain Ramelot, ENTSO-E  |
| 8 | Q&A  | Sylvain Ramelot, ENTSO-E  |

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# Introduction, Methodology used & ERAA 2026 scope



Ralph Pfeiffer,  
ERAA 2026 steering group convenor





# Role of the ERAA



Assess potential adequacy risks of the European power system in medium term

With focus on TY 2028, 2030, 2033, 2035



Inform decision makers and stakeholders

Common basis for MS to introduce capacity mechanisms



Strengthen Europe's trajectory to net-zero

Strengthen and complement system planning activities

# Continuous improvement

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ERAA 2026 focus on deploying Revenue-Based Economic Viability Assessment (EVA) with additional improvements.



Revenue-based EVA deployment



Risk aversion enhancements



More battery investment candidates



Balancing reserve modelling improvements



Demand Side Response:  
demand shifting





# Two complementing scenario data collected in ERAA 2026

## NECP-based scenario\*

Reference  
ERAA 2026

- In line with latest policy targets in respective member states (RES expansion, CO2 emissions, thermal phase out etc.)
- refining NECP and other data compliant with National, MS and EU energy policy targets in accordance to latest developments.

## Trends and Projections

- Data collected in ERAA 2026
- Focus in ERAA 2027

- National projected demand, supply and grid outlooks prepared by each individual TSO (Best Estimate)
- Derived based on historical evolution, external sources and other TSOs information (e.g. New demand connection request, interconnector expansion etc.)
- Reflecting on the best estimate the impact of policies not yet implemented.
- Assumptions behind the scenario will be more elaborated in ERAA 2027.



# Revenue-based EVA



Marco Pancrazi  
Adequacy & Capacity Strategy Specialist, Terna

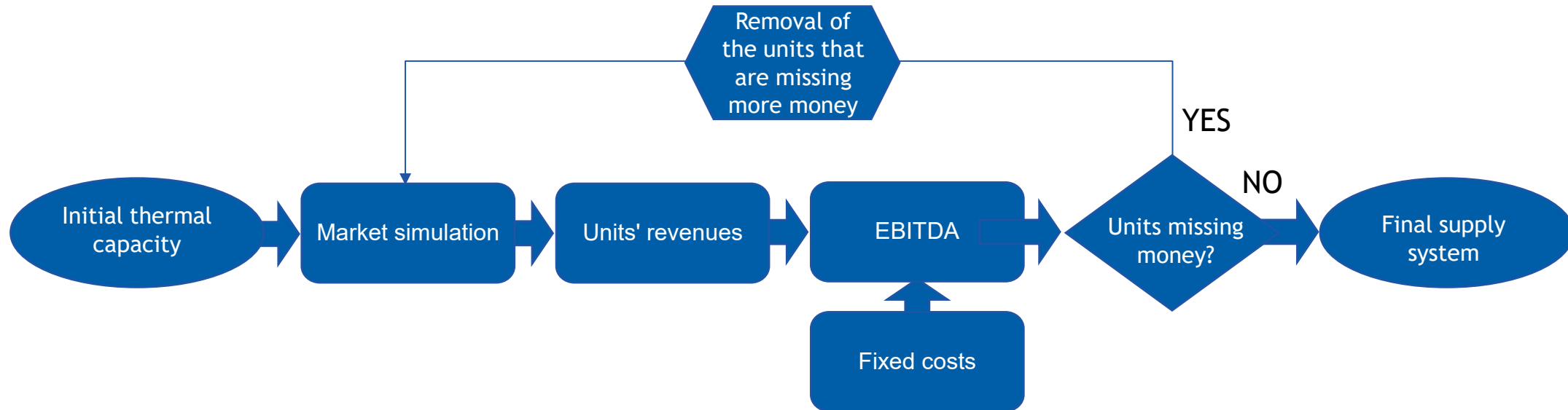




# Revenue-based EVA

## Iterative process

Unit profitability is assessed through **missing money analysis**, an iterative process that aims to identify system equilibrium

