

DECISION No 23/2020
OF THE EUROPEAN UNION AGENCY
FOR THE COOPERATION OF ENERGY REGULATORS

of 2 October 2020

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

THE EUROPEAN UNION AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

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

Having regard to Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators¹, and, in particular, Article 9(1)(a) thereof,

Having regard to Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity² and, in particular, Article 23(6) thereof,

Having regard to the outcome of the consultation with the European Network of Transmission System Operators for Electricity ('ENTSO-E'), Member States, the Electricity Coordination Group ('ECG') and relevant stakeholders,

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

Having regard to the favourable opinion of the Board of Regulators of 25 September 2020, delivered pursuant to Article 22(5)(a) of Regulation (EU) 2019/942,

Whereas:

1. INTRODUCTION

(1) Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity (the 'Electricity Regulation') sets out a framework for the assessment of resource

¹ OJ L158, 14.6.2019, p. 22.

² OJ L158, 14.6.2019, p. 54.

adequacy. This includes steps to identify and address any potential resource adequacy concerns.

- (2) As part of this framework, ENTSO-E has been tasked with developing a methodology for calculating the value of lost load ('VOLL'), the cost of new entry ('CONE') and the reliability standard ('RS'). Pursuant to Article 25(2) of the Electricity Regulation, the RS shall be set by the Member State or by a competent authority designated by the Member State, and shall be based on the methodology for calculating the RS.
- (3) Pursuant to Article 23(6) and (7) of the Electricity Regulation, ENTSO-E shall submit the proposal for the VOLL/CONE/RS methodology by 5 January 2020 for ACER's approval in accordance with the procedure set out in Article 27 of the Electricity Regulation.
- (4) As specified in Article 27 of the Electricity Regulation, within three months of the date of receipt of this proposal, ACER shall either approve or amend it. In the latter case, ACER shall consult ENTSO-E before approving the amended proposal.
- (5) This Decision follows from ENTSO-E's proposal for the VOLL/CONE/RS methodology, seeking approval by ACER. Annex I to this Decision provides the final text of the VOLL/CONE/RS methodology, as amended and approved by ACER. Annex II contains a summary and evaluation of answers received within the public consultation conducted by ACER (for information only). Annex III gathers ENTSO-E's comments and proposed changes based on ACER's 24 July preliminary views (for information only).

2. PROCEDURE

- (6) On 4 May 2020, 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' (the 'Proposal').
- (7) On 6 May 2020, ACER launched a public consultation on the Proposal, inviting all stakeholders (including the Member States through the ECG) to provide views on the Proposal by 27 May 2020.³ The summary and evaluation of the responses received are presented, for information, in Annex II to this Decision.
- (8) From 5 May until 16 August 2020, ACER engaged with the Member States, national regulatory authorities (NRAs), the European Commission, ENTSO-E and relevant

³ [PC 2020 E 10](#) - Joint public consultation on methodologies for assessing electricity resource adequacy. This consultation also covered the ENTSO-E proposal for a methodology for the European resource adequacy assessment (ERAA). For a summary and evaluation of stakeholders' responses on the ERAA proposal, see ACER Decision No 24/2020, Annex II.

stakeholders through conference calls and electronic exchanges of documents with the aim to:

- (a) analyse the Proposal to reach a common understanding of the various elements, taking into consideration the legal requirements set out in the Electricity Regulation;
- (b) discuss current practices in the Member States, explore best practices at the European and international level as well as investigate alternative proposals, highlighting their likely benefits and drawbacks;
- (c) discuss the comments received during the public consultation (see section 5.1);
- (d) consult ENTSO-E and NRAs regarding all the necessary amendments to the Proposal (see sections 5.2 and 5.3).

(9) In particular, the following interactions took place between May and July 2020:

- 6 May: electronic exchange of documents, for consideration, with the ECG, the NRAs, and the European Commission;
- 8 May: conference call with the European Commission;
- 12-13 May: conference call with the NRAs;
- 20 May: conference call with the European Commission; electronic exchange of documents, for consideration, with ENTSO-E;
- 25-26 May: conference call with the NRAs;
- 2 June: conference call with ENTSO-E;
- 9 June: conference call and electronic exchange of documents, for consideration, with the NRAs;
- 12 June: conference call with the NRAs;
- 16 June: electronic exchange of documents, for consideration, with the NRAs;
- 17 June: conference call with the NRAs;
- 18 June: electronic exchange of documents, for consideration, with ENTSO-E; conference call with the NRAs;
- 24 June: conference call with the NRAs, conference call with ENTSO-E;
- 30 June: conference call with the NRAs;
- 3 July: electronic exchange of documents, for consideration, with the European Commission, NRAs and ENTSO-E;
- 8 July: conference call with the NRAs;
- 20 July: conference call with ENTSO-E;
- 24 July: electronic exchange of documents with NRAs; and

