Evaluation of responses to the public consultation on the Methodology for the European resource adequacy assessment

1 Introduction

On 4 May 2020, ENTSO-E submitted to ACER a proposal for 'European Resource Adequacy Assessment - Methodology Proposal in accordance with Article 23 of the Electricity Regulation of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast)' (the 'ERAA Proposal'). In the same occurrence, ENTSO-E submitted to ACER a 'Proposal for a Methodology for calculating the Value of Lost Load, the Cost of New Entry for generation, or demand response, and the Reliability Standard in accordance with Article 23 of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast)' (the 'VOLL/CONE/RS Proposal').

On 6 May 2020, ACER launched a joint public consultation on the ERAA Proposal and the VOLL/CONE/RS Proposal, inviting Member States, the Electricity Coordination Group and all relevant stakeholders to submit their comments, in accordance with Articles 23(7) and 27(2) of the Electricity Regulation. The consultation document asked stakeholders to provide views on the text of the ERAA Proposal and the VOLL/CONE/RS Proposal. The closing date for comments was 27 May 2020.

2 Responses

By the end of the consultation period, ACER received responses from 37 respondents.

This evaluation paper summarises all comments on ERAA Proposal and ACER's responses to them. The table below is organised according to the respective comment, as well as a response from ACER clarifying the extent to which their comments have been taken into account.

ACER highlights that it might have re-elaborated the text of some observations for the sake of brevity and clarity. ACER strove to respect the content of the responses provided, but to avoid any possible misunderstanding arising from summarising the observations received, the names of the respondents are not explicitly provided in the table below. For transparency reasons, full access to the original and non-confidential responses to the public consultation, including the name of the stakeholder, is provided here.

Respondents' views	ACER answer
Part 1: ERAA proposal	
1.1 Do you think that policies and measures contributing to indirectly restricting wholesale price formation (as referred to in Article 10(4) of Reg. (EU) 2019/943) should be reflected in ERAA?	
18 respondents replied YES	
6 respondents replied NO	
1.2 Please elaborate on your previous answer	
Every market rule in force at the time of ERAA execution should be considered and the relevant conclusions shouldn't be influenced by the level of scarcity prices, since the latter are not expected to solve the missing money problem. The effects of limited wholesale prices on demand elasticity could be reflected on the CRM parameters, but do not affect the necessity of the CRM itself. Moreover, these effects on CRM parameters should be appropriately estimated with a prudent approach (3 respondents). Measures restricting wholesale price formation (at least the ones identified by NRAs) should be taken into account in ERAA as they are factors resulting in a "missing money" phenomenon. The model underpinning the ERAA should reflect as well as possible the market fundamentals and market design, either directly through the model, or through post-processing of the modelling results. This modelling exercise should result in an exhaustive list	**Answer 1** ACER observes that: a. ongoing policies and measures contributing to indirectly restricting wholesale price formation (in line with Article 10(4) of the Electricity Regulation) should, when identified by a regulatory authority or designated competent authority (Article 10(5) of the Electricity Regulation), be reflected in ERAA when they have a significant impact on resource adequacy. This reflection shall take into account the relevant implementation timeline; b. ERAA should include measures and actions identified by Member States aimed to mitigate such policies and measures contributing to indirectly restricting wholesale price formation (Article 10(5) of the Electricity Regulation), taking into consideration the relevant implementation timeline;

Respondents' views	ACER answer
of modelled measures and of where they are applied (6 respondents). The model should include policies and measures that may restrict wholesale price formation, directly as well as indirectly, and should result in an exhaustive list of measures concerned and where they are applied. In the Nordic market, the current technical price cap of € 5000/MWh in the balancing market needs to be removed as it could affect the price formation in extreme situations, being lower than the current technical price cap of € 9999/MWh in the intraday market (2 respondents). Restrictions can be reflected in ERAA only if they cannot be fully removed by the ERAA simulation years and if there is a clear timetable how the restrictions will be fully removed after that. The possibly remaining restrictions can be included for those years when they are still affecting the wholesale price formation, but their impact should be clearly shown and at least a sensitivity analysis should be done without these restrictions. Restricting policies and measures in some countries can also affect neighbouring countries through unused possibilities for cross-border trade, if the restrictions result in a cross-border price difference although there would still be unused cross-border transmission capacity available (1 respondent).	c. Pursuant to Article 23(5e) of the Electricity Regulation, ERAA shall anticipate the likely impact of the measures referred in Article 20(3) of the Electricity Regulation; and d. the value of electricity prices during scarcity hours modelled in the ERAA shall be consistent with harmonised limits on maximum clearing prices (Article 10(1-2) of the Electricity Regulation). ACER believes that such framework would ensure a consistent and realistic assessment of the overall adequacy of the modelled electricity system, pursuant to Article 23(1) of the Electricity Regulation.

Respondents' views	ACER answer
The ERAA methodology should endeavour to assess resource adequacy by providing a model that is representative of the electricity market and system. As long as policies and measures indirectly restricting wholesale price formation are applied in any bidding zone of MSs, they should not be taken into account in the ERAA. On the contrary, the methodology should be based on the assumption that such indirect policy and measures are removed from the market; therefore, the methodology should assume how the market should operate if the distortions caused by price caps were removed and effective scarcity pricing was in place. The ERAA methodology should assume a market that operates without the distortions introduced by those measures (1 respondent). The ERAA should reflect the provisions in the Electricity Regulation and apply the relevant timelines/ primary purpose of the ERAA, i.e. if a provision is meant to take effect from year X, then the ERAA methodology should apply this provision from year X. Contrary to ENTSO-E's assertion, the primary purpose of the ERAA is not to assess whether a capacity remuneration mechanism (CRM) is required, but to assess whether a MS is facing security of supply risks over the given period. If the ERAA analysis shows that the risks for a MS are greater than the established reliability standard (i.e., the long-term target for resource adequacy), then the said MS should identify the root causes of these concerns and remove any obstacles and distortions that lead to those security of supply risks. The ERAA should	

Respondents' views	ACER answer
therefore reflect the implementation plan developed by a Member State (1 respondent).	
Free price formation helps to indicate true willingness to pay and value of lost load. Prerequisite for this is that consumers can react to price signals, meaning that they need to have smart meters that allow to measure their offtake/injection and reaction to market prices, but also that they are exposed to market price signals. Price caps might be needed for technical price formation reasons (1 respondent).	**Answer 2** ACER believes that current and projected level of price responsiveness from consumers should be reflected in ERAA, taking into consideration best estimates. ACER observes that technical limitations in price formation shall be consistent with the maximum clearing price, as referred to in Article 10(1-2) of the Electricity Regulation.
Both scenarios of the ERAA should be run: a scenario reflecting such policies and measures as they are, and a scenario assessing the adequacy without any such policies. The results of the two scenarios would be helpful for the competent authorities of MS to avoid any measures that might negatively affect the Security of Supply (1 respondent). ERAA should take those policies and measures into account because it is likely that after elimination of the most significant market distortions the supposed resource inadequacy might disappear (1 respondent).	**Answer 3** ACER considers that the assessment of the legal basis and justification of indirect restrictions to price formation is beyond the scope of resource adequacy methodologies. On the other hand, ACER observes that an analysis of the impact of such measures would ensure a consistent and realistic assessment of the overall adequacy of the modelled electricity system, pursuant to Article 23(1) of the Electricity Regulation). Consequently, pursuant to Article 3(7) of the ERAA methodology, ACER requires that ENTSO-E shall conduct an additional sensitivity without any

Respondents' views	ACER answer
Wholesale price formation may be skewed because energy markets are altered/affected by price caps. Articles 20(2) and 20(3) of the Electricity Regulation specify that MSs have a responsibility to deal with restrictions to wholesale price formation. Some of these restrictions may stem from the very NRAs that are expected to remove them as per Article 10(2) of the Electricity Regulation. For example, provisions regarding harmonised clearing and bidding price limits at European level, and how non-harmonised limits may remain in certain European markets. As a result, wholesale price formation may be skewed because energy markets are altered/affected by price caps. Restrictions on balancing energy pricing, imbalance settlement, or regulation of retail prices also affect wholesale price formation in far too many EU MSs (2 respondents).	indirect restriction to price formation, to identify whether indirect restrictions to price formation may constitute possible sources of resource adequacy concerns in line with Article 23(5)(k) of Electricity Regulation. ENTSO-E may also conduct additional sensitivity analyses adding or removing some indirect restrictions to price formation in some modelled zones. All these sensitivities do not affect the Member States' prerogatives pursuant to Article 20(1), (2) and (3) of Electricity Regulation.
All resources contribute to ensure physical adequacy and should be taken into account in the ERAA. ERAA should reflect the reality of the mechanisms put in place, with the measures decided when the assessment is done, in compliance with the provisions of the Electricity Regulation. This implies updating the list at each exercise. This also raises the important question about the way all this should be taken into account (1 respondent).	**Answer 4** Pursuant to Article 23(5d) of the Electricity Regulation, ACER agrees that each ERAA shall appropriately take account of the contribution of all resources including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation.
Reports from MSs according to Article 10(5) should be publicly available in due time and assessed by ACER (1 respondent).	**Answer 5**

Respondents' views	ACER answer
	ACER considers that requirements related to the publication of such reports are beyond the scope of resource adequacy methodologies.
Modelling such policies and measures will require specific and detailed knowledge of national arrangements, and therefore ENTSO-E is unlikely to be in a position to model this accurately. Attempted inclusion could inadvertently act to reduce the transparency of the assessment (1 respondent). Risk of compromising the accuracy and reliability of ERAA results. It should be considered that some of the measures mentioned in Article 10(4) of the Electricity Regulation aim at ensuring the correct functioning of wholesale and balancing markets and system adequacy so they should not be considered as inducing undue limitations to wholesale price formation. In particular, considering CMs, they do not generate price distortions or artificial limitations in short-term markets. In any case, the assessment of these indirect restrictions seems particularly difficult to undertake. There is the risk of compromising the accuracy and reliability of ERAA results. Finally, given the extremely limited amount of historical scarcity situations and the high degree of uncertainty surrounding their future occurrence, the modelling of these situations and the impact of these measures on long-term, fundamental market outcomes is doubtful (2 respondents).	**Answer 6** ACER considers that ENTSO-E and TSOs jointly possess all the relevant knowledge to model properly the impact of policies and measures contributing to indirectly restricting wholesale price formation in ERAA (and the related mitigating measures). This would ensure a consistent and realistic assessment of the overall adequacy of the modelled electricity system, pursuant to Article 23(1) of the Electricity Regulation. ACER observes that the modelling framework may be simplified, if necessary.
1.3 How should policies and measures contributing to indirectly restricting wholesale price formation be reflected in ERAA?	

Respondents' views	ACER answer
Where possible, such policies and measures should be included directly in the model to represent better the market dynamics. (8 respondents). Modelling in ERAA the mentioned policies and measures without representing underlying market failures would unfairly skew outcomes of the assessment (3 respondents). Market distortions, as such price restrictions, should be addressed before any CM (including strategic reserves) can be envisaged and this should thus be reflected in the ERAA methodologies, as described in the Clean Energy Package (1 respondent).	See Answer 1.
ERAA should consider that some aspects of the market design may exacerbate the missing money problem. A specific parameter should be introduced into the analysis in order to consider risks that the capacity committed in the energy market may receive a price that does not correctly reflect its value during scarcity situations (1 respondent).	**Answer 7** ACER believes that ERAA shall reflect the expected market functioning, in order to ensure a consistent and realistic assessment of the overall adequacy of the modelled electricity system, pursuant to Article 23(1) of the Electricity Regulation. While ACER believes that risk is an important component to consider in the EVA, it also stresses the fact that analysing the suitability of a given market design to reduce missing money problems is beyond the scope of resource adequacy methodologies.

Respondents' views	ACER answer
A trade-off should be found between the potential benefits of including such policies and measures in the model – an improved representation of the market outcome – and the potential drawbacks – a more complex mathematical model that tends to become a black box, with results that are impossible to explain or interpret in a sound way (3 respondent). Policies and measures contributing to indirectly restricting wholesale price formation should be reflected in ERAA by imposing (ex-post to the modelling exercise) some market price caps during moments of scarcity, and on the reporting of the impacts of this post-processing. Need for an impact assessment with respect to the reference/target market design (4 respondents).	See Answer 6.
Policies that cannot be included in a quantified way should be listed, as well as the potential impact they may have on the profitability of assets, market outcome (5 respondents). The inability to introduce all indirect restrictions (e.g. risk of intervention on the tax side when the wholesale market prices are high) in the modelling should not translate into ignoring them – i.e. carry out the ERAA as if they did not exist. The ERAA methodology should be flexible enough to allow for incorporating the risks perceived by investors at least in the NRAAs (e.g. additional sensitivity analyses) (1 respondent).	**Answer 8** ACER agrees that policies which cannot be included in a quantified way should be listed, along with their potential impact on ERAA results, pursuant to Article 11(6) of the ERAA methodology. ACER believes that ENTSO-E and TSOs are well placed to identify and model measures significantly impacting resource adequacy.

Respondents' views	ACER answer
Relevant measures in countries covered by the ERAA should be identified based on a standardised methodology covering all potentially relevant policies and measures that could contribute to indirectly restrict wholesale price formation. Importance of a realistic view on resource adequacy in each MS (1 respondent).	ACER considers that specifying requirements for NRAAs with respect to incorporating risk perceived by investors is beyond the scope of the ERAA methodology.
Since the ERAA is a long-term analysis with significant uncertainty about the regulatory framework in force, the possibility of introducing/repealing price restriction should be merely reflected as a decreasing factor of the scarcity prices probability. Further, for the robustness of ERAA, given the unpredictability of scarcity prices, to the extent the economic viability assessment (EVA) of a given (new or existing) asset relies on scarcity prices, that asset has to be excluded in the "without CRM" reference scenario. These policies and measures should be considered within the EVA (1 respondent).	**Answer 9** ACER believes that the impact of measures affecting price restrictions, rather than the probability of occurrence of scarcity prices, shall be considered in ERAA, to ensure a consistent and realistic assessment of the overall adequacy of the modelled electricity system, pursuant to Article 23(1) of the Electricity Regulation. ACER disagrees that capacity resources which (partly) rely on scarcity prices should, *a priori*, necessarily be excluded in the central reference scenario without CM. A potential exit from the market should be considered only as an output of the EVA taking into consideration economic viability pursuant to Article 6(4) of the ERAA methodology.
Restrictions can be included for those years when they are still affecting the wholesale price formation, but their impact should be clearly shown and at least a sensitivity analysis should be done without these restrictions (3 respondents).	See Answer 3.

