PUBLIC

DECISION No 06/2026
OF THE EUROPEAN UNION AGENCY
FOR THE COOPERATION OF ENERGY REGULATORS

of 24 April 2026

on the European Resource Adequacy Assessment for 2025

THE EUROPEAN UNION AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators[1], and, in particular, Article 9(1)(a) thereof,

Having regard to Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity[2], and, in particular, Article 23(7) and Article 27 thereof,

Having regard to the outcome of the consultation with the European Network of Transmission System Operators for Electricity,

Having regard to the outcome of the consultation with ACER's Electricity Working Group,

Having regard to the favourable opinion of the Board of Regulators of 22 April 2026, delivered pursuant to Article 22(5)(a) of Regulation (EU) 2019/942,

Whereas:

1. INTRODUCTION

(1) The European Resource Adequacy Assessment (ERAA) is a pan-European forecast evaluating the adequacy of power system resources up to 10 years ahead. Conducted annually by the European Network of Transmission System Operators for Electricity

[1] OJ L 158, 14.6.2019, p. 22.
[2] OJ L 158, 14.6.2019, p. 54.

(ENTSO-E), the ERAA aims to identify possible risks to the balance between electricity supply and demand.

(2) The annual ERAA serves two primary purposes: to identify potential resource adequacy concerns and to provide a robust and objective basis for informed policy decisions, particularly when assessing the need for capacity mechanisms. As such, the ERAA plays a major role in shaping resource adequacy policies.

(3) The methodology used for assessing European resource adequacy (ERAA methodology)[3] has been developed by ENTSO-E under Article 23(3) of Regulation (EU) 2019/943 (Electricity Regulation) and approved by ACER on 2 October 2020.[4]

(4) On 17 December 2025, ENTSO-E submitted for assessment to ACER its 2025 proposal of scenarios, sensitivities, assumptions and results as required by Article 23(7) of the Electricity Regulation (collectively ERAA 2025 or the Report).

(5) This Decision contains ten annexes. Annexes I.a – I.h set out the amended ERAA 2025, Annex II contains ACER's amendments to ERAA 2025, and Annex III ('technical annex') supplements ACER's assessment in section 6 by providing a technical review of specific elements of ERAA 2025.

(6) In all the past decisions concerning ERAA, ACER emphasised the need for improved consistency between its two modules, namely, the economic viability assessment (EVA) and the economic dispatch (ED). This includes the adoption of robust investment modelling, flow-based capacity calculation methods, and enhanced investor behaviour modelling.

(7) ACER acknowledges that ENTSO-E's continuous effort to apply the ERAA methodology is reflected in ERAA 2025. However, it leaves the main challenge of consistency largely unresolved. This underscores the need for ENTSO-E's ongoing dedication to strengthening the quality of the future editions. To address this, ACER recommends that ENTSO-E aims for a step-change in consistency, so that the next ERAA permanently bridges the gap between the two modelling modules, making the progress fully visible.

2. PROCEDURE

2.1. Engagement with ENTSO-E and other parties before the submission of ERAA 2025

[3] Annex I to ACER Decision No 24/2020.

[4] ACER Decision No 24/2020.

(8) ACER has engaged with ENTSO-E on ERAA 2025 since November 2024 to provide feedback during the early development stages.

(9) On 22 April 2025, ACER submitted its reaction on the preliminary input data publicly consulted by ENTSO-E, suggesting that demand datasets be provided per sector together with clarifying drivers behind evolutions compared to ERAA 2024. ACER also called for consistency regarding the consideration of electrification and what share of the additional demand will be flexible.

(10) In a letter dated 07 November 2025, ACER urged ENTSO-E and all EU transmission system operators (TSOs) to consider appropriate solutions to ensure revenue consistency between ERAA modules and demonstrate the proper reflection of investment incentives.

2.2. Proceedings following the submission of ERAA 2025

(11) On 17 December 2025, ENTSO-E published the draft ERAA 2025[5] and submitted it for ACER's The submission consisted of a Report￼ describing the purpose of the assessment and its main findings and the ERAA 2025's input dataset along with seven annexes:

Annex 1	Input data
Annex 2	Methodology
Annex 3	Detailed results
Annex 4	Scarcity events analysis
Annex 5	Proof of concept: Application of Revenue-Based EVA Approach on European Scale
Annex 6	Country comments
Annex 7	Definition and glossary

[5] See ENTSO-E's European Resource Adequacy Assessment 2025 Edition.

(12) On 22 December 2025, ACER issued a public notice about the initiation of its decision procedure.

(13) From 17 December 2025 to 26 February 2026, ACER reviewed the submission and sought clarifications and further information from ENTSO-E.

(14) ACER shared its preliminary position on 26 February 2026 with ENTSO-E and Member States via the Electricity Coordination Group (ECG). ENTSO-E provided written views on 09 March 2026 and supplemented them during an oral hearing which took place on 10 March. ACER also received written views from the Portuguese Ministry. The received views are summarised in section 4.11.

(15) In parallel, ACER regularly discussed ERAA 2025 with the regulatory authorities, through ACER's Security of Supply Task Force and ACER's Electricity Working Group (AEWG).

(16) On 13 March 2026, ACER closed the oral and written procedure.

(17) The AEWG was consulted on ACER's draft Decision between 18 and 23 March 2026 and provided its advice on 1 April 2026 (see section 4.2).

(18) ACER's Board of Regulators issued a favourable opinion on 22 April 2026.

3. ACER'S COMPETENCE TO DECIDE ON ERAA 2025

(19) Article 9(1)(a) of Regulation (EU) 2019/942 states that ACER shall approve and amend, where necessary, the proposals for calculations related to ERAA pursuant to Article 23(7) of the Electricity Regulation.

(20) Pursuant to Article 23(7) of the Electricity Regulation, ERAA's scenarios, sensitivities, assumptions and results shall be subject to the prior consultation of the Member States, the ECG and the relevant stakeholders, and approval by ACER under the procedure set out in Article 27 of the Electricity Regulation. As specified in Article 27, ACER has three months to either approve or amend ERAA. In the latter case, ACER shall consult ENTSO-E before approving the amended ERAA.

(21) On 17 December 2025, ENTSO-E submitted ERAA 2025 (including scenarios, sensitivities, assumptions and results) to ACER for approval. ACER is competent to decide on ERAA 2025 based on Article 9(1)(a) of Regulation (EU) 2019/942 and Articles 23(7) and 27 of the Electricity Regulation.

4. SUMMARY OF THE OBSERVATIONS RECEIVED BY ACER

4.1. Consultation on ACER's preliminary position

(22) This section summarises the views of ENTSO-E and the Member States consulted on ACER's preliminary position.

4.1.1. Feedback from ENTSO-E

(23) ENTSO-E raised concerns in three areas, summarised below. ACER's responses are provided in Sections 6 and 8, as referenced below.

(24) First, ENTSO-E disagreed with ACER's proposal to remove the upper bound of the ERAA 2025 results and to define the central reference scenario as a single discrete value. ENTSO-E argued that presenting a range of outcomes is more informative for stakeholders as it captures uncertainty regarding investor risk aversion, thus Member States could choose their preferred approach to assess the adequacy of their power systems. In ENTSO-E's view, such an approach contradicts neither the Electricity Regulation nor the current ERAA methodology. ENTSO-E also reiterated that the 1,000 EUR/MWh revenue cap applied in 2028 is a necessary and technically substantiated measure to ensure a robust EVA. For ACER's response, see section 6.1.1.3.

(25) Second, ENTSO-E disagreed with ACER's proposal to include pre-curtailment sharing data in the main Report. In ENTSO-E's view, curtailment sharing is an integral element of the overall adequacy simulations. It is technically implemented subsequently to the economic dispatch, but this should not be understood as the pre-curtailment sharing dispatch results establishing any meaningful results for decision making and publication. Therefore, publishing these data in the Report may be misleading and confusing for stakeholders as it could be perceived as sensitivity results. For ACER's response, see section 6.1.5.4.

(26) Third, ENTSO-E questioned the inclusion of (non-binding) recommendations for the future ERAA editions as going beyond Article 27(4) of the Electricity Regulation, and deemed references to the amended ERAA methodology premature pending its adoption. ENTSO-E nonetheless welcomed further dialogue and committed to implementing an iterative revenue-based EVA in ERAA 2026. For ACER's position on formulating recommendations for future ERAA editions, see Section 8. Concerning the ERAA methodology, the amendments were adopted on 13 March 2026.

4.1.2. Feedback from the Portuguese Ministry

(27) The Portuguese Ministry considers the ERAA 2025 results for TY2030, TY2033 and TY2035 overly optimistic and unrealistic. They rely on the revised NECP's ambitious trajectories, which may not materialise given slower supply growth and a surge in electro-intensive connection requests. ERAA 2025 also uses optimistic modelling (excessive pumping/hydro use and 100% NTC availability year-round) producing unrealistically low LOLE and diverging from NRAA (RMSA-E 2024) and operational realities.

(28) ACER notes that the central reference scenarios are developed based on ENTSO-E's call for evidence on preliminary data (31 March to 22 April 2025), aiming to ensure that, among others, demand and generation capacities assumptions are based on the latest available information, in accordance with Articles 3 and 9 of the ERAA methodology. For future ERAA editions, ACER also notes that the amended ERAA methodology, adopted by ACER on 13 March 2026, foresees an additional Trends &

Projections scenario that will reflect more closely the expected evolution of the electricity system, notably by reflecting the effect of existing policies and historical trends.

(29) The Ministry disagreed with ACER's amendment for a single LOLE value and the removal of adequacy indicator ranges. It argued that reflecting uncertainty through ranges based on different investor risk aversion strategies is essential for a robust assessment. In the Ministry's view, such ranges provide necessary insights for decision-makers. For ACER's response, see section 6.1.1.3.

4.2. Consultation of ACER's Electricity Working Group

(30) The AEWG broadly endorsed ACER's draft decision, inviting ACER to take note of the comments from the regulatory authorities.

(31) During the AEWG commenting phase, seven regulatory authorities submitted written comments, and the draft decision was discussed at AEWG meeting on 25 March. BNetzA, CRE, CNMC, ARERA, MEKH and URSO reiterated their support to retain the upper bound of the ERAA 2025 results in the report as part of the sensitivity analysis, rather than removing it. They consider that this scenario may provide valuable insights to stakeholders while it does not have any explicit legal consequences. E-Control expressed concerns about the development of the ERAA reports over the years, the lack of implementation of the ERAA methodology for some elements and the disregard of the ACER decisions by ENTSO-E. URSO stated their position in support for moving toward a biennial cycle for the ERAA to ensure more stable results and a more efficient allocation of resources.

(32) In view of these comments and discussions, the AEWG invited ACER providing further arguments to justify the complete removal of the upper bound scenario from the study and welcomed to work on it further for forthcoming ERAA will be valued to address the expressed concerns of regulatory authorities.

(33) The AEWG also encouraged ACER to pursue the engagement with ENTSO-E for ensuring that the ERAA develops in a consistent and robust way going forward. The message should be strong for the respect of the ERAA methodology, for improvements of the ERAA process, for better coordination and transparency of the ERAA.