27 July: electronic exchange of documents, for consideration, with ENTSO-E and Member States.

3. ACER'S COMPETENCE TO DECIDE ON THE PROPOSAL

- (10) Pursuant to Article 9(1)(a) of Regulation (EU) 2019/942, Article 23(6) and (7) and Article 27(3) of the Electricity Regulation, ACER shall amend, where necessary, and approve ENTSO-E's proposal for a VOLL/CONE/RS methodology within three months after receiving this proposal from ENTSO-E.
- (11) Since ENTSO-E submitted the Proposal on the basis of Article 23(6) of the Electricity Regulation, ACER is competent to decide on this Proposal according to Article 9(1)(a) of Regulation (EU) 2019/942 and Article 23(7) and Article 27(3) of the Electricity Regulation.

4. SUMMARY OF THE PROPOSAL

(12) The Proposal submitted to ACER⁴ consists of the following elements:

(e) The 'Whereas' section

(a) Title 1 includes the general provisions setting out the scope of the Proposal and definitions (Articles 1 and 2).

(b) Title 2 sets out the methodology for the calculation of VOLL (Articles 3 to 8):

Article 3 sets out the objective of the estimation of VOLL and its relation to the calculation of RS;

Article 4 provides for different sectoral VOLL estimates per type of consumers;

Article 5 describes the parameters to take into account when estimating VOLL for consumer types;

Article 6 sets out the methodology to evaluate the different VOLLs per consumer type (survey based on the stated choice methodology);

Article 7 describes the estimate of a single VOLL for adequacy as a weighted average of the different VOLLs of consumer types, where the different weights represent the share of consumption of each consumer type at times of scarcity or the logic of manual load-shedding;

Article 8 specifies the limitations of the VOLL methodology, and requests the provision of a range of values in addition to the central

⁴ In this section, and unless otherwise described, Article numbers refer to the ENTSO-E Proposal as submitted to ACER on 4 May 2020.

estimate of the single VOLL for adequacy to reflect the underlying uncertainties;

- (c) Title 3 sets out the methodology for the calculation of CONE (Articles 9 to 16):
- Article 9 provides an overview, including the main steps, of the methodology for calculating CONE;
 - Article 10 describes the selection of candidate reference technologies;
 - Article 11 lists the technical characteristics to take into account for the relevant cost estimates;
 - Article 12 describes how to calculate the de-rated capacity of candidate reference technologies;
 - Article 13 defines the construction period and economic lifetime of the reference technologies;
 - Article 14 specifies the calculation of the cost elements for CONE, namely the capital and annual fixed costs;
 - Article 15 describes how to estimate the weighted average cost of capital ('WACC') for the calculation of the equivalent annual cost;
 - Article 16 details the calculation of the equivalent annualised cost and CONE, along with the criteria for determining the reference technology;
- (d) Title 4 sets out the methodology for the calculation of RS (Articles 17 and 18):
- Article 17 expresses the RS as LOLE, and describes how to calculate RS (including variable cost if necessary). This Article also describes how a Member State should set the RS, and the criteria to fulfil the RS;
 - Article 18 sets out the conditions of validity of the RS calculation described in Article 17 and suggests corrections in case these conditions do not hold;
- (e) Title 5 consists of two final provisions referring to the implementation and language of the methodology (Articles 19 and 20).
- (f) Annex 1 provides a detailed methodology for calculating WACC;
- (g) Annex 2 describes the corrections that may apply if the conditions of validity described in Article 18 are not met; and
- (h) Annex 3 describes how MSs shall decide which values to use to define the RS, and provides numerical examples of VOLL, CONE and RS.

5. SUMMARY OF THE OBSERVATIONS RECEIVED BY ACER

5.1. Public consultation

- (13) A summary of comments to ACER's public consultation is provided in Annex II, together with ACER's response to these comments. All consultation submissions are published on ACER's website.⁵