Respondents' views	ACER answer
Historical wholesale price data during scarcity events can be used in order to calibrate the results obtained from the ENTSO-E's model (1 respondent).	**Answer 10** ACER agrees that ENTSO-E may rely on historical wholesale prices for calibration purposes.
1.4 What would be the impact on price formation during scarcity hours?	
Given the uncertainty surrounding the occurrence of such scarcity hours over the time horizon of the ERAA, the broader impact on market participant behaviours of such restrictive policies and measures is questionable when compared to other evolutions of market fundamentals (demand, supply, commodity prices, network, weather conditions) that affect the prices on a daily basis (3 respondents).	**Answer 11** While ACER agrees that other market fundamentals affect electricity prices, it also observes that prices during scarcity hours may significantly impact the expected revenues from the electricity market (Article 6(9)(a) of ERAA methodology).
Price formation is affected during moments of scarcity or surplus (with lower spikes or dips, respectively, than in a pure, non-restricted energy market) (2 respondents). A series of factors (governmental and regulatory interventions, TSOs decisions) result in a *de facto* price cap, which is an order of magnitude lower than the VOLL or the nominal price cap (1 respondent). During scarcity hours, prices may be set at a regulated/administrative price (e.g. the technical price limit of the corresponding market). While the respondent does not favour this	See Answer 1.

Respondents' views	ACER answer
option, prices have to be taken into account when considering price formation. The uncertainties in terms of the level of the technical price limit for DA and ID markets in the forthcoming years (due to the systematic increase when prices reach 60% of the actual limit) should be acknowledged, and the related assumptions should be explicit (1 respondent). This question cannot be answered in general, as it depends on the details of the corresponding policies and measures (1 respondent) or on the specific "scarcity" situation (1 respondent). In case of genuine scarcity of capacity resources, market prices should be able to reach the VOLL (i.e. the price that, on average, makes indifferent inflexible consumers between withdrawing and not withdrawing electricity). However, the energy-only market may not be able to achieve long-run efficiency (promoting efficient investments), especially in the context of the transition towards a decarbonised electricity sector. Among others, investments exclusively based on spot market margins are exposed to high and increasing risks that cannot be just faced by means of the full elimination of direct and indirect price restrictions (to allow spot prices to increase up to the VOLL). This elimination is not a realistic and reliable condition, as spot prices may be prevented to always reflect the effective value of resources committed in the markets also because of imperfections of the current European market design (1 respondent).	

Respondents' views	ACER answer
Price restrictions will limit the ability for consumers to indicate true willingness to pay and value of lost load and will restrict investment signals. Through price restrictions, DSR would be hampered, thus leading to an underuse of flexibility in the system and to an overestimate for the need of flexibility from other sources. In case such flexibility would then be contracted through CMs, this would probably lead to an undue and unnecessary overall cost increase for consumers as DSR usually has a high activation cost but a low investment cost as it is mostly secondary use of assets that have primarily been built for the purpose of consumption (1 respondent). Restrictions on wholesale price formation can hinder DSR market participation during scarcity hours and thus threaten the matching of supply and demand in the day-ahead and intraday markets. DSR, especially when provided through temporarily reducing or stopping industrial production, can have very high marginal costs and are thus available to the market only at a very high bid price. Restricting policies and measures in some countries can also affect neighbouring countries through unused possibilities for cross-border trade, if the restrictions result in a cross-border price difference although there would still be unused cross-border transmission capacity available (2 respondents).	**Answer 12** ACER agrees that removing policies and measures contributing to indirectly restricting wholesale price formation (Article 10(4) of the Electricity Regulation) provides better signals for investments and innovation for flexible resources (in particular demand response)[1]. ACER observes that, pursuant to Article 23(5)(d) of the Electricity Regulation, ERAA shall appropriately take account of the contribution of all resources including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation. ACER observes that, in case policies and measures contributing to indirectly restricting wholesale price affect cross-border trade, then the relevant impact should be highlighted in ERAA results.

[1] See paragraph (25) of Article 5.2 of ACER Decision No 04/2017.

Respondents' views	ACER answer
The frequency of activation of price restrictions during scarcity hours, rather than the prices themselves, will give the right signals to the market, promoting new investments in the electricity sector (1 respondent) A rare spontaneous extreme spike in electricity pricing would not promote the bankability of new investment projects while creating a heavy burden for the market participants, most probably resulting in market distortions and malfunctioning. On the contrary, a frequent activation of measures restricting the electricity wholesale price formation would give the right investment signals regarding the necessity for new capacity, promoting the bankability of the relevant projects (1 respondent).	**Answer 13** ACER believes that both frequency of scarcity and prices themselves significantly impact the expected revenues from the electricity market (Article 6(9)(a) of ERAA methodology).
A low cap on balancing market and imbalance prices can harmfully lead to a situation where market participants do not adequately cover their power demand in the day-ahead and intraday markets but intentionally leave a part of their demand to be covered as imbalance energy. This would result in distorted and too low day-ahead and imbalance prices, as well as in a higher risk for forced load shedding (1 respondent)	**Answer 14** ACER observes that specifying price caps for balancing markets is beyond the scope of ERAA methodology. ACER believes that regulatory distortions which significantly impact resource adequacy should be reflected in ERAA (Article 7(9) of ERAA methodology), subject to feasibility.
Two steps need to be distinguished: to what extent the measures influence price formation, and to what extent the impact on price	**Answer 15** ACER believes that the two mentioned steps shall refer:

Respondents' views	ACER answer
formation leads to an actual impact on adequacy. One should not prejudge the answer to any of these two questions (1 respondent).	a. to the simulation of the electricity market (by means of the ED model described in Article 7 of the ERAA methodology); and b. to the economic viability assessment of capacity resources (Article 6 of the ERAA methodology).
1.5 Do you think that, actions taken by a regulatory authority or designated competent authority aimed to eliminate identified policies or measures which could serve to restrict wholesale price formation (as referred to in Article 10(5) of Reg. (EU) 2019/943) should be reflected in ERAA?	
19 respondents replied YES	
6 respondents replied NO	
1.6 Please elaborate on your previous answer	
These actions should be taken in to account in ERAA (8 respondents) because: a. ERAA will be in line with the resulting improved market situation in the coming years (1 respondent); b. Policies and measures that limit the wholesale price formation have similar effects on resource adequacy and should therefore be included (2 respondent); c. It would be useful to run both scenarios, i.e. a. a scenario reflecting such policies and measures, including any actions already taken or any firm plans for action already decided upon by the competent authorities to eliminate/mitigate them, as well as b. a scenario assessing the adequacy without any such policies (1 respondent);	See Answer 1 and Answer 3.

Respondents' views	ACER answer
d. Article 23(5)(b) of the Electricity Regulation requires the ERAA to include an economic assessment of the likelihood of retirement, mothballing or new-build of new capacities including sensitivities on wholesale prices; these sensitivities could be used to model and assess the impact of the measures referred to in Article 10(4) of the Electricity Regulation (1 respondent); e. These measures should provide a picture of how the wholesale market would normally operate without the distortive impact of price caps, thus eliminating security of supply concerns and making obsolete the need for a CM (1 respondent); f. It is likely that after elimination of the most significant market distortions the supposed resource inadequacy might disappear (1 respondent); g. Restrictions to wholesale price formation can lead to the "missing money" problem, whereby resources cannot recover their full costs and a return on investment. They dampen the signals for investments over the long term, thus undermining security of supply. Well-formed wholesale prices will be key to delivering the right set of resource capabilities, on both the supply and the demand side, that will be required to achieve the power sector transformation and "keep the lights on" in a cost-effective manner (1 respondent); and h. Pursuant to Article 20 of the Electricity Regulation, all regulatory distortions, price caps and regulated prices should be addressed through an implementation plan. NRAs should	

Respondents' views	ACER answer
apply the same logic since in many cases they have a clear role in these points (1 respondent).	
These actions should be taken into account in ERAA but with some considerations (10 respondents): a. CM are independent from – and therefore not affected by – these policies (both introduction and removal of price limits) (2 respondents); b. The effect of measures such as bidding zone reconfiguration are difficult to predict (regulatory risk) and likely to challenge fundamentally the outcomes of the ERAA in specific regions due to their impact on cross-zonal capacities. The 70% rule is not adequate for the ERAA because it does not reflect the physical capabilities of the network and could be impossible to apply in practice (1 respondent); c. Several restrictions to efficient price formation cannot be easily eliminated as they are endogenous in the current European market design and some measures agreed at European level (e.g. negative prices) might even increase risks faced by new investors and exacerbate capacity underinvestment (1 respondent); d. These actions/measures should be reflected in the ERAA if their impact can be modelled without compromising the accuracy of the ERAA results (for example the suppression of price limits) and if they derive from legally binding decisions (3 respondents);	**Answer 16** ACER observes that, pursuant to Article 10(4) of the Electricity Regulation, capacity mechanism are listed as policies and measures that could contribute to indirectly restricting wholesale price formation. ACER observes that the ERAA shall reflect the best forecast of European electricity market design (including the requirements set in Article 16(8) of the Electricity Regulation), with the aim to identify realistic resource adequacy concerns. ACER believes that assessing the efficiency of market design options is beyond the scope of ERAA methodology. See Answer 3, Answer 6 and Answer 10.

Respondents' views	ACER answer
e. On-going measures by NRAs (or the MS, according to Article 20 of the Electricity Regulation) aimed to remove restrictions to wholesale price formation should also be integrated in a sensitivity, as long as the effectiveness of the measure to tackle the restriction is still uncertain (1 respondent); f. If NRAs take such actions, this should be reflected in the degree of calibration (based on historical wholesale prices during scarcity events). If actions are not taken by the NRA, or if they are deemed insufficient, the ENTSO-E market model results shall be adapted using historical data and experience from previous scarcity periods in the particular country or BZ (1 respondent); and g. To address these actions correctly, the technical complexity of the model would increase. To guarantee realistic and robust simulations it is necessary, first to identify and understand the data to be collected in a consistent way from each MS and, then, to figure out how to reflect the effect of these actions taken by Authorities on the model. This might be very challenging, since the measures and policies set out in Article 10(4) of the Electricity Regulation are very heterogeneous. Pursuant to Article 6 of ERAA Proposal, the additional constraints applied to the economic assessments might be based on relevant considerations including price restrictions, imperfect information, and regulatory uncertainty. ERAA methodology provides the requirements to consider as a basis to perform the ERAA. However, different requirements may be gradually deployed in each subsequent ERAA based on the	

Respondents' views	ACER answer
latest capabilities and improvements with respect to technical, data and computational capabilities and resources (1 respondent).	
Only specific actions should be included in the ERAA:	See Answer 1.

Respondents' views	ACER answer
a. Only decided/taken actions and policies or whose implementation is legally imposed with a clear timeline and detailed scope (5 respondents); and b. If undecided actions or actions without a credible timeline from any competent authority are included in the ERAA, it should be as part of the sensitivities that illustrate the impact of alternative measures or designs compared to the current market. These measures should also be clearly explained, including the assumptions and the likelihood of their adoption and implementation (5 respondents). No action should be included: modelling such actions will require specific and detailed knowledge of national arrangements. ENTSO-E is unlikely to be in a position to model this accurately. Attempted inclusion could reduce the transparency of the ERAA (1 respondent).	
1.7 Do you think that scenarios for ERAA should reflect the timeline for adopting measures to eliminate any identified regulatory distortions or market failures as a part of the State aid process included in the implementation plans as referred to in Article 20(3) of Reg. (EU) 2019/943?	
17 respondents replied YES	
7 respondents replied NO	
1.8 Please elaborate on your previous answer	

Respondents' views	ACER answer
Scenarios for ERAA should definitely reflect the timeline for adopting measures to eliminate any identified regulatory distortions or market failures: a. Timelines for the removal of market distortions are essential and would provide valuable information on the alternative solutions as compared to costly CRMs (1 respondent); and b. It is important that ERAA reflects the ever changing European power market to enable optimal balancing and reflect the available cross-zonal transmission capacities (3 respondents)	See Answer 1.
Scenarios for ERAA should reflect the timeline for adopting measures to eliminate any identified regulatory distortions or market failures, with some caveats: a. The preparation of timeline(s) remains with the competent authorities of Member States and the ERAA should by no means imply their prior checking as regards compliance with the relevant EU legislation (3 respondents); b. ERAA should implement a flexible approach with reference to the provisions of the implementation plan, taking into account the level of uncertainty inherent in the timeline for adopting the relevant measures (1 respondent);	**Answer 17** ACER observes that assessing the timeline of measures to eliminate any identified regulatory distortions is beyond the ERAA methodology. This timeline is an input for ERAA. ACER agrees that ERAA should support the identification of regulatory distortions or market failures that caused or contributed to the emergence of a resource adequacy concern. See Answer 1 and Answer 3.

Respondents' views	ACER answer
c. ERAA is forward looking and therefore the assessment should reflect the future regulatory framework as closely as possible, including any measures as part of the implementation plans pursuant to Article 20 of the Electricity Regulation (1 respondent); d. Only measures effectively planned should be taken into account: ERAA should not speculate on whether certain measures will be taken (or removed) or not (6 respondents); and e. ENTSO-E added a reference to implementation plans in Article 5(6) of ERAA proposal, that affects data collection for the PEMMDB. This addition seems to recognise the relevance of implementation plans for the ERAA methodology. However, this change is not sufficient to fully anticipate the impact of implementation plans, as it would only rely on information provided by TSOs or other market participants. It would be better to consider that the measures implemented pursuant to implementation plans, which are market-related and in some cases very specific, should be incorporated as part of the models, in accordance with the corresponding timeline for adopting such measures (1 respondent)	
Scenarios for ERAA should not reflect the timeline for adopting measures to eliminate any identified regulatory distortions or market failures: a. The model cannot be accurate since it is impossible to include detailed knowledge of national arrangements and this will reduce the transparency of the assessment (1 respondent);	See Answer 1.