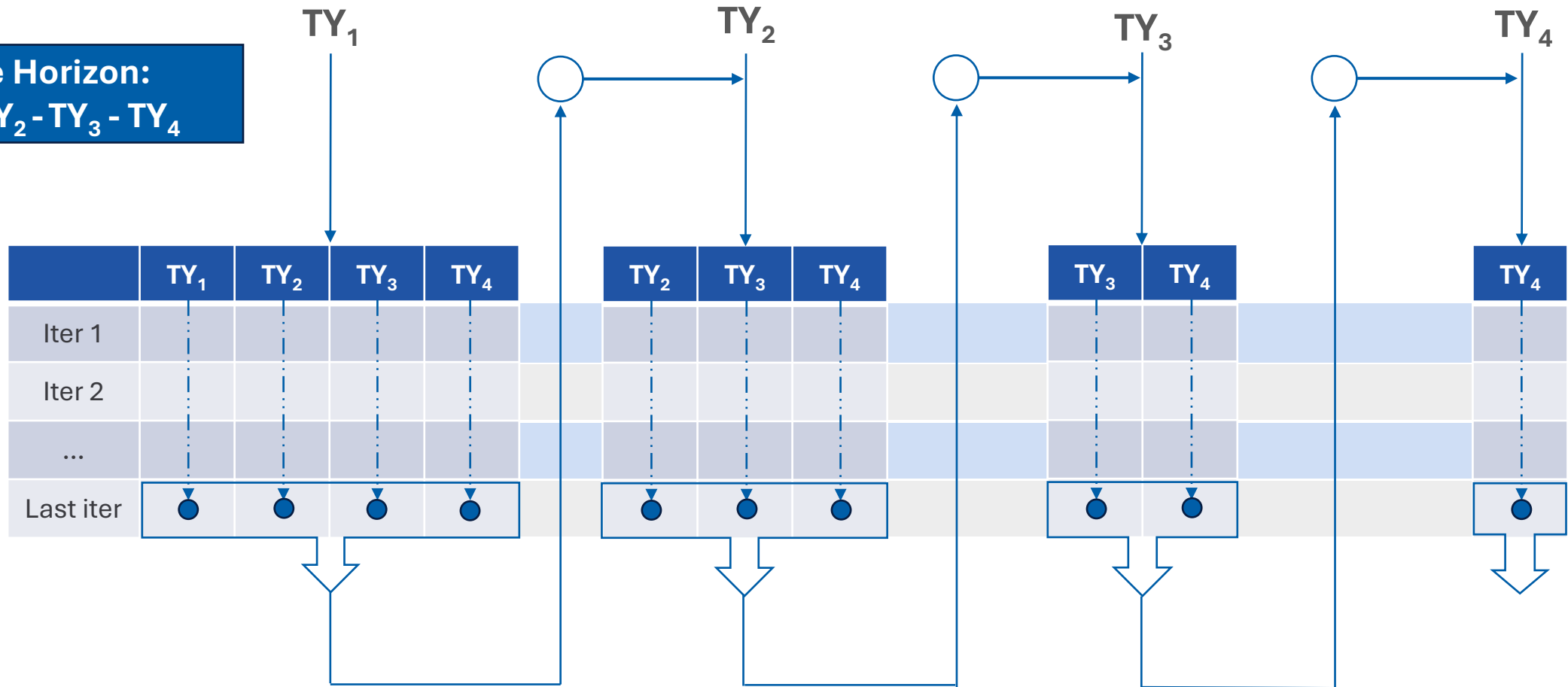




# Revenue-based EVA

Multi-year analysis

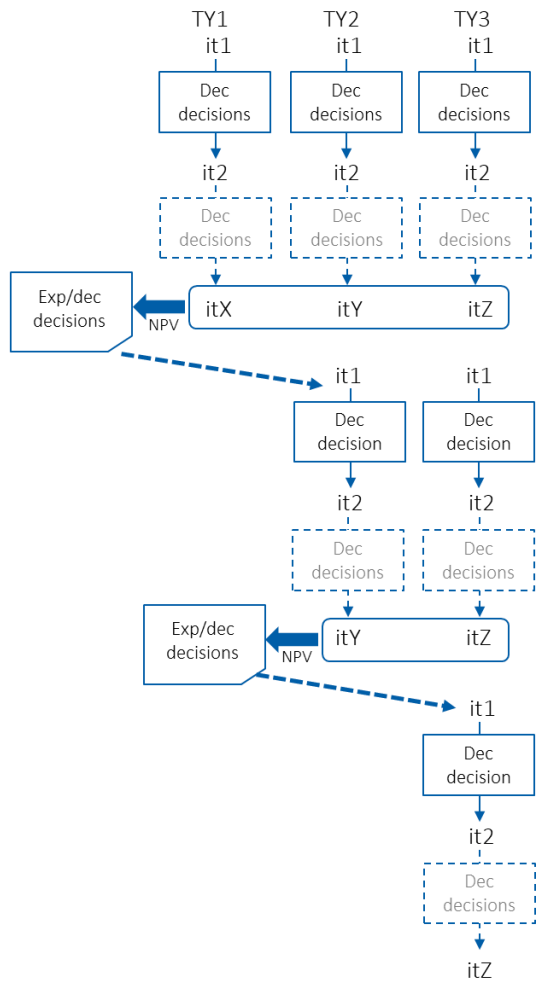
**Time Horizon:**  
 $TY_1 - TY_2 - TY_3 - TY_4$