5.2. Consultation of ENTSO-E and Member States

- (14) ACER consulted ENTSO-E and the Member States (through the ECG) on its preliminary position on the VOLL/CONE/RS methodology. The main comments received are summarised in paragraphs (15) to (21) below. The full version of ENTSO-E's response can be found in Annex III.
- (15) ENTSO-E and some Member States highlighted that it is a Member State's right to determine the general structure of its energy supply, pursuant to Article 194(2) of the Treaty on the Functioning of the European Union. ENTSO-E and some Member States also stated that setting the RS is a Member State's prerogative, and that a clear distinction between calculating and setting the RS should be made.
- (16) ENTSO-E and some Member States suggested that, instead of being optional, the uncertainty range which complements the single VOLL, CONE or RS value should be mandatory.
- (17) ENTSO-E suggested to highlight, in the VOLL methodology, the main parts of the regulatory framework which relate to supply interruptions and consumers expected to be protected against disconnections.
- (18) Some Member States suggested to ensure consistency between the VOLL and the harmonised maximum clearing price modelled in the ERAA methodology, e.g. by defining a harmonised fixed maximum clearing price equal to the average VOLL.
- (19) Some Member States stated that freedom should be given to reflect local specificities.
- (20) One Member State suggested that for the calculation of the CONE, the consideration of technologies other than electricity generation technologies should not be a mandatory requirement, but an option that could be taken into account at national level.
- (21) ENTSO-E requested an explanatory note on the VOLL calculation to better understand these calculations.

⁵ [PC 2020 E 10](#)

- (22) These comments are addressed in section 6.3.

5.3. Consultation of the AEWG

- (23) The AEWG was consulted from 28 August until 4 September. The AEWG broadly supported the draft methodology. However, one NRAs raised objections about the requirement to study all technologies when calculating CONE (supporting the feedback described in paragraph (20)). In addition, one NRA submitted minor clarifications and general remarks.
- (24) A separate consultation process was set up for Ofgem, to enable this regulatory authority to provide views.

6. ASSESSMENT OF THE PROPOSAL

- (25) The Electricity Regulation provides the regulatory framework for the Proposal. This includes procedural requirements in relation to the consultation and submission of the Proposal (discussed in section 6.1) as well as substantive requirements which either directly refer to the contents of the Proposal or provide a broader legal context which needs to be taken into account (discussed in section 6.2).

6.1. Compliance with procedural requirements

- (26) Regarding procedural requirements, Article 23(6) and (7) in conjunction with Article 27(2) of the Electricity Regulation require ENTSO-E to consult all the relevant stakeholders on its Proposal before submitting it to ACER for approval. This includes Member States, the ECG, regulatory authorities and other national authorities. ENTSO-E is required to duly consider the results of the consultation in its Proposal and submit it to ACER by 5 January 2020. ENTSO-E's consultation must be carried out in accordance with the requirements specified in Article 31 of the Electricity Regulation, which also applies to this Proposal (pursuant to Article 31(1) read in conjunction with Article 30(1)(c) of the Electricity Regulation).
- (27) On 5 December 2019, ENTSO-E launched a public consultation⁶ on the draft Proposal. The consultation lasted from 5 December 2019 until 30 January 2020, and included a stakeholder workshop on 16 December 2019. Following the public consultation, ENTSO-E organised a webinar on 17 April 2017 and uploaded material from the workshop and the webinar as well as an overview of the comments received during the consultation along with the detailed comments on its website. In addition, ENTSO-E regularly informed and consulted ACER before submitting the Proposal.

⁶ See [ENTSO-E's consultation website](#).

- (28) Therefore, in ACER's view, the submitted Proposal has been duly consulted by ENTSO-E and meets the requirements of the Electricity Regulation regarding the involvement of stakeholders.
- (29) ENTSO-E submitted the Proposal on 4 May 2020, which is beyond the submission deadline of 5 January 2020 as indicated in Article 23(6) of the Electricity Regulation. Despite this delay, ACER notes that the Electricity Regulation does not declare a submission after 5 January 2020 as invalid.
- (30) Therefore, ACER considers the submission of the Proposal as valid.

6.2. Compliance with substantive requirements⁷

- (31) Regarding substantive requirements, Article 23(6) of the Electricity Regulation provides that the Proposal shall be based on transparent, objective and verifiable criteria. In addition, the following provisions govern the specific elements of the Proposal.
- (32) Article 25 of the Electricity Regulation sets out the requirements for the RS. Pursuant to Article 25(1), RS shall indicate the necessary level of security of supply of the Member State in a transparent manner. Article 25(2) prescribes that the RS shall be based on the methodology set out in Article 23(6) of the Electricity Regulation. Article 25(3) of the Electricity Regulation further requires that the RS shall be calculated at least using the VOLL and the CONE, and shall be expressed as 'expected energy not served' ('EENS') and 'loss of load expectation' ('LOLE').
- (33) Article 11 of the Electricity Regulation sets out the requirements for the single estimate of the VOLL for the purpose of setting the RS, and provides, in paragraph (1), that the single estimate of the VOLL shall be determined based on the methodology set out in Article 23(6) of the Electricity Regulation. Article 11(2) of the Electricity Regulation requires an update of the VOLL estimate at least every 5 years, or earlier in case of a significant change.
- (34) ACER considers that the Proposal does not fully meet the requirements for calculation of the RS which are specified in Article 25(3) of the Electricity Regulation. While Article 17 of the Proposal calculates the RS based on CONE and VOLL, the RS calculation is only expressed as LOLE. ACER notes that Article 25(3) of the Electricity Regulation requires that the RS is expressed as EENS and LOLE. ENTSO-E explained during its communication with various stakeholders that there is no economic justification for expressing the RS as EENS. The relevant amendments introduced by ACER to ensure compliance with Article 25(3) of the Electricity Regulation are discussed in paragraph (44) and paragraph (60) below.