Respondents' views	ACER answer
b. ERAA should be based on the regulatory framework known and in force at the time of the assessment, so no implementation plans until their implementation starts, also because of the missing money issue. ERAA's timeline has a low impact on the evaluation of CRM (which is the main goal of the ERAA) (2 respondents) and; c. At this stage, the ERAA methodology should not include activities arising from Article 20(3) of the Electricity Regulation, since the deadlines to implement solutions to eliminate any identified regulatory distortions or market failures have not yet been determined (2 respondents).	
1.9 How should scenarios for ERAA reflect the timeline for adopting measures to eliminate any identified regulatory distortions or market failures as a part of the State aid process included in the implementation plans?	
ERAA should be based on the latest decisions and timelines for market development. Market development actions that have not yet been decided can be included as sensitivity scenarios (6 respondents). Implementation Plans' measures should be included in the ERAA simulations with a certain delay with respect to the declared implementation timeline (4 respondents). It should be done via modelling different scenarios using parameters set to model the best estimate of the expected timeline	See Answer 1.

Respondents' views	ACER answer
with respect to the solutions identified by the implementation plan (2 respondents).	
Introduction of a transparent instrument to verify if suppliers/BRPs are capable of balancing their portfolio in the medium term in order to avoid CRMs, since CRMs are only meant to be a last-resort solution in case of residual risks following the implementation of market reforms (2 respondents).	**Answer 18** ACER observes that identifying measures to eliminate resource adequacy concerns is beyond the scope of ERAA methodology.
1.10 How do you expect the measures referred to in questions 1.1 and 1.5 would affect price formation, especially during scarcity situations (i.e. when unserved energy occurs)?	
Enhance market-based price formation by fully enabling demand-side market participation and equal cross-border trading possibilities. This will improve the power system efficiency and lead to lower total system costs (3 respondents). Through price restrictions, DSR would be hampered, thus leading to an underuse of flexibility in the system and thus an overestimate for the need of flexibility from other sources. In case such flexibility would then be contracted through CRMs, this would probably lead to an undue and unnecessary overall cost increase for consumers (1 respondent). There is a risk of market distortion if adjacent countries (non-European) do not apply comparable market rules (2 respondents).	See Answer 1 and Answer 12.

Respondents' views	ACER answer
The implementation of such measures should better be assessed on their contribution to the well-functioning of short-term energy markets, instead of their ability to affect the long-term, fundamental market outcomes (2 respondent). Price caps can be needed for technical price formation reasons (as e.g. an infinite price level should be impossible). The implementation of strategic reserves in order to ensure that time lag effects for new capacity do not create short term adequacy issues, by keeping existing capacity in the system but out of the market (1 respondent). There is a difference between the need to improve short-term market operations and the need to provide long-term investment signals, which contribute to security of supply by ensuring enough firm capacity and ultimately system adequacy (1 respondent). Negligible impact (3 respondents). No opinion about it, because too hard to define those scarcity situations (7 respondents).	
1.11 The Proposal for ERAA mentions that Replacement Reserve (RR) is fully available to avoid unserved energy, whereas FRR is fully unavailable for this purpose. Do you agree with this proposal?	
16 respondents replied YES	

Respondents' views	ACER answer
9 respondents replied NO	
1.12 Please elaborate on your previous answer	
YES, unconditionally (12 respondents)	
YES, with some caveats (4 respondents)	
YES for FRR, NO for RR (4 respondents)	
NO for FRR, YES for RR (4 respondents)	
NO (1 respondent)	
FRR is needed to ensure system security and frequency quality, and should not be used as resource in ERAA (12 respondents): a. FRR's objective is not ensuring adequacy (5 respondents); b. The use of any FRR capacity for the supply of ENS would reduce the remaining available FRR capacity at levels below the ones required by the regulatory framework (2 respondents); and c. FRR must guarantee the exchange at the borders and safeguard frequency deviations close to real time, and should not be used for other purposes (1 respondent). Part of FRR could be considered in the adequacy assessment: a. TSOs might be biased towards dimensioning higher FRR than they might need, at least part (for example 25-50%) of the unused FRR might be considered available for solving adequacy issues (1 respondent);	**Answer 19** In general, ACER observes that assessing the efficiency of balancing reserves dimensioning is beyond the scope or ERAA methodology. ERAA shall however reflect the expected levels of balancing reserves, in order to ensure a consistent and realistic assessment of the overall adequacy of the modelled electricity system pursuant to Article 23(1) of the Electricity Regulation. Furthermore, ACER observes that: a. pursuant to Article 4(6)(g)(i) of the ERAA methodology, for each target year, the dimensioning of FCR and FRR, and the contribution of each TSO, shall reflect reserve needs to cover imbalances in line with Articles 153 and 157 of the SO GL;

Respondents' views	ACER answer
b. FRR should not be used for ERAA when limited to SO GL requirements, but potential remaining bids should (1 respondent); and c. Only the part of the FRR required to restore frequency to 49.5 Hz should be reserved. The rest of the FRR could address any resource adequacy concern (1 respondent). The capacity of the generation assets reserved to cover "high-frequency" (positive) shares of the balancing power demand (such as load and RES noise, ramps, schedule jumps) should not be taken into account. The low-frequency components (such as forecast errors and power plant outages, which are expressed in terms of deviations of the forecast from the hourly mean value) are implicitly contained in the hourly residual load - included in the form of RES and load forecast errors - or are explicitly taken into account by modelling unplanned power plant outages. Therefore, the share of FFR provided for this purpose must also be included in the supply side in the modelling (1 respondent). ERAA simulations are unable to replicate or see the short-term frequency fluctuations that are present in reality because the FRR time resolution (< 15 min) is shorter than the temporal granularity in ERAA modelling (1 h). FRR volumes should therefore only be represented as capacity that cannot be deployed for adequacy but has to remain free/available to deal with these – non-visible in the	b. pursuant to Article 4(6)(g)(ii) of the ERAA methodology, unless the modelling framework is able to model the use of balancing reserves in relation to unforeseen imbalances, FCR and/or FRR (or a part of these balancing reserves) may be deducted from the available resources in the ED; and c. the modelling of FCR and FRR shall follow the requirements from Article 7(7) of the ERAA methodology.

Respondents' views	ACER answer
ERAA modelling – short-term frequency fluctuations (4 respondents).	
RR is an optional reserve that can be fully available for avoiding unserved energy in the ERAA calculation (6 respondents). The use of RR for resource adequacy purposes does not affect negatively the available FRR capacity, nor the network security (1 respondent). The use of RR for resource adequacy purposes is in line with Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation[2] (2 respondents). RR, unlike FRR, is meant to cope with cases typical of ERAA simulation so should be considered to solve resource adequacy issues (1 respondent). It is up to TSOs to judge whether RR should be used or not for resource adequacy (1 respondent).	**Answer 20** See Answer 19. ACER observes that, pursuant to Article 4(6)(g)(iii) of the ERAA methodology, RR shall be considered as capacity resource available in the ED. For each target year, the dimensioning of RR shall be consistent with Article 160 of the SO GL.

[2] OJ L 220, 25.8.2017, p. 1–120

Respondents' views	ACER answer
Not excluding RR creates an increased risk of imbalance of the European power system due to a more likely lack of reserve, and therefore a deterioration of supply standards. RR may need to be considered as part of mFRR (which is how some European TSOs operate) or flexible generation may be classified as strategic reserves (e.g. hydro and pumped hydro generation, batteries, etc.) (1 respondent). RR should also be excluded (3 respondents). RR's purpose is balancing, not adequacy (1 respondent). RR is only intended to restore FRR (2 respondents).	
The adequacy issue should not depend *ex-ante* on the choice of managing the balance the system in a more proactive manner (i.e. by using RR apart from FRR/FCR in a holistic reserve sizing and balancing process according to the SOGL). What's more, this market design choice might be transitory at national level (1 respondent). All reserves should be considered in the resource adequacy assessment (2 respondents).	See Answer 19 and Answer 20.

Respondents' views	ACER answer
With more market-based possibilities for short-term trading even with 15-minute products, the supply and demand can be well matched in the intraday market (3 respondents). From the physical adequacy perspective, both FRR and RR should be included; on the other hand, from the market perspective, both FRR and RR should be excluded (1 respondent).	
Eventual emergency/defence resources (e.g. interruptibility) should also be considered equal to zero for adequacy contribution (2 respondents).	**Answer 21** Pursuant to Article 23(5)(d) of the Electricity Regulation, ACER observes that the ERAA methodology shall appropriately take account of the contribution of all resources, including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation. In ACER's view, this also includes out-of-market measures. Pursuant to Article 7(6) of ERAA methodology, ACER observes that the ED shall consider that manual load-shedding is a measure of last resort and that, it may only be used after exploiting all market-based capacity resources in line with a) Article 16 of Regulation (EU) 2019/941 of the European Parliament and of the Council of 5 June 2019 on risk-preparedness in the electricity

Respondents' views	ACER answer
	sector[3], b) with Articles 11(5)(b)(v) and 22 of Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration[4] (hereinafter the 'Emergency and Restoration Network Code') and c) with any other relevant national legislation related to load-shedding procedures.
1.13 What do you think should be the FRR purpose (and use) at times of unserved energy and how should ERAA reflect this use?	
FRR, as a reserve product, should only be used for this purpose and not for adequacy issues (4 respondents). Not applying these reserves during moments of scarcity would lead to imbalances in the system that would lead to curtailment, while still having large volumes of unused capacity in reserve that has been paid for by consumers (1 respondent). FRR and FCR should be ready to be deployed to preserve system security - especially in occurrence of inadequacy - in order to avoid further unserved energy related to an improper containment and restoration of frequency deviations and to preserve scheduled cross-border exchanges (1 respondent).	See Answer 19.

[3] OJ L 158, 14.6.2019, p. 1–21
[4] OJ L 312, 28.11.2017, p. 54–85

Respondents' views	ACER answer
The purpose and use of FRR shall be the operational matters in real time (including the system security in either alert or emergency state) (1 respondent).	
TSOs will anyway automatically use the reserves before envisaging any load-shedding, in line with the purpose of reserves (1 respondent). In scarcity situation, a part of FRR can be used to avoid load shedding, but this reduces the system security and cannot be relied upon in the ERAA (2 respondents).	See Answer 21.
In Sweden, the TSO has procured production units to ensure the N-1 criterion with the intention of making them available as mFRR bids. In principle, these bids should not cover unserved energy, but in practice, it would create an absurd situation where the bids are withheld in a scarcity situation with the motivation that something might happen. At the same time, they should not crowd out pure market-based bids, so it is a question of correct pricing (2 respondents). The part of FRR which can be used to avoid unserved energy should be dispatched in the modelling before load shedding is deployed. (1 respondent).	See Answer 19 and Answer 21.

Respondents' views	ACER answer
1.14 Do you agree that unused (normatively estimated based on the historical difference between available and activated for other purposes, see example below) Frequency Restoration Reserves (FRR) upwards should be used in ERAA as resource with the aim to reduce unserved energy (which ultimately materialises as imbalance)	
3 respondents replied YES	
22 respondents replied NO	
1.15 Please elaborate on your previous answer, eventually with a proposal for the normative estimation of unused FRR.	
According to SOGL, FRR dimensioning is based on the system operation needs, which must be always met. Using aFRR, mFRR and the remaining reserves for adequacy assessment means deterioration of security of supply standards on the mid and long-term, and increases the risk of unserved energy, since these reserves will not be available for system reserve needs (the purpose they are designed for) (19 respondents). Unserved energy does not materialise as imbalance, as stated in the consultation. Imbalances can only be created by served loads that deviate from the injection of the Balance Responsible Parties. Unserved load – as part of a controlled brown-out – on the other hand would not result in physical imbalances that would have to be remedied by balancing capacity such as FRR (3 respondents).	**Answer 22** See Answer 19. Taking into consideration the ERAA modelling framework, ACER observes that if ENS arises, it means that there is a part of demand that could not be met by available capacity resources. Consequently, the ENS would come from a situation of unbalanced system.
If TSOs are systematically over-procuring balancing products (resulting in large volumes of historic unused FRR) then TSOs should update their FRR dimensioning processes and consider procuring lower volumes of FRR (1 respondent).	See Answer 19.