(34) CRE proposed several targeted amendments to the text of the draft decision. Specifically, it suggested: (1) deleting the paragraph that linked risk aversion to the increase in the technical price cap in ERAA (see Section 6.1.1.3.); (2) aligning the wording on elements affecting price formation more closely with Article 7(9) of the ERAA methodology (see Section 6.1.2.7.); (3) clarifying the respective functions of the ED and EVA module (see Section 6.1.5.3.); (4) clarifying the reference to a possible shift to a revenue-based model (see Section 6.1.5.); and (5) recommending that ENTSO-E further improve its modelling of risk aversion (see Section 8).

(35) ACER takes note of the comments from the regulatory authorities provided at the AEWG and acknowledges the value of testing scenarios in which risk appetite is lower than in the most likely base case used in the central reference scenario. In this context, ACER welcomes the possibility to include such a sensitivity in future ERAA editions. However, ACER emphasises that any such analysis, including sensitivity scenarios, must be based on well-substantiated assumptions, be subject to stakeholder consultation, follow a robust methodology, and be duly discussed with ACER. For ACER's assessment of why the approach this year is not suitable for sensitivity analysis, see Section 6.1.1.3.

5. LEGAL FRAMEWORK

(36) The relevant provisions governing ERAA are set out in Chapter IV of the Electricity Regulation and the ERAA methodology. This section briefly summarises the legal requirements for ERAA set out in Chapter IV of the Electricity Regulation.

(37) Pursuant to Article 23(1) of the Electricity Regulation, first sentence, ERAA shall identify resource adequacy concerns by assessing the overall adequacy of the electricity system to supply current and projected demands for electricity at Union level, at the level of the Member States, and at the level of individual bidding zones, where relevant.

(38) Articles 23(1) and 23(5) lay down the relevant requirements for annual ERAA, prescribing the scope, contents and methods. These requirements are reflected in Articles 1, 3, 4, 6, 7 and 8 of the ERAA methodology.

(39) Articles 23(2), 23(4), 23(7), 27(2) and 27(3) of the Electricity Regulation set out the requirements for the ERAA process, including a mandatory consultation. Moreover, Articles 30(1)(c), 31 and 41(2) of the Electricity Regulation require that ENTSO-E operates in full transparency and ensures appropriate stakeholder engagement. These requirements are reflected in Articles 5, 9, 10 and 11 of the ERAA methodology.

(40) Pursuant to Article 27(3) in joint reading with Article 23(7) of the Electricity Regulation, ACER has three months from the submission date to either approve or amend ERAA. ACER shall publish the approved ERAA on its website.

6. ASSESSMENT OF ERAA 2025

6.1. Assessment of content requirements

6.1.1. Scope and scenarios of ERAA 2025

6.1.1.1. Geographical scope of ERAA 2025

(41) Article 23(1) of the Electricity Regulation provides that adequacy is assessed at Union level, at Member State level, and at the individual bidding zone level, where relevant. Article 23(5)(a) of the Electricity Regulation further requires that ERAA is carried out

at each bidding zone level covering at least all Member States. This requirement is further specified in Article 1 and Article 4 of the ERAA methodology.

(42) ERAA 2025 explicitly models 35 countries, including all interconnected EU Member States[6]. ENTSO-E provided full results for the current bidding zones across all target years. Non-explicitly modelled regions, such as Morocco, Tunisia, and Egypt, are accounted for via exogenously determined energy exchanges.

(43) ACER finds the geographical granularity of ERAA 2025 to be consistent with the requirements of the ERAA methodology.

6.1.1.2. Temporal scope of ERAA 2025

(44) Pursuant to Article 23(1) of the Electricity Regulation, the ERAA must cover each year within a ten-year period. ERAA 2025 models only four target years within the study period: 2028, 2030, 2033, and 2035. While omitting intermediate years is a methodological simplification, ACER considers it acceptable, given that it does not compromise the accuracy of the results.

6.1.1.3. Scenario framework

(45) Pursuant to Article 23(5) of the Electricity Regulation and Article 3 of the ERAA methodology, the annual ERAA should be based on appropriate central reference scenarios and sensitivities. Article 23(5)(f) specifically requires that the ERAA methodology includes variants without existing or planned capacity mechanisms and, where applicable, variants with such mechanisms.

(46) Accordingly, Article 3 of the ERAA methodology specifies that ERAA must rely on two central reference scenarios: one scenario considering the impact of approved capacity mechanisms and another scenario excluding them (except for contracts already awarded at the time of the assessment).

(47) ERAA 2025 only provides the latter of the two mandatory central reference scenarios and does not consider the scenario with capacity mechanisms. The absence of a scenario with capacity mechanisms adversely impacts the full functionality of ERAA. First, it does not take into consideration how capacity mechanisms enhance security of supply in the Member States where they already exist. Second, how the benefits of additional capacity brought forward through already approved capacity mechanisms in one Member State extend to other Member States. By overlooking the impact of existing capacity mechanisms, ERAA 2025 provides only a partial assessment of future adequacy risks. Since the assessment can still be used to identify adequacy concerns, ACER considers this simplification acceptable in ERAA 2025.

[6] ERAA 2025 models Cyprus non-explicitly in accordance with Article 64(2) of the Electricity Regulation.

(48) Contrary to previous ERAA editions, in ERAA 2025, ENTSO-E presents the central reference scenario not as a discrete set of loss of load expectation (LOLE), but as a range of values. This range is defined by two different runs with different modelling approaches to investor risk aversion:

(49) A lower range: Uses hurdle premiums only. ERAA 2025 introduces a novel approach, that is application of a constant absolute risk aversion (CARA) utility function[7]. Consequently, hurdles premiums for these technologies have increased significantly compared to ERAA 2024, rising their perceived costs. For OCGTs, hurdles premiums increased from 6.0% to 9.9%, and for CCGTs, from 4,5% to 6.9%. For other technologies, such as batteries and DSR, hurdles premiums remained unchanged to ERAA 2024. Further details on the CARA utility function parametrization are provided in Section 6.1.2.6.

(50) An upper range: Combines hurdles premiums with revenue cap. This approach combines the hurdles premiums as computed for the lower range with a revenue cap that limits the hourly electricity price considered by investors in the EVA. ENTSO-E argues that the introduced cap prevents investment decisions from being driven by price spikes. ENTSO-E indicates that the base value of 1000 EUR/MWh cap was determined for target year 2028. For subsequent target years, the revenue cap increases at the same rate as the price cap increase used in the lower range as discussed in Section 6.1.2.7.[8]

(51) First, ACER objects to using a range of LOLE values as the central reference scenario to identify adequacy concerns. ACER considers that this approach undermines ERAA's role in identifying adequacy concerns under the Electricity Regulation, and also contradicts the ERAA methodology. Under Articles 20 and 21 of the Electricity Regulation, the identification of adequacy concerns through ERAA or NRAA causes concrete legal consequences (identifying distortions, implementation plan, prohibiting capacity mechanism absent concern, suspension of new contracts and mandatory phase-out). As the legal trigger, ERAA results must provide a single, unambiguous outcome per Member State so authorities and stakeholders can determine applicability of these obligations. Reporting adequacy concerns as a range fails to ensure this, creating legal and practical uncertainty in identifying adequacy concerns and undermining effective implementation of these provisions. Furthermore, in consistency with the Electricity Regulation, Article 8(1)(b) of the ERAA methodology

[7] The CARA utility function aims to simulate OCGTs and CCGTs' investor behaviour under uncertainty by quantifying the risk premium associated with volatile or rare price spikes. While ACER considers the use of this measure as acceptable in ERAA 2025, the specific calibration of investors' risk aversion coefficient to 0,0075 has not been sufficiently substantiated by ENTSO-E with empirical evidence or comprehensive sensitivity analysis. Given that the CARA model is highly sensitive to this parameter, the lack of justification for this specific value raises concerns regarding the reliability of the resulting investment and decommission outcomes for the OCGTs and CCGTs subject to the EVA.

[8] Price cap, used with an upper-range run increases to 1200 EUR/MWh, 1300 EUR/MWh, and 1400 EUR/MWh for target years 2030, 2033, and 2035 respectively.

requires that a resource adequacy concern is identified where the reliability standard is not fulfilled for the target year for at least one central reference scenario. By treating the central reference scenario as a range, ENTSO-E does not provide the single, unambiguous result required to determine whether that condition is met. ERAA 2025 therefore cannot conclusively identify an adequacy concern when only part of the LOLE range exceeds the reliability standard, as it is the case for Portugal in target year 2028 (lower range: 1h LOLE; upper range: 6h LOLE; RS: 1.46h)[9] Consequently, using a range weakens ERAA's ability to assess the need for capacity mechanism and would offer a legally and technically questionable and insufficient basis for any such mechanism and would leave it open to contest, since the justification would rest on only a partial identification of an adequacy concern. Having a range would deprive Member States of a clear yes/no adequacy signal, risking delayed or divergent national decisions. It would be also difficult to translate a range into concrete procurement volumes and timelines, increasing the likelihood of either under-procurement or over-procurement of capacity.

(52) Secondly, ACER questions the results of the upper LOLE range. ACER notes that the hurdle premiums already account for the non-normal distribution of inframarginal rents. In that sense, applying a revenue cap on top of the hurdle premiums constitutes a double risk-aversion measure. This redundant layering leads to an artificial underestimation of commissioning and overestimation of decommissioning, increasing adequacy risks.

(53) Both mechanisms seek to address the same underlying concern, namely, the uncertainty of scarcity revenues and the resulting investor risk discounting. Their simultaneous application, however, leads to an undue duplication of the same risk factor. In particular, the impact of price spikes on investor risk, reflected in increased revenue volatility, is already incorporated in the calibration of the CARA-based hurdle rate. At the same time, the effect of those same price spikes on expected revenues is effectively disregarded through the application of a revenue cap.

(54) ACER considers that the same price signal cannot be invoked to justify a higher perceived investment risk while being simultaneously assumed not to materialise for the purposes of revenue expectations, as this constitutes a methodological inconsistency. Furthermore, the base hurdle rates, still applied to batteries and demand-side response in ERAA 2025, were explicitly calibrated on the assumption that investors perceive extreme scarcity revenues as uncertain and potentially subject to regulatory intervention.

[9] Reliability standard for Portugal: https://www.dgeg.gov.pt/pt/destaques/determinacao-da-norma-de-fiabilidade-para-portugal-continental/

(55) ACER therefore finds that applying a revenue cap in addition to these hurdle rates results in a double counting of investor risk aversion and lacks methodological justification.

(56) ACER also notes that ERAA 2025 states the 1000 EUR/MWh value for target year 2028 was derived from historical data and market simulations, and that the 99.85th percentile was used to capture most price occurrences. However, ERAA 2025 does not specify which bidding zones or time period were included in the historical dataset, nor does it describe the methodology used in the market simulations. The Report also fails to explain why the 99.85th percentile was selected as the most appropriate one. Furthermore, these specific assumptions related to the revenue cap were not included in the inputs call-for-evidence with stakeholders nor consulted with ACER, despite having a defining impact on the final results. ACER thus considers that the Report does not sufficiently details which data and methods was used to determine this revenue threshold, making it difficult for stakeholders to assess the robustness of this risk aversion measure.