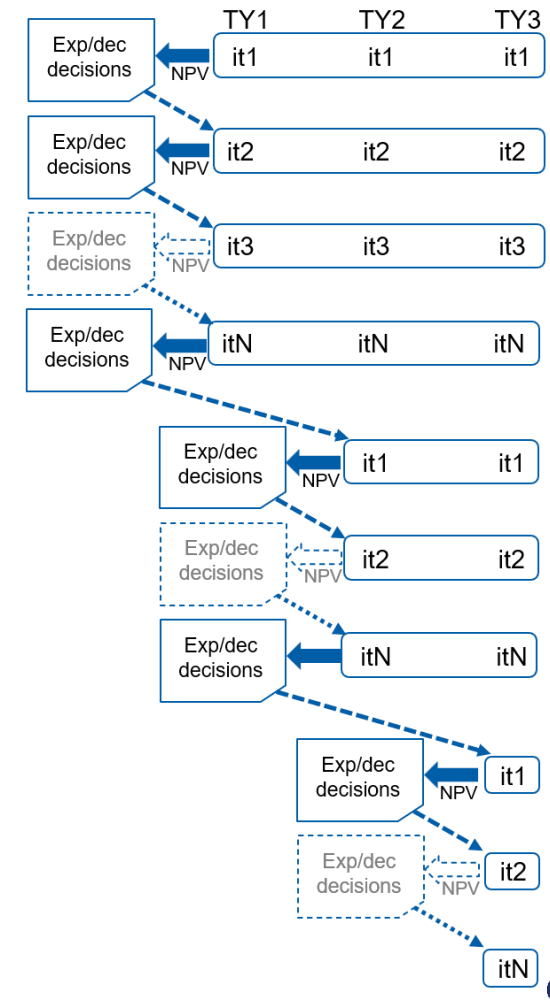
# Two revenue-based EVA implementations are implemented with unique perspectives

## Implementation A



Implementation A reduces the risk of “stranded investments”, delivering a plausible future in which all remaining capacity will be profitable in all assessed target years.

## Implementation B



Implementation B delivers a plausible future in which some remaining capacity will not be profitable due to imperfect decisions without accurately future prediction.

# Revenue-based EVA represents investors perspective and enables technical improvements of the models

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## More battery candidates

Expanded set of battery storage candidates assessed in the viability analysis

1



## Up to 16 weather scenarios

Increased weather scenario coverage in ERAA 2026 EVA for more robust results

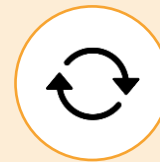
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## Tailor-made risk aversion

Custom risk aversion measures including extreme revenue discounting

3



## Improved EVA-ED consistency

Tighter alignment between economic viability and economic dispatch modelling

4

# Risk aversion

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Ilyes Abdellouli  
Adequacy Analyst, ENTSO-E



# Risk aversion in ERAA 2026

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## Hurdle premiums

Risk aversion to address uncertainty of the variability of the revenues.



New

## Extreme revenue discounting

Risk aversion to address the reservation towards considering the extreme revenues.

