ACER
European Union Agency for the Cooperation of Energy Regulators

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OF THE EUROPEAN UNION AGENCY FOR THE COOPERATION OF ENERGY REGULATORS

of 17 September 2024

on the differences between the national resource adequacy assessment of Estonia and the 2023 European resource adequacy assessment

THE EUROPEAN UNION AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

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(2) 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 24(3) thereof,

Whereas:

1 INTRODUCTION

(1) Articles 20, 23 and 24 of Regulation (EU) 2019/943 (Electricity Regulation) set out that a Member State may conduct a national resource adequacy assessment (NRAA) to complement the European resource adequacy assessment (ERAA) when monitoring resource adequacy within its territory. Either assessment can identify resource adequacy concerns, but both assessments must be based on the methodology for the European resource adequacy assessment (ERAA methodology).[3] The concerns identified through ERAA or NRAA can be addressed by eliminating regulatory distortions or market failures, and, if necessary, by introducing dedicated measures, such as capacity mechanisms.

[1] OJ L158, 14.6.2019, p. 22.
[2] OJ L 158, 14.6.2019, p. 54.
[3] Annex I to ACER Decision No 24/2020.

(2) Where the NRAA, as defined in Article 24 of the Electricity Regulation, identifies an adequacy concern that was not identified in the ERAA, the NRAA must include reasons for the divergence between the two assessments, including details of the sensitivities used and the underlying assumptions. The NRAA must be published and submitted to ACER for an opinion. ACER's opinion assesses, on a case-by-case basis, whether the differences between the two assessments are justified. ACER primarily considers the differences identified by the Member State and reasoned in the submission, but may also identify further differences, if they also have a material impact on the results.

(3) The most recent ERAA (ERAA 2023) was approved on 2 May 2024.[4] Estonia carried out its own resource adequacy assessment (Estonian NRAA) in 2023.[5] The Estonian NRAA was published on 19 December 2023. An English translation was submitted to ACER on 16 July 2024 alongside the reasons for its divergence from ERAA 2023, including details of the sensitivities used and the underlying assumptions.[6]

(4) This Opinion concerns the differences between the Estonian NRAA and ERAA 2023 and evaluates whether these differences are justified.

2 SUMMARY OF THE ESTONIAN ADEQUACY ASSESSMENT

(5) The document submitted to ACER (titled "Estonian National Resource Adequacy Assessment 2023") consists of several sections, but not all of them fall under the scope of this Opinion. Table 1 lists the sections of the Estonian NRAA and their relevance for this Opinion.

Table 1. Sections of the Estonian NRAA and their relevance for the Opinion

Colours denoting relevance for the Opinion:

relevant
partly relevant
not relevant

Section	Contents	Relevance
1.1	Deterministic analysis of the operational capabilities of the Baltics system	Not relevant since deterministic analysis is not in the scope of ERAA.
1.2	Summary of the resource adequacy outlook	Relevant insofar as it refers to Sections 2.4.1 - 2.4.4,
2.1	Definition of resource adequacy	Not relevant as it is a recapitulation concepts.
2.2	Estonian reliability standard	Partly relevant regarding some contextual information.

[4] ACER Decision No 06/2024.
[5] The Estonian TSO received and used the preliminary results of the ERAA 2023 EVA.
[6] The Estonian NRAA in English language is available here.

2.3	Concept of strategic reserve	Not relevant as it is not covered in ERAA.
2.4	Resource adequacy assessment	Relevant as it provides a summary behind the assessment described in Sections 2.4.1 - 2.4.4.
2.4.1	Reasoning why the NRAA is performed in addition to ERAA	Relevant as it provides reasoning on why it is necessary for Estonia to complement ERAA 2023 with the NRAA.
2.4.2	Key assumptions in the NRAA	Relevant as it provides a summary of the differences in input data between the NRAA and ERAA 2023.
2.4.3	ERAA 2023	Relevant as it includes contextual information for the Opinion.
2.4.4	Probabilistic NRAA	Relevant as it describes the probabilistic resource adequacy assessment.
2.4.5	Deterministic analysis of resource adequacy of the region	Not relevant since a deterministic analysis is not in the scope of ERAA.
2.4.6	Deterministic analysis of resource adequacy of the country	Not relevant since as deterministic analysis is not in the scope of ERAA.
2.4.7	Assessment of short-term resource adequacy in the coming winter	Not relevant since short-term adequacy forecasts are not in the scope of ERAA.
2.4.8	Extraordinary scenarios	Not relevant as deterministic scenarios are not in the scope of ERAA.
2.5	Demand forecast	Not relevant as the Estonian NRAA does not indicate changes in demand assumptions v. ERAA.
2.6	Key changes related to generating capacities in Estonia	Not relevant as there is no clear link with the probabilistic assessment in Sections 2.4.1 - 2.4.4.
2.7	Summary of short- and medium-term resource adequacy	Partly relevant insofar as it relates to the probabilistic assessment in Sections 2.4.1 - 2.4.4.
ANNEX I	Installed capacities in the Estonian electricity system	Partly relevant, regarding some contextual information.

(6) According to Article 8 of the ERAA methodology, an adequacy concern is identified when the Member State has a reliability standard in place and the reliability standard is not fulfilled for the central reference scenario.[7] According to Section 2.2 of the Estonian NRAA, the reliability standard in Estonia, expressed as loss-of-load expectation ($LOLE_{RS}$), is 9 hours[8] at the time of the submission of the NRAA to ACER.[9]

[7] This is when the LOLE result of the central reference scenario is higher than the $LOLE_{RS}$.

[8] Section 4, paragraph 14[1](2) of the Estonian Network Code on the Functioning of the Electricity System, available here. The reliability standard in Estonia is also expressed as 4.5 GWh of Expected Energy Not Served (EENS). ACER refers in this Opinion to the reliability standard used in the Estonian NRAA (i.e. expressed in LOLE). However, ACER notes that if the Estonian NRAA instead used the reliability standard of 4.5 GWh EENS, no adequacy concern would be indicated neither in its central reference scenario nor in its sensitivities.

[9] The 9 hour reliability standard was set before the relevant European methodology for calculating the reliability standard was approved by ACER Decision 23/2020. ACER did not assess the approach to setting the reliability standard in Estonia. As communicated to ACER, a new reliability standard of 8 hours LOLE is currently being developed for Estonia based on the European methodology, but the new reliability standard is not yet approved by the Estonian authorities.

(7) The Estonian NRAA contains a) a central reference scenario (called “reference” or “baseline” scenario in the report) and b) three sensitivities with varying capacity of oil shale power plants removed from the system.

(8) The Estonian NRAA models three target years: 2028, 2030 and 2033. The central reference scenario of the Estonian NRAA shows an adequacy concern in target years 2030 and 2033.