(57) Considering the above, ACER has amended ERAA 2025 by removing the upper range (revenue-cap-based approach) and retaining only the lower range (hurdle premiums-only approach) as the outcome of the central reference scenario for identifying adequacy concerns.

6.1.2. Inputs

(58) The assumptions underpinning the ERAA inputs are a key determinant of adequacy outcomes, as they directly shape both the simulated level of scarcity and the investment signals produced by the assessment. Demand projections, resource availability, cross-zonal capacities, and economic parameters jointly influence the economic viability of resources, as well as the magnitude and timing of energy not served (ENS). ACER evaluates these inputs to ensure compliance with the Electricity Regulation and the ERAA methodology, focusing on their impact on the robustness of the adequacy results.

6.1.2.1. Demand, DSR and sectoral integration

(59) Article 23(5) of the Electricity Regulation requires that the assessment accounts for projected demand (point b), including the contribution of demand-side response (DSR), sectoral integration and demand flexibility (point d). Article 4 of the ERAA methodology further specifies these requirements, particularly stating that ERAA shall consider both implicit and explicit DSR. Further details on ACER’s assessment of the DSR assumptions are provided in the chapter 3 of Annex III to this Decision.

(60) ACER observes that ERAA 2025 projects a 19% rise in EU-27 annual electricity demand by 2028 compared to historical levels observed in 2025. This increase follows the trend noted in ACER’s Decision 07/2025 on ERAA 2024. Annual demand volumes in ERAA 2025 remain broadly similar to those in the previous edition, being 1.7% lower in the 2028 projection, 1.4% lower in 2030, and at the same level in 2035. While ENTSO-E attributes this to accelerated electrification (EVs, heat pumps) and

data centre expansion, ACER underlines as in its previous Decisions that national demand projections should be accompanied by more granular, per-sector assumptions to ensure transparency.

(61) Additionally, ACER notes that EU-27 peak demand in ERAA 2025 is significantly higher than historical levels. The highest EU-27 peak-demand from 2022 occurred in winter 2026 – 420 GW – as per ENTSO-E Transparency Platform. Whereas in the first target year (2028) in ERAA 2025 demand peaks to 512 GW[10]. That is 22% higher.

(62) The assumed rise in demand is largely driven by the expected deployment of electric vehicles and heat pumps, in line with EU greenhouse gas emission reduction targets. In the modelling framework, ERAA represents the largest share of these technologies as price-insensitive implicit DSR, meaning they are added to demand as fixed hourly consumption profiles. The peak consumption of these technologies coincides with the morning and evening demand peaks, thereby amplifying overall peak load. In addition, increasing electricity demand from the electrification of other sectors – notably industry and the rapid expansion of data centres – further contributes to the projected rise in peak demand. Compared with the previous ERAA, peak demand levels in ERAA 2025 are slightly lower: by 2% in 2028 and 2030, and by 0.3% in 2035.

(63) Regarding DSR, the total capacity modelled (pre-EVA) amounts from 3.2% to 4% of peak demand in the EU-27 for target years 2028 and 2035 respectively. ACER maintains that this DSR projection remains conservative compared to external benchmarks. **ACER considers this amount is on the conservative side considering estimates from other relevant sources[11] and suggests that assumptions to be used in future ERAA editions be put under scrutiny to ensure their robustness and better reflect the existing or future DSR levels in the ERAA** (e.g. DSR contracted through capacity mechanisms, beyond the duration of their contracts). Where national DSR assessments are used, ACER recommends that future ERAAs provide more transparency on those inputs, i.e. providing source of data with clear DSR capacity estimate where applicable.

(64) It is noted that in the previous ERAA, the share of DSR relative to peak demand was slightly higher, amounting to between 3.4% and 4.3% for the target years 2028 and 2035, respectively. While lower peak demand levels in ERAA 2025 reduce adequacy risks, lower DSR capacity has the opposite effect.

(65) ACER welcomes ENTSO-E's extensive description of the demand-forecasting methodology in the ERAA 2025 edition. The methodology builds on historical load data and incorporates the effects of weather and calendar variables on electricity

[10] For this comparison, the 99.99 centile of ERAA 36 demand profile was used.
[11] For example, a projection of 17% downward DSR from peak demand in 2030 smarten-DNV Report: Demand-Side Flexibility

demand. In addition, it accounts for the evolving characteristics of the electricity system, including the increasing penetration of heat pumps, the electric vehicle uptake, the deployment of behind-the-meter battery storage, the expansion of rooftop photovoltaic installations, and changes in base-load consumption patterns.

(66) Overall, ERAA 2025 projects a substantial increase in both annual and peak electricity demand. At the same time, DSR volumes remain conservative relative to external benchmarks. This combination risks overstating adequacy concerns.

6.1.2.2. Supply assumptions (pre-EVA)

(67) Article 23(5)(d) of the Electricity Regulation requires that the resource adequacy assessment reflects appropriate central reference scenarios of projected supply resources. Article 3 of the ERAA methodology further specifies that the central scenario projections in ERAA must be consistent with Member States' policies.

(68) The National Trends scenario, which broadly aligns with Member States' National Energy and Climate Plans (NECPs), serves as the baseline for resource capacities. On this bases, the Economic Viability Assessment (EVA) determines potential entry/exit capacities in the system. The initial capacity inputs are therefore essential for adequacy outcomes, as not all resource types are subject to EVA-based economic optimisation.

(69) Hydro capacity is assumed to remain stable over the target years. By contrast, a significant share of the existing thermal fossil-fuel capacity in the EU-27 is projected to be gradually decommissioned, declining by 73 GW between 2028 and 2035. This reduction is partially offset by the continued deployment of battery storage, which is expected to increase from 48 GW in 2028 to 125 GW in 2035. However, despite largely replacing fossil-fuel capacity in capacity terms, the limited energy duration of batteries constrains their contribution during prolonged periods of low renewable energy generation.

(70) Overall, controllable resource capacity assumptions at EU-27 level (including thermal generation, storage, and DSR) in ERAA 2025 remain broadly stable across the target years, increasing from 445 GW in 2028 to 457 GW in 2035. These values are also broadly consistent with those reported in the previous ERAA edition: they are nearly unchanged in 2028, 3 GW higher in 2030, and 11 GW lower in 2035.

(71) ERAA 2025 shows that controllable capacity does not increase at the same pace as electricity demand. While controllable resources remain broadly stable, peak demand is projected to rise substantially, from 512 GW in 2028 to 646 GW in 2035. This widening gap implies an increasing reliance on renewable generation and its effective contribution during peak demand hours. Although the strong growth of renewables, from 531 GW solar and 310 GW wind in 2028 to 904 GW solar and 609 GW wind in

2035[12], significantly enhances average energy availability, their ability to fully compensate for stagnant controllable capacity is constrained by variability and resource-demand correlation effects, particularly during prolonged low-wind and low-solar conditions.

(72) While the resource capacity assumptions are broadly aligned with Member States' policies, the adequacy of the future electricity system increasingly depends on enhanced system flexibility and stronger cross-border integration. Renewable deployment alone cannot fully offset the combined impact of rising peak demand and largely stable controllable resource capacity. Gains in system flexibility are expected to stem primarily form the expansion of energy storage and DSR, while deeper cross-border integration enables a more efficient sharing of flexibility resources at European level, thereby mitigating local residual demand variability and reducing system-wide adequacy risks.

6.1.2.3. Greenhouse gas emissions reduction target

(73) Article 23(5) of the Electricity Regulation requires ERAA to align with energy efficiency and emissions targets. ACER acknowledges that ERAA 2025 broadly incorporates the updated NECPs and the Fit-for-55 framework, targeting an emissions reduction of at least 57% from the 1990 levels by 2030[13]. Detailed analysis regarding the alignment of the Central Reference Scenario with these targets is provided in Section 2 of Annex III to this Decision.

6.1.2.4. Cross-zonal capacities

(74) According to Article 23(5) of the Electricity Regulation, ERAA must properly take into consideration the level of interconnection, interconnection targets, and real network development. Furthermore, the assessment must be based on a market model using the flow-based capacity calculation approach where applicable and accurately reflect the contribution of imports and exports to adequacy. These requirements are further specified in Articles 3 and 4 of the ERAA methodology.

(75) In ERAA 2025, as in previous ERAA editions, the modelling distinguishes between the CORE and Nordic capacity calculation regions using the flow-based (FB) approach and the rest of Europe using net transfer capacity (NTC) exchange limitations.

(76) For the CORE CCR (comprising 13 study zones), ACER notes that inconsistencies persist between the Economic Dispatch (ED) module, which utilized six FB domains per target year (three per summer/winter season), and the EVA module, which utilized only two (one per season). While ACER acknowledges that this reduction in

[12] A detailed comparison of installed wind and solar capacities in the EU-27 between ERAA 2024 and ERAA 2025 is provided in Annex III.

[13] According to the European Commission on the fit-for-55 targets: [Completion of key 'Fit for 55' legislation](#).

granularity is intended to manage computational complexity, such a simplified approach may fail to capture the optimized cross-border contribution during diverse operational conditions. This discrepancy between the investment and adequacy modules continues to risk distorting investment signals.

(77) For the Nordic CCR, ENTSO-E has introduced the FB approach in both the ED and EVA modules, by identifying seven FB domains per target year. ACER welcomes this implementation as an improvement to ensure that the investment module more accurately reflects cross-border contributions during scarcity. However, ACER observes that the EVA runs this FB setup using only one representative domain[14], which remains a methodological simplification.

(78) Regions outside of the CORE and Nordic capacity calculation regions are modelled using bilateral NTC values. ACER observes that average maximum net import and export capacities generally increase across most countries throughout the target years, reflecting projected grid investments.

(79) Regarding compliance with the requirement to provide at least 70% of interconnector capacity for cross-zonal trade, ACER notes that ENTSO-E adjusted NTC values to reflect this threshold. However, as highlighted in previous ACER Decisions, there is a lack of transparency regarding the specific verification methods used to ensure compliance for all NTC borders. **ACER reiterates its recommendation for more detailed reporting on the 70% target in future ERAA editions to ensure the robustness of import assumptions during scarcity.**

(80) Finally, ACER notes that neighbouring zones (e.g. Morocco, Tunisia, Egypt) are modelled implicitly through pre-determined energy exchanges with connected countries modelled explicitly. These exchanges are exogenously defined and do not participate in the optimization of the EVA or ED modules.