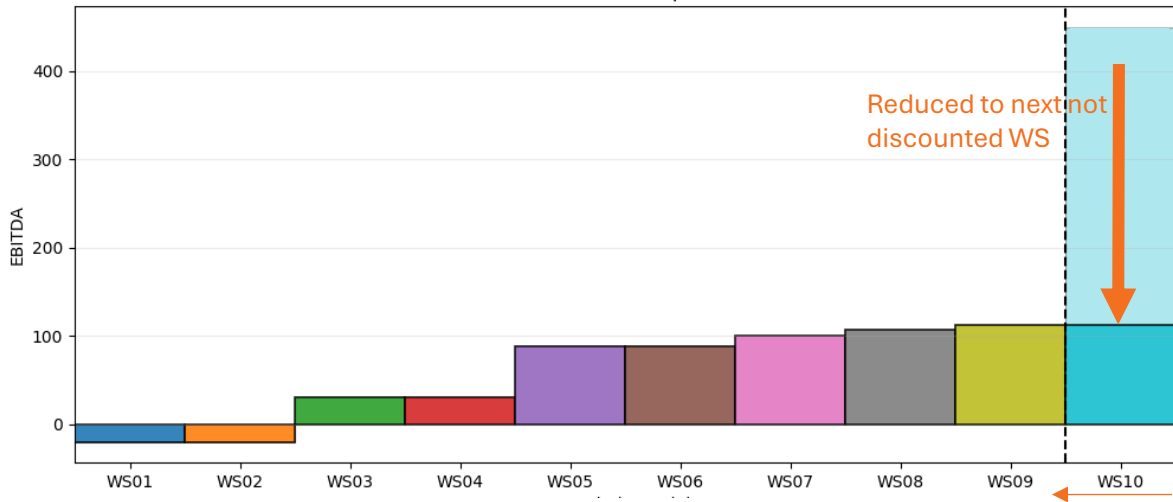


# Extreme Revenue Discounting

Revenues from extreme Weather Scenarios are reduced when averaging revenues from all WSs for economic viability assessment. This reduces the impact of the extreme revenues on the unit profitability.

## Simple example

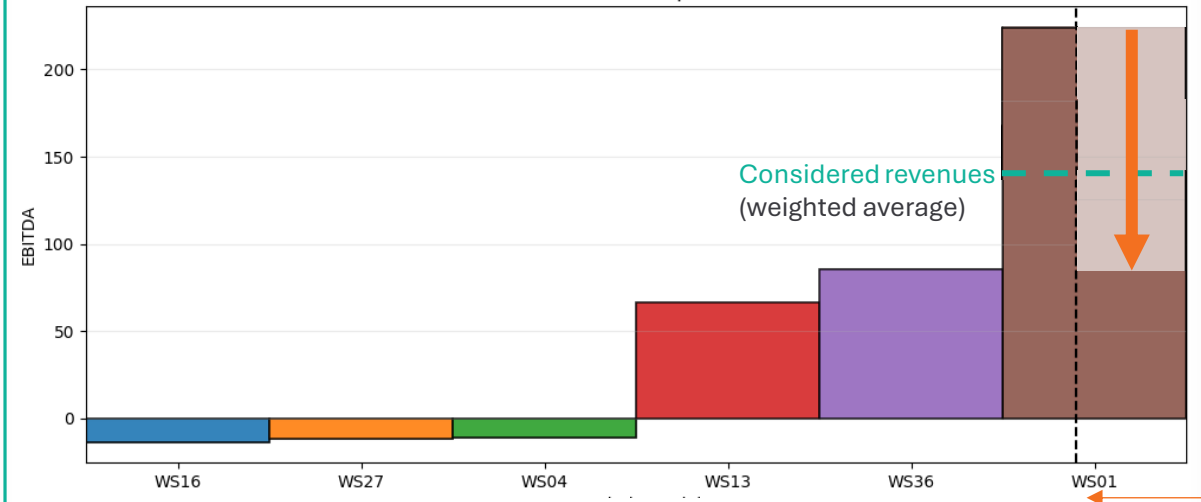
10 WS example



10% extreme revenue discounting threshold (illustrative revenue threshold example) (1 extreme WS if EVA is running with 10 WS)

## Interpolation example

6 WS example



10% extreme revenue discounting threshold (illustrative revenue threshold example) (0.6 extreme WS if EVA is running with 6 WS)

The analysis is performed independently for each unit.

5% extreme revenue threshold is used in ERAA 2026.

Different Weather scenarios may be discounted for each unit.