(9) According to the ERAA methodology, the central reference scenario is the basis for identifying resource adequacy concerns. This is the scenario that represents the most likely future development of the electricity system. Nevertheless, ACER recognises that sensitivities may complement the central reference scenarios to assess, for example, the robustness of the identified adequacy concerns.[10] The Estonian NRAA contains three sensitivities: two sensitivities (referred to as “639 MW sensitivity” and “466 MW sensitivity”) apply to target year 2028, and one sensitivity (referred to as “1081 MW sensitivity”) applies to target year 2030. The 466 MW sensitivity results in a loss-of-load-expectation (LOLE) exceeding $LOLE_{RS}$ in 2028.[11] ACER has assessed this sensitivity insofar as it may provide insights not captured by ERAA, leading to higher LOLE values.[12]

(10) ERAA 2023 models four target years: 2025, 2028, 2030 and 2033. ERAA 2023 shows no adequacy concerns in Estonia for any of the modelled target years. The results[13] of the central scenario of the Estonian NRAA diverge from ERAA 2023 for target years 2030 and 2033 and the result of the 466 MW sensitivity diverges for target year 2028. This is summarised in Table 2.

[10] See paragraph 162 of ACER Decision No 06/2024.
[11] This is not a resource adequacy concern in the meaning of Article 8(1) of the ERAA methodology since it is based on a sensitivity and not on a central reference scenario.
[12] The remaining two sensitivities were not assessed by ACER because $LOLE_{RS}$ is either not exceeded (639 MW sensitivity) or is already exceeded in the central reference scenario for the same target year, i.e. TY2030 (1081 MW sensitivity).
[13] The Estonian NRAA provides aggregated results expressed as LOLE and EENS for each target year. Detailed results in terms of the energy not served for each hour have not been published, as opposed to ERAA 2023 (where they have been published here). The lack of detailed hourly results in the Estonian NRAA means that further understanding of the scarcity patterns and a potential comparison with ERAA is not possible.

Table 2: The reliability standard as LOLE and the results of ERAA 2023 and the Estonian NRAA, for each modelled target year (TY).

Assessment	TY2028	TY2030	TY2033
Estonian reliability standard	9h	9h	9h
ERAA 2023, central reference scenario	3.6h	2.9h	4.1h
Estonian NRAA, central reference scenario	5.0h	14.2h	9.8h
Estonian NRAA, 466 MW sensitivity	12.8h	NAP	NAP

(11) The Estonian NRAA uses the resource mix resulting from ERAA 2023's economic viability assessment (EVA)[14] as the initial input.[15] It then introduces changes to certain input data and additional modelling details (see Section 3) and performs a probabilistic economic dispatch (ED)[16] analysis to assess the adequacy risk.

(12) The EVA and the ED are separate but interlinked modules of ERAA 2023. The ED analysis tests the resource adequacy level of the future electricity system. The analysis takes the assumptions regarding the state of the system (including the capacity mix and the electricity grid) and tests to which extent this system can meet the electricity demand. The result of the analysis is the expected number of hours when demand cannot be met.

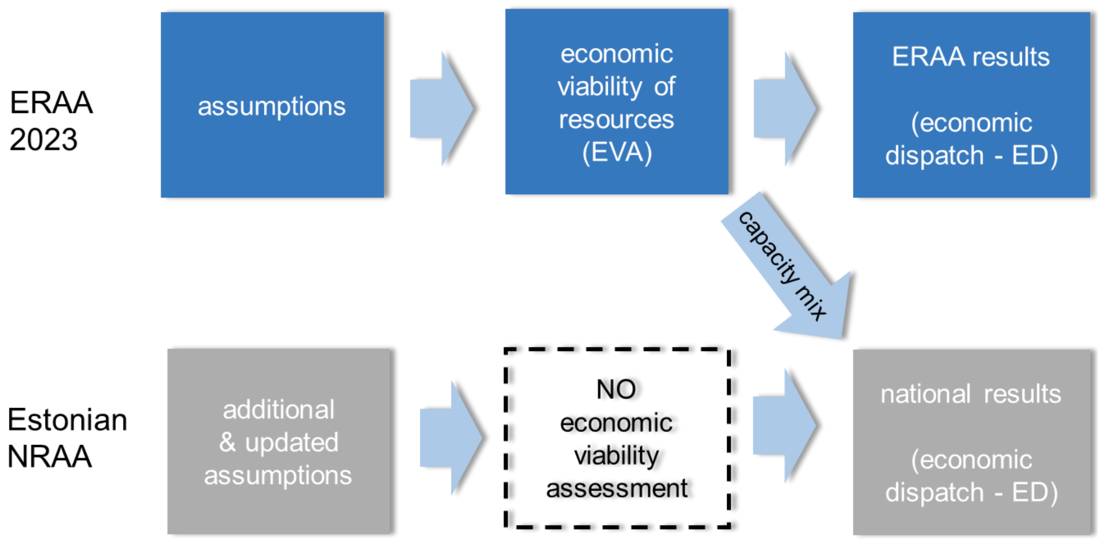
(13) However, before running the ED analysis, the future capacity mix must be known. In ERAA 2023, this final capacity mix is a result of the EVA. In essence, the EVA takes an initial estimate of the capacity mix, together with all the assumptions regarding the state of the system and assesses how the market will respond to these assumptions. The EVA thus aims to reflect market functioning where market participants react and anticipate demand-supply dynamics and make business decisions accordingly – for example to exit the market or to undertake additional investments. The assessment also considers that the time to make new investments operational varies, depending among others on the technology type, and is up to two years for batteries and up to five years for new gas turbines.[17]

(14) The Estonian NRAA changes several assumptions but does not assess if those changed assumptions (e.g. less capacity on the market) would trigger investors' response (e.g.

[14] "Economic viability assessment" means here a model assessing the profitability of capacity resources, informing decisions on retirement, mothballing and re-entry, renewal/prolongation and new-build of capacity resource as described in Article 6 of the ERAA methodology (see footnote 3).
[15] In the Pan-European Market Modelling Database (PEMMDB) used as input to ERAA 2023, 250 MW of gas capacity is included in EE00. This capacity corresponds to the Kiisa emergency power plant and is marked as out-of-market in ERAA; hence it is actually not used by the model. The NRAA model does not consider this power plant as contributing to adequacy either.
[16] "Economic dispatch" means here a mathematical optimisation model as described in Article 7 of the ERAA methodology (see footnote 3).
[17] This follows from the harmonised construction period in national CONE studies. See Table 6.1 in Annex I of ENTSO-E's ERAA report.

market entry) which could in turn also affect adequacy results (lower risk). Figure 1 illustrates the modelling approach of the Estonian NRAA and its link with ERAA 2023.