Respondents' views	ACER answer
If it was the assessment of ACER that the dimensioning rules of the SOGL leaves FRR capacity structurally unused, this should be addressed directly through the SOGL (2 respondents). As the frequency drop in central Europe on 10 January 2019 showed, FRR is much needed in specific events and, therefore, average usage values are not particularly meaningful (1 respondent). At least part of FRR should be considered as resource in ERAA: a. Keeping entire FRR aside from the available generation seems to be too conservative. Since TSOs might be biased towards dimensioning higher FRR than they might need, at least part (for example 25-50%) of the unused FRR might be considered available for solving adequacy issues (1 respondent); b. Even more FRR should and could be considered in extreme scenarios. Not taking these reserves into account would lead to imbalances in the system that would then be resolved with curtailment, while still having large volumes of unused capacity in reserve that has been paid for by consumers. It would be extremely difficult to justify this from an economic perspective, let alone from a societal perspective. In more base case scenarios, the proposed approach in this question would be the absolute minimum of FRR to be considered in any resource adequacy assessment (1 respondent);	

Respondents' views	ACER answer
c. It is worth noting that even Article 22(2b) Emergency and Restoration Network Code suggests that all the active power shall be available to avoid frequency deterioration (1 respondent). The part of FRR which can be used to avoid unserved energy should have no influence on the wholesale prices in the modelling, i.e. be dispatched at no price before load shedding is deployed (1 respondent).	
If scarcity situations in the calculations turn often out to be common scarcity situations for neighbouring countries without cross-border congestions, a sensitivity scenario or a regional analysis with a reduced total common FRR requirement for such countries could be calculated (3 respondents).	See Answer 21.
Historical perspective and average values are not appropriate to assess future situations (6 respondents).	**Answer 23** ACER observes that: a. pursuant to Article 5(11)(d) of the ERAA methodology, the PEMMDB shall include system reserve requirements separately provided for FCR, FRR and RR per each modelled zone, target year and MTU; and b. while historical perspective and average values, used in a decontextualized framework, are not always enough to assess future situations, the calibration of a model has to be performed using (historical) observations. Consequently, pursuant to Article 7(13) of the ERAA methodology, ACER observes that

Respondents' views	ACER answer
	ENTSO-E may use the data collected pursuant to Article 5 of the ERAA methodology to calibrate the ED.
1.16 What should be the price for unused FRR in ERAA?	
Price level of FRR is irrelevant: a. FRR volumes should not be deployed for adequacy purposes, thus this question is not relevant (1 respondent); b. The focus should be on determining whether sufficient flexibility and capacity will be available in the system, whatever the price level. Free price formation will lead to sufficient market competition and thus to lower overall prices in the system, instead of artificially maintaining potentially unneeded and expensive reserve margins for capacity. If needed for the assessment, FRR capacity could be priced at the value of lost load (1 respondent).	**Answer 24** ACER observes that, pursuant to Article 6(9)(b) of ERAA methodology, revenues from ancillary services (including FCR, FRR and RR where these services are remunerated) shall be considered, based on best forecast. To the extent possible, the estimation of expected revenues shall account for realistic network operation within the considered scenario for the concerned modelled zone. Only revenues coming from the activation of RR for duration shorter than one MTU (if the MTU is longer than 15 min) shall be included, as other revenues related to RR activation are endogenously modelled in the ED. The expected revenues from other electricity-related services shall anticipate the likely impact of the measures referred in Article 20(3) of the Electricity Regulation. These revenues shall only be included for capacity resources expected to provide other electricity-related services (e.g. revenues from ancillary services shall not be considered for capacity resources procured for strategic reserves).
1.17 Do you have any views for the selection of a relevant and representative set of climate years as input for the Monte Carlo approach?	
The selection of climate years should be consistent at European level and include a sufficient number of years so that the	**Answer 25**

Respondents' views	ACER answer
probabilistic calculation in ERAA is reliable enough (7 respondents). Use a 30 year pattern like in the GB Capacity Market adequacy assessment. (1 respondent). Select an amount of years to take into account the effect of climate change. Extreme historic climate years should either be excluded or their extreme impact rather being taken into account as sensitivities rather than as integral element, in order to avoid skewing results (1 respondent). Adequacy assessment exercises have to look at extreme events, which should be weighted more than average conditions. The underlying climate variations and set of climate years included should be as broad/wide as possible to avoid omitting extreme weather events. (11 respondents). This discussion on a relevant and representative set of climate years should be done by experts in this field, it goes beyond the scope of ACER, NRAs, ENTSO-E and TSOs. Discussions are needed with climate and meteorological scientists to which extent historical weather data fit for the next 10 years (5 respondents).	ACER observes that, pursuant to Article 4(1)(f) of ERAA methodology, the expected frequency and magnitude of future climate conditions shall be taken into account in the PECD, also reflecting the foreseen evolution of the climate conditions under climate change. To this effect, the central reference scenarios shall either: a. rely on a best forecast of future climate projection; b. weight climate years to reflect their likelihood of occurrence (taking future climate projection into account); or c. rely at most on the thirty most recent historical climatic years included in the PECD. ACER observes that this fallback solution has been validate by Copernicus Climate Change Service (C3S)[5]. ACER considers that this requirement aims to ensure a realistic identification of resource adequacy concerns pursuant to Article 23(1) of Electricity Regulation. ACER highlights that, in line with Article 24 of the Electricity Regulation, complementary national resource adequacy assessments (NRAAs) may be conducted. NRAAs have a regional scope and are based on the ERAA methodology (in particular for

[5] https://climate.copernicus.eu/

Respondents' views	ACER answer
Define a methodology at EU level to get a set of climate years, which includes all the historical information and takes into account the expected evolution of the climate. This methodology cannot be based on a simplistic approach – for instance, it cannot be based on a limited set of the most recent years (say, the last N consecutive years with N lower than the number of years available today in ENTSO-E Pan-European Climate Database) as this approach would be far too simplistic (5 respondents). A restriction on the set of past climate years considered in the ERAA exercise should not be motivated by targeting the expected outcome of the analysis, i.e. to narrow the weather risk uncertainty (3 respondents). The consideration of a 35-year timeframe (PECD) appears to be out of tune with changes to our climate. In addition to the normal run based on the entire PECD database, more methods should be also used (2 respondents). Adopting average climate conditions from the last 10 years as normal conditions, extreme years from these 10 years can be accepted as low and high conditions. The latter can be determined based on the highest conditions from the last 40-50 years. (1 respondent).	points (b) to (m) of Article 23(5) of the Electricity Regulation). NRAAs may take into account additional sensitivities to those referred in point (b) of Article 23(5) of the Electricity Regulation. In such cases, NRAAs may make assumptions taking into account the particularities of national electricity demand and supply and may use tools and consistent recent data that are complementary to those used by ENTSO-E for ERAA.

Respondents' views	ACER answer
The present sanitary crisis calls for the inclusion of the pandemic risk and raises the question of how it can be taken into account for demand and generation uncertainties (2 respondents). In addition to the normal run based on the entire PECD database, ENTSO-E could run sensitivities only considering the last 10, 20 and 30 years. Alternatively, ENTSO-E could run a sensitivity with the full PECD database but assigning different probabilities to historical years. For example, the PECD could be split into decades, starting with the most recent historical years. Each decade, and all years within it, would be assigned one probability in descending order, the more recent the decade, the higher its associated probability. If years in the most recent decade have probability P, for example, then assume that years in the 2nd most recent decade have three quarters of this probability (1 respondent).	
The full dataset related to the climate years (including the assumed generation profile of intermittent RES generation linked to the weather) should be made available to market participants upon requests (2 respondents).	**Answer 26** ACER observes that requirements for publication of PECD used in ERAA are included in Article 11(3)(c) of the ERAA methodology.
ENTSO-E's proposed methodology lacks any information about the Pan-European Climate Data set (PECD) or climate years to consider for the assessment. We suggest that ACER rectify it by including information about the scope and contents of the	**Answer 27**

Respondents' views	ACER answer
database, e.g., number of climate years considered and time period, spatial and temporal granularity (1 respondent). Modelling renewable energies properly will require a certain level of spatial granularity (e.g. a spatial pattern of probably at least 10x10 km and also wind speeds in different heights fitting to the different plant sizes of wind turbines). This spatial granularity needs to be reflected in the weather data as well, which is often not the case for years far back from today (1 respondent).	ACER observes that the scope and the content of the PECD database are described in Articles 4(1)(e-f) and Article 5(12) of the ERAA methodology.
1.18 Do you have any other major observation on the ERAA Proposal? (if so, please indicate clearly the related Article, paragraph of the proposal, and add a sufficient explanation)	
General comments: a. Given the importance of the methodology to introduce or maintain capacity mechanism, ENTSO-E should put sufficient resources in the implementation of the ERAA methodology. NRAAs might help in anticipating the implementation of some elements by more advanced TSOs (1 respondent); b. ENTSO-E only applied minor modifications with respect to the methodology submitted in its public consultation, so further improvements are needed (1 respondent); c. The reliability standard is a long-term average target for a system and not a ceiling for the most pessimistic type of cases. Treating the reliability standard as a ceiling will result in an oversupplied market: prices would be systematically suppressed, and consumers would pay several times more for	**Answer 28** ACER observes that: a. the ERAA methodology shall be fully implemented by the end of 2023, pursuant to Article 12(1) of the ERAA methodology; b. the text of ERAA methodology has been significantly amended taking into account the views and several comments received from NRAs and relevant stakeholders during the public consultation; c. The setting of the reliability standard is beyond the scope of the ERAA methodology, which aims at identifying resource adequacy concerns;

Respondents' views	ACER answer
the marginal supply resources than the value they place on having those supply resources available (1 respondent); d. More visibility on the implementation timeline of ERAA. It seems that ENTSO-E does not foresee evolutions of MAF into ERAA to be completed before 2025. Some important aspects like economic viability will be taken into account quite late in the process (1 respondent); e. With respect to the Belgian situation, the system operator and the authorities can be expected to treat security of supply with the utmost attention by devising specific scenarios/sensitivities (including parameters outside Belgium with impact on the situation in Belgium) and opt for a reference scenario based on the most appropriate sensibility to assess the adequacy situation at national level and take the necessary measure to ensure it (1 respondent); and f. An improvement of the ERAA Proposal glossary is suggested (1 respondent).	d. pursuant to Article 11(8) of ERAA methodology, at the latest three months after the approval of the ERAA methodology, ENTSO-E shall publish a roadmap describing the implementation phase referred to in Article 12 of ERAA methodology. This roadmap shall be updated on annual basis, following the publication of each edition of the ERAA report. ENTSO-E shall publicly consult any significant change in the roadmap. Specific requirements on the implementation of EVA are described in Article 6(19) or ERAA methodology; e. pursuant to Article 3(3) of the ERAA methodology, the baseline for ERAA stems from the national projected demand, supply and grid outlooks prepared by each individual TSO; and f. the glossary has been merged with Article 2 of the ERAA methodology, to centralise definitions in a single location. Moreover, the content of Article 2 of the ERAA methodology has been improved.
On Article 1 ("Subject matter and scope") of ERAA Proposal. Article 1(4). To clarify that NRAA and regional exercises could consider different assumptions outside their countries of interest (3 respondents).	**Answer 29** ACER observes that, pursuant to Article 24(1) of the Electricity Regulation, NRAAs shall have a regional scope and may make assumptions taking into account the particularities of national electricity demand and supply.
On Article 2 ("Definitions and interpretation") of ERAA Proposal:	**Answer 30**

Respondents' views	ACER answer
a. Article 2(2c). It should be clarified that the model objective function could also include other costs beyond the total short-term system operating cost (e.g. where avoidable fixed costs should be considered to take into consideration the option for mothballing or decommissioning decisions) (3 respondents); b. Article 2(2). SOGL definitions are included in Article 3, not in Article 2 (1 respondent); and c. Article 2(2). There is an inconsistency arising by the fact that some definitions are already included in the referenced EU rules. Definition that prevail must be clarified for the sake of legal certainty: we recommend definitions in EU rules prevail (1 respondent).	ACER observes that: a. pursuant to Article 7(2) of the ERAA methodology, the ED shall assume perfect foresight of generation and, in particular, of decisions variables related to decommissioning/mothballing of existing capacity resources coming from EVA pursuant to Article 6 of ERAA methodology; and b. the reference to Article 3 of SO GL has been amended accordingly; and c. several inconsistencies with the reference legal framework have been amended.
On Article 3 ("Scenario Framework") of ERAA Proposal: a. Article 3(3). Scenarios should take into account real network development, as stated in the Electricity Regulation (4 respondents), by considering transmission projects in development phase or with regulatory approval only (1 respondent); b. Grid development cannot be imposed as an input in the model, apart from particular projects already in the commissioning phase (1 respondent); c. Article 3(3b). Interconnectors and other network projects must be considered among the capacity/resources available (2 respondents); d. Assumptions taken to build the central scenarios should be revised or clarified (e.g. the modelled network and the calculated exchange capacities should adequately reflect what	**Answer 31** ACER observes that: a. pursuant to Article 3(3) of the ERAA methodology, the baseline data for the ERAA stems from the national projected demand, supply and grid outlooks prepared by each individual TSO considering, in particular, best estimates regarding the state of the grid in line with ENTSO-E's TYNDP and the most recent national development plans. ACER stresses that ERAA shall be a consistent and realistic assessment of the overall adequacy of the modelled electricity system (Article 23(1) of the Electricity Regulation); b. pursuant to Article 23(5)(d) of the Electricity Regulation, the ERAA shall appropriately take account of the contribution of

Respondents' views	ACER answer
can reasonably be expected over the ERAA time horizon) (2 respondents); e. The proposal does not provide specific rules for sensitivities. The respondents believes that the base case scenario should reflect the currently applied legal regimes (such as EU ETS, EPS550 etc.) and sensitivity scenarios provided by the TSOs should reflect additional future burdens and difficulties for the service providers (generators, storage, DSRs), that may be possibly implemented in coming years (2 respondents); f. Alignment and comparability with national TSO input data and assumptions should be ensured (1 respondent); g. ERAA scenarios should be fully compliant with Paris Agreement. NECPs are outdated and behind European Green Deal standards (1 respondent); h. ERAA shall explicitly provide for different central reference scenarios, and for each of them, there shall be sub-scenarios with and without CMs in order to take account of more parameters within each central reference scenario. It is recommended to use the same scenarios as for ENTSO-E TYNDPs (1 respondent); i. Strategic reserves should be included in a specific sensitivity, not in a scenario (2 respondents); and j. Additional out-of-market emergency measures such as voltage reduction to reduce demand should be considered in a specific sensitivity (1 respondent).	all resources including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation; c. pursuant to Article 11(1) of the ERAA methodology, the ERAA report shall strive to facilitate stakeholders' understanding regarding the inputs, data, assumptions, and scenario (and sensitivity) development; d. specific rules for sensitivities analyses are provided in paragraphs 6, 7 and 8 of Article 3 of the ERAA methodology; e. pursuant to Article 6(14) of the ERAA methodology, the EVA shall consider market and/or regulatory constraints which are expected to apply for a target year, and which are expected to impact significantly the overall system costs or the economic viability of capacity providers; f. pursuant to Article 5(1)(a) of the ERAA methodology, ENTSO-E shall provide data collection guidelines to each TSO, to guarantee a coherent data collection process; g. the compliance of NECPs with Paris Agreement is beyond the scope of ERAA methodology but it is a key element of the Governance Regulation (in particular Articles 3(2)(f), 3(5), 4(a)(iii) and 14(5)); h. pursuant to Article 3(6) of the ERAA methodology, ENTSO-E may complement the central reference scenarios with additional scenarios and/or sensitivities with European relevance, e.g. to