(81) Overall, ACER acknowledges the improvements made in ERAA 2025 regarding the consideration of cross-zonal capacities, particularly the expansion of FB modelling in the Nordic CCR. However, to ensure full consistency and compliance with the regulatory framework**, ACER recommends that for future ERAA editions, ENTSO-E strive to use the same set of FB domains in both the EVA and ED modules to eliminate persisting inconsistencies and improve transparency regarding the 70% target compliance for all NTC borders.**

6.1.2.5. Outages (forced)

(82) Pursuant to Article 4 of the ERAA methodology, outages are integrated into the probabilistic assessment using the Monte Carlo method to simulate the availability of generation, storage, and transmission resources. Planned outages are modelled using

[14] The most representative FB domain used to run the EVA being the one allocated to weather scenario (WS) 23.

perfect foresight; for the short-term horizon (SY+1 to SY+3), they rely on TSO inputs and historical data, while for the long term (SY+4 to SY+10), they are centrally optimized to avoid periods of adequacy risks. On the other hand, unplanned outages are represented as rando, events derived from historical failure rates and mean time-to-repair data. The random outages samples are combined with specific weather scenarios to create a set of Monte Carlo samples years, ensuring the simulation captures the volatile nature of resource availability.

(83) ACER welcomes that outages, comprising both planned maintenance and forced outages (FOs), are represented in both the EVA and the ED modules, although with differing levels of granularity and stochasticity.

(84) In the EVA module, outages for generating capacities are modelled using a deterministic approach to manage computational complexity. For existing thermal units, maintenance is simplified by derating available capacity based on the maintenance patterns established in the ED modules. For expansion and life-extension candidates, a maintenance rate is applied as a derating factor inversely proportional to the load profile. For forced outages, a representative outage pattern based on the 15 forced outage samples used in the ED is retained.

(85) For interconnections assets in the EVA, a derating equal to the line-specific Forced Outage Rate (FOR) is applied to NTC-modelled borders. For FB borders, no additional FOs are considered, as they are implicitly included within the FB domains.

(86) In the ED module, the representation is probabilistic and more granular. FOs are generated randomly for each stochastic element, including generation units and interconnections assets, for each simulation. These profiles are drawn hourly based on the FOR and mean time to repair as provided by the TSOs. Notably, for new-builds, life-extended, or de-mothballed units, no planned maintenance is considered in the ED, under the assumption that such maintenance would occur during periods of oversupply.

(87) ACER welcomes the improvement in the EVA module with a representative outage pattern based on unit-level simulations[15], which provides a more realistic derating curve than previous editions. However, ACER observes that the fundamental inconsistency between a deterministic EVA (relying on a single representative sample) and a probabilistic ED (relying on a full distribution of random occurrences) persists.

(88) As the EVA does not capture the full range of scarcity-driven revenue spikes that occur due to random forced outages in the ED, it may fail to fully reflect the economic viability of resources. Furthermore, the modelling of NTC interconnector forced outages in the EVA remains strictly deterministic (simple derating based on the forced

[15] The maintenance patterns calculated for the adequacy step.

outage rate), whereas they are stochastic in the ED. Consistent with Decision No 07/2025, ACER maintains that this divergence in modelling interconnector availability across modules diminished the robustness of the assessment's investment signals.

(89) Consequently, ACER reiterates its recommendation that ENTSO-E implements a consistent and representative treatment of forced outages across both modules in future ERAA editions. ACER considers that the transition toward structural solutions, such as the introduction of an iterative revenues-based approach for the EVA, would likely contribute to solving these persistent divergences.

6.1.2.6. Investment parameters and constraints

(90) Under Article 6 of the ERAA methodology, the Economic Viability Assessment (EVA) serves as the primary mechanism for projecting the European generation fleet's evolution. It determines the entry of new capacity and the retirement or mothballing of existing assets. This optimization process relies on a variety of economic parameters, such as capital cost, operating and maintenance costs, and short-run marginal costs, and constraints, including maximum potentials per technology, technical resource limits, and regulatory requirements such as carbon emission thresholds and mandated technology phase-outs. These parameters play a crucial role in setting the benchmark for security of supply, which is then used to interpret the results of the ERAA. Recently, the European Commission has mandated ACER to derive the investment parameters for all Member States.

(91) Similarly to previous ERAA editions, the investment decision-making process is modelled using the weighted average cost of capital (WACC) along with an additional estimated risk premium, known as the hurdle premium. While the WACC captures country-specific and systemic risks, the hurdle premium reflects investors' risk aversion by compensating for uncertainties such as the unpredictability of price spikes or potential regulatory interventions.

(92) For peaking technologies in ERAA 2025, ENTSO-E updated the hurdle premiums based on a Constant Absolute Risk Aversion (CARA)[16] utility function. This update has led to a significant year-on-year increase in hurdle premiums for peaking units compared to ERAA 2024, namely from 6.0% to 9.9% for OCGT units, and from 4.5% to 6.9% for CCGT units. For DSR and batteries, hurdle premiums' values remained stable.

(93) Upon ACER's request, ENTSO-E provided further reasoning to support the calibration of their CARA coefficient. The approach relies on three arguments: (i) a

[16] See Section 6.1.1.3 - footnote 7, The CARA utility function uses as parameter a risk aversion coefficient α of 0.0075

scientific article[17] supporting that the selected level of risk aversion is moderate; (ii) an order-of-magnitude consistency between the risk tolerance parameter and the break-even cost of the units; and (iii) a validation that the resulting hurdle premiums are broadly in line with the hurdle rate assumptions used in prior ERAA editions. ACER considers that none of these three arguments provides sufficient substantiation for the selected value of α = 0.0075.

(94) Regarding the scientific article cited by ENTSO-E, ACER notes that Babcock, Choi and Feinerman (1993) is an article examining risk aversion in an agricultural setting, drawing on empirical studies from the 1980s applied to farm-level decisions. Given the substantial differences in sector and context between agricultural producers and electricity market investors, ACER considers that the transposition of this framework to the electricity sector requires explicit justification that ENTSO-E has not provided.

(95) More fundamentally, the central contribution of the cited paper is precisely to demonstrate that a CARA coefficient cannot be characterised as moderate, high, or low based on its numerical value alone. The paper shows explicitly that the same coefficient can imply negligible risk aversion or extreme risk aversion depending on the size of the expected payoffs. The paper's core methodological instruction is accordingly that any chosen α must be validated by computing the implied risk premium relative to the relevant expected pay-off. ENTSO-E has not provided this calculation, and its characterisation of α = 0.0075 as moderate therefore remains to be justified.

(96) Regarding the order-of-magnitude argument, ACER notes that the proposed calibration anchors the risk tolerance parameter 1/α to the annual break-even cost of the modelled units, set at 62 €/kW for OCGT and 113 €/kW for CCGT in ERAA 2025. ACER considers that break-even cost and risk tolerance are fundamentally distinct concepts. Break-even cost is an economic concept reflecting the level of revenue required to cover investment and operating costs and is a property of the asset. Risk tolerance is the parameter governing the strength of risk aversion and is a property of the investor. A sound calibration of α should therefore be grounded in observed investor behaviour, such as market risk premia on comparable investments or revealed preference from historical capacity investment decisions. ACER therefore considers that the order-of-magnitude argument does not constitute a valid basis for the selected value of α.

(97) Regarding the consistency with previous hurdle rate assumptions, ACER notes that ENTSO-E partly validates its chosen α on the grounds that it produces hurdle premiums broadly in line with those used in previous ERAA editions. ACER considers that this argument undermines rather than supports the calibration. The explicit purpose of introducing the CARA framework in ERAA 2025 was to replace

[17] Babcock, B. A., Choi, E. K., & Feinerman, E. (1993). Risk and Probability Premiums for CARA Utility Functions. Journal of Agricultural and Resource Economics, 18(1), 17–24. http://www.jstor.org/stable/40986772

prior hurdle rate assumptions. Calibrating the new framework so as to replicate the outputs of the previous approach undermines that purpose and risks locking in former assumptions. If the previous hurdle rates were well calibrated, there would have been no need to replace them. If they were not well calibrated, replicating them cannot serve as a validation of the new approach. Either way, this consistency check provides no independent support for the chosen value of α.

(98) Based on the above, ACER considers that the value of $\alpha = 0.0075$ has not been sufficiently substantiated. **ACER suggest that in future ERAA editions, ENTSO-E should ground the calibration of its risk aversion parameter in empirical evidence of investor behaviour.**

(99) Similarly to the previous ERAA edition, ENTSO-E applied harmonized values for the Cost of New Entry (CONE) for gas technologies across all bidding zones. While this approach prevents potential spill-over effects as observed in preliminary runs of the ERAA 2024 where bidding zones with low national CONE values (e.g., Belgium) captured most of the new investments, it also overrides national economic specificities. Such assumption thus distorts the geographical repartition of ENS events. For ERAA 2025, ENTSO-E also applied this approach to batteries, where commissioning candidates of all bidding zones got assigned the same CONE parameters.

(100) The harmonized CONE values were updated using the new national CONE or NRAA studies available since the previous edition. Specifically, updated values CAPEX or FOM costs were provided for Belgium, Ireland, Denmark, Czech, and Italy.[18] While harmonized CAPEX for OCGT and CCGT units remained relatively stable, the harmonized FOM increased[19]. ACER notes that, although FOM increases are moderate, they may impact the viability of peaking units.

(101) For batteries commissioning candidates, the CONE value was extracted from NREL[20] assumptions for average 6h utility-scale batteries. Compared with previous ERAA, the default battery CAPEX and FOM nearly doubled. This cost increase seems to be aligned with the battery size increase, from 2 hours in ERAA 2024 to 6 hours in ERAA 2025.

(102) As in previous editions, ERAA 2025 introduces EVA expansion constraints within the EVA optimization to reflect technical or policy-driven limits on new capacity.

[18] Aside from the values updated in ERAA 2025, national CONE studies used concerns Belgium, Czech Republic, Denmark, Germany, Luxembourg, Finland, France, Greece, Italy, Netherlands, Slovenia, Spain, Sweden, Poland, and Ireland.

[19] For OCGT units, the harmonized CAPEX slightly increased from 535.6 to 541.2 EUR/kW (+1.0%), while the harmonized FOM from 21.4 to 22.4 EUR/kW/yr (+4.7%). For CCGT units, the harmonized CAPEX remained stable from 912.1 EUR/kW to 911.3 EUR/kW (-0.1%), while the harmonized FOM from 34.7 to 36.2 EUR/kW/yr (+4.3%).

[20] https://atb.nrel.gov/electricity/2023/utility-scale_battery_storage

ACER notes that these expansion potentials remain largely consistent with ERAA 2024, aside from gas in the United Kingdom and Poland. In the UK, such potential expansion increases from 0 GW across all target years to 37.5 GW in 2030, 28.1 GW in 2033 and 26.5 GW in 2035. Additionally in Poland, a significant increase of gas potential is noted for target year 2035, raising from 3.7 GW to 27 GW from ERAA 2024 to ERAA 2025.

(103) To ensure consideration of national economic specificities while avoiding re-runs in future ERAA editions, ACER reiterates its call for structural fixes to the determination of technical and economic parameters. **Consistent with its previous recommendations, ACER suggests that ENTSO-E utilises values derived from the recent ACER's CONE study in upcoming ERAA editions to ensure the robustness of the results.**

6.1.2.7. Price cap assumptions

(104) Article 7(9) of the ERAA methodology states that elements impacting price formation shall be reflected in the EVA and the ED if they are expected to impact significantly the EVA or the ED. This includes the harmonised limits on maximum and minimum clearing prices (HMMCP) pursuant to Article 10, paragraphs (1) and (2), of Electricity Regulation.