⁷ In this section, Article numbers refer to the ENTSO-E Proposal as submitted to ACER on 4 May 2020.

- (35) ACER notes that the Proposal does not fully meet the requirements for the calculation of VOLL which are set out in Article 11(1) of the Electricity Regulation. The Proposal is in line with Article 11(1) of the Electricity Regulation to the extent that it requires (in Article 3) to calculate a single estimate of the VOLL, which shall be made publicly available. The Proposal also complies with Article 11(1) of the Electricity Regulation by allowing to compute one estimate per bidding zone and specifies that, where a bidding zone consists of territories of more than one Member State, the concerned Member States shall jointly determine a single estimate of VOLL, CONE and RS for that bidding zone. The calculation of a single VOLL for the RS is described in detail in Article 7 of the Proposal. However, the Proposal requires Member States to calculate the single VOLL estimate, whereas Article 11(1) of the Electricity Regulation requires regulatory authorities or another competent authority (designated by a Member State) to carry out this task. The relevant amendments introduced by ACER to ensure full compliance with Article 11(1) of the Electricity Regulation are discussed in paragraph (47) below.
- (36) The Proposal meets the requirements of Article 11(2) of the Electricity Regulation because Article 3(2) requires an update of the single VOLL estimate at least every 5 years or earlier in case of a significant change. The Proposal introduces a similar requirement for CONE calculations, even though this requirement is not present in the Electricity Regulation. ACER considers that such updates of the CONE value are beneficial because they improve the quality of CONE (and thus RS) values; however, since there is no such requirement in the Electricity Regulation, ACER considers that such requirement should be converted into a recommendation.
- (37) Finally, ACER considers that the Proposal does not fully meet the requirements of Article 23(6) of the Electricity Regulation. While the Proposal does require the CONE calculation to be based on transparent, reliable, objective and verifiable sources and criteria, it neither specifies what meeting this requirement effectively means in practice, nor introduces the same requirement for the VOLL and RS methodologies. The relevant amendments introduced by ACER to ensure full compliance with Article 23(6) are discussed in paragraphs (67), (87) and (95) below.

6.3. ACER's amendments as set out in Annex I to this Decision⁸

General amendments

- (38) The amendments set out below consist of necessary changes introduced to ensure that the Proposal complies with the provisions of the Electricity Regulation as well as changes to improve the Proposal in view of stakeholders' comments. Further editorial changes were made to ensure consistency between the methodologies and overall

⁸ In this section, unless explicitly mentioned, Article and paragraph numbers refer to the VOLL/CONE/RS methodology, as amended and approved by ACER and set out in Annex I to this Decision.

coherence of the Proposal. This results in substantive amendments to the Proposal, as set out in paragraphs (39) to (102)(103).