Respondents' views	ACER answer
	assess the robustness of the identified resource adequacy concern; i. being a form of capacity mechanisms, strategic reserves shall be assessed in the central reference scenario "With CMs" as defined in Article 3(5) of ERAA methodology; and j. pursuant to Article 23(5)(d) of the Electricity Regulation, ACER observes that the ERAA methodology shall appropriately take account of the contribution of all resources, including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation. In ACER's view, this includes also out-of-market measures.
On Article 4 ("European Resource Adequacy Assessment – Description") of ERAA Proposal: a. Article 4(6). Cross-zonal capacity must be fully utilised in scarcity situations, including also merchant interconnectors and DSO-operated lines (3 respondents); b. Point of concern with respect to "double derating" and simultaneous scarcity in resource adequacy methodologies (see Article 7(3) ERAA Proposal), maximum entry capacity (MEC) methodology pursuant to Article 26(11)(a) of the Electricity Regulation and revenue sharing methodology pursuant to Article 26(11)(b) of the Electricity Regulation). There should be more clarity on the interaction between the three aforementioned methodologies. MEC and revenue	**Answer 32** ACER observes that: a. pursuant to Article 23(5)(d) of the Electricity Regulation, the ERAA shall appropriately take account of the contribution of all resources including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation. ACER believes that merchant interconnectors and DSO-operated lines shall, where compatible with the modelling framework, included;

Respondents' views	ACER answer
sharing methodologies should make use of the simultaneous scarcity percentage calculated in ERAA pursuant to Article 7(3) of ERAA Proposal) (1 respondent); c. Articles 4(3)(d) and 4(5). Additional demand from storage units should take into consideration their responsiveness to market signals by taking into account: availability within the day (relevant for V2G); seasonal environmental constraints (for hydro, potable and agriculture) coherently with different climate scenarios (eventually taking into consideration climate change) (2 respondents); d. Article 4. Demand forecasting and DSR are grossly underdeveloped. Important to define peak demand and weather-corrected peak demand in ERAA as system stress conditions are broadly related to times of peak demand and such metrics are used in resource adequacy assessments all over the world. Weather-corrected peak demand is also useful for benchmarking purposes (comparison of projected and realised outcomes). More granular breakdown of demand (with respect to industry and commercial sectors, in particular) might highlight structural formation of this demand and enable to more accurately assess DSR potentials and impact of energy efficiency. Information could be matched with Eurostat subsectors (1 respondent); e. Article 4(4)(f)(iii). Lack of information on what historical data are considered for assuming outage rates. Only relevant data should be considered (peak demand season, data from markets with no price caps to allow to catch behaviour of assets close	b. the methodologies pursuant to Article 26(11) of Electricity Regulation are beyond the scope of the ERAA methodology. Nevertheless, paragraphs (11) and (12) of Article 11 of the ERAA methodology require ENTSO-E to provide Member States and RCCs with data needed for tasks pursuant to Article 24 and 26(11) of Electricity Regulation; c. pursuant to Article 4(2)(c) of the ERAA methodology, modelling of outages shall reflect, where possible and applicable, the attractiveness for capacity resources to be available during MTUs when ENS is likely to occur; d. pursuant to Article 4(3)(a) of the ERAA methodology, demand shall consider projections of economic growth and penetration of new technologies; e. pursuant to Article 4(3)(c) of the ERAA methodology, explicit and implicit DSR shall be considered in the assessment. The data related to potential for demand reduction, postponement or shifting shall be based on the best forecast in the modelled zone and within the concerned time period of the assessment; f. pursuant to Article 5(11)(e) of the ERAA methodology, the PEMMDB shall include demand predictions including demand profiles and forecast adjustment, also taking into account the role of relevant technologies; g. pursuant to Article 11(3) of the ERAA methodology, for each ERAA, ENTSO-E shall publish on its website and for each scenario and sensitivity high level assumptions, economic and

Respondents' views	ACER answer
to scarcity situations) : e.g. Belgium (last few winters) and Texas (last few summers). Assessments should determine seasonal unplanned outage rates, one for the peak season in a market and another for the rest of the year (1 respondent); f. Article 4(4). Unclear why ENTSO-E's text mention that strategic reserves will be considered where and when applicable. CMs under State Aid should be always considered in ERAA (1 respondent); g. Whenever strategic reserves are used to balance supply and demand in the ERAA model, the prices in the economic viability model should be at least the VOLL (in line with Article 22(2b) of the Electricity Regulation). ACER should amend in ERAA Proposal "strategic reserves contribute only to the adequacy of the country in which they are contracted and hence will be considered in the ERAA only after the implementation of the EVA, not affecting its outcomes." (1 respondent); h. ERAA should also consider any additional out of market emergency measures that TSOs have at their disposal for dealing with supply shortfalls (e.g. voltage reduction and production from generators to above rated capacity). Modelling in accordance with projected and historical information. Limitations in using emergency measures should be appropriately considered in the ERAA (1 respondent); i. Article 4(3)(c). Surveys to assess VOLL for the domestic and tertiary sectors could be also used to infer the potential of explicit and implicit DSR (1 respondent);	technical data to perform the EVA pursuant to Article 6, with relevant temporal granularity and at least per modelled zone; h. pursuant to Article 5(11)(e)(ii) of the ERAA methodology, demand forecasts further require a set of model parameters that allow for a characterization of time series per modelled zone, target year and MTU where applicable, including annual demand per sector (industry, residential sector, services and transport) as aggregated forecast for each target year; i. strategic reserves shall be considered in central reference scenarios pursuant to Article 3(5) of ERAA methodology; j. pursuant to Article 7(7) of ERAA methodology, the ED shall reflect that strategic reserves are to be dispatched only if a TSO is likely to exhaust its balancing resources to establish an equilibrium between demand and supply, without prejudice to the activation of capacity resources before actual dispatch in order to respect the ramping constraints and operating requirements of these capacity resources, in line with Article 22(2) of Electricity Regulation. k. pursuant to Article 23(5)(d) of the Electricity Regulation, the ERAA shall appropriately take account of the contribution of all resources including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation. ACER believes that out-of-market measures should therefore be included;

Respondents' views	ACER answer
j. Article 4(3). Distinction among implicit and explicit DSR should be mandatory. Condition of robustness could undermine accounting future potentials, against the principle set in Article 23(5) of the Electricity Regulation. Clarify "concerned period of the assessment" in Article 4(3c) of ERAA Proposal: in respondent's view, it shall be the annual granularity of ERAA exercise, not the 10 years-ahead time horizon (1 respondent); k. Article 4(1)(h). Asymmetrical environmental drivers in Moroccan power sector should be properly managed (i.e. linked to the announced policy decision regarding a European carbon border tax) (1 respondent); l. ERAA is a complex exercise and it requires stepwise approach. Once prove of concept is not mature, modelling should start by minimizing short-term marginal costs (1 respondent); m. Modelling framework should allow fulfilment of the provisions of the Electricity Regulation to increase flexibility (aggregators, roll-out of smart meters, etc.) (1 respondent); and n. A clear distinction between run-of-river and reservoirs in hydro modelling is needed (1 respondent).	l. pursuant to Article 4(3)(d) of ERAA methodology, the proportion of consumers demand which is price-responsive and which is excluded from calculating the single VOLL for RS pursuant to Article 7(2)(a) of the VOLL methodology, shall be included as DSR in the ERAA; m. there is a clear distinction between explicit and implicit DSR in Article 4(3)(c) of ERAA methodology: moreover, the wording "assumptions considering that the relevant technology is available, mature and competitive" on future potentials of DSR was amended with "best forecast"; n. pursuant to Article 4(7)(a) of the ERAA methodology, non-explicitly modelled systems shall be modelled as exogenous best estimates of cross-zonal exchanges on all borders with explicitly modelled zones. The cross-zonal exchanges shall be provided by TSOs having direct interconnections with those systems. The cross-zonal exchanges shall reflect expected market conditions and expected operational practices (including specific connection agreements) for the MTUs of each target year; o. pursuant to Article 12(2), the ERAA methodology may be implemented through a gradual process, where 'proof of concept' testing and impact assessment of the different methodological elements shall be ensured, prior to considering that such methodological improvement is mature enough to become an integral part of the ERAA;

Respondents' views	ACER answer
	p. pursuant to Article 4(4)(a) of ERAA methodology, supply assumptions shall consider current status and best estimates of all available generation units in the system, also including the different categories of hydro generation units.
On Article 5 ("Data collection") of ERAA Proposal: a. Article 5(6). Power plants operating fewer hours have reliability problems and higher failure rates: to be considered in PEMMDB (1 respondent); b. Article 5(11). Taxes and levies with a potentially significant impact on the EVA should be considered (1 respondent); c. A robust and reliable database (same quality level across EU) is a central prerequisite for a reliable adequacy assessment. It should contain data on RES and DSR with high spatial granularity, to properly apply probabilistic modelling. Common methodology for determining DSR potentials across EU. All data inputs should be available and free to use also for the scientific community. A detailed description of the model is important if MS have to rely on NRAAs, to understand possible differences (1 respondent); d. Fuel prices (especially gas) cannot be uniform for the whole ENTSO-E area. ENTSO-E should rather forecast regional gas prices (1 respondent); e. Data collection guidelines should specify that TSOs shall collect data from all relevant sources, including NRAs, DSOs and NEMOs, power plants and other stakeholders. Data collection guidelines should be publicly consulted (the text mentions validation only, it has no legal value). Relevant	**Answer 33** ACER observes that: a. pursuant to Article 11(3)(b) of ERAA methodology, for each ERAA, ENTSO-E shall publish, for scenario and sensitivity, high level assumptions, economic and technical data to run the ED pursuant to Article 7 of ERAA methodology, with relevant temporal granularity and at least per modelled zone; b. pursuant to Article 13(4) of the CONE methodology, the entity calculating CONE shall include taxes and levies as elements of annual fixed costs: moreover, pursuant to Article 6(10) of ERAA methodology, for each scenario, modelled zone and target year, the costs of capacity resources shall be equal to the sum of all costs expected to be incurred by the capacity resources, consistently with the CONE and CORP calculation process according to the CONE and RS methodologies; c. pursuant to Article 11(3) of ERAA methodology, for each ERAA, ENTSO-E shall publish for each scenario and sensitivity high level assumptions, economic and technical data to perform the EVA and the ED, with relevant temporal granularity and at least per modelled zone. Moreover, pursuant to Article 5(9) of ERAA methodology, general economic

Respondents' views	ACER answer
decision-making bodies should consider introducing binding legal instruments detailing transparency requirement. Clarify when/how ENTSO-E supplements TSOs' data when necessary. Clarify wording in Article 5(3) about "request" and "transparently detail". Collected data should made public (e.g. PEMMDB at least in aggregated form) (1 respondent); f. Criticism towards effect of PSTs on resource availability: eventually, it should be addressed by means of a sensitivity (1 respondent); g. Volatility of carbon and fuel prices should be addressed via specific sensitivities (evidence from COVID-19 situation) (1 respondent); h. Transparent access to detailed ENTSO-E data should be given to MSs (1 respondent); i. MSs should take responsibility on policy-related data (1 respondent); and j. Supporting the development of methodologies for DSR potentials (data currently held by market actors). Each MS should provide a good estimation of its expected DSR technical potential and the expected level of DSR that actually materialised in the market (2 respondents).	parameters, such as evolution of fuel prices and CO_2 emission allowance price under the EU ETS (where applicable), shall be prepared centrally by ENTSO-E, based on available economical expertise at European level. These assumptions shall be consistent with the ENTSOs' scenarios prepared for the TYNDP, and may lead to different parameter values among modelled zones; d. Article 5(4) of ERAA methodology was amended to include MSs, NRAs, DSOs and NEMOs as relevant source of information for carrying out ERAA; e. Article 11 was introduced to detail transparency requirements, to ensure that, pursuant to Article 41 of the Electricity Regulation, ENTSO-E shall operate in full transparency towards stakeholders and the general public; f. with respect to the wording "request" and "transparently detail" in Article 5(4) of ERAA methodology, ACER's understanding is that, in case of inconsistency in the collected data, ENTSO-E shall request the relevant TSOs to disclose their data sources and define a consolidation mechanism in order to combine such data into a consistent dataset; g. pursuant to Article 4(6)(c)(iii), PST settings represent relevant variables for the modelled capacity calculation processes; h. pursuant to Article 3(6) of ERAA methodology, ENTSO-E may complement the central reference scenarios with additional scenarios and/or sensitivities with European relevance, e.g. to assess the robustness of the identified resource adequacy concerns;

Respondents' views	ACER answer
	i. pursuant to Article 3(3) of ERAA methodology, the baseline data for the ERAA stems from the national projected demand, supply and grid outlooks prepared by each individual TSO, considering national objectives, targets and contributions, and other projections contained in the NECPs, as referred in Article 3 of the Governance Regulation, including trends related to coal phase-out, nuclear phase-out, RES development, storage, electric vehicles, sectoral integration, DSR and energy efficiency measures; and j. pursuant to Article 11(11) of ERAA methodology, upon request and for each central reference scenario, ENTSO-E shall provide all the relevant information to Member States and to the bodies that are responsible for the national resource adequacy assessments, for example for the execution of the tasks pursuant to Article 24 of the Electricity Regulation.
On Article 6 ("Economic viability assessments") of ERAA Proposal: a. ERAA should consider only investments which already successfully completed the authorization process or in general to introduce a "success factor" (<1) of the investment initiatives to fine-tune the outcomes of the EVA; that can be based on national track records and the parameter can be set at national level. ERAA should reflect risks of the energy-only market with a trigger based, for example, on the number of past scarcity price events and defined at the national level (1 respondent);	**Answer 34** ACER observes that: a. pursuant to Article 6(3) of ERAA methodology, the evolution of capacity resources based on exogenous assumptions (according to the national base line data as described in Article 3) may be excluded from the EVA, i.e. the EVA may abstain from affecting these exogenous assumptions; b. pursuant to Article 6(19) of ERAA methodology, ENTSO-E shall experiment with the EVA and shall publish a report (no later than the end of 2021) describing at least the experiment