(105) ENTSO-E has updated the price cap evolution used for the EVA and for the ED modules consistently with the methodology used in previous editions. This methodology simulates adjustments of the harmonized maximum and minimum clearing prices for single day-ahead coupling (SDAC). For the target years 2028, 2030, 2033, and 2035, the applied maximum clearing prices in the model are 5500, 6500, 7000, and 7500 EUR/MWh respectively. This trajectory reflects an upward adjustment compared to the caps applied in ERAA 2024, particularly for the 2028 horizon.

(106) ACER maintains that setting the maximum clearing price in the EVA solely equal to the technical bidding limit of the day-ahead market remains inconsistent with Article 10 of the Electricity Regulation. As detailed in Annex III of Decision No 07/2025, this approach fails to account for the Intraday (ID) technical bidding limits (currently 9,999 EUR/MWh), which may underestimate the potential scarcity revenues available to peaking resources.

(107) Furthermore, ACER observes that the methodology continues to rely on a causality relation where the occurrence of price spikes in previous ERAA editions influences the price caps of the current edition. As highlighted in Decision No 07/2025, such interdependency between ERAA outcomes is not justified and introduces a risk of cyclical adequacy results, where the assessment may alternate artificially between resource adequacy and resource scarcity.

(108) Consequently, ACER reiterates its recommendations that the EVA in future ERAA editions should incorporate the technical bidding limits of both the day-ahead and intraday markets in conjunction to provide accurate scarcity signals. ACER also

recommends that ENTSO-E investigates the impact of the price cap interdependency on result robustness and implements a decoupling of price cap determinations from previous ERAA outcomes.

6.1.3. Methods

6.1.3.1. Probabilistic assessment

(109) Article 23(5) of the Electricity Regulation requires that ERAA applies probabilistic calculations and includes at least the two indicators: LOLE and EENS. These requirements are further specified in Article 4 of the ERAA methodology.

(110) ERAA 2025 utilizes the same probabilistic approach to assess resource adequacy risks as previous editions. This approach aims to capture the uncertainty associated with future weather conditions and the availability of generation and interconnection assets through Monte-Carlo simulations. The primary outputs of these simulations are the probabilistic risk indicators, LOLE and EENS.

(111) Similarly to previous editions, ERAA 2025 provides a graphical representation to evaluate the evolution of convergence criteria in Annex 3 of the Report, rather than reporting an exact numerical threshold value. Based on the stability of the coefficient showcased in the results and its consistency with previous assessments, ACER considers that ENTSO-E has provided sufficient proof of the model's convergence.

(112) ACER considers the probabilistic assessment approach in ERAA 2025 to be in line with the applicable requirements. Nevertheless, ACER is of the view that providing an exact convergence threshold value would further enhance the transparency of the assessment.

6.1.3.2. Modelling of storage and DSR

(113) Article 23(5)(d) of the Electricity Regulation requires that the assessment appropriately takes account of the contribution of energy storage, including its contribution to flexible system operation. Article 23(5)(m) of the Electricity Regulation also requires that the national characteristics of energy storage are properly taken into consideration. These requirements are reflected in Article 4 of the ERAA methodology.

(114) ERAA 2025 maintains the modelling approach for the consideration of pumped-storage hydro and battery storage used in previous assessments. Regarding battery storage, capacities are distinguished between market batteries, modelled explicitly, and non-market batteries. ACER considers the approach to optimising storage broadly consistent with the Electricity Regulation and the ERAA methodology.

(115) However, ACER notes that further improvements are required in future editions regarding the economics of storage assets. To reflect real-world operation, the model should account for various revenue streams, such as balancing capacity revenues.

Furthermore, as battery storage becomes a mature technology, the EVA should be permitted to both commission and decommission these assets.

(116) The approach to demand flexibility in ERAA 2025 also remains broadly similar to ERAA 2024, categorising DSR in three categories: (i) explicit DSR, (ii) price-insensitive implicit DSR, and (iii) price-sensitive implicit DSR. Explicit DSR is modelled as load reduction capacity subject to optimised dispatch. Price-insensitive implicit DSR is integrated in demand profiles as pre-determined time-series for heat-pumps, electric vehicles, and non-market batteries. Price-sensitive implicit DSR remains subject to dispatch optimization.

(117) ACER maintains its concerns regarding the modelling of price-insensitive implicit DSR, which continues to rely on pre-determined time series that are not reactive to simulated system conditions. This methodological simplification risk underestimating system flexibility during scarcity hours.

(118) In ERAA 2025, implicit price-sensitive heat-pumps and electric vehicles optimise their dispatch within predefined time blocks: 6-hour windows for heat-pumps, whereas for electric vehicles – two 6-hour daytime windows plus one 12-hour nighttime window. With each time window, a predefined amount of energy must be consumed within specified power limits. The required energy represents the technical need to charge an EV battery or to operate a heat pump system, while the upper bound of the power range reflects the maximum charging capacity of the EV or the nominal power consumption of the heat pump. Although the overall optimisation horizon for system dispatch is typically one day, these shorter optimisation time windows are introduced to better approximate real-world operational behaviour. Under this formulation, EV fleet charging is distributed across the day with three optimised charges. Similarly, heat pumps are activated at least once within each 6-hour window, ensuring regular operation to maintain indoor temperature levels.

(119) ACER considers that the DSR modelling approach is acceptable in ERAA 2025, but, given the enhanced role of DSR in an increasingly decarbonised power system, **ACER recommends ENTSO-E to further improve the modelling accuracy and consistency among modelled countries in upcoming ERAA editions**, aligning methodologies for estimating technical expansion potential and applying consistent installation and activation costs.

(120) Regarding implicit DSR, future ERAAs should clearly and transparently justify the basis for the assumed fixed consumption profiles of electric vehicles and heat pumps. Even when modelled as price-insensitive and therefore not reacting to real-time market signals, the operation of these technologies is typically automated or follows predefined charging and heating schedules. Such schedules are generally informed by historical price patterns, meaning that their consumption behaviour is not entirely independent of price signals. This should contribute to peak smoothing rather than peak amplification. However, the fixed DSR profiles currently used in ERAA appear to increase demand during morning and evening peak hours, which runs counter to the economic rationale and expected system impact of implicit demand response.

(121) ACER reiterates that the approaches used in other planning products, such as ENTSO-E's TYNDP 2024, can inform improvements to the DSR data collection. Specifically, modelling electric vehicles through granular inputs that define charging availability for every hour, and bidding zone would significantly increase modelling accuracy. As part of future ERAA improvements, ACER suggests expanding the data collection scope to include smart devices and building management systems[21]. ACER also recommends that in the future ERAA cycles, new support schemes for clean flexible resources, such as DSR and storage, will be appropriately reflected.

6.1.3.3. Climate data

(122) For ERAA 2025, ENTSO-E has further enhanced the climate database by transitioning to the pan-European climate database (PECD) version 4.2. This update continues the methodological shift from detrended historical data toward climate-informed weather scenarios, which are essential for capturing future climate change conditions, such as increased frequency of extreme heat waves and changing wind patterns, that directly impact both renewable generation and electricity demand profiles.

(123) Despite the availability of 36 high-resolution weather scenarios for the probabilistic ED module, ACER recalls that the EVA remains limited to a subset of only three representative weather scenarios. While this reduction is intended to keep computational complexity manageable, ACER notes that any such data reduction inevitably leads to information loss and fails to fully capture the variability of climate conditions when assessing the economic viability of resources.

(124) Overall, ACER welcomes the continuous improvement of the climate dataset, which increases the technical robustness of the adequacy findings. However, ACER emphasizes that the discrepancy between the 36 scenarios used for the risk module and the three used for investment decisions remains a primary driver of inconsistency between the two modules.

(125) ACER is of the view that as the scenarios selected for the EVA do not sufficiently represent the climatic stresses found in the full set, the model may fail to signal the necessary investment in firm peaking capacity. Consequently, **ACER recommends that ENTSO-E further investigates methods to increase the number of scenarios utilized in the EVA of upcoming ERAA editions.**

6.1.3.4. Single modelling tool

[21] Other sources of demand flexibility, such as smart devices and energy management systems in buildings and industry are currently not taken into consideration in the ERAA data collection.

(126) Article 23(5) of the Electricity Regulation requires that the assessment applies a single modelling tool, a requirement which is further specified in Article 4 of the ERAA methodology.

(127) Since ERAA 2025 utilizes the same modelling tool for all target years, ACER considers that it meets the requirement of the Electricity Regulation for a single modelling tool.

6.1.4. Economic viability assessment

6.1.4.1. Outline

(128) Pursuant to Article 23(5) of the Electricity Regulation, the central reference scenarios must include an EVA to account for the likelihood of retirement, mothballing and new build of generation assets. This requirement ensures that the assessment appropriately considers the contribution of all existing and potential future resources. The EVA-related requirements are further specified in Articles 3 to 7 of the ERAA methodology. Additional details on ACER's assessment of the EVA are provided in chapter 3 of Annex III to this Decision.

(129) The EVA module maintains the stochastic model formulation as in previous ERAA editions, which seeks to minimise the total system cost as a probabilistic formulation of the costs incurred across the study horizon. Following ACER`s recommendation, and similarly to ERAA 2024[22], ENTSO-E conducted again a proof-of-concept for an iterative revenues-based approach to the EVA. While both formulations are compliant with Article 6(2)(b) of the ERAA methodology, the outcomes of the iterative approach were not included in the results of the Central Reference Scenario.

(130) The EVA for ERAA 2025 explicitly models four target years, with intermediate years not being modelled explicitly. Instead, intermediate target years are assumed to be duplicates of the latest available target year. ACER notes that this approach fails to fully capture the system dynamics of intermediate years, which may influence decisions regarding entry, exit, or life-extension of capacity. Relying on duplication rather than interpolation risks underestimating the volume of investments or decommissionings driven by evolving market conditions.

(131) ACER welcomes the expansion of decision variables within the EVA for ERAA 2025. The model now explicitly considers commissioning, decommissioning, life-extension, mothballing, and de-mothballing for both gas OCGT and CCGT technologies. For hard coal, lignite, and oil, decisions are limited to decommissioning, life-extension, and mothballing/de-mothballing. Conversely, for hydrogen OCGT and CCGT plants, DSR, and batteries[23], only commissioning decisions are considered.

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[22] Decision No 06/2024.

[23] The energy to production ratio of battery candidates is fixed at E/P=6.

(132) ACER notes that nuclear and renewable power capacities remain considered policy-driven and are excluded from the economic optimization of the EVA. While this assumption remains largely valid for nuclear assets, ACER reiterates its view from Decision No 07/2025 that it is not fully applicable to renewable energy generation, which increasingly operates under market-based investment signals.

(133) ACER acknowledges the reintegration of mothballing and de-mothballing decision variables as a positive development. This aligns the assessment with the requirements of Article 23(5)(b) of the Electricity Regulation and addresses a setback identified in the previous assessment cycle.