- (39) ACER found it necessary to add Recital (2) to clarify the terminology used in the VOLL/CONE/RS methodology.
- (40) ACER found it necessary to remove, in Recital (3), references to Commission Regulations (EU) 2015/1222 and 2017/1485, given that these Regulations are not explicitly referred to in the VOLL/CONE/RS methodology.
- (41) ACER found it necessary to remove Recitals (4) to (14) of the initial Proposal, which quote the relevant provisions of the Electricity Regulation. In ACER's view, the aim of the "Whereas" section is primarily to provide the background and rationale for the Proposal as well as to explain how the Proposal meets the objectives of the Electricity Regulation, and not merely to duplicate the text of the Electricity Regulation.
- (42) In view of the concerns expressed by ENTSO-E and some Member States, as highlighted in paragraph (15) above, ACER found it necessary to add Recital (4) to the 'Whereas' section. This is to clarify that it is the Member States' right, pursuant to Article 194(2) of the Treaty on the Functioning of the European Union (TFEU), to determine the general structure of their energy supply and therefore, to set their own desired level of security of supply, as highlighted in Recital (46) of the Electricity Regulation. Further amendments to address these concerns relate to removing Article 8 and amending Article 17 of the initial Proposal, as well as removing Annex III to the initial Proposal, as discussed in paragraphs (66), (94) and (101) below.
- (43) ACER found it necessary to add Recitals (5) to (7) (replacing Recital (3) of the initial Proposal) to better explain in what way the VOLL/CONE/RS methodology contributes to achieving the objectives set out in Article 1 of the Electricity Regulation and how it aligns with the principles of the electricity market operation pursuant to Article 3 of the Electricity Regulation.
- (44) ACER found it necessary to add Recital (8) to explain how the RS methodology aims to fulfil Articles 11, 23 and 25 of the Electricity Regulation. Specifically, Article 25(3) of the Electricity Regulation specifies that the RS shall be expressed as 'expected energy not served' and 'loss of load expectation'. The calculated RS is thus expressed as 'loss of load expectation', which itself relies on VOLL, which is expressed based on 'expected energy not served', and therefore, in ACER's view, meets the requirement of Article 25(3) of the Electricity Regulation.
- (45) ACER found it necessary to add Recital (9) to explain why the entity calculating CONE (and RS) is not explicitly named in the VOLL/CONE/RS methodology.
- (46) ACER found it necessary to add Recital (10) to explain how the requirements from Article 23(6) of the Electricity Regulation are fulfilled.
- (47) ACER found it necessary to amend paragraphs (1) and (3) of Article 1 to align the definition of the entity calculating the single VOLL for RS with Article 11(1) of the

Electricity Regulation. Given that the Electricity Regulation does not explicitly specify which entity shall calculate CONE and RS, the CONE and RS methodologies do not explicitly name the entity to be designated with carrying out these tasks. Instead, generic terms are used throughout the methodologies (i.e. ‘the entity calculating single VOLL for RS’, ‘the entity calculating CONE’ and ‘the entity calculating RS’).

- (48) ACER found it necessary to amend paragraph (1) of Article 2 to include a reference to Article 3 of Regulation (EU) 2017/2196.
- (49) ACER found it necessary to amend paragraph (2) of Article 2 to ensure that the definitions fully align with the applicable legal framework. ACER also amended some definitions, and introduced additional definitions for the sake of correctness and clarity.

Amendments to Title 2 (calculation of the VOLL)

- (50) ACER found it necessary to amend paragraph (4) of Article 3 to align its wording with Article 2(9) of the Electricity Regulation. ACER notes the views of some Member States that there should be consistency between the VOLL and the harmonised maximum clearing price modelled in the ERAA methodology (see paragraph (18) above). However, ACER is of the view that the approach suggested by the Member States would be inconsistent with the definition of VOLL as provided in Article 2(9) of the Electricity Regulation. According to this definition, VOLL means an estimation in euro/MWh of the maximum electricity price that customers are willing to pay to avoid an outage. Therefore, the harmonised maximum clearing price pursuant to Article 10 of the Electricity Regulation may not impact the VOLL methodology.
- (51) ACER found it necessary to amend paragraph (2) of Article 4 to amend the minimum set of consumer categories. ACER also clarified how to handle a lack of representative data, in order to ensure feasibility of VOLL calculations. This amendment also provides transparency about potential simplifications, to ensure that the results of the VOLL methodology are well understood.
- (52) To address ENTSO-E’s comments provided during the consultations, ACER found it necessary to amend paragraph (1) of Article 5 by providing references to the relevant regulatory framework for supply interruptions.
- (53) ACER found it necessary to amend paragraph (2) of Article 6 to allow the entity calculating the single VOLL for RS to avoid conducting surveys related to unnecessary parameters. This, in ACER’s view, ensures that the requirements with respect to surveys are proportionate and do not constitute an unnecessary administrative burden for the entity calculating the single VOLL for RS.
- (54) ACER found it necessary to amend paragraph (3) of Article 6 to request that the surveys shall rely on a statistically representative sample, also in terms of the actual responses received, in order to enhance the robustness of the survey results.