Respondents' views	ACER answer
b. Article 6(1). EVA is key and shall be delivered with the launch of the ERAA methodology (3 respondents); c. Article 6(3b). The assets excluded by the EVA should be only the ones subsidized for all the time horizon of the ERAA or at least to an extent sufficient to cover their fixed costs (5 respondents); d. Articles 4(1)(f) 5(10). While the modelling approach applies perfect foresight assumption, imbalance costs should be considered in the EVA: such costs are relevant and expected to increase in the future due to non-programmable RES development (5 respondents). One respondent proposes to include imbalances costs in Article 5(10); e. EVA should be performed using forward market prices. These markets usually give visibility to market participants for a 3-4 years time horizon. As the assessment is conducted on a 10 years time period, lack of visibility on forward market prices should be considered in the simulation (consequently increasing the risk perceived by investors relying only on revenues from energy markets) (5 respondents); f. On DSR, EVA should consider the attractiveness of the participation to customers (they tend to be more risk-averse about non-core activities) and the one of intermediaries (e.g. aggregators). Different process regarding investment modelling, as it involves behavioural considerations (1 respondent); g. Revenues from both the DA market and ancillary services should be taken into account wherever possible, since they	conducted, including the methodologies tested and the results obtained, the issues faced and the suggested target implementation of a full-fledged EVA. The ERAA methodology shall be fully implemented by the end of 2023, pursuant to Article 12(1) of ERAA methodology; c. pursuant to Article 6(2) of ERAA methodology, the EVA shall either (a) assess economic viability of (groups of) capacity resources or (b) minimise the overall system cost. In line with Article 6(15) of ERAA methodology, the EVA may be refined to consider the effect of risk management towards price volatility and price spikes, considering state of the art experience in the industry; d. pursuant to Article 6(4) of ERAA methodology, if the EVA assesses the economic viability of capacity resources within the study time period, for each capacity resource and target year, economic viability shall be defined based on the difference between revenues and costs. A capacity provider shall be viable if (and only if) its revenues are higher than or equal to its costs; e. the impact of imbalance risks could be included in the costs of capacity providers in line with Article 6(10) of the ERAA methodology, or as a simplification these costs could be reflected through the economic parameters of the EVA (e.g. WACC); f. pursuant to Article 6(9)(a) of ERAA methodology, the expected ED prices shall be consistent with the probability-weighted

Respondents' views	ACER answer
may both significantly provide revenue streams (1 respondent); h. Hedging strategies in forward markets should not be taken into account due to lack of transparency and increased complexity (1 respondent); i. Article 6(2). The ERAA Proposal is unclear regarding the criteria to consider mothballing or decommissioning of power plants (4 respondents); j. Article 6(2). It should be clarified that an uneconomic context of thermal plants should lead to their closure/decommissioning unless there is another mechanism in place. Mothballing can only be considered based on harmonized, clear and common criteria (e.g. aversion to risk criteria) leading market players to decide mothballing thermal units if during 2 or more consecutive years they don't cover fix costs (1 respondent); k. Article 6(3). The treatment of power plants receiving legacy capacity payments (schemes no longer available but with pending commitments made even before the establishment of State Aid Guidelines 2014-2020) should be clarified. These plants would not be "exclusively" exposed to EOM so it cannot be inferred that these plants are in a positive economic context. EVA should apply to all plants largely or mostly exposed to energy markets. No discrimination between CMs (i.e. legacy capacity commitments should be assessed) (1 respondent);	average of the simulated prices over the Monte Carlo sample years (without risk premium). g. pursuant to paragraphs (a) and (b) of Article 6(9) of ERAA methodology, expected revenues from the wholesale electricity market and expected revenues from other electricity-related services shall be considered in the EVA; h. ENTSO-E and TSOs jointly possess all the relevant knowledge to properly model risk in electricity markets. Pursuant to Article 11(1) of ERAA methodology, the ERAA report prepared by ENTSO-E shall strive to facilitate stakeholders' understanding regarding assumptions; i. ACER considers that ENTSO-E and TSOs jointly possess all the relevant knowledge to properly model mothballing or decommissioning of capacity resources; j. pursuant to Article 6(9)(e) of ERAA methodology, all scenarios and sensitivities shall reflect revenues coming from CM contracts already signed at the moment of the assessment; k. pursuant to Article 6(9)(b) of ERAA methodology, revenues from ancillary services shall be considered, based on best forecast; l. pursuant to Article 6(5)(e) of ERAA methodology, the EVA shall consider adding new viable capacity resources, in line with Article 23(5)(d) of the Electricity Regulation; m. pursuant to Article 23(1) of the Electricity Regulation, the ERAA shall identify resource adequacy concerns by assessing the overall adequacy of the electricity system to supply current

Respondents' views	ACER answer
l. Article 6(3). Robust estimation on the expected revenues from ancillary services can be only justified based on contractual or firm commitments. Otherwise, these revenues cannot be considered. m. Parameters should be modified to ensure that generation assets included in the scenarios are economically viable to operate and that the EVA's results are not distorted (2 respondents); n. Scenarios should not incorporate new assets based on their estimated economic viability, given the quasi-impossibility to properly model investment risk (3 respondents); o. The effects of limited wholesale prices on implicit DSR (meant as pure spot-price responsiveness without CM) could be reflected on the CM parameters (e.g. adequacy demand by the TSO), whilst it is not expected to have a significant impact on the necessity of the CM itself. Scarcity prices do not solve the missing money issue. These reforms do not affect the need of CM but only the quantification of some relevant parameters of the CM design (i.e. demand for capacity and VOLL level) (2 respondents); p. The effect of measures such as bidding zone reconfiguration are i) difficult to predict (regulatory risk), ii) likely to challenge fundamentally the outcomes of the ERAA in specific regions due to their impact on cross-zonal capacities (in particular if the 70% rule shall apply for capacity calculation) (4 respondents); q. The use of the 70% threshold for calculating the exchange capacities is not adequate for the ERAA, because it does not	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. Moreover, ACER observes that the suitability of scarcity prices in solving the missing money problem is beyond the scope of ERAA methodology; n. the ERAA shall reflect the best estimate of future European electricity market design options with respect to a) bidding zone review pursuant to Article 14 of the Electricity Regulation and b) minimum levels of available capacity for cross-zonal trade pursuant to Article 16(8) of the Electricity Regulation; o. the wording of ERAA methodology was amended in order to mention "best estimates" instead of "robust estimates", to ensure consistency among the assumptions; p. pursuant to Article 6(9)(c), additional revenues from services outside the electricity sector (such as heat supply) shall be considered in the EVA, based on best forecast; q. pursuant to Article 6(9)(e), in the central reference scenario (or sensitivity) with CM in the considered modelled zone for the considered target year, additional CM revenues shall be considered based on best forecast of the expected CM functioning; and r. pursuant to Article 6(9)(a) of ERAA methodology, revenues from the electricity market shall either be based on expected prices or on additional approaches (such as "value at risk").

Respondents' views	ACER answer
reflect the physical capabilities of the network and could be impossible to apply in practice (1 respondent); r. EVA should consider the realization of the new capacity whose projects were already approved, as no other investment decisions can reasonably be assumed in a "no-CRM scenario": it is suggested to be careful in including new asset. A sensitivity where no new capacity is included on the basis of the economic viability test should always be performed (4 respondents); s. Article 6(3). It is unclear what "robust estimates" means in ENTSO-E's text. It is unclear how the economic viability of capacity resources offering balancing reserves will be assessed, for example for capacity resources that rely entirely on revenues from these services for their business case. It is unclear why revenues from heat-driven combined heat and power assets would not be considered in the assessment if electricity is a by-product and is of lesser importance for their economic viability. Some national TSOs are planning to consider additional CM revenues for the economic viability with CMs checks, even where auctions have not taken place yet (1 respondent); t. According to ENTSO-E, additional revenues due to scarcity pricing mechanisms will be considered only when implemented. The respondent believes this constitute a bias towards the use of CMs for securing supplies, instead of relying on the market (1 respondent);	

Respondents' views	ACER answer
u. An integrated invest-dispatch-approach while minimising the overall system costs has to be deployed (1 respondent); v. The state-of-the-art approach in economic modelling to cover potential risks for investors is taking this into consideration via WACC, which could potentially be differentiated by country and/or technology, where useful and reasonable (1 respondent); w. Peak prices should be part of the economic viability assessment and not be cut off (important for business case) (1 respondent); x. Risk is not only borne by investors but also by consumers. It can be expected that suppliers and/or consumers will take measures at some point to reduce their risk and exposure to high imbalance or electricity prices. Different approaches to hedge such risks like trading of future contracts already exist, and the interest to avoid exposure to high electricity prices translates into a willingness to pay for corresponding hedging products. This mechanism on the demand side should also be reflected in the EVA (1 respondent); and y. Revenues from ancillary services and combined heat and power should be considered, based on national support schemes or market-based sales (1 respondent).	
On Article 7 ("Output and results") of ERAA Proposal. Article 7(2). 95th percentile values of LOLE and ENS are skewed metrics as they indicate the risks for the most extreme cases. It is suggested instead to presents the full distribution for the two metrics (1 respondent).	**Answer 35** ACER observes that, pursuant to Article 11(4)(e) of the ERAA methodology, ENTSO-E shall publish the distribution (including

Respondents' views	ACER answer
	the average) of total ENS and LOLE over all considered Monte Carlo sample years.
On Article 8 ("Stakeholder Interaction") of ERAA Proposal: a. Article 8(1). Individual network operators must be mentioned among stakeholders (1 respondent); b. Stakeholder engagement should include the use of a panel of technical experts to provide independent scrutiny of ENTSO-E's analyses. Similar experience in GB Capacity market. In particular: i) the panel should be technical, not political. Activities of the panel could be provided in an annual report following ERAA publication; ii) the panel should be heterogeneous in terms of competencies; iii) members of the panel should be independent and not be representatives of any current or previous employers, trade associations or membership organisations, iv) topics to address: modelling methodology, inputs (also including check and validation of inputs from TSOs) and outputs (1 respondent); and c. ENTSO-E could arrange regional meetings with market participants and consumer and business associations (on top of public consultations) to discuss in more detail issues of regional nature (1 respondent).	**Answer 36** ACER observes that: a. pursuant to Article 27(2) of the Electricity Regulation, ENTSO-E shall carry out a consultation on the ERAA proposal involving all relevant stakeholders, including regulatory authorities and other national authorities. It shall duly take the results of that consultation into consideration in its proposal. The process of stakeholder interaction is further detailed in Article 9 of the ERAA methodology; and b. pursuant to Article 9(3) of the ERAA methodology, ENTSO-E shall establish adequate interaction channels for all relevant stakeholders, including civil society, to contribute to each step of developing the proposals for the ERAA methodology, the scenarios, the assumptions, and results, through a transparent, open, accessible, inclusive, efficient, and well-structured process.
On Article 9 ("Process") of ERAA Proposal. A timeline should be included, otherwise the Article is duplicative of Article 8. The word "preferably" should be removed from Article 9(9) to be compliant with Article 31(3) of the Electricity Regulation (1 respondent).	**Answer 37** ACER amended Article 9(4)(b) of ERAA methodology to remove the word "preferably".

Respondents' views	ACER answer
	The timeline for the submission of scenarios, sensitivities, assumptions and results of the ERAA to ACER for approval has been added in Article 10(2) of ERAA methodology.

Respondents' views	ACER response
Part 3: Both proposals	
3.1 Do you see an interplay between economic viability assessments performed in ERAA and reliability standard calculation?	
11 respondents replied YES	
7 respondents replied NO	
3.2 Please elaborate on your previous answer	
There is and should be an interplay between EVA and RS because: a. need for consistency. Only a proper economic modelling / EVA can provide for a properly calculated level of security of supply to compare with the individual RS. Without a proper economic modelling of the European power system, there is a high risk that the outcome of the ERAA will be compared with RS even though they are not comparable. This risk increases towards the later years of the 10-year period observed in the ERAA, as extrapolations or "expert guesses" tend to be even less reliable (1 respondent); b. technical and economic data are used for EVA and RS calculation should be the same (1 respondent);	**Answer 38** ACER observes that: a. ENTSO-E and TSOs jointly possess all the relevant knowledge to develop a consistent and advance EVA to assess the likelihood of retirement, mothballing, new-build of generation assets and measures to reach energy efficiency; b. pursuant to Article 5(10) of ERAA methodology, for the technologies used in ERAA which are also reference technologies for CONE or CORP, the economic and technical data used for ERAA (except the WACC) shall be identical to

Respondents' views	ACER response
c. VOLL is the common parameter. VOLL should be consistent across ERAA and RS calculation. This value should be the average VOLL (instead of max VOLL) as it represents all inflexible demand, complies with Art 10 and reduces the risk of over/under procurement (1 respondent); d. if prices are not allowed to reach the VOLL used for assessing RS, then the market will not incentivise sufficient resources over the long term to meet the RS. This, in turn, would create inconsistency between the RS and the EVA. A price cap based on VOLL is a theoretically efficient market price during unserved energy events because it reflects the maximum price that customers are willing to pay to avoid disconnections (1 respondent]); e. Member States must contribute to European adequacy in a coherent and efficient way, while respecting the subsidiarity principle (1 respondent); and f. WACC is the link: RS/LOLE is influenced by WACC, which should be set at a level ensuring the profitability of the new unit providing missing capacity in the system. In the forecasts of the demand/supply balance, both new investments and the amount of decommissioned power are significant. They largely depend on economic profitability. In this context, it is worth remembering that the problem of missing money led to insufficient power in many countries. (1 respondent).	the latest available best estimate used in the most recent CONE and CORP calculations pursuant to the CONE and RS methodologies; c. pursuant to Article 7(8) of the ERAA methodology and to ensure consistency with the EVA, the cost of ENS shall reflect price formation during hours when ENS occurs in a considered modelled zone, and shall be equal to the harmonised maximum clearing price (pursuant to Article 10(1-2) of Electricity Regulation) unless indirect restrictions to wholesale price formation (pursuant to Article 10(4-5) of Electricity Regulation) impact price formation; d. pursuant to Article 5(13) of ERAA methodology, ENTSO-E shall centrally prepare assumptions on harmonised maximum clearing prices (pursuant to Article 10(1-2) of the Electricity Regulation), based on available economic expertise at European level; e. Member States are important actors contributing to ERAA, and have been actively involved in the process of approving the ERAA methodology within the boundaries set by the principle of subsidiarity and the applicable legal framework. In particular, pursuant to Article 23(7) of the Electricity Regulation, the ERAA methodology, scenarios, sensitivities, and assumptions as well as results of the assessment shall be subject to the prior consultation of Member States, the Electricity Coordination Group (ECG) and relevant stakeholders; and