Figure 1. Schematic representation of the modelling approach of ERAA 2023 and the Estonian NRAA



3 ASSESSMENT OF THE DIFFERENCES BETWEEN THE ESTONIAN NRAA AND ERAA 2023

(15) ACER has identified and assessed six relevant differences between the Estonian NRAA and ERAA 2023.

A. Assumptions

1. Geographical scope of the assessment
2. Reserve requirements
3. Cross-zonal capacities
4. Offshore wind capacity
5. Reduced capacity of oil shale (sensitivity)

B. Application of assumptions

6. Consistency of the use of the assumptions throughout the assessment

(16) Differences 1 to 4 apply to both the central reference scenario and the sensitivity. Difference 5 only applies to the sensitivity. Difference 6 concerns the inconsistent

application of the assumptions listed under point A and applies to both the central reference scenario and the sensitivity.

(17) In its assessment, ACER has considered two aspects:

a) Firstly, given that the purpose of the NRAA is to complement the ERAA, ACER assessed whether the updated assumptions in the Estonian NRAA (Differences 1-5) serve this purpose, in that they provide additional insights, for example, by including national or regional aspects not considered, or not considered sufficiently, in ERAA 2023, or that they rely on newer information or data than those collected for ERAA 2023.

b) Secondly, ACER also looked at how assumptions are applied in the Estonian NRAA (Difference 6). In particular, the assessment should use the same assumptions to test the adequacy risks (in the ED module) and to test investments in capacity resources (in the EVA module).[18] If this is not the case, the results of the assessment will be skewed.[19] The Estonian NRAA takes the outputs of the EVA from ERAA 2023 and applies updated assumptions only in the ED analysis. Hence, in this Opinion, ACER has also considered whether these changes would impact the profitability of resources and hence would need to be implemented also in an updated EVA, so as to accurately assess this impact.

(18) The following sections focus on the six relevant differences between the Estonian NRAA and ERAA 2023. Each section starts with describing the difference, then assesses its relevance in terms of its impact on the diverging adequacy results between the Estonian NRAA and ERAA 2023. Finally, it provides ACER's evaluation of whether the difference is justified.

3.1 Difference 1: The geographical scope of the assessment

3.1.1 Description of the difference

(19) ERAA explicitly models all bidding zones of the EU, as well as additional bidding zones in Europe. The Estonian NRAA has a smaller scope, covering the Baltics, the Nordics and further two relevant Central European countries. In its ED analysis, it explicitly models the zones of Estonia, Latvia, Lithuania, Denmark (including offshore zones), Norway, Sweden, Finland, Poland and Germany (including offshore zones). The

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[18] Article 6(12) and Article 6(13) of the ERAA methodology require that generation and network constraints in the EVA are modelled in line with the assumptions used in the ED module.

[19] ACER highlighted that consistency between the EVA and ED modules is key to achieve robust results in its decisions on ERAA 2022 (Decision No 4/2023) and ERAA 2023 (footnote 4).

contribution of zones connected to Germany, Demark, Poland and Norway are modelled as fixed capacity contributions.[20]

(20) The difference is implemented in the ED analysis, but its impact on entry/exit decision of resources was not tested via an EVA.

3.1.2 Relevance of the difference

(21) In an interconnected energy system governed by the common rules of the internal energy market, domestic consumption and production decisions are inevitably influenced by developments abroad. Capturing this cross-border effect is essential to achieve robust results. Appropriately modelling the neighbouring and other relevant market zones is important both in terms of assessing adequacy risks and in terms of evaluating the profitability of domestic capacity resources *(on the effect on profitability see more in Section* 3.6).

3.1.3 Evaluation of the difference

(22) While NRAAs do not need to cover all EU, like ERAA, Article 24(1) of the Electricity Regulation explicitly states that an NRAA should have a regional scope, therefore it must sufficiently consider that its national system is part of a wider interconnected system.

(23) The ED analysis of the Estonian NRAA explicitly models market zones with a direct connection to Estonia. In addition, other bidding zones with a high relevance for the market dynamics in the region are also modelled explicitly, while the contribution of the remaining zones are considered in a simplified manner. This, in ACER's view, sufficiently considers the relevant region in line with the Electricity Regulation. As such, the more restricted geographical scope of the Estonian NRAA vis-à-vis ERAA is justified.

3.2 Difference 2: Reserve requirements

3.2.1 Description of the difference

(24) The Baltic electricity system is expected to synchronise with the Continental Europe Synchronous Area at the beginning of 2025, which will have an impact on reserve requirements.[21] The Baltic Load Frequency Control (LFC) areas (Estonia, Latvia and Lithuania, corresponding to the three market zones in ERAA) will in the future form a single LFC block. The Baltic Member States have developed a concept of sharing[22]

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[20] Elering indicated to ACER that the fixed capacity contributions correspond to the average imports in a sample of three representative climate years in the preliminary ERAA 2023 ED simulations.

[21] According to the Estonian implementation plan submitted to the European Commission, synchronisation will take place in February 2025.

[22] This is sharing of reserves *within* the Baltic LFC block, which is not sharing reserves between LFC blocks, as described in Article 168 of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline

reserves within the LFC block, where the Frequency Restoration Reserve (FRR) capacity will be procured based on the requirement of the block, reducing the total balancing capacity that would otherwise have to be procured for each LFC area.[23] The Estonian NRAA indicates that the modelling of the procurement of frequency reserves in the model follows the `Baltic LFC block concept`, published by the Estonian TSO (Elering) in September 2020.[24]

(25) Following the regional developments described above, the Estonian NRAA applies a different balancing reserve requirements model compared to ERAA 2023, with five key distinguishing elements: types of reserve requirements, sharing of reserves, additional procurement constraints, the impact of sharing reserves on cross-zonal capacities, and the availability of additional resources to provide reserves. The elements are described in the following paragraphs.

Types of reserve requirements

(26) In ERAA 2023, two balancing reserve types are modelled for each market zone: the symmetrical FCR requirement and the upwards-FRR requirement (both are modelled as a single value in MW).[25] The Estonian NRAA models five balancing reserve types: beside the symmetrical FCR requirement, the NRAA models separately automatic and manual FRR ("aFRR" and "mFRR", respectively), and models both the upwards and downwards products.

Sharing of reserves

(27) The total reserve requirement in the Estonian NRAA (735 MW[26]) is very similar to the reserve requirement in ERAA 2023 (737 MW[27]). However, the modelling of how these reserves are procured differs between the assessments. In ERAA 2023, a proportional share of the requirement is procured from each of the three Baltic market zones (around 200-300 MW per zone).[28] On the other hand, the Estonian NRAA considers the total reserve requirement for the Baltics, but the model can decide how much reserve capacity it will procure in each market zone, based on economic efficiency (subject to certain

on electricity transmission system operation (System Operation Guideline). See recital (67) of ACER Decision 10/2021 in footnote 23.