- (55) ACER found it necessary to amend paragraph (4) of Article 6 to introduce a minimum survey template, which is annexed to the VOLL/CONE/RS methodology and discussed in paragraph (98). This template aims to ensure comparability of results across Member States and also helps to limit the work needed to conduct surveys.
- (56) ACER found it necessary to amend paragraph (5) of Article 6 to clarify that the willingness to pay cost-estimation method shall apply (which is in line with Article 2(9) of the Electricity Regulation), but that additional cost-estimation methods may be used if the entity calculating the single VOLL for RS considers that it leads to more robust VOLL estimates⁹.
- (57) ACER notes the views expressed by ENTSO-E and some Member States that the uncertainty range which complements the single VOLL, CONE or RS value should be mandatory. ACER agrees that uncertainty ranges may provide valuable information about the uncertainty underlying the sectoral VOLL calculation. However, ACER notes that the assumptions and the process for calculation of the uncertainty range are not defined in the Proposal, and estimating these uncertainty ranges in a robust and reliable manner may require significant work. Furthermore, the regulatory framework does not explicitly require estimating uncertainty ranges. For the above reasons, ACER found it necessary to amend paragraph (8) of Article 6 to specify that uncertainty ranges are optional, instead of mandatory.
- (58) ACER found it necessary to amend paragraph (2) of Article 7 to clarify that only the proportion of consumers demand which is price-responsive shall be excluded from VOLL calculations. This requirement ensures that all inflexible demand which is not entitled to protection against disconnection is well reflected in the VOLL methodology. ACER also highlighted the main parts of the regulatory framework which impact the consumers expected to receive special protection against disconnection.
- (59) ACER found it necessary to amend paragraph (3) of Article 7 to clarify that the single VOLL for RS shall reflect the EENS that additional capacity resources would avoid, in line with manual load-shedding plans pursuant to Article 11 of Commission Regulation (EU) 2017/2196. This amendment ensures consistency with the RS methodology.
- (60) ACER found it necessary to amend paragraph (4) of Article 7 to refine the calculation of the different weights (of the consumer categories or sub-categories) used to calculate the single VOLL. These weights are expressed based on EENS which aims to fulfil the requirement of Article 25(3) of the Electricity Regulation, according to

⁹ As e.g. suggested by the Council of European energy regulators in Guidelines of Good Practice on Estimation of Costs due to Electricity Interruptions and Voltage Disturbances, see https://www.ceer.eu/documents/104400/3729293/C10-EQS-41-03_GGP+interruptions+and+voltage_7-Dec-2010.pdf/7dec3d52-934c-e1ea-e14b-6dfe066ecc3e?version=1.0

which RS (based on VOLL) shall be expressed as EENS and LOLE. For each consumer type (or subtype), the weights shall either:

- (a) reflect the marginal reduction of load-shedding (i.e. EENS) that additional capacity resource would cause; or
- (b) as a simplification, reflect how the full load-shedding (i.e. EENS) is spread among consumer types.

- (61) ACER found it necessary to amend paragraph (5) of Article 7 to detail the calculation of the weights for each set of VOLL parameters.
- (62) ACER found it necessary to amend paragraphs (3) to (5) of Article 7 to clarify that the VOLL parameters and weights used to calculate the single VOLL for RS may take into account the main ENS patterns observed in recent resource adequacy assessments. This is to ensure consistency with the ERAA methodology and thus, to support a robust identification of resource adequacy concerns.
- (63) ACER found it necessary to amend paragraph (6) of Article 7 to allow using a single set of VOLL parameters per consumer type as a simplification to facilitate calculations when necessary. This simplification would ease VOLL calculations while not significantly impacting the results in most cases.
- (64) ACER found it necessary to amend paragraph (7) of Article 7 in order to describe how to handle missing data for a given (sub) category of consumer and set of VOLL parameters. The proportionate approach strikes a balance between allowing a feasible VOLL calculation in the short-term, and refining VOLL estimates in the long term.
- (65) For the reasons set out in paragraph (57), ACER found it necessary to amend paragraph (8) of Article 7 by specifying that uncertainty ranges are optional, and not mandatory.
- (66) ACER found it necessary to remove Article 8, because, pursuant to Article 25(2) of the Electricity Regulation, setting the RS is a Member State's prerogative that is beyond the scope of the RS methodology. In that respect, ACER agrees with the views provided by ENTSO-E and the Member States during the consultation process (see paragraph (15) above) and reiterates that the RS methodology focuses solely on calculating the RS and therefore does not encroach upon the Member States' right to set the RS.
- (67) ACER introduced a new Article 8 describing transparency requirements for the VOLL methodology. These requirements ensure that the VOLL methodology is based on transparent, objective and verifiable criteria, in line with the provisions of Article 23(6) of the Electricity Regulation. Paragraph (3) of Article 8 allows the entity calculating the single VOLL for RS to aggregate published data to address confidentiality concerns. Finally, paragraph (4) of Article 8 suggests coordination between entities calculating the single VOLL for RS, the CONE and the RS, to facilitate data retrieval for stakeholders.