# Battery investment candidates



Ilyes Abdellouli  
Adequacy Analyst, ENTSO-E

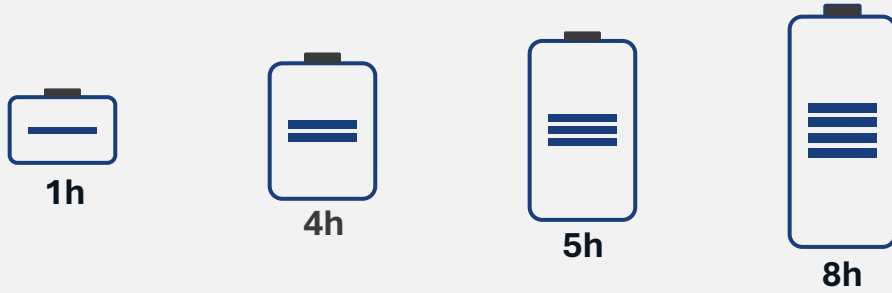


# Extension to four battery investment candidates

## ERAA 2025

### Existing units

Various storage sizes based on real fleet data



### Investment assessment

Single technology configuration



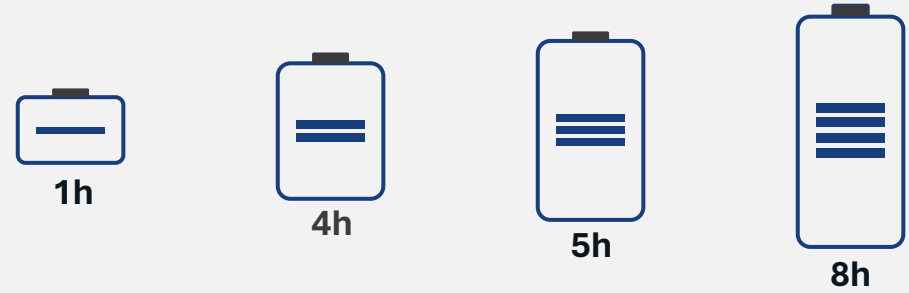
E/P = 4h singular technology



## ERAA 2026

### Existing units

Same as ERAA 2025: various storage sizes



### Investment assessment

Four pre-defined E/P configurations assessed



2h



4h



6h



8h

● Already modelled in ERAA 2025

● New in ERAA 2026

○ Existing fleet: various sizes



# ED modelling improvements



Gabriel Magny  
Energy Modelling Specialist, ENTSO-E



# Balancing reserve modelling development

⚡ NEW

## Balancing reserve requirements

ERAA 2025  
Static



ERAA 2026  
Dynamic (hourly)

### 1. Optimisation of balancing reserve procurement

⚡ CHANGED

- Eligible technologies compete for reserve provision through co-optimisation of generation and reserves.

Technologies: Thermal, RES, DSR ⚡ NEW

**Before:** Predefined RES & DSR technology-specific requirements → **Now:** Competitive provision within ED

📈 *More accurately reflects actual reserve procurement and improves price formation in co-optimisation*

### 2. Pre-processing of available resource capacities

🛡️ UNCHANGED

- Technology specific balancing reserve requirements are derated for limited energy storage technologies

Technologies: Hydro, batteries

⚡ CHANGED

🛡️ **Approach unchanged from previous ERAs for hydro & batteries**

🔒 *Too computationally complex to co-optimize storage activation for balancing reserves*



# Demand Side Response development

The ERAA 2026 includes two different types of explicit DSR, improving the representation of DSR behaviour.

## Demand shedding

- Allows modelling of demand side resources that are willing to have a net reduction in demand beyond a specified activation price (EUR/MWh).
- Main parameters for demand shedding DSR:
  - **Activation price** (EUR/MWh) – price beyond which demand response is activated
  - **Maximum daily operating hours** (h) – maximum number of hours the demand response can be activated in a day.
  - **Activation potential** – rating profile (%) to model variation of the available demand reduction in time