[23] ACER Decision 10/2021 on the market-based allocation process of cross-zonal capacity for the exchange of balancing capacity for the Baltic CCR, available here.

[24] Elering's Baltic Load-Frequency Control block concept document is available here.

[25] These are the reserve types for which capacity is removed from the market in ERAA. Replacement Reserves are also considered in ERAA but are available to the market in the sense that they can resolve adequacy situations.

[26] The Estonian NRAA assumes that in the Baltics, a total of 710 MW FRR and 25 MW FCR are procured, as described in the Baltic LFC block document (footnote 24).

[27] 720 MW FRR and 17 MW FCR.

[28] ERAA 2023 assumes that in the Baltics, a total of 720 MW FRR and 17 MW FCR are procured. This is modelled as: 209 MW of FRR and 8 MW of FCR are procured in EE00, 225 MW of FRR and 0 MW of FCR in LV00, and 286 MW of FRR and 9 MW of FCR in LT00.

technical constraints).[29] This could mean that the bulk of the 735 MW could be procured in one market zone and much less capacity (the remainder) could be procured in the others.[30]

Additional procurement constraints

(28) The Estonian NRAA introduces additional constraints in the procurement of reserves, which were not included in ERAA 2023. According to the NRAA, "*each power plant has a maximum reserve procurement limitation for each of reserve types which comes from their ramping speeds and other plant specifications*".[31] The NRAA provides no additional explanations nor specifies whether this applies for all power plants. It also limits, for batteries located in the Baltic market zones, their maximum bids in the balancing services market.[32]

Sharing reserves – impact on cross zonal capacities

(29) ERAA 2023 models the possibility for reserve sharing between the Baltic zones (see paragraph 3.2.1) by removing part of the Net Transfer Capacities (NTCs) between Baltic zones from the model. Essentially, in ERAA 2023, the NTCs available to the energy market (including resolving scarcity situations) on the borders Estonia-Latvia and Latvia-Lithuania have been reduced, for all market time units, by the total (FCR and FRR) balancing capacity requirement of one of the market zones sharing the border (the one with the higher requirement). Thus, the NTCs on these borders that are actually available to the energy market in ERAA 2023 are always lower than 100% of the NTCs. On the other hand, the Estonian NRAA aims to more accurately replicate the market-based process of allocating cross-zonal capacity, in each market time unit, between sharing reserve capacity and energy market flows. The Estonian NRAA indicates that its model calculates the optimal allocation for each market unit, which could result in anywhere from 0% to 100%[33] of the cross-zonal capacity being available to the market (with the remainder reserved for sharing reserves). The Estonian NRAA does not describe

[29] The constraints correspond to the reference incident in each LFC area (the failure of the largest element in the LFC area). The constraints are as follows: it should be assured that 650 MW of upwards FRR is accessible from EE00 (domestically or cross-border), 700 MW from LT00 and 442 MW from LV00. In addition, the Estonian NRAA models that 36 MW of FCR should be accessible from each market zone.

[30] The details on how the model procures balancing capacity were not available to ACER. As good practice, NRAAs should clearly indicate the input assumptions used, in particular where they differ from ERAA.

[31] Page 17 of the report.

[32] The maximum bid size in MW corresponds to the discharge rate by which the battery would discharge itself in four hours (i.e. for a 100 MWh battery the maximum bid size is 25 MW).

[33] This modelling does not reflect the real-life situation fully accurately. As per Annex I of ACER Decision 10/2021 (see footnote 23), the default maximum volume allocated for the exchange of balancing capacity shall be 20% of cross-zonal capacity, and 50% in specific circumstances (a fallback procedure in exceptional situations can also be initiated). This means that by default, at least 80% of the cross-zonal capacity should always be available for energy market flows, and 50% in specific circumstances.

additional details of the algorithm used to allocate cross-zonal capacity between sharing reserve capacity and energy market flows.

Additional resource available

(30) The Estonian NRAA models, in its ED analysis, an additional 510 MW of gas generation capacity corresponding to the units Lietuvos B7 and B8 located in Lithuania. In the Estonian NRAA, this capacity can offer reserves and it is partly available to the market.[34] In ERAA 2023, these two units are included in the input data[35] but are marked as out-of-market resources, meaning they are not used by the ERAA model. Effectively, the ERAA model runs as if the units did not exist, while the Estonian NRAA model can utilise them to help satisfy the balancing capacity requirements.

(31) The difference (with its five elements) is implemented in the ED analysis, but the impact on entry/exit decision of resources was not tested via an EVA.[36]

3.2.2 Relevance of the difference

(32) Even if – in terms of the total reserve capacity requirement for the LFC block – the Estonian NRAA and ERAA 2023 do not differ substantially,[37] the Estonian NRAA specifies that the more detailed modelling of the Baltic reserve requirements has a significant impact on the results of the adequacy assessment.[38] At the same time, the Estonian NRAA does not describe this impact, nor does it offer explanations as to how the difference affects the results. ACER understands that the impact on the results is a combination of effects resulting from the five elements of the difference.

a) The constraints in the Estonian NRAA that determine how the model reserves capacity of FCR, upward and downward aFRR and mFRR (elements 1, 2 and 3) mean that the model could reserve more capacity for balancing needs in some market zones. As a consequence, less generation capacity would be contributing to resolving scarcity situations, thus increasing adequacy risks in the market zone. While the total upward reserve needs in the Baltics remain almost the same, the distribution of energy not served can change between the bidding zones.

b) More cross-zonal capacity is theoretically available to the market in the Estonian NRAA compared to ERAA 2023 (element 4), which could mean that more scarcity situations can be resolved with the help of foreign resource capacity. Furthermore,

[34] According to Elering, the units, in order to offer reserves, need to be running at least at their minimum stable level of 125 MW.

[35] The Pan-European Market Modelling Database is updated by national TSOs and used by ENTSO-E for the annual ERAA exercise.

[36] As pointed out in paragraph (17)b), this is because the NRAA does not rely on its own viability assessment. The NRAA therefore uses the results of ERAA 2023's EVA model with the simplified modelling of the reserve requirements.

[37] As indicated in Section 3.2.1.

[38] In Section 2.4.

due to the additional capacity available to the Baltic reserve market in the Estonian NRAA compared to ERAA 2023 (element 5), additional capacity could be freed up to participate in the market and resolve adequacy situations in the Estonian NRAA.

(33) At the same time, the changed assumptions can influence the profitability of capacity resources, existing and new. Due to the interplay of the various elements with potentially opposing effects on resource availability, the impact that the change would have on the profitability of existing and new resources is unclear (an EVA that would take the changes into account was not performed).

a) As the additional constraints (elements 1, 2, 3) can mean that in a certain LFC area less capacity is available in the market, the absence of this capacity could mean higher electricity market prices and, hence, improve the profitability of other resources in the system.

b) Higher cross-zonal capacities (element 4) and increased capacity available to the market (element 5) could reduce prices in times when a market zone is in a tense situation, and, hence, reduce the profitability of resources in the zone. This could mean higher adequacy risks, which could nonetheless be offset by the possibility of higher imports (*see more in Section 3.6*).