6.1.4.2. Weather Scenario selection

(134) As described in Section 6.1.3.3, ENTSO-E updated the climate database used to determine the inputs of the ED and the EVA. This evolution improves the representation of future climate conditions and, in principle, increases the robustness of the EVA.

(135) However, to manage computational complexity, the EVA in ERAA 2025 continues to model only three weather scenarios, whereas the ED module utilizes the full set of 36 weather scenarios. ACER emphasizes that this simplification maintains a significant inconsistency between the investment and adequacy modules, as a subset of only three scenarios cannot fully capture the variability of system conditions required for a robust assessment.

(136) ENTSO-E utilized the same Wasserstein distance-based method as in ERAA 2024 to select the subset of three weather scenarios, specifically WS23, WS27, and WS35. The method aims to select those weather scenarios in which revenue outcomes in the previous ERAA cycle are the most representative of the entire scenarios set to ensure that the representativeness of revenues in the EVA aligns with those of the ED module.

(137) However, ACER raises significant concerns regarding the actual representativeness of the selected weather scenario subset for the EVA. While the initial subset selection, based on ERAA 2024 outcomes, demonstrated alignment between the average revenues of the selected subset and the full set, ACER observes that this alignment is not maintained when performing the ERAA 2025 assessment. Specifically, average revenues for gas-fired peaking plants are lower by 17% in 2028 and 30% in 2035 compared to the full 36-scenario set utilized in the Economic Dispatch (ED) module. This divergence indicates that the selected subset of scenarios fails to adequately capture investment signals necessary to assess capacities' economic viability.

(138) ENTSO-E highlights in the Report that median revenues are broadly aligned between the selected subset and the whole set of weather scenarios. ACER observes, however, that the divergence in expected revenues indicates the selected subset fails to capture the full scope of projected scarcity conditions. This scarcity events inconsistency between the EVA and the ED is further detailed in Section 6.1.5.3 and Chapter 3 of Annex III to this Decision. ACER also notes that Article 6 of the ERAA methodology explicitly requires that "expected revenues" be considered in the EVA. Therefore,

characterizing “reasonable alignment” based on median revenues rather than the average is not in line with the Wasserstein distance-based methodology communicated to ACER.

(139) This revenue underestimation in the EVA directly impacts the perceived economic viability of resources, leading to an artificial reduction in the capacity fleet used to run the subsequent ED module. Ultimately, this diminished capacity results in an inflation of the adequacy risks identified in ERAA 2025, ACER warns that a significant portion of the reported adequacy risks are attributable to this weather selection inconsistency rather than actual system evolutions, thereby diminishing the robustness of the final outcomes.

(140) In a letter of 7 November 2025, ACER requested ENTSO-E to improve consistency, in line with its recommendations included in Decision No 07/2025. Based on preliminary results, ACER identified that net revenues of marginal units (OCGT and CCGT) were approximately one-third lower in the EVA compared to the ED. ACER called on ENTSO-E to consider appropriate solutions, such as re-weighting or re-running the EVA after a more representative scenario selection. ACER understands that ENTSO-E could not implement ACER’s recommended measures to improve consistency between EVA and ED mainly due to challenging timeline for ERAA 2025[24].

(141) ACER acknowledges the technical challenges associated with reducing weather scenarios to manage computational complexity and recognizes that ENTSO-E consistently applied the same methodology as in the previous assessment cycle. Consequently, ACER considers the weather scenario selection approach in the EVA acceptable for the purpose of ERAA 2025.

(142) Nevertheless, as assumptions regarding weather scenarios have a major impact on the ERAA results, the target model should assume full consistency between the set of weather scenarios in the EVA and those in the ED. Thus, **ACER recommends the following structural fixes to the weather scenario selection approach in future ERAA cycles:**

(143) **Increasing scenarios granularity:** ENTSO-E should strive to increase the number of scenarios considered in the EVA to better capture the system conditions of the ED.

(144) **Iterative revenue-based approach:** ACER maintains that a shift to the iterative revenue-based approach is essential to ensure convergence between expected EVA revenues and ED outcomes.

[24] Section 3.3. of Annex 1 – Input data & Assumptions of the submitted ERAA 2025 Report and Section 10.12 of Annex 2 – Methodology of the submitted ERAA 2025 Report.

(145) **Decoupling weather scenario from previous ERAA outcomes:** The selection method should be modified so that it does not rely on the outcomes of previous ERAA editions, which may no longer updated inputs and system dynamics.

6.1.4.3. EVA outcomes

(146) In view of the considerations in Section 6.1.2.6 and the methodological analysis, ACER observes that the levels of retained and newly commissioned capacity in ERAA 2025 are lower than those identified in previous assessment cycles. This trend is consistent with the application of more conservative investment signals and a diminished level of consistency between the EVA and ED modules.

(147) Specifically, the decommissioning of fossil-fired generation throughout the EVA phase results in a reduction of 50 GW in 2028, 39 GW in 2030, 33 GW in 2033, and 34 GW in 2035 relative to the initial input data. Regarding capacity additions for the 2028 horizon, the EVA identifies only a 4 GW expansion of DSR. By 2030, the model projects 8 GW of new DSR capacity and 1 GW of OCGT capacity, while life-extending 5 GW of existing gas turbines. For 2033, the model indicates capacity additions of 9 GW of DSR, 3 GW of battery storage, and 21 GW of new gas-fired capacity, together with 6 GW of lifetime extensions of existing gas-fired power plants. For 2035, the additions include 10 GW of new DSR, 3 GW of battery storage, and 27 GW of new gas, accompanied by 7 GW of lifetime extensions. Consequently, the EVA results in total capacities for 2028 and 2030 that are lower than those provided in the national estimates, with reductions of 66.2 GW and 43.1 GW respectively. Conversely, for the 2033 and 2035 horizons, the volume of lifetime extensions and new entries outweighs retirements, yielding a positive net balance compared to pre-EVA levels of 7 GW and 14.6 GW respectively. ACER analyses this shift between decommissioning in the near horizon and commissioning in later horizons as related to the dynamics of cost-minimization models which are discussed in Section 3.4 of Annex III to this Decision, rather than real-world dynamics of the European power system.

(148) A comparative analysis of the EVA outcomes between ERAA 2024 and ERAA 2025 for the Union indicates a persistent reduction in the absolute volume of economically viable capacity across all target years. In ERAA 2025, the modelling phase generally results in higher retirement rates and a lower volume of both lifetime extensions and new expansions, leading to a smaller overall capacity fleet. Specifically, the post-EVA capacities in ERAA 2025 are approximately 10 to 12 GW lower than those reported in the 2024 edition for the 2028, 2030, and 2035 horizons[25]. In both assessment cycles, the substantial retirement of existing fossil-fired capacity projected for 2028 and 2030 results in a net reduction of total resource capacity, as decommissioning exceeds the combined volume of capacity extensions and new commissioning.

[25] 2033 not being modelled in ERAA 2024.

(149) ACER considers that the lower net EVA resource balance observed in ERAA 2025 is a direct consequence of the increased hurdles premiums discussed in Section 6.1.2.6 and the weather scenario selection methodology detailed in Section 6.1.4.2. While the higher hurdles premiums for gas increase the profitability threshold for commissioning and life-extensions, the weather scenario selection underestimate the expected revenues of capacities subject to the EVA. Consequently, this leads to a reduction in available capacity used to perform the ED that subsequently increase adequacy risks reported in the final assessment outcomes. ACER thus warns that part of the ERAA 2025 adequacy results are driven more by modelling limitations than by actual underlying system dynamics of the European power market.

6.1.5. Outcomes

6.1.5.1. Adequacy outcomes evolution compared to previous editions

(150) Upon evaluating the results of ERAA 2025, ACER observes a persistent and significant increase in identified adequacy risks across the European Union. In the Central Reference Scenario, the average LOLE across all modelled countries has increased steadily compared to ERAA 2024 and ERAA 2023.

(151) For the 2028 target year, the average LOLE across EU study zones stands at 7.30 hours[26], an increase from 5.40 hours in ERAA 2024 and a four-fold increase compared to the 1.67 hours projected in ERAA 2023. This upward trend is further observed for the 2030 horizon, where risks have nearly doubled from the previous edition (from 3.3 hours in ERAA 2024 to 6.3 hours in ERAA 2025) and are also four times higher than the levels identified in ERAA 2023 (1.32 hours). In later horizons (2033 and 2035), average risks further elevate, with average LOLE values of 8.3 hours in both target years.

(152) ACER has concerns about the evolution of adequacy risks in specific Member States. For example, in Estonia for 2033, the projected LOLE exhibits a substantial increase from 4.11 hours in ERAA 2023 to 43.68 hours in ERAA 2025. Across common target years (2028, 2030, and 2035), the most significant average LOLE increases compared to ERAA 2024 are Italy (+8.29 hours), Germany (+7.09 hours) Lithuania (+6.97 hours), Spain (+6.95 hours), and the Netherlands (+6.45 hours). ACER considers that such substantial increases between consecutive assessments are difficult to explain by real world developments. Since methodological limitations increase adequacy risks (see sections 6.1.3 and 6.1.4), these evolutions may result in inconsistent adequacy signals provided to stakeholders, whereas ERAA must provide a stable outlook to be a reliable basis for policy decisions.

(153) ACER emphasises that the identified adequacy risks appear to increase with each successive assessment cycle. Consequently, ERAA 2025 identifies adequacy concerns

[26] ACER's computation based on the average of countries' LOLE, excluding Malta. The LOLE of countries with several bidding zones were pre-computed into a single indicator for the whole country.

for the majority of Member States with a defined reliability standard across all target years. However, consistent with the findings in Sections 6.1.3 and 6.1.4, ACER is of the view that these results are heavily influenced by specific methodological choices and limitations, such as increased risk-aversion parameters or the weather scenario selection, rather than solely reflecting the actual supply-demand dynamics of the European power system.

6.1.5.2. Identification of sources of resource adequacy concerns

(154) Pursuant to Article 23(5)(k) of the Electricity Regulation, ERAA is required to identify the sources of possible resource adequacy concerns, specifying whether they arise from network constraint, a resource constraint, or both. Article 8 of the ERAA methodology elaborates on the potential drivers to be evaluated and the methodological approaches required for this identification.

(155) ACER recognizes the addition of quantitative analysis of scarcity events in Annex 4 of the Report, in line with recommendations set out in Decision No 07/2025. By detailing the frequency, depth, and duration of scarcity events, Annex 4 provides the granularity necessary to interpret the drivers behind aggregate adequacy metrics like LOLE and EENS.

(156) This characterization is essential for a robust interpretation of the ERAA 2025 results, as it enables stakeholders to distinguish between scarcity driven by local resource shortages and scarcity resulting from exchanges constraints. By illustrating the specific climatic and operational conditions under which ENS occurs, ENTSO-E has directly addressed transparency gaps identified in previous ERAA editions.

(157) ACER welcomes this increased transparency and recommends that ENTSO-E maintains this practice in future editions.