Respondents' views	ACER response
	f. pursuant to Article 6(9) of ERAA methodology, a risk component related to investment may be considered in ERAA with different approaches (also including WACC).
There is no (strong) interplay or even if there is, the two calculations should be kept separate, because: a. calculations should be independent to keep it simple (3 respondents); b. to avoid circular reasoning and market failures (1 respondent); c. no significant added value in linking them (2 respondents); d. adequacy targets estimation (through VOLL/CONE/RS) is a different topic than checking to what extent these targets can be achieved relying solely on energy-only markets (EVA) (3 respondents); e. no strong interplay besides that EVA results can be compared with the RS chosen for the concerned BZ (using the proposed methodology) in order to identify adequacy risks (2 respondents); f. one possible link could be the number of hours with scarcity prices, during which the existing assets receive revenues taken into account in their EVA. But given the hours with scarcity pricing are expected to be limited, this should rather not be part of a long-term adequacy assessment. (2 respondents); g. even if VOLL could be such a common parameter (as EVA would be impacted if DA/ID price reaches VOLL) it is unlikely that market price will reach VOLL with increasing DSR. (3 respondents);	**Answer 39** ACER observes that: a. consistency should be ensured between the ERAA and RS methodologies. However, ACER acknowledges that introducing circularity between the methodologies may unnecessarily increase the complexity. Therefore, ACER simplified the interdependency on some topics (e.g. regarding the impact of EENS on VOLL calculations); b. pursuant to Article 6(4) of ERAA methodology, economic viability shall be defined based on the difference between revenues (not limited to revenues from energy-only-markets) and costs; c. pursuant to Article 23(5)(d), the ERAA methodology shall appropriately take into account of the contribution of all resources including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation; and

Respondents' views	ACER response
h. in the absence of market failures, this can result in a circular assessment, RS being automatically fulfilled if the generation mix is adapted based on the estimated economic viability of the assets. In reality, market failures exist, and it is extremely difficult to properly model the dynamics of investment decisions, especially investment risk; therefore, no new asset should be added in the scenarios based on an economic viability assessment. The ERAA should only, based on the existing generation fleet and the identified decommissioning/mothballing needs (which are much easier to assess), identify the capacity gap in each country to ensure the fulfilment of RS. This analysis being done, it should be up to each MS do define the appropriate means to bridge this gap. (2 respondents); and i. there is a need for consistency between VOLL and max clearing price (2 respondents).	d. pursuant to Article 7(8) of the ERAA methodology and to ensure consistency with the EVA, the cost of ENS shall reflect price formation during hours when ENS occurs in a considered modelled zone, and shall be equal to the harmonised maximum clearing price (pursuant to Article 10(1-2) of Electricity Regulation) unless indirect restrictions to price formation (pursuant to Article 10(4-5) of Electricity Regulation) impact price formation. Pursuant to Article 10(2) of Electricity Regulation, maximum clearing prices (if any) shall take into account the maximum value of lost load and shall be calculated through a transparent mechanism that automatically adjusts the technical bidding limits in due time in the event that the set limits are expected to be reached.
3.3 How should this interplay affect CONE, VOLL and maximum clearing price, in order to ensure a realistic and consistent modelling framework?	
Limited added value in keeping the link between RS and ERAA, risk of circular calculation: it should be avoided that the ERAA modeling enters in a circular calculation, with the number of scarcity hours that is an output of the process reinserted as an input and adjusted to ensure sufficient revenues for assets to remain economically viable. This would make the outcome of the ERAA of limited practical value (2 respondents).	**Answer 40** ACER observes that: a. consistency should be ensured between the ERAA and RS methodologies. However, ACER acknowledges that introducing circularity between the methodologies may unnecessarily increase the complexity. Therefore, ACER

Respondents' views	ACER response
Reflecting market risks in ERAA: a. costs applied in ERAA (scenario without CMs) should include a component due to risks characterizing current market design (e.g. risks in a competitive energy-only market due to the impossibility to stabilise market revenues and due to the unpredictability of the hours when a relevant share of fixed costs can be recovered). Such component should be defined at national level (1 respondent); b. EVA should aim to include, as best as possible, risk considerations (risk aversion metrics). Consulting financial sector on this point might be revealing, plus need to take views of the MSs on the evolution of their power systems (1 respondent); and c. against ENTSO-E proposal to consider in ERAA the effect of risk aversion towards price volatility/spikes to improve the robustness of the EVA against certain limited cases (of price spikes): this is not justified, allows for subjective interpretation, undermines the importance of scarcity pricing (allowing the TSOs to disregard modelled price spikes). Any risk aversion should be reflected by modifying the hurdle rates used in the EVA. ENTSO-E and TSOs clearly report the aforementioned changes and the reasons for them. (1 respondent). Need for consistency between CONE, VOLL and the maximum clearing price used in the EVA of the ERAA. (1 respondent])	simplified the interdependency on some topics (e.g. regarding the impact of EENS on VOLL calculations); b. pursuant to Article 6(9) of ERAA methodology, a risk component may be considered in ERAA with different approaches; c. pursuant to Article 5(10) of ERAA methodology, for the technologies used in ERAA which are also reference technologies for CONE or CORP, the economic and technical data used for ERAA (except the WACC) shall be identical to the latest available best estimate used in the most recent CONE and CORP calculations pursuant to the CONE and RS methodologies; and d. pursuant to Article 7(8) of the ERAA methodology and to ensure consistency with the EVA, the cost of ENS shall reflect price formation during hours when ENS occurs in a considered modelled zone, and shall be equal to the harmonised maximum clearing price (pursuant to Article 10(1-2) of Electricity Regulation) unless indirect restrictions to price formation (pursuant to Article 10(4-5) of Electricity Regulation) impact price formation.

Respondents' views	ACER response
Maximum clearing price shall be consistent with national and European policies and constraints. (1 respondent).	
3.4 Do you think that the proposed involvement of stakeholders in both Proposals is sufficient to guarantee robustness and transparency on scenario assumptions, input datasets, modelling approaches (e.g. with respect to the links with national energy policy targets and plans, DSR modelling), etc.?	
9 respondents replied YES	
11 respondents replied NO	
3.5 Please elaborate on your previous answer	
The proposed involvement of stakeholders is deemed sufficient: a. it is important that the proposed rules will be followed both on European level and in each Member State (3 respondents); b. the process should also be a regular item in the TSO's general stakeholder groups and meetings (1 respondent); c. the high-level character of the methodologies raises criticism: there are concerns on the extent to which the opinions of stakeholders will be taken into account. It is necessary that consultations should not be conducted only to comply with legal obligations but to be substantial (1 respondent); d. MSs must guarantee, at national level, the involvement of stakeholders (1 respondent);	**Answer 41** ACER observes that: a. pursuant to Article 31 of Electricity Regulation, ENTSO-E shall conduct an extensive consultation process. Moreover, pursuant to Article 41(2) of Electricity Regulation, ENTSO-E shall operate in full transparency. ACER considers that the requirements introduced in Article 11 of the ERAA methodology, along with the consultation requirements of Article 9, ensure proper transparency of the ERAA methodology and its assumptions; and b. the text of the methodologies have been improved to ensure applicability and full alignment with the applicable regulatory framework.

Respondents' views	ACER response
e. a concrete framework for stakeholders' involvement should be established, which needs to be regularly reviewed. It further suggests fostering a close cooperation between ENTSO-E and market players, to ensure that the outcome of the ERAA exercise is close to the business reality faced by market players (1 respondent); and f. further stakeholders' engagement during the analysis and approval process of the ERAA methodology performed by ACER (1 respondent) The proposed involvement of stakeholders is deemed not sufficient: a. use of a panel of technical experts to reduce the reliance on a single annual public consultation, and to provide independent scrutiny of ENTSO-E's analysis and assumptions. Data validation procedures should be established. The proposed panel should i) be a purely technical not policy advisory group; ii) focus on scrutinizing the analysis in ENTSO-E's annual resource adequacy assessment; iii) publish a report with the findings; and iv) consist of independent members not being representatives of any current or previous employers, trade associations or membership organizations (1 respondent); b. there should be full transparency on both the input data and on the ERAA model: an open source approach is suggested (3 respondent); c. a single annual consultation is not enough (1 respondent);	ACER also acknowledges the importance of the methodologies for MSs and other stakeholders, as well as the complexity underlying them. Consequently, ACER agrees that enhanced stakeholders' involvement is desirable (on specific topics, as well as to follow the general implementation) and would contribute to the development of state-of-the art, robust and reliable methodologies.

Respondents' views	ACER response
d. MSs and TSOs should define issues and parameters that should be determined at national level and they should have the possibility to access inputs, assumptions, approaches, algorithms and outcomes of ERAA, at least those ones with direct or indirect reference to electricity system under their responsibility (1 respondent); and e. a proactive and formalised engagement should be incentivised, particularly in the first years of undertaking the assessment, to accommodate the steep learning curve of implementation and recommend the creation of working groups of technical experts and interested stakeholders to address some of the key elements of the assessment, co-managed by ENTSO-E and ACER. The following issues appear critical: i) demand forecasting and DSR assessments; ii) economic viability assessments; iii) scenarios and assumptions; and iv) effects of climate on the assessment and the report itself (1 respondent).	
3.6 How should stakeholders be involved to guarantee robustness and transparency on scenario assumptions, input, datasets, modelling approaches, (e.g. with respect to the links with national energy policy targets and plans, DSR modelling), etc.?	
Importance of ensuring a meaningful consultation process including early involvement of a wide range of stakeholders. Preliminary results should be presented to stakeholders. Feedback provided by stakeholders should be considered in the final publication (10 respondents). Need of an independent technical review and scrutiny of the input data and assumptions (2 respondents).	**Answer 42** ACER considers that the ERAA methodology shall ensure full transparency (see Answer 41).

Respondents' views	ACER response
A number of more specific proposals were put forward: a. organise regular national TSOs'-stakeholder interactions and workshops to collect national input (3 respondents); b. provide an open-source model available and auditable (1 respondent); c. allow Member States and TSOs access to inputs, assumptions, approaches, algorithms and outcomes of ERAA (1 respondent); d. market participants should be consulted to give their views and responsible authorities should justify any perceived deviation from the methodology's letter or spirit. (1 respondent); e. ENTSO-E could arrange regional meetings with market participants and consumer and business associations to discuss in more detail regional issues. (1 respondent); and f. current drafting of Articles 8 and 9 of the ERAA draft methodology does not appear fully compliant with the requirements of Article 31 of the (2 participants).	ACER however considers that transparency requirements shall be proportionate, e.g. that they should be subject to justified confidentiality claims.
3.7 How should stakeholders be involved to support the implementation of the methodologies described in the Proposals?	
It is crucial to ensure a meaningful consultation of stakeholders to support the implementation of the methodologies (16 respondents). Most respondent consider that stakeholders may be involved by:	See Answer 41.

Respondents' views	ACER response
a. participation in workshops, stakeholders groups and public consultations at national and European level; b. providing a technical review and scrutinising the input data, assumptions, approaches, algorithms and outcomes, for which effective stakeholders access to relevant data and materials is of critical importance; and c. need for transparent and equal treatment of the opinions gathered (1 respondent). Specific proposals are listed below: a. implementation should be a subject in TSO's market stakeholder groups, and the TSOs should also discuss it with stakeholders through national energy associations. (6 respondents); b. organisation of workshops during the conception of the methodologies (1 respondent); c. stakeholders' participation in data collection stages (by ENTSO-E and TSOs) to enrich databases, studies and assessments. Methodologies should define how participation in this analysis is possible (1 respondent); d. ERAA preliminary results to be presented and discussed before the publication of the report. National input to ERAA data (by TSOs) should be based on regular national stakeholder interaction and workshops. (1 respondent);	

Respondents' views	ACER response
e. ENTSO-E to have technical discussions with the stakeholders' experts in energy market modelling and economic analysis of investment files (One respondent).	
3.8 How would you increase stakeholder interaction with the aim to improve the methodologies towards possible future updates?	
It is suggested to maintain active stakeholder engagement and interaction in a future revision or update of the ERAA and for recalculation of VOLL, CONE or RS. Specific proposals to increase stakeholder participation are listed below: a. TSOs should arrange national, regional and European-level stakeholder workshops to evaluate the process and the outcomes of its implementation, and to propose improvements for future updates (2 respondents); b. stakeholders should be consulted if methodologies are revised, in close interaction. There is a need to revise VOLL and CONE calculation in shorter periods, and stakeholder involvement must be guaranteed for any revision of methodologies or calculation. This involvement should be promoted by ENTSO-E, the TSOs and the competent national regulators and authorities (1 respondent); c. stakeholders could be involved in the dedicated work stream of TSOs. National input to ERAA data and the overall ERAA work done by national TSOs should be based on regular national stakeholder interaction and workshops (1 respondent);	See Answer 41.

Respondents' views	ACER response
d. ENTSO-E and ACER to create working groups for informing and further developing the methodologies. Groups should consist of experts and relevant stakeholders in the different areas of interest. ACER should proactively consult stakeholders to identify the main issues with the current methodology and draw a roadmap for its development. This should be independent, but should consider the proposed roadmap that ENTSO-E is planning to develop as part of the methodology (Article 8(4.7)) (1 respondent); e. systematic consultation of market participants when either the VOLL, CONE or RS are (re)calculated in each Member State (1 respondent); f. assessment of the feedback given by stakeholders in each step of the process. Reports on consultations from ENTSOE shall be fully available (1 respondent); and g. expert stakeholder teams should function continuously, given that resource adequacy assessment aspects in the area of energy are very complex. Create a network of experts who will participate in these processes on an ongoing basis (1 respondent).	
Part 4: Conclusion	
4. Please provide any further comment	

Respondents' views	ACER response
Both ERAA and VOLL/CONE/RS Proposals shall aim to harmonize as much assessments and variables as possible at EU level (including WACC, de-rating factors, etc.), and shall only leave limited amount of room for MS to adjust those variables (preferably in some pre-determined ranges) (1 respondent).	**Answer 43** ACER observes that consistency of the parameters underlying CONE and CORP values calculation is required between ERAA, CONE and RS methodologies pursuant to Article 6(6)(a) of ERAA methodology. ACER however considers that some flexibility should remain to reflect justified national specificities (e.g. in CONE).
The importance of the involvement of the stakeholders cannot be overestimated and future development should allow for this. In the current process, time to reply to consultation was limited, given the many changes in market rules occurring since the preprocess of development of the Third Energy Package. The respondent found the short deadlines applied by ACER unreasonable: the consultation process should be at least six weeks (1 respondent).	**Answer 44** ACER understands the need for a proper duration of the consultation process with stakeholders. On the other hand, ACER stresses that legal deadlines often constrain the timeline of the approval process (set in Article 27(4) of the Electricity Regulation).
ACER should have informed better respondents to the online questionnaire about the features of the online tool (replying "Yes" or "No" to some answers in ACER's online survey leads to more or less questions appearing in the survey) (1 respondent).	**Answer 45** While this is not the first time ACER published public consultations with conditional questions, ACER notes the observation and will aim to improve the survey tool, e.g. to enhance user friendliness.