3.2.3 Evaluation of the difference

(34) Article 4(6)(g) of the ERAA methodology requires that the dimensioning of FCR and FRR, as well as the contribution of each TSO, reflect reserve needs to cover imbalances in line with Articles 153 and 157 of the System Operation Guideline.[39] The Estonian NRAA adds additional detail on top of ERAA 2023. The number of reserve objects (element 1), the approach to procuring reserves (element 2), and the additional constraints (element 3) add more accuracy to the model. The approach in the Estonian NRAA to model the allocation of cross-zonal capacity (element 4) reflects the market-based allocation process of cross-zonal capacity[40] more accurately than the ERAA. Including the additional gas capacity as a reserve provider (element 5) adds further detail that was not considered in ERAA 2023.

(35) Consequently, ACER considers that all five elements comprising the difference in modelling reserve requirements compared to ERAA 2023 are justified as they introduce relevant and reasoned regional specificities characterising the Baltic balancing market.

3.3 Difference 3: Cross-zonal capacities

3.3.1 Description of the difference

[39] See footnote 22.
[40] See footnote 23.

(36) The Estonian NRAA uses updated commissioning dates of two prospective grid projects:

a) The 700 MW interconnector Estlink 3 between Estonia and Finland is assumed to be commissioned in 2035, two years later than assumed in the ERAA 2023.

b) The 700 MW interconnector Harmony Link between Poland and Lithuania is assumed to be commissioned in 2032, two years later than assumed in the ERAA 2023.

(37) Table 3 indicates the contribution to cross-zonal capacity of the two interconnectors in ERAA 2023 and in the Estonian NRAA for the relevant target years.

Table 3. Contribution of Estlink 3 and Harmony Link to cross-zonal capacity in the Estonian NRAA and ERAA 2023

Interconnector	Assessment	TY2030	TY2033
Estlink 3 (on the border Estonia-Finland)	ERAA 2023	0 MW	700 MW
	Estonian NRAA	0 MW	0 MW
Harmony Link (on the border Lithuania-Poland)	ERAA 2023	700 MW	700 MW
	Estonian NRAA	0 MW	700 MW

(38) According to the Estonian NRAA, the reason for the difference with ERAA 2023 is access to more up-to-date information on interconnector timelines, which was not available at the time of the ERAA 2023 input data collection deadline in Spring 2023.

(39) Furthermore, the Estonian NRAA changes the commissioning date of the 1000 MW link between Estonia and Latvia (the fourth connection on this border). However, ACER finds that there is no difference between ERAA 2023 and the Estonian NRAA as regards this interconnector, since it is not modelled in any of the target years of ERAA 2023 nor of the Estonian NRAA.

(40) The difference is implemented in the ED analysis, but the impact on entry/exit decision of resources was not tested via an EVA

3.3.2 Relevance of the difference

(41) In the last four years, Estonia imported roughly one-third of its consumed electricity.[41] The capacity of Estlink 3 amounts to more than half of Estonia's average hourly demand, while the capacity of Harmony Link corresponds to around 17% of the average hourly

[41] According to ENTSO-E's Transparency Platform, in 2023, Estonia imported more than 40% of the electricity it consumed (the net import was 3.31 TWh, while the total load was 8.1 TWh). The share of the import was 47% in 2020, 31% in 2021, and 10% in 2022 (source: ENTSO-E Transparency platform).

demand of the three Baltic zones.[42] The EVA of ERAA 2023 showed that Estonia is expected to remain an importing zone in the future as well, importing 60% of its electricity consumption in TY2030, and 45% in TY2033. These factors indicate that assumptions on available cross-zonal capacity are crucial for the assessment of adequacy and profitability of resources in Estonia.

(42) Unless the neighbouring zones experience simultaneous scarcity, lower cross-zonal capacity means that less resources are available to cover the peak demand of one of the zones. Hence, a lower available cross-zonal capacity between two zones means higher adequacy risks in both zones, and vice versa.

(43) The Estonian NRAA itself acknowledges that changing the commissioning dates of major projects, such as Harmony Link, has "*a negative impact on resource adequacy*".[43] In fact, the Estonian NRAA states that "*due to postponement of the Lithuania-Poland interconnection (Harmony Link), the 2030 resource adequacy does not meet the reliability standard*".[44] ACER understands that the change of the commissioning date of Harmony Link contributes substantially to the divergence between the results of the Estonian NRAA and ERAA 2023 in TY 2030.

(44) At the same time, changes in cross-zonal capacity assumptions can influence the profitability of capacity resources, existing and new. In fact, the Estonian NRAA indicates that the timeline of the Harmony Link has a substantial impact on the profitability of oil shale power plants in Estonia noting that "*a better connection with external markets brought down prices in the Baltics*" in ERAA 2022.[45] Indeed, the EVA of ERAA 2022 – where the interconnector was assumed to be commissioned as early as in 2026 – resulted in unprofitability and a consecutive retirement of the entire fleet of Estonian oil shale power plants in target years 2027 and 2030. In contrast, a later commissioning date of the interconnectors would mean that the Baltics zones would experience higher prices, improving the profitability of existing resources and possibly resulting in fewer market exits and better resource adequacy.[46]

(45) On the other hand, ERAA 2023 outputs suggested a different possible effect of the interconnector availability. The EVA of ERAA 2023 shows that in TY2030 most of the time (93%), Harmony Link exports electricity from the Baltics into Poland, which sees a higher average price. From this perspective, removing the interconnector capacity could actually mean a decrease of the average prices in the Baltics and hence a lower profitability of Baltic resources. However, there are hours (albeit much fewer in number) where the Baltics are importing electricity from Poland, due to the increased prices in the

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[42] The average projected demand in Estonia in TY2033 in ERAA2023 and in the NRAA is 1.23 GW. The average projected demand in TY2030 in ERAA2023 is 1.13 GW in Estonia, 2.00 GW in Lithuania and 1.0 GW in Latvia.
[43] Section 2.4.4.2 of the NRAA.
[44] The NRAA did not assess the exact impact of removing the interconnector, since its postponement is one of the several changes made in the NRAA impacting TY2030.
[45] See Section 2.4.3 of the NRAA.
[46] Highlighted in Section 2.4.3 of the NRAA.

Baltics, sometimes even reaching the cap (7000 €/MWh), indicating a supply shortage. If the interconnector capacity was not there, and the Baltics were unable to count on the contribution of Polish resources, the number of tense situations with high Baltic prices could increase.