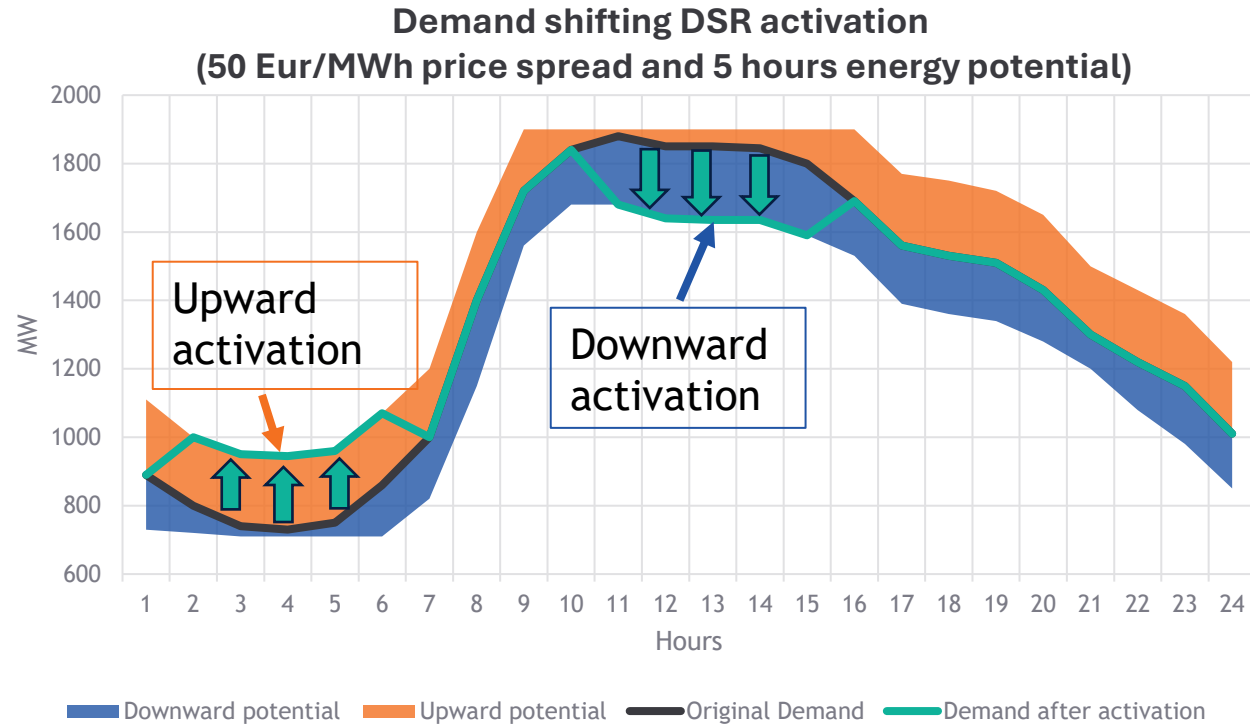
 NEW

## Demand shifting

- Allows modelling of demand side resources that are willing to shift their demand in time. Main parameters for demand shifting DSR:
  - **Upward potential** – rating profile (%) to model variation of the available demand **increase** in time
  - **Downward potential** – rating profile (%) to model variation of the available demand **reduction** in time
  - **Energy potential** – maximum number of hours (h) that demand response can be provided in one direction before response in opposite direction is necessary
  - **Price spread** – minimum price (EUR/MWh) spread necessary for demand response activation
  - **Recovery window** (h) – period within which demand must be recovered

# Demand shifting DSR illustrative example

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# ERAA amended methodology implementation