6.1.5.3. Revenues and adequacy metrics consistency

(158) ACER acknowledges that, due to the higher computational complexity in the EVA module, the adequacy risk calculation is split between the EVA and ED modules, and that the EVA module may therefore be subject to certain simplifications compared with the ED module. However, ACER has repeatedly underscored the necessity of methodological consistency between the EVA and the ED modules. In ERAA 2025, ACER observes a widening discrepancy between these two modules, characterized by the ED module identifying substantially higher adequacy risks than the EVA.

(159) ACER's analysis of ERAA 2025 outcomes reveals that the ED module reports much higher adequacy risks across all target years compared to the EVA. ACER considers

the near absence of identified evaluated adequacy risk in the EVA for the later horizons (2030, 2033 and 2035) to be technically inconsistent[27].

(160) The disparity is equally evident in the number of bidding zones[28] with positive LOLE. While the ED module identifies adequacy risks in nearly every modelled bidding zone, the EVA module identifies risks in a far more restricted subset. In 2028, 35 bidding zones exhibit risks in the ED compared to 26 in the EVA. For the 2030 and 2033 horizons, while the ED identifies risks in 34 and 35 zones respectively, the EVA identifies risk in only 3 (DKE1, ES00 and PT00) in 2030, and only in CY00 and GR03 in 2033. By 2035, the ED identifies adequacy risks in 35 bidding zones, while the EVA suggests a perfectly adequate system with no identified risks across the Union.

(161) ACER considers the near absence of identified evaluated adequacy risk in the EVA for the later horizons (2030, 2033 and 2035) to be technically inconsistent. It is contradictory for the investment module to result in a perfectly adequate system while the adequacy assessment of the same system identifies substantial risks. This discrepancy suggests that the EVA does not sufficiently capture the system conditions reflected in the ED.

(162) The inconsistency is further confirmed by ACER's analysis of marginal plants' capture prices (i.e. volume-weighted revenues). ACER observes that capture prices are consistently higher in the ED module, reflecting the impact of scarcity situations that are not reflected in the EVA. This difference ranges from 19.0 €/MWh (+23.8%) in 2028 or 22.4 €/MWh (+21.65%) in 2030 to 46.9 €/MWh (+33.15%) in 2035. Such divergence underscores an underestimation of revenues of the capacities assessed under the EVA.

(163) In ACER's view, this outcome is a direct consequence of the simplified modelling approach in the EVA, which utilizes only three weather scenarios compared to the 36 scenarios used in the ED. This restricted subset fails to capture the extreme climatic events that drive scarcity prices in the full probabilistic assessment. Consequently, the EVA does not reflect the economic incentives necessary to retain existing capacity or attract new investment, leading to modelled capacity exits that may not occur.

(164) ACER concludes that by significantly underestimating potential revenues for flexible and peaking resources, the EVA artificially reduces the pool of available capacity. When the ED module is subsequently run on this diminished fleet, it produces inflated adequacy risks. ACER considers that the significant increase in LOLE reported in

[27] The detailed LOLE results show that from the EVA to the ED, adequacy risks increase from 1.5 hours to 7.3 hours in 2028 (+5.8 hours), from 0.2 hours to 6.3 hours in 2030 (+6.1 hours), from 0.1 hours to 8.3 hours in 2033 (+8.2 hours), and from 0.00 hours to 8.3 hours in 2035 (+8.3 hours). Furthermore, ACER observes that the consistency of adequacy metrics has steadily declined over successive ERAA editions. For example, for the 2028 horizon, the EVA/ED LOLE gap was 0.5 hours in ERAA 2023 and 4.0 hours in the ERAA 2024, while it reaches 5.9 hours in ERAA 2025.

[28] Excluding MT00.

ERAA 2025 is driven primarily by this methodological inconsistency rather than by actual system fundamentals. Consequently, **ACER reiterates its recommendation that ENTSO-E implements an iterative revenue-based approach in future ERAA editions to ensure a better consistency between the two modules**.

6.1.5.4. Curtailment sharing

(165) Pursuant to Article 7(9)(d) of the ERAA methodology, the assessment shall reflect the impact of cross-zonal capacity allocation, such as demand-curtailment sharing, if they are expected to impact significantly the results of the EVA or the ED. Curtailment sharing aims to ensure that, in the event of a energy shortage, the resulting energy shortage is distributed fairly among the bidding zones in a domestic supply deficit rather than falling entirely on one bidding zone.

(166) In previous Decisions, ACER highlighted that curtailment sharing was a primary source of adequacy metrics inconsistency between the EVA and the ED modules, significantly increasing perceived adequacy risks in the ED. The theoretical implementation and methodological formulation of the feature are sound and compliant with the ERAA methodology, as already discussed in Decision No 07/2025. For ERAA 2025, ACER welcomes the inclusion of greater technical detail within the submitted Report regarding the functioning and mathematical formulation of this feature (the so-called "adequacy patch" of the EUPHEMIA algorithm).

(167) On the practical implementation for ERAA 2025, ACER notes that no notable changes were introduced to the curtailment sharing feature compared to the previous edition. ACER observes that the impact of curtailment sharing on adequacy results remains significant as in previous editions, with curtailment sharing more than doubling the perceived adequacy risks in the ED (on average a 103% increase in LOLE compared to pre-sharing outcomes).

(168) In order to verify the empirical robustness of the feature, ACER conducted a dedicated analysis of the ERAA 2025 outcomes by comparing the pre-curtailment sharing (pre-CS) and post-curtailment sharing (post-CS) dispatch results, as well as the resulting curtailment ratios across bidding zones. This study, along with the detailed impact of curtailment sharing on adequacy outcomes, is provided in Section 4 of Annex III to this Decision. **To ensure full transparency, ACER also amends Annex 3 of the ERAA report to include pre-curtailment sharing LOLE and EENS results.**

(169) In response to ACER’s preliminary position, ENTSO-E raised concerns that the publication of these results in the Report would create confusion as stakeholders might misread them as sensitivity results (see Section 4.1). ACER considers that this concern can be addressed by providing sufficient explanations in Annex 3.

(170) While the majority of the curtailment sharing cases behave in accordance with the theoretical expectations, ACER identifies a minority of cases where the outcomes raise concerns. In these instances, the redistribution of ENS results with a reduction of system-wide ENS compared to the dispatch pre-CS, which does not align with expected behaviour of the CS feature. ACER considers that these outliers require

further investigation to determine if they result from specific network constraints, rounding effects, or modelling artifacts. Consequently, **ACER recommends that ENTSO-E provide more detailed evidence and explanatory elements in the next edition regarding these specific outcomes.** ACER reiterates that a fully robust assessment requires that the empirical outcomes of the curtailment sharing feature consistently match its theoretical formulation across all bidding zones and target years.

6.1.5.5. Out-of-market capacity resources

(171) Pursuant to Article 23(5) of the Electricity Regulation, the assessment must appropriately consider the contribution of all resources to system adequacy. In this respect, Article 7(10) of the ERAA methodology requires that the assessment projects the risks in the absence of any out-of-market capacity resources and following their activation.[29] Furthermore, under Article 8(1) of the ERAA methodology, resource adequacy concerns can only be identified after evaluating the impacts of these out-of-market measures.

(172) ACER observes that ERAA 2025 provides a level of insight regarding out-of-market measures consistent with the previous edition. Specifically, for Malta and Poland, adequacy metrics are reported both with and without the activation of out-of-market resources. This dual reporting is essential as it allows for an objective assessment of how these last-resort measures alleviate the identified adequacy concerns.

(173) ACER welcomes the inclusion of the impact of the Polish out-of-market measures in this assessment, noting that this information was not presented in the previous assessment cycle. This addition represents a tangible improvement in the transparency of the results for the 2025 edition.

(174) Overall, ACER considers the implementation of out-of-market capacity resources in ERAA 2025 to be acceptable. ACER emphasizes the importance of maintaining the transparency in future editions to ensure that stakeholders can clearly distinguish between market-driven adequacy and the safety margins provided by non-market resources.

6.1.5.6. Transparency

(175) Article 41(2) of the Electricity Regulation mandates that ENTSO-E operates in full transparency towards stakeholders. This requirement is further detailed in Article 11 of the ERAA methodology, which specifies that the ERAA must facilitate a

[29] Out-of-market capacity resources are resources that lie outside the market, i.e. do not participate in the wholesale market, that TSOs would only use as a last resort if the market fails to meet electricity demand.

comprehensive understanding of the assessment, including its inputs, data, assumptions and scenario development.

(176) Overall, ACER observes that the level of transparency in ERAA 2025 remains consistent with the standards established in 2023 and 2024 assessment cycles. While current efforts are noted, there is scope to enhance the accessibility of the assessment for stakeholders in future editions.

(177) Regarding data availability, ACER welcomes the continued provision of hourly ENS data, interactive dashboards on input data and modelling outcomes, and refined methodological descriptions. Nevertheless, ACER considers that further data items must be made public to allow for a comprehensive understanding of the results.

(178) With respect to curtailment sharing, ACER acknowledges the improved clarity provided by ENTSO-E regarding the implementation of these elements. This description allows stakeholders to better assess the technical robustness of the feature. However, pre-curtailment sharing adequacy outcomes are not publicly available. Considering that the curtailment sharing feature significantly redistributes Energy Non-Served (ENS) and can nearly double reported adequacy risks in certain bidding zones, providing these results is essential for transparency. This data allows stakeholders to understand the "native" adequacy position of each bidding zone before regional solidarity measures are applied. **Consequently, ACER is of the view that publishing this data directly in the Report, rather than in an annex to ACER's decision, improves accessibility and clarity. This further justifies amending Annex 3 of the ERAA report to include pre-curtailment sharing LOLE and EENS results. Given the high impact of this feature on final adequacy results, to ensure transparency, ACER recommends the inclusion of these intermediary results in future ERAA reports.**

(179) As ENTSO-E continues to fine-tune modelling solutions to achieve full alignment with the Electricity Regulation and the ERAA methodology, ACER notes that technical changes can have distinct impacts on the results. To ensure that stakeholders can track these evolutions, **ACER reiterates its recommendation that ENTSO-E publishes comprehensive release notes for all future editions. These notes should detail all technical changes compared to the previous assessment, their justification, their alignment with legal requirements, and their likely impact on the results.**

6.2. Assessment of procedural requirements

6.2.1. Timeline for submission

(180) ERAA 2025 complies with Article 23(2) of the Electricity Regulation, which requires annual assessments. It was submitted to ACER on 17 December 2025, resulting in a delay of 46 days beyond the 1 November deadline set in Article 10(2) of the ERAA methodology. The delay was partly caused by delays in ERAA 2024 approval, which required re-runs that consumed ENTSO-E's resources. ENTSO-E informed ACER of

the delay in advance. ACER welcomes ENTSO-E's efforts in reducing this delay, which help preserve the timeline for future ERAA cycles.

6.2.2. Data collection requirements

(181) Article 23(4) of the Electricity Regulation requires the TSOs to provide ENTSO-E with the data it needs to carry out ERAA. Article 5 and Article 10 of the ERAA methodology specify that ENTSO-E must provide the TSOs with data collection guidelines to ensure coherency of the input data across the assessment and publish these guidelines.