Amendments to Title 3 (calculation of the CONE)

- (68) ACER found it necessary to amend paragraphs (1) and (3) of Article 9 to clarify that the calculation of CONE requires estimating a variable cost for new entrants, where applicable to ensure a realistic RS.
- (69) ACER found it necessary to amend paragraph (2) of Article 9 to convert the requirement to update the CONE value regularly into a recommendation, in line with paragraph (36).
- (70) ACER found it necessary to introduce paragraph (4) of Article 9 to recommend that the entities calculating CONE coordinate in order to ensure consistency in technical and economic parameters when justified. This recommendation aims to increase consistency among the CONE values computed by multiple entities calculating CONE.
- (71) ACER found it necessary to introduce paragraph (5) of Article 9 allowing for the calculation of either:
- (a) a single value of the fixed and variable CONE to apply over the whole timeframe referred to in Article 25(3) of the Electricity Regulation; or
 - (b) a different value for each of the years of the applied timeframe, to account for expected developments that may affect the economic and technical parameters underlying CONE.

This clarification aims to enable a proportionate approach between detailed CONE values and feasible implementation. The entity calculating CONE may thus accurately reflect how CONE evolves with time, to improve the accuracy of the RS.

- (72) ACER found it necessary to amend paragraph (1) of Article 10 to require to study candidate technologies covering at least generation, storage and DSR. ACER notes that the aim of the CONE methodology is to model potential new entrants to the electricity system, either with or without capacity mechanism. In order to reflect potential market entry in a realistic manner, ACER considers it necessary to require studying at least generation, storage and DSR technologies, to assess whether these technologies may be reference technologies (despite the comment mentioned in paragraph (20)). ACER notes that this approach is in line with Article 3(j) of the Electricity Regulation which states that “*safe and sustainable generation, energy storage and demand response shall participate on equal footing in the market*”. Furthermore, pursuant to Article 22(1)(h) of the Electricity Regulation, capacity mechanisms shall “*be open to participation of all resources that are capable of providing the required technical performance, including energy storage and demand side management*”. Therefore, this amendment also ensures consistency between the CONE methodology and the common requirements for capacity mechanisms as set out in the Electricity Regulation.

- (73) ACER found it necessary to amend paragraph (4) of Article 10 to remove the requirement that candidate technologies shall not receive subsidies to be considered reference technology.¹⁰ In ACER's understanding, subsidies are only a part of the revenues considered by new entrants when deciding on new entry, so that entry decisions are not entirely based on subsidies. ACER thus deems it methodologically incorrect to assume ex-ante that subsidies determine the installed capacity of a given technology which receives subsidies ACER thus considers that this amendment ensures a more realistic CONE methodology, which is also consistent with the ERAA methodology.
- (74) ACER found it necessary to introduce paragraph (5) of Article 10 to better describe how to estimate the potential for additional capacity resources and to ensure a realistic estimate of the RS.
- (75) ACER found it necessary to amend paragraph (1) of Article 11 to provide a more accurate description of the technical characteristics of potential new entrants. In particular, to ensure a more robust description of the constraints that potential new entrants may face, ACER allowed considering parameters describing efficiency, CO₂ emission factors, expected operational conditions, licensing, permitting and spatial planning requirements.
- (76) ACER found it necessary to amend paragraph (2) of Article 11 to request that the technical specifications be based, among others, on relevant assumptions of the latest resource adequacy assessment or on the applicable legal and regulatory framework, in order to ensure realistic and consistent assumptions.
- (77) ACER found it necessary to amend Article 12 to specify that the calculations shall use a de-rating capacity factor, rather than relying on de-rated capacity, to increase transparency and facilitate the understanding of the formulas.
- (78) ACER found it necessary to remove Article 13 of the initial Proposal, because the requirements introduced by this Article describe technical characteristics of potential new entrants. These requirements were thus moved to Article 11.
- (79) ACER found it necessary to introduce paragraph (6) in Article 13 to require that cost factors which are independent from the reference technology shall be identical for all reference technologies. This requirement is to ensure consistency of CONE estimates among reference technologies.

¹⁰ Article 10(3)(a) of the Proposal states that the Member State shall demonstrate that a technology does not benefit from a legal State Aid. It also states that a technology which receives subsidies may be considered if no subsidy is taken into account in the CONE calculation.