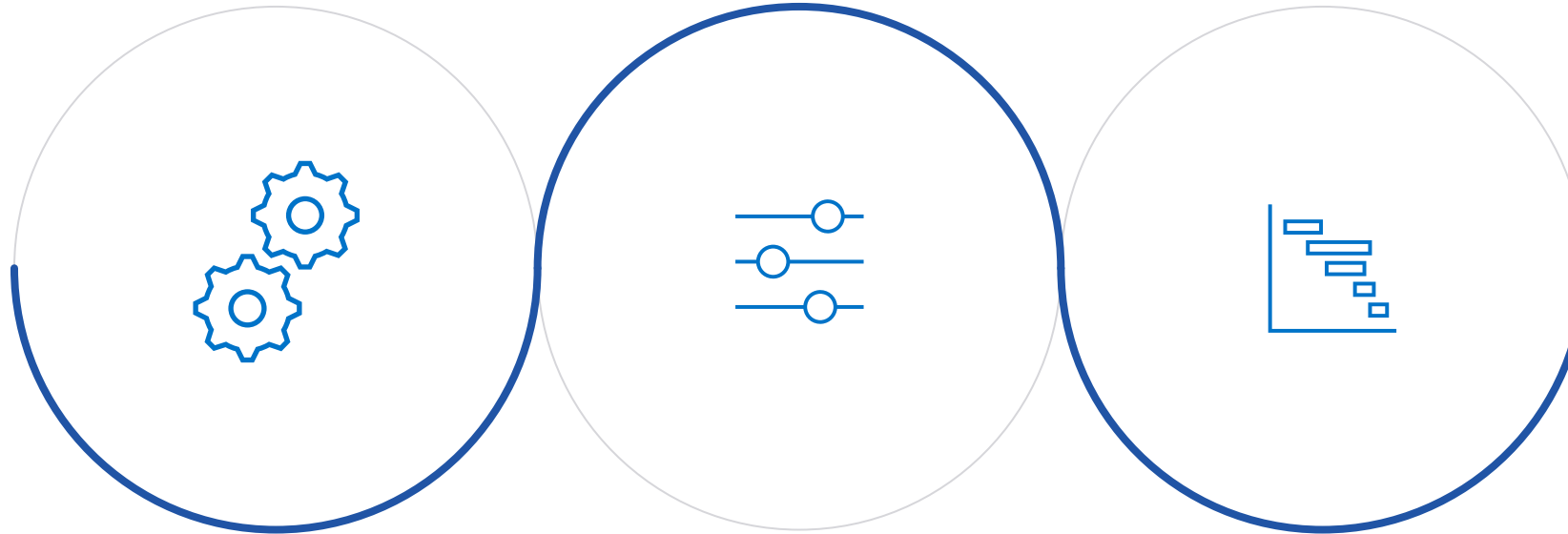
Sylvain Ramelot  
Adequacy Specialist, ENTSO-E





# Amended methodology implementation plan

## Ongoing Implementation



### CM-related parameters

Development and implementation are ongoing. ERAA 2026 aims to publish CM-related parameters for participating countries that have not opted out.

### With CM scenario

Proof of Concept under development. Publication aimed 6 months after ERAA publication.

### Implementation plan

Publication of implementation plan covering full scope of amended ERAA methodology expected end of July.

# Q&A

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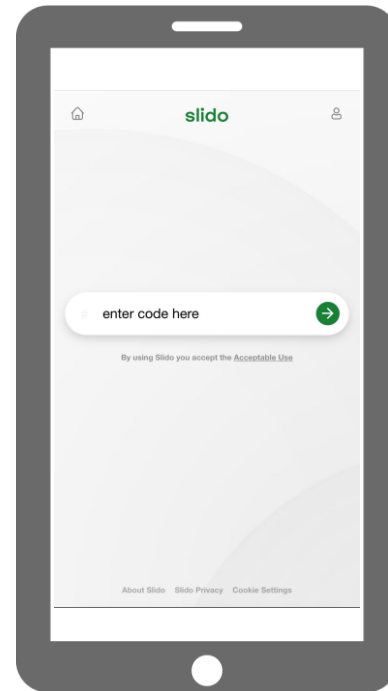
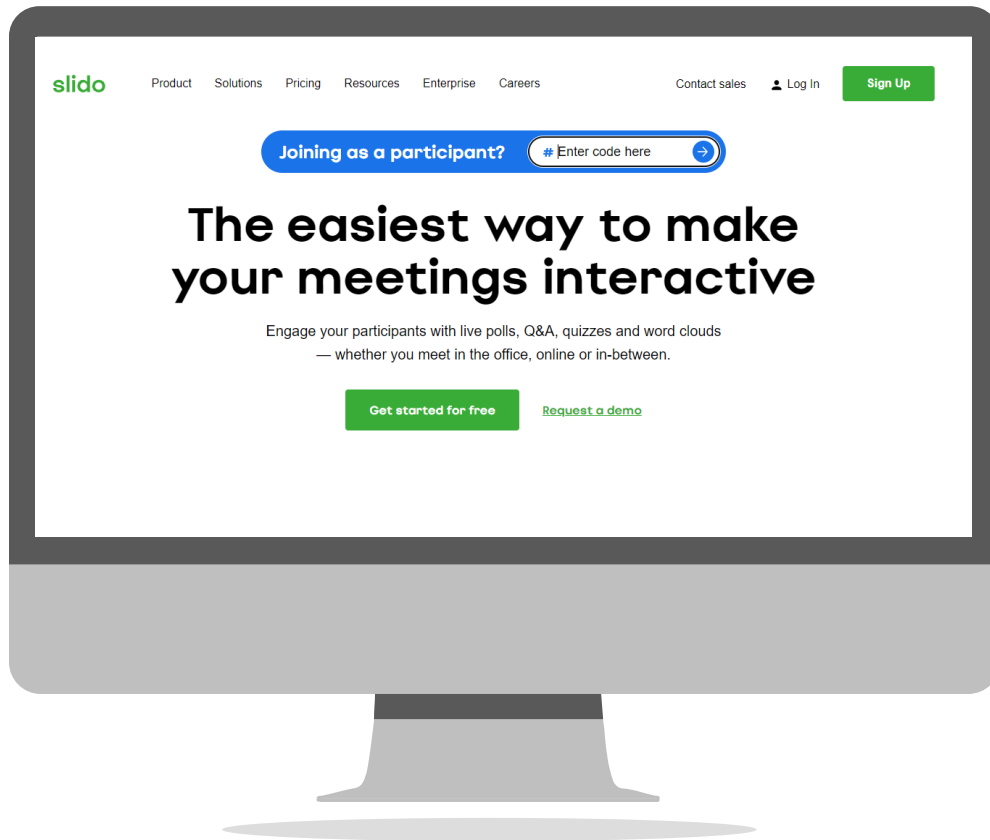