(46) Regarding Estlink 3, the EVA of ERAA 2023 shows that while the prices in the two zones converge 69% of the time, the price is higher in Estonia 99.95% of the remaining hours. The average price in Estonia in TY2033 is 20% higher than in Finland. From this perspective, removing the interconnector capacity could mean an increase of the average prices in Estonia and hence a higher profitability of Estonian resources. Furthermore, similarly to the example of Harmony Link, if the capacity of Estlink 3 was not there, and the Baltics experienced a lower contribution of Finnish resources, the number of hours where Baltic prices reach very high levels could increase.

(47) In sum, ACER notes that the Estonian NRAA`s assumptions on cross-zonal capacities have a substantial impact on the ED analysis and have a non-negligible impact on the profitability of resources (*on the effect on profitability see more in Section 3.6*).

3.3.3 Evaluation of the difference

(48) Resource adequacy assessments should be based on the latest available information. This is particularly the case for large grid development projects in Europe, which, at times, face delays. In view of this, revising the commissioning dates for Estlink 3 and Harmony Link is legitimate if supported by verified information.

(49) The Estlink 3 project has recently moved from the planning to permitting phase, and its completion has been updated to 2035.[47] This timeline aligns with the new assumption in the Estonian NRAA.

(50) The Harmony Link project, originally planned as a subsea interconnector, is now set to become an overland link. The Polish and Lithuanian TSOs estimated its completion by the end of 2030.[48] Based on this, adequacy assessments should consider the interconnector operational starting with modelling year 2031, rather than 2032, as assumed by the Estonian NRAA. Nevertheless, this disparity does not have a relevant effect given the assessment's granularity (neither 2031 nor 2032 are modelled target years). The impact of this new interconnector will only be visible in the following target year, namely 2033.

(51) Consequently, ACER considers that the update of the input assumption on cross-zonal capacities in the Estonian NRAA is justified as it is based on information that became available after the closure of the data collection for the ERAA 2023.

[47] See news piece of 5 February 2024 by Montel here.
[48] See announcement from the Polish TSO on the cooperation agreement regarding Harmony Link here.

3.4 Difference 4: Offshore wind capacity

3.4.1 Description of the difference

(52) When submitting the data for ERAA 2023, Elering assumed that 500 MW of offshore wind capacity will be available in Estonia in TY2033. In the Estonian NRAA, the TSO assumed that no offshore wind capacity will be available in TY2033 and that the 500 MW of offshore wind capacity will only enter in 2035. The NRAA indicates that the reason for the change is updated knowledge on the offshore project timeline.

(53) The change is applied as reduced resource capacity available to the ED analysis of Estonian NRAA. The change is not applied in the EVA, therefore its impact on the profitability expectations of existing and new resources is not assessed.

3.4.2 Relevance of the difference

(54) The Estonian NRAA does not specify how the change impacts the results of the ED analysis. ACER finds that removing the offshore wind generation capacity could increase, to some extent, the adequacy risks indicated by the assessment. Taking the 500 MW installed capacity with an availability factor of 14.45%,[49] the available offshore wind capacity (72.25 MW) represents 5.8% of the average hourly demand.[50]

(55) Moreover, removing offshore wind capacity from the supply stack likely has some impact on the profitability of resources. The electricity generated by offshore wind would enter the merit order at a very low price, which would likely suppress the market clearing price in some hours (*on the effect on profitability see more in Section 3.6*).

3.4.3 Evaluation of the difference

(56) Article 4(4)a of the ERAA methodology requires that supply assumptions consider the current status and best estimates of supply resources. The Estonian NRAA indicates that the best estimate of the project timeline has changed since the time of the ERAA 2023 data collection, necessitating the change of the assumption in the Estonian NRAA. Insofar as the change represents the updated best estimate of the TSO, the change is justified.

<u>Recommendation</u>

(57) ACER notes that in the data collection for ERAA 2024, Estonian assumptions for *offshore* wind are indeed lower compared to 2023, reflecting the change made in the

[49] 2024 Cost of new entry (CONE) study in Estonia.
[50] The average available capacity is an estimation and does not always correspond to the capacity actually available in times of supply shortage.

Estonian NRAA.[51] However, the assumptions for *onshore* wind were also updated in ERAA 2024[52] – they are higher compared to ERAA 2023 and closer to the assumptions in the draft updated NECP approved on 10 August 2023.[53] However, the Estonian NRAA did not update the onshore wind assumptions. At the same time, the Estonian NRAA states that if the NECP targets were taken into account in the assessment, the effect on resource adequacy would have been positive.[54] The NRAA also indicates that climate goals and decarbonisation are some of the factors for the decreased profitability of oil shale power plants,[55] resulting in adequacy concerns indicated by the sensitivity in TY2028. Therefore, the Estonian NRAA should reflect updated knowledge on onshore and offshore wind capacity consistently.

3.5 Difference 5: Sensitivity with a reduced capacity of oil shale power plants

3.5.1 Description of the difference

(58) ERAA 2023 and the Estonian NRAA`s central reference scenario both assume that 831 MW of oil shale capacity is available to the system.[56] In contrast, the 466 MW sensitivity assumes that 365 MW of the currently operating oil shale capacity is decommissioned,[57] leaving 466 MW available on the market by TY 2028. The 466 MW sensitivity results in an EENS of 1.4 GWh and LOLE of 12.8h, exceeding the reliability standard of 9 hours LOLE.

(59) According to the Estonian NRAA, oil shale power plants have historically represented Estonia's main source of electricity production.[58] The NRAA then indicates that "*considering climate goals and decarbonisation trends, Estonian oil shale power plants are becoming non-profitable".[59]* Furthermore, it is explained that it is challenging for some oil shale units to receive revenues from the balancing market due to their low ramping speed. The Estonian NRAA indicates that Eesti Energia, the state-owned operator of the Estonian oil shale capacity, has notified Elering of their intent to take some capacity off the market earlier than expected.

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[51] The NRAA assumes that instead of 500 MW, 0 MW of offshore wind capacity will be available in TY2033, which is also the assumption in ERAA 2024. See final ERAA 2023 data here, 2024 data here, and ACER's analytical dashboard here.
[52] The onshore wind capacity assumption for TY2030 in ERAA 2024 is 1716 MW, around twice as high as the assumption in ERAA 2023 and in the Estonian NRAA.
[53] The NECP target for 2030 is 1.3 GW of onshore wind and 1 GW of offshore wind capacity. The draft updated NECP is available here.
[54] In Section 2.4.4 of the NRAA.
[55] In Section 2.4.1 of the NRAA.
[56] As described in paragraph (8), the central reference scenario of the Estonian NRAA does not identify an adequacy risk in 2028.
[57] In the end of 2026.
[58] In 2023, the oil shale plants produced 2.0 TWh of electricity, 43% of the total electricity production in Estonia and 25% of the total electricity consumed in Estonia. The total installed capacity of oil shale power plants in 2023 was 1330 MW (the average demand in Estonia was 922 MW). Source: ENTSO-E TP).
[59] Page 13 of the report.

(60) As stated in the Estonian NRAA, the EVA of ERAA 2023 did not use up-to-date assumptions[60] on the costs of Estonian oil shale power plants.[61] Instead, proxy values were used in the ERAA model. In the context of the NRAA submission, the Estonian Ministry of Climate indicated to ACER that the actual short run marginal costs of six units of the "EP Eesti" and "Balti PP" power plants are expected to be higher than the short run marginal costs in ERAA 2023 model. The EVA of ERAA 2023 did not result in any exit market exit decisions for oil shale power plants in Estonia in TY2028, maintaining the original assumption that 831 MW of oil shale power plants will remain available.

3.5.2 Relevance of the difference

(61) With the assumption that some plants are unprofitable, the Estonian NRAA reduces the capacity of oil shale in the ED module for TY 2028, resulting in less available resource capacity and an increased adequacy risk.

(62) The impact of the early decommissioning of the oil shale plants on the profitability of resources, especially potential new market entry decisions, was not assessed by an EVA. The 365 MW of removed oil shale capacity represent around a third of the average hourly demand in 2028.[62] Removing oil shale capacity from the resource mix would mean that in some hours, more expensive resources could get dispatched to cover the demand, increasing the price and the inframarginal rent of the remaining resources (*on the effect on entry/exit decisions see more in Section 3.6*).

3.5.3 Evaluation of the difference

(63) The Estonian NRAA indicates that the main reasoning behind the change in oil shale capacity in the model is the notification of Eesti Energia to the Estonian TSO of their intent to take capacity off the market earlier than the EVA of ERAA 2023 suggested. The Estonian NRAA indicates that the unprofitability is not shown in the results of the EVA in ERAA 2023, as the cost parameters used in ERAA 2023 were not accurate.

(64) According to Article 24(1) of the Electricity Regulation, NRAAs may take into account additional sensitivities to those of ERAA. In such cases, they may make assumptions taking into account, among others, the particularities of national electricity supply. As such, the addition of the 466 MW sensitivity to the Estonian NRAA is a justified difference compared to ERAA 2023.

[60] According to Elering, some oil shale power plants' cost data were only shared by the owner in April 2024, 5 months after the NRAA was published.
[61] Page 13 of the report.
[62] The average demand projected for TY2028 is 1108 MW.

3.6 Difference 6: Application of national assumptions

3.6.1 Description of the difference

(65) In its central reference scenario, ERAA 2023 applies largely the same assumptions (constraints) in the ED and the EVA modules. This led ACER to conclude in its Decision[63] that the assessment has achieved a level of consistency that is sufficient to allow decision makers to rely on its results.

(66) The NRAA, on the other hand, applies assumptions to the ED module that are not reflected in the EVA. The NRAA offers no explanation for this inconsistency, nor does it clarify whether the difference in the assumptions in the ED and the EVA modules would maintain a sufficient level of modelling consistency.

3.6.2 Relevance of the difference

(67) Not accounting for the investor response to the revised assumptions could misrepresent the likelihood of retirement, mothballing, new-build of generation assets and measures to reach energy efficiency which should be assessed in an NRAA, according to Article 23(5)(b) of the Electricity Regulation. If the EVA reflected the risks of the Estonian NRAA's ED module properly, it could result in different outcomes in terms of either less market exits/mothballing decisions and/or more market entry decisions, resulting in a different capacity mix. In turn, this would impact the results of the ED analysis, likely decreasing the LOLE results.

(68) The impact that the changes could have on the profitability on investments is illustrated by the following example. Under the conditions descripted in the Estonian NRAA, the additional revenues of resources that are able to produce in the scarcity hours amount to 88,200 euros/MW in TY2030.[64] This is more than the cost of new entry of open-cycle gas turbines in Estonia.[65] Hence, also depending on the profitability during the entire lifetime, some resources may find it profitable to enter the Estonian market which may reduce the adequacy risk.

(69) The new investments (in expectation of higher revenues) would be possible considering the appropriate time lag. ERAA 2023 assumed[66] that new open-cycle and closed-cycle

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[63] See footnote 4.

[64] There are 12.6 additional hours that in the Estonian NRAA should clear at the maximum modelled clearing price of 7,000 €/MWh. The reference scenario of the Estonian NRAA results in 14.2h LOLE, while the ERAA's overall result is 2.9h LOLE. Both assessments use the same EVA developed for ERAA 2023 indicating only 1.6h LOLE. The LOLE results of the ERAA are substantially closer to the results of the EVA (1.3h difference) than the results of the Estonian NRAA, which diverge from the results of the EVA by 12.6h. This numerical illustration applies provided that no new investments take place. See also Section 3.2 of the Annex to ACER Decision 04/2023 on ERAA 2022.

[65] The Estonian NRA shared with ACER the results of the cost of new entry calculations in April 2024. The cost of new entry of open-cycle gas turbines in Estonia is calculated at 72,900 euros/MW by Elering.

[66] See footnote 17.

gas turbines can be installed within five years, while new battery and explicit DSR capacity can enter within two years.[67] In fact, there is already an expectation that 200 MW of new battery capacity will enter the Estonian market in 2025, which is not considered in neither ERAA 2023 nor in the Estonian NRAA.[68]

(70) The inconsistency in the application concerns all five differences in assumptions described in Sections 3.1-3.5 above. Each of the sections discusses the likely impact that an inconsistent application of the difference could have on the profitability of resources and thus on the divergence between the results of the Estonian NRAA and the ERAA. Table 4 summarises these findings.

[67] Furthermore, the cost of new entry study for Estonia indicated that the construction period for batteries and gas OCGT in Estonia is 0.2 years, while it is 1.5 years for gas CCGT.

[68] See news piece of 21 November 2023 by Montel here. Elering indicated to ACER that the post-consultation ERAA 2024 input dataset will contain the additional 200 MW of battery capacity as of TY2028.