- (80) For the reasons set out in paragraph (57) above, ACER found it necessary to amend paragraph (9) in Article 13 in order to specify that uncertainty ranges are optional, as opposed to mandatory.
- (81) ACER found it necessary to amend paragraph (3) in Article 14 to clarify that different WACC values may be estimated for different reference technologies or specific groups of reference technologies. This is to account for differences in risks (taking into account hedging opportunities expected to be available). The amendment thus leads to more realistic CONE (and RS) values.
- (82) For the reasons set out in paragraph (57) above, ACER found it necessary to amend paragraph (6) in Article 14, in order to specify that uncertainty ranges are optional, as opposed to mandatory.
- (83) ACER found it necessary to remove a mathematical formula from paragraph (1) in Article 15, because the removed formula is already reflected by another formula from paragraph (2).
- (84) ACER found it necessary to amend paragraphs (1) and (2) in Article 15 to define parameters normalised with installed capacity, and to account for the de-rating capacity factor instead of the de-rated capacity. This change aims to increase transparency and to facilitate the understanding of the formulas.
- (85) For the reasons set out in paragraph (57), ACER found it necessary to amend paragraph (3) in Article 15, to make the provision of uncertainty ranges optional.
- (86) ACER found it necessary to introduce a new Article 16 describing the calculation of the variable CONE. The specifications broadly align with the requirements of Article 17(7) of the initial Proposal. The specifications were however refined, in particular to reflect the impact of taxes and levies on variable CONE. Furthermore, to ensure consistency with the calculation of the fixed CONE, CONE variable should take into account as much as possible local specificities related to prices, characteristics and requirements (in line with paragraph (19)). CONE variable shall be expressed in local currency and in real terms to ensure consistency with the ERAA. In order to avoid unnecessary calculations, paragraph (8) of Article 16 allows the entity calculating CONE to only estimate an order of magnitude of CONE variable, to show that it is negligible compared to the single VOLL for RS. Finally, for the reasons discussed in paragraph (57) above, ACER made the provision of uncertainty ranges optional.
- (87) ACER found it necessary to introduce a new Article 17 describing transparency requirements for the CONE methodology. These requirements ensure that the CONE methodology is based on transparent, objective and verifiable criteria, in line with the provisions of Article 23(6) of the Electricity Regulation. To protect confidential information, paragraph (4) of Article 17 allows the entity calculating CONE not to disclose confidential information. Finally, paragraph (5) of Article 17 suggests coordination between entities calculating the single VOLL for RS, the CONE and the RS, to facilitate data retrieval for stakeholders.

Amendments to Title 4 (calculation of the RS)

- (88) ACER found it necessary to introduce a new Article 18 to provide a more precise description of the calculation of the LOLE thresholds underlying the RS calculation. ACER included the variable cost in the formula for the LOLE threshold, in line with Annex 2 of the Proposal. ACER better described the conditions for including renewals or prolongation in the RS calculation, to ensure consistency with the new entrants considered when calculating the RS.
- (89) ACER found it necessary to amend paragraphs (1) and (3) of Article 19, recommending that the validity of the methodologies be monitored for both new entrants and renewals or prolongations, to enable a consistent modelling of all reference technologies in the RS methodology.
- (90) ACER found it necessary to introduce paragraph (3) in Article 20 to better define the total potential for additional capacity resource for a given LOLE threshold (based on Article 16(5) of the Proposal).
- (91) ACER found it necessary to introduce paragraph (5) in Article 20 to clearly describe how the minimum capacity need for the RS impacts the LOLE target for the RS (based on Article 16(6) of the Proposal).
- (92) ACER found it necessary to introduce paragraph (7) in Article 20 to allow the calculation of either a single value of the RS for the whole timeframe pursuant to Article 25(3) of the Electricity Regulation, or different values per year of the timeframe. This clarification aims to enable a proportionate approach between detailed RS values and feasible implementation.
- (93) ACER found it necessary to amend paragraph (8) in Article 20 to make the provision of an uncertainty range optional, as already explained in paragraph (57).
- (94) ACER found it necessary to remove paragraphs (8) to (10) of Article 17 of the initial Proposal, because setting (and fulfilling) the RS is beyond the scope of the RS methodology.
- (95) ACER found it necessary to introduce a new Article 21 describing transparency requirements for the RS methodology. These requirements ensure that the RS methodology is based on transparent, objective and verifiable criteria, in line with the provisions of Article 23(6) of the Electricity Regulation. Paragraph (3) of Article 21 allows the entity calculating the RS to publish aggregated data to address confidentiality concerns. Finally, paragraph (6) of Article 21 recommends coordination between entities calculating the single VOLL for RS, the CONE and the RS, to facilitate data retrieval for stakeholders.

Remaining amendments

- (96) ACER found it necessary to remove Article 19 of the initial Proposal, as