(182) As in the past three years, ENTSO-E has collected data from the TSOs for ERAA 2025, as for example evidenced by the surveys run on the assumptions of the assessment with the TSOs and has published the data collection guidelines alongside the Report. ERAA 2025 is therefore in line with these requirements.

6.2.3. Stakeholder engagement

(183) Article 31 and Article 30(1)(c) of the Electricity Regulation require that ENTSO-E conducts an extensive consultation process and takes into consideration stakeholders' comments when finalising the annual ERAAs. Article 27 of the Electricity Regulation requires ENTSO-E to consult relevant stakeholders and duly take the results of that consultation into consideration. The requirements are further specified in Article 9 of the ERAA methodology and aim to enable stakeholders to contribute at every step of developing ERAA in a way that is transparent, open, accessible, inclusive, efficient and well-structured. Article 23(7) of the Electricity Regulation requires that ERAA is subject to the prior consultation of Member States, the ECG and relevant stakeholders before it is submitted to ACER for approval.

(184) ENTSO-E consulted stakeholders on the preliminary scenario assumptions and held public webinars to inform stakeholders about methodological approaches and developments for ERAA 2025. In total, ENTSO-E held three public webinars to inform stakeholders and seek feedback.[30] In addition, ENTSO-E consulted on the preliminary results with the ECG. ACER also recognises ENTSO-E's commitment to collaborate with ACER throughout the development process of ERAA 2025.

(185) Nevertheless, ACER observed that, as in 2023 and 2024 where climate years, values for cost of new entry, French nuclear availability patterns were added or amended after the consultation on scenario assumptions without duly informing or consulting stakeholders, ENTSO-E introduced late in the process a novel risk aversion approach, running the EVA with a revenue cap.[31] Similarly, ENTSO-E did not consult ACER nor the wider group of stakeholders on the choice to present LOLE outcomes as a

[30] For more information, on ENTSO-E's stakeholder engagement activities, see ENTSO-E's dedicated webpage on ERAA.

[31] See Section 6.1.1.3

range instead of single LOLE values. **ACER recommends that in the future ERAA editions, ENTSO-E consults stakeholders on all elements of the ERAA, and especially those assumptions and scenarios that have a material impact on adequacy risks evaluated in ERAA.**

(186) Finally, ACER welcomes that ENTSO-E explicitly reacted to the stakeholder feedback, alongside with publication of stakeholder replies. This is an improvement compared to previous ERAA editions which help stakeholders how their comments were considered in the assessment.

7. SUMMARY AND REASONS FOR AMENDMENTS

7.1. Summary of ACER's assessment

(187) While ERAA 2025 still includes methodological simplifications that require refinement, ACER considers that they do not compromise the central reference scenario's ability to identify adequacy concerns. However, for a number of reasons which are detailed in Section 6.1.1.3, paragraphs (45) - (57), ACER has amended the decision to discard the "range-based" results and the revenue-cap approach, defining the "hurdle premiums-only" run as the sole outcome.

(188) ACER highlights that several technical aspects, notably the consistency between the investment (EVA) and adequacy (ED) modules, have not yet fully aligned with the ERAA methodology. The current use of a limited subset of weather scenarios in the EVA fails to capture the full spectrum of scarcity revenues identified in the ED, likely leading to underestimation of capacity and overestimation of adequacy risks (LOLE). Persistent discrepancies in investment signals and the lack of transparency in risk-aversion parameters (such as the CARA coefficient) remain significant areas for improvement.

(189) ACER recognises that the implementation of the ERAA methodology has improved throughout past editions through the dedication of ENTSO-E and TSO experts. In parallel with the ERAA 2025 approval process, the ERAA methodology is being revised to help streamline and simplify the process of applying a capacity mechanism. Once implemented, these amendments should facilitate the annual ERAA preparation, increase robustness and transparency, and strengthen ERAA's role as a benchmark, particularly through the computation of parameters used for capacity mechanisms.

(190) ACER notes that the complexity of the ERAA exercise and the relatively short approval timeline (3 months) make it difficult to introduce substantial late-stage amendments. This highlights the importance of continuous engagement between ENTSO-E and ACER. Unilateral, non-consulted changes that materially affect results, such as the late introduction of a revenue cap, can hamper effective regulatory oversight and undermine stakeholder confidence in the transparency of the process.

7.2. ACER's amendments and reasons

(191) ACER considers that several elements of ERAA 2025 require amendments to ensure technical robustness, transparency and compliance with the regulatory framework.

(192) Most importantly, ACER has removed the upper range (revenue-cap-based approach) while retaining the lower range (hurdle premiums-only approach) as the only outcome of the central reference scenario for identifying adequacy concerns. Reasons for this amendment are set out in paragraphs (45) to (57).

(193) Secondly, ACER has amended Annex 3 of the Report by including the pre-curtailment sharing LOLE and EENS results in a table format. Reasons for this amendment are set out in paragraphs (165) and (170).

(194) In the interest of ensuring clarity and preventing potential confusion among stakeholders, ACER requests that ENTSO-E promptly brings in line the draft ERAA Report available on ENTSO-E's website with the amended and approved ERAA Report, as set out in Annex II to this Decision.

8. KEY RECOMMENDATIONS FOR FUTURE ERAA EDITIONS

(195) ACER continues its practice of including recommendations for future ERAA editions as part of its yearly assessments. This is both appropriate and necessary. ERAA is an annual exercise that has seen considerable and steady methodological refinement. Nevertheless, ACER's review of ERAA 2025 has identified critical areas where modelling choices, particularly regarding risk aversion and investment signals, give rise to concerns. ACER therefore considers it useful to provide ENTSO-E with clear guidance on how to further improve future ERAAs, in line with the ERAA methodology. This section highlights priority areas for improvement in future ERAA editions to ensure its results remain a robust basis for policy decisions.

(196) Regarding consistency between the investment (EVA) and adequacy (ED) modules, ACER notes that this has deteriorated in ERAA 2025 compared with earlier editions. The current reliance on a limited subset of weather scenarios in the EVA fails to capture the full spectrum of scarcity revenues identified in the ED. ACER recommends that the number of scenarios in the EVA is significantly increased. Furthermore, ACER recommends to implement the iterative revenue-based approach as it would ensure that investment signals are based on the same assumptions, including scarcity conditions, as the adequacy assessment. In addition, the EVA model should accurately reflect all revenue streams available to capacity, including capacity mechanisms, forward hedging, and ancillary services, as listed in Article 6(9) of the ERAA methodology.

(197) Regarding risk aversion and investment parameters, ACER recommends that ENTSO-E provides full transparency regarding the derivation of the Constant Absolute Risk Aversion (CARA) coefficient. It is recommended that ENTSO-E ensures that the modelling of risk aversion does not lead to redundant layering, such as applying revenue caps on top of hurdle premiums, leading to double counting which artificially inflates adequacy risks by overestimating decommissioning. Overall, ACER recommends that, in the future ERAA editions, ENTSO-E improves the representation

of the investor business case, including the consideration of the different revenue streams and the representation of investor risk aversion, in line with Article 6(8)(a) of the ERAA methodology, as amended by ACER Decision 04/2026.

(198) Regarding cross-zonal capacities and forced outages, inconsistencies persist in the use of flow-based domains and resource availability patterns between the two modules. ACER recommends using a consistent set of flow-based domains in both EVA and ED. Furthermore, the treatment of forced outages should be aligned across modules, particularly for interconnectors, to prevent the distortion of investment signals in zones with low interconnectivity.

(199) Regarding the economic viability of flexible resources, ACER recommends that the EVA module better reflects the actual business case for assets such as battery storage. To ensure a robust assessment, the modelling should account for a broader range of revenue streams beyond day-ahead energy arbitrage, including balancing capacity revenues and grid support services. Furthermore, as battery storage matures, the EVA should be permitted to both commission and decommission these assets based on their full economic potential, ensuring that investment signals for flexibility are not artificially constrained by a narrow modelling scope.

(200) A structural solution is also required for the technical and economic parameters used in the assessment. To ensure that national economic specificities are respected while maintaining result robustness, ACER recommends that ENTSO-E considers the values derived from the recent ACER study on the Cost of New Entry (CONE) for the upcoming assessment cycle.

(201) Regarding the scenario framework, ACER reiterates its recommendation that ENTSO-E include the legally mandated "with capacity mechanism" central reference scenario in the ERAA 2026 edition. By overlooking the impact of existing capacity mechanisms, the assessment provides only a partial view of future adequacy risks and fails to consider how these mechanisms enhance security of supply across Member States. ACER also recommends that ENTSO-E focuses on the timely and proper implementation of the amended ERAA methodology, adopted on 13 March 2026. This revised framework, which will be in force for the next assessment cycle, is intended to strengthen the ERAA by streamlining the assessment process and enhancing transparency. A successful implementation is crucial to ensure that the ERAA provides a robust and reliable basis for the computation of capacity mechanism parameters and the assessment of flexibility needs across the Union.

(202) Finally, ACER welcomes ENTSO-E's efforts in reducing submission delays in the current cycle. For future editions, ACER recommends that ENTSO-E continues to allocate the necessary resources to meet the 1 November submission deadline.

(203) The above recommendations aim to provide transparency about ACER's expectations and signal the practical steps that ENTSO-E is recommended to take to facilitate timely approval of subsequent ERAAs. While these recommendations are non-binding and relate to future editions, their inclusion is proportionate and helpful,

and does not prejudice further dialogue. ACER welcomes continued exchanges with ENTSO-E on how to implement these recommendations,

HAS ADOPTED THIS DECISION:

Article 1

The proposal for European Resource Adequacy Assessment for 2025 is amended and approved, as set out in Annexes I.a – I.h and Annex II to this Decision.

Article 2

This Decision is addressed to ENTSO-E.

Done at Ljubljana, on 24 April 2026.

- SIGNED -

For the Agency
The Director ad interim

V. ZULEGER

Annexes:

Annexes I.a-I.h – Submitted ERAA 2025 proposal:

- Annex I.a – ERAA 2025: Executive Report
- Annex I.b – ERAA 2025: Input Data and Assumptions
- Annex I.c – ERAA 2025: Methodology
- Annex I.d – ERAA 2025: Detailed Results
- Annex I.e – ERAA 2025: Scarcity Events Analysis
- Annex I.f – ERAA 2025: Proof of Concept: Application of Revenue-Based EVA Approach on European Scale
- Annex I.g – ERAA 2025: Country Comments
- Annex I.h – ERAA 2025: Definitions and Glossary

Annex II – Amendments to ERAA 2025
Annex III – Technical annex

In accordance with Article 28 of Regulation (EU) 2019/942, the addressees may appeal against this Decision by filing an appeal, together with the statement of grounds, in writing at the Board of Appeal of the Agency within two months of the day of notification of this Decision.

In accordance with Article 29 of Regulation (EU) 2019/942, the addressees may bring an action for the annulment before the Court of Justice only after the exhaustion of the appeal procedure referred to in Article 28 of that Regulation.