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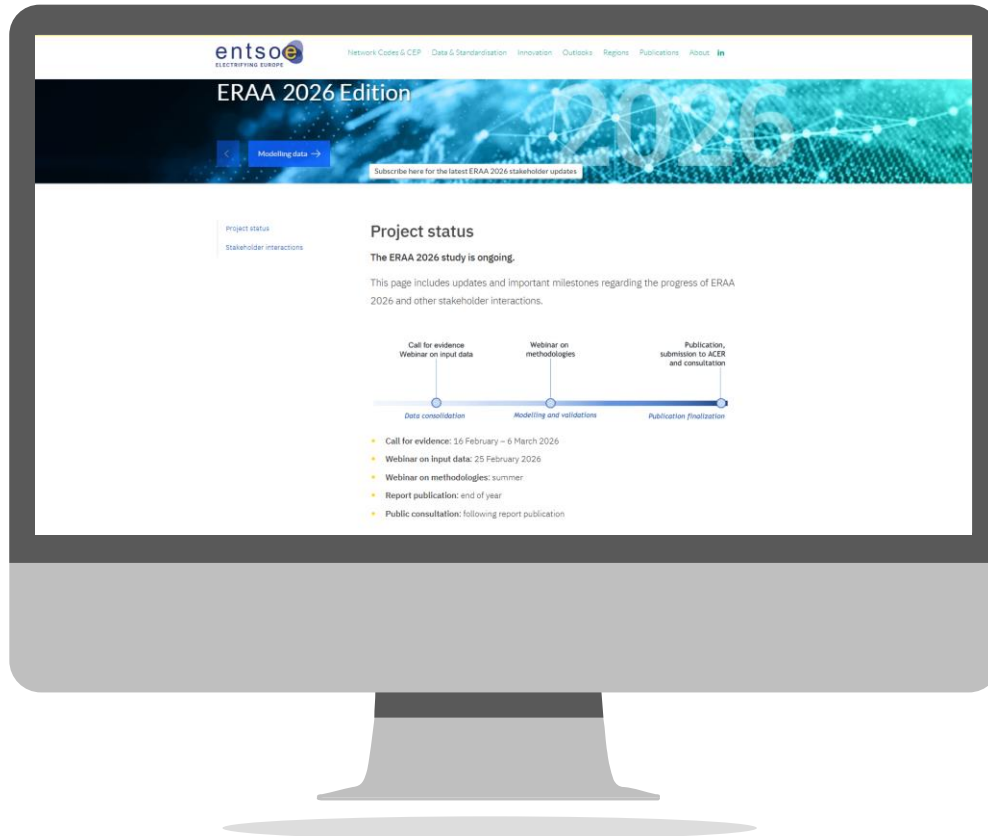
# ENTSO-E proceeds with modelling and validation before publication in November



- **Call for evidence:** 16 February – 6 March 2026
- **Webinar on input data:** 25 February 2026
- **Webinar on methodologies:** 1 July 2026
- **Report publication:** end of year
- **Public consultation:** following report publication

# Dedicated ERAA 2026 space with subscription feature

## ERAA 2026 website page available



## New: subscribe to ERAA 2026 updates



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