Table 4. Summary of the likely impact of the application of the differences on the results of the assessment

#	Difference NRAA v. ERAA 2023	Likely impact on the results	Likely impact on results if an EVA was done	Explanation of the likely impact on EVA
3.1	Reduced geographical scope of the assessment	Change in LOLE in all TYs	Change in LOLE in all TYs	The impact on investments cannot be gauged without running the model.
3.2/1	Adding types of reserve requirements	Increase in LOLE for all TYs	Change in LOLE for all TYs	Changes in the availability of capacity resources for market operation and for providing balancing services could mean changes in profitability.
3.2/2	Sharing of reserves			
3.2/3	Additional reserve procurement constraints			
3.2/4	Allocation of cross-border capacity	Decrease in LOLE for all TYs	Change in LOLE for all TY.	Lower production of domestic resources, potentially offset by imports.
3.2/5	Additional gas generation capacity participating in the balancing market	Decrease in LOLE for all TYs	Increase in LOLE for all TYs	Lower profitability of some resources due to additional capacity (up to 510 MW) available to the market.
3.3	Removing Harmony Link in 2030	Increase in LOLE in TY2030.	Change in LOLE in all TYs.	Change in the profitability of domestic resources. Removing the interconnector (17% of the average demand of the Baltics) could affect prices.
3.3	Removing Estlink 3 in 2033	Increase in LOLE in TY 2033	Decrease in LOLE in all TYs	Increased profitability of domestic resources. The possibility of imports from a lower-price zone is reduced (by 700 MW – half of Estonian average demand).
3.4	Reduced capacity of offshore wind	Increase in LOLE in TY2033	Decrease in LOLE in all TYs.	Increased profitability of domestic resources. Removing a low marginal-cost technology (6% of average demand) could increase prices.
3.5	Reduced capacity of oil shale (sensitivity)	Increase in LOLE in TY2028	Decrease in LOLE in all TYs	Increased profitability of domestic resources. Reduced dispatchable capacity (33% of average demand) could mean higher prices and new investment opportunities.

***Note**: The explanations of the likely impact on EVA represent the most prominent possible effects, based on ACER's expert judgement. They do not explore the full range of potential ways through which the differences may impact the economic viability of resources. Such* *analysis can only be done via the modelling exercise. Hence the exact impact cannot be assessed without incorporating the changed assumptions into the EVA model.*

(71) The total net impact considering a consistently run EVA and ED assessment cannot be precisely estimated without re-running the assessment. However, the summary in Table 4 suggests that the changes, if also implemented in an EVA, would likely have an aggregated downwards impact on the LOLE results, with the impact varying for different TYs.[69]

3.6.3 Evaluation of the difference

(72) Articles 6(12) and 6(13) of the ERAA methodology require that generation and network constraints in the EVA are modelled in line with the assumptions used in the ED module. ACER, in its decisions on ERAA 2022[70] and ERAA 2023[71] highlighted that consistency between the EVA and ED modules is key to achieve robust results. ACER has concluded that ERAA 2023 has achieved a sufficient level of consistency. As such, considering ERAA 2023 EVA results as starting point of the Estonian NRAA is welcome. Nevertheless, the economic viability results should be brought in line with the new assumptions applied in the Estonian NRAA.

(73) In essence, the Estonian NRAA did not test if – under the new assumptions – market forces could at least ease the adequacy concern, for example by prompting new resources to enter the market. The Estonian NRAA does not provide reasons for not running an EVA with the updated assumptions, nor does it explain that the inconsistency would not materially change the results. Considering the above, ACER finds that the difference between the Estonian NRAA and ERAA 2023 in terms of the application of assumptions and the application of the sensitivity is not justified.

Recommendations

(74) To mitigate the above inconsistency, ACER recommends that the Estonian NRAA reflects the changed assumptions in an EVA. To avoid reconstructing the entire EVA model, the ERAA 2023 model could be kept as a starting point, with the input data changed accordingly. The Estonian TSO may explore possibilities of cooperating with ENTSO-E to facilitate running the model.

(75) The EVA should be performed for all three modelled years. As the impact of the differences for each the three modelling years varies (as indicated in Table 4), the Estonian NRAA can investigate different ways of implementing the EVA for the

[69] The impact on EVA results is not limited only to the target year when a change in assumption takes place, since the planning horizon of the EVA can extend to other years as well (see Appendix 1 of Annex 2 to ERAA 2023).
[70] ACER Decision No 4/2023
[71] See footnote 4.

different target years. Among others, the assessment should consider the appropriate time lag that is needed for new investments to take place.[72]

(76) Regarding Difference 2 (reserve requirements), ACER acknowledges that some of the market design details are not currently reflected in the ERAA model (for example, the market-based process of allocating cross-zonal capacity) and that if they were, the benefit in increased accuracy may not outweigh the increase in complexity. If this is the case, the Estonian NRAA should explain the reasons for the remaining inconsistency between the ED and EVA and its expected impact on the results.

(77) Regarding Difference 5 (sensitivity), ACER recommends running the EVA with the updated assumption. As the Estonian NRAA indicates that data confidentiality could be an obstacle, ACER recommends that Elering submits the accurate costs to ENTSO-E within a secure environment corresponding to the confidentiality level of the provided information.

4 CONCLUSIONS

(78) ACER has identified and assessed six relevant differences between the Estonian NRAA and ERAA 2023, listed in Table 5. The combination of these differences leads to a divergence in the adequacy results between the two assessments.

Table 5: Summary of the differences between the Estonian NRAA and ERAA 2023

<table>
<tr><th></th><th>Difference</th><th>Reason for the difference</th><th>ACER's evaluation</th></tr>
<tr><td>1</td><td>Geographical scope of the assessment</td><td>Computational simplification</td><td rowspan="5">Justified</td></tr>
<tr><td>2</td><td>Reserve requirements</td><td>Additional regional detail introduced into the model</td></tr>
<tr><td>3</td><td>Cross-zonal capacities</td><td rowspan="2">Updated data available</td></tr>
<tr><td>4</td><td>Offshore wind capacity</td></tr>
<tr><td>5</td><td>466 MW sensitivity with a reduced capacity of oil shale power plants</td><td>Additional sensitivity introduced</td></tr>
<tr><td>6</td><td>Application of national assumptions</td><td>No economic viability assessment performed</td><td>Not justified</td></tr>
</table>

(79) ACER considers that the different assumptions used in the Estonian NRAA (differences 1-5) are justified as they either constitute a simplification while still being in line with

[72] See footnote 66.

the required scope (difference 1) or capture national specificities through more up-to-date and/or accurate information than those used in the ERAA.

(80) However, these assumptions are not applied consistently throughout the Estonian NRAA, an approach which differs from ERAA 2023 and is not justified, in ACER's view (difference 6). In particular, the Estonian NRAA does not assess, by means of an EVA, how the changed assumptions would impact entry and exit decisions of resources in the modelled years. This inconsistency could be resolved by assessing how the changed assumptions might affect the economic viability of resources in the region,

HAS ADOPTED THIS OPINION:

1. ACER considers that that the differences between the Estonian NRAA and ERAA 2023 are justified in terms of the national assumptions used, but not justified when it comes to the inconsistent application of these assumptions in the assessment.

2. To address the inconsistent application of assumptions, ACER recommends conducting an assessment on how the changed assumptions might affect the economic viability of resources in the region.

This Opinion is addressed to the Ministry of Climate of Estonia.

Done at Ljubljana, on 17 September 2024.

- SIGNED -

For the Agency
The Director

C. ZINGLERSEN