Respondents' views	ACER response
ACER and ENTSO-E should find the right balance between the benefit of including additional parameters/assumptions versus their costs/impacts, recognizing that the modelling exercise is a simplification of reality and it cannot cover all elements. It was suggested to engage in cost-benefit analyses of proposed sophistication of the approaches (1 respondent). Estimation of parameters (like VOLL, CONE, reliability standards) need to consider several assumptions about future conditions of the electricity market and the related uncertainty, especially taking into consideration a low-carbon economy endangered by the pandemic. Focus should be on being "roughly correct" rather than "precisely wrong". It is suggested to consider the Pareto principle ("80/20 rule") to focus on most important drivers (1 respondent).	**Answer 46** ACER is aware of the complexity of the ERAA, and considers that a balance should be struck between level of detail and implementation feasibility. At the same time, ACER believes that the ERAA shall be realistic and shall fulfil all legal requirements, even in a simplified manner (during a transition period). ACER also recognises that future amendments should balance between the level of complexity introduced by innovation and the more realistic representation of the current and future market and, and strove to address this issue in the amended methodology.
ERAA should not be detrimental to NRAAs. Ensure a reasonable harmonisation without being overly prescriptive because the methodologies' ultimate translation remaining a political choice for MS (1 respondent).	**Answer 47** ACER observes that, pursuant to Article 20(2) of the Electricity Regulation, ERAA or NRAAs may identify a resource adequacy concern: therefore, ACER does not see the ERAA exercise as detrimental to NRAAs. Furthermore, ACER considers that specifying requirements for NRAAs is beyond the ERAA methodology.
Disagreement with the inclusion of RR in the adequacy assessment, following a vote against the approval of the proposal of ERAA methodology within ENTSO-E (1 TSO respondent).	**Answer 48**

Respondents' views	ACER response
	ACER observes that, pursuant to Article 4(6)(g)(iii) of ERAA methodology, RR shall be considered as capacity resource available in the ED. For each target year, the dimensioning of RR shall be consistent with Article 160 of the SO GL. ACER also observes that keeping RR outside of the ERAA would result in an unrealistic and excessively conservative approach, because long outages of capacity resources are endogenously modelled in ERAA.
The ERAA Proposal lacks the level of ambition envisioned in the CEP, as well as in the EU Green Deal and the Climate Emergency declared by the European Parliament (1 respondent). The ERAA and VOLL/CONE/RS methodologies should mention specifically EU climate goals. Tight deadlines for CEP should not be an excuse for low quality methodologies. Allowing sufficient time should also guarantee compliance with access to information and public participation requirements as enshrined in the Aarhus Regulation. The pragmatic approach should not compromise quality and the need for an efficient and effective methodology to address the climate emergency (1 respondent).	**Answer 49** ACER observes that the ERAA methodology shall be consistent with the legal basis provided by Article 23 of the Electricity Regulation. ACER will strive to ensure stakeholder involvement to ensure gradual improvements of the methodology (see Answer 41 and Answer 42). ACER observes that the ERAA methodology shall be consistent with the legal basis provided by Article 23 of the Electricity Regulation. In particular, additional improvement of the modelling framework are allowed in line with Article 27(4) of the Electricity Regulation. Binding climate goals should be directly or indirectly reflected in scenarios and sensitivities, in line with Article 3 of ERAA methodology.

Respondents' views	ACER response
A document comparing the two versions of the draft ERAA and VOLL/CONE/RS methodologies prepared by ENTSO-E (the draft methodologies dated on 5 December 2019, and the draft methodologies dated on 22 April 2020, which were submitted to ACER for approval) would have been useful for the purposes of facilitating the analysis by participants (1 respondent).	**Answer 50** While ACER acknowledges that the publication of a comparative document of the two versions from ENTSO-E might have facilitated the analysis by participants, it also observes that this goes beyond the requirements for ENTSO-E set by the Electricity Regulation.
The ERAA methodology shall include a clear, explicit and robust ex-post monitoring mechanisms of the quality of its assumptions and output, based on the historical data which will be available in the future (1 respondent).	**Answer 51** ACER observes that, pursuant to Article 23(7) of the Electricity Regulation, the ERAA methodology, scenarios, sensitivities, and assumptions as well as results of the assessment shall be subject to the prior consultation of MSs, the Electricity Coordination Group (ECG) and relevant stakeholders and approval by ACER under the procedure set out in Article 27 of the Electricity Regulation. ACER also observes that, pursuant to Article 6(17) of ERAA methodology, ENTSO-E may use the data collected pursuant to Article 5 of ERAA methodology to calibrate the EVA. These transparency requirements should allow interested stakeholders to conduct an ex-post monitoring of the main ERAA assumptions.

Respondents' views	ACER response
On transparency: the ERAA proposal itself acknowledges that it is modular, will not be implemented in full and may not be fully compliant with the Electricity Regulation. Vague wording not specifying requirements for prioritizing implementation, legal validity, occurrence of a consultation process or capabilities in executing implementations steps. To avoid opaqueness and lack of transparency it would be sensible to add clauses regarding an explicit monitoring mechanism. The transparency principle can be guaranteed by applying the resource adequacy procedure decision making the Aarhus Convention (1 respondent).	**Answer 52** ACER considers that the ERAA shall be realistic and shall fulfil all legal requirements. ACER also introduced transparency requirements (e.g. in Article 11 of the ERAA methodology) to ensure that ENTSO-E operates in full transparency in line with Article 41(2) of Electricity Regulation. ACER observes that the Aarhus Convention forms an integral part of the EU legal order, pursuant to Council Decision 2005/370/EC of 17 February 2005 on the conclusion of the Convention on behalf of the European Community. As such, the mechanisms provided therein with respect to access to information, public participation in decision-making and access to justice in environmental matters apply to acts issued by EU institutions and bodies, including ACER, subject to conditions specified therein as well as in the EU acts implementing the Aarhus Convention, in particular Regulation (EC) 1367/2006.
On energy solidarity principle: the ERAA methodology should be drafted in line with the principle of energy solidarity. The relevant decision-making bodies should draft the methodology in a way that reflects the solidarity principle establishing a robust and ambitious model that will guarantee security of supply for the benefit of the EU and MS (1 respondent).	**Answer 53** Pursuant to Article 23(7) of the Electricity Regulation, the ERAA methodology, scenarios, sensitivities, and assumptions as well as results of the assessment shall be subject to the prior consultation of Member States, the Electricity Coordination Group (ECG) and relevant stakeholders. The active involvement of Member States in the process of developing the ERAA methodology, as well as

Respondents' views	ACER response
	when conducting subsequent adequacy assessments, should ensure that all their individual concerns are duly taken into account and their national interests, as well as those of the EU as a whole, are safeguarded in line with the principle of solidarity. Given the above, ACER has not identified any imbalance between the interests of the EU and the interests of the individual Member States.
On energy efficiency first principle (EE1st). The EE1st principle should be reflected in the different provisions of the ERAA methodology, given that the latter will be used when adopting investment decisions to decarbonise the energy system and secure supply of energy, by allocating financial resources through the confirmation that a CM is needed to address security of supply concerns. The current methodology is not consistent with the EE1st principle, because relevant parts that refer to demand response do not properly consider the opportunities that the latter offer to the energy system (1 respondent).	**Answer 54** ACER observes that, pursuant to Article 23(5)(d) of the Electricity Regulation, the ERAA shall appropriately take account of the contribution of all resources including existing and future possibilities for generation, energy storage, sectoral integration, demand response, and import and export and their contribution to flexible system operation. ACER refined requirements related to demand-response, to ensure that demand-response is properly reflected. In particular, Article 6(14) of the ERAA methodology requires that the EVA reflects binding energy efficiency targets.
Balancing reserves should be excluded from the base case assessments (2 respondents).	**Answer 55** Pursuant to Article 23(5)(d) of the Electricity Regulation, the ERAA "appropriately takes account of the contribution of all resources". ACER thus observes that: a. pursuant to Article 4(6)(g)(ii) of ERAA methodology, unless modelling framework is able to model the use of balancing

Respondents' views	ACER response
	reserves in relation to the occurrence of imbalances, FCR and/or FRR may be deducted from the available resources in the resource adequacy assessment, either by deducting their respective capacities from the available supply or by adding them to the demand profile; and b. pursuant to Article 4(6)(g)(iii) of ERAA methodology, RR shall be considered as capacity resource available in the ED.
Climate change modelling is a complex exercise to be developed with climate and adequacy experts: before this is developed, climatic years should include extreme events and should not be based on a set of most recent years. There shall be a consistent EU choice of climatic years and this shall be publicly consulted (2 respondents).	**Answer 56** See Answer 25. ACER observes that, in line with Article 24 of the Electricity Regulation, complementary national resource adequacy assessments (NRAAs) may be conducted. In such cases, NRAAs may make assumptions taking into account the particularities of national electricity demand and supply and used tools and consistent recent data that are complementary to those used by ENTSO-E for ERAA. Besides, additional sensitivities or scenarios (e.g. reflecting extreme weather events) may also be considered in the ERAA.
While not real, perfect foresight is a simplification, it should not be embedded in the methodology in case a model with imperfect foresight is developed (1 respondent).	**Answer 57** ACER considers the "perfect foresight" assumption acceptable: this simplification is currently used in several modelling exercises with

Respondents' views	ACER response
	a level of complexity similar to ERAA. Additional improvement to the ERAA methodology, after a 'proof of concept' testing and impact assessment of the different methodological elements have shown enough maturity, could be introduced in changes to the ERAA methodology pursuant to Article 27(4) of the Electricity Regulation.
Combined heat and power is a mature technology (in contrast with what was written by ENTSO-E) and the models should take into account the relevant constraints. This is particularly relevant for DK. For the same reasons all cross-sectoral aspects (heat pump, power-to-x, etc.) should be taken into account by the model (1 respondent).	**Answer 58** Pursuant to Article 23(5)(d) of the Electricity Regulation, ACER considers that, to ensure consistent scenarios, assumptions regarding all technologies (including CHP) should rely on a "best forecast" approach.
Modelling framework should be coherent with market design and legally imposed implementations (1 respondent).	**Answer 59** As recalled in recital (6) of the "Whereas" section of ERAA methodology, ACER observes that ERAA shall aim to best reflect the expected trends in market design.
EVA is a complex exercise, decision should not be exclusively based on a mathematical model, which is a tool supporting decisions. The model should include risk-aversion considerations to include the points of view of different market parties, also consulting the financial sector. MSs should provide input to the consultation on exogenous assumptions on capacity (2 respondents).	**Answer 60** ACER observes that: a. the EVA (and in general the whole ERAA methodological framework) shall mainly be used for the purpose of identifying

Respondents' views	ACER response
	resource adequacy concerns pursuant to Article 23(1) of the Electricity Regulation; and b. pursuant to Article 6(3) of ERAA methodology, the evolution of capacity resources which are based on exogenous assumptions may be excluded from the EVA, i.e. the EVA may abstain from affecting these exogenous assumptions. Furthermore, these exogenous assumptions shall be consulted.
If any, price caps should be reflected in the ERAA modelling framework (1 respondent).	**Answer 61** ACER believes that the maximum clearing price should be modelled in line with Article 10(1-2) of Electricity Regulation. This would ensure a consistent and realistic assessment of the overall adequacy of the modelled electricity system (Article 23(1) of the Electricity Regulation).
On transparency: a. ENTSO-E should publish relevant data influencing adequacy on generation, (plant capacities, unit sizes), transmission (interconnector capacities), planned and unplanned outages by type and price zone for all relevant years, demand per type and price for all relevant years, time series for RES, demand, must-run profiles and areas not modelled. Transparency is vital when MSs run their own models for national and regional adequacy assessments. Confidentiality can be solved by anonymizing relevant data (1 respondent); and	**Answer 62** ACER observes that, in line with Article 41(2) of Electricity Regulation, ENTSO-E shall operate in full transparency towards stakeholders and the general public. In particular, the ERAA report shall strive to facilitate stakeholders' understanding regarding the inputs, data, assumptions, and scenario development. The ERAA report shall thus also include an executive summary.

Respondents' views	ACER response
b. ENTSO-E model should be publicly available with a description on how it works: this makes it easier for MSs running their assessments as well as research institutions. Tests of new features should be made publicly available. While one tool will be used, ENTSO-E should run analyses with additional tools (like in MAF) for comparison (1 respondent).	ACER amended Article 11 of ERAA methodology in line with the comment received. In particular, ACER observes that, pursuant to Article 11(11) of ERAA methodology, ENTSO-E shall provide all the relevant information to Member States and to the bodies responsible for the NRAAs, for example for the execution of the tasks pursuant to Article 24 of the Electricity Regulation.
On implementation: NRAA should follow the MAF/ERAA in force. The current point of reference for NRAA should be the latest MAF/ERAA report approved and published by ENTSO-E (1 respondent).	**Answer 63** ACER observes that the exact scope of NRAAs is beyond the ERAA methodology. Pursuant to Article 24(1) of Electricity Regulation, NRAAs shall however be based on the ERAA methodology (for some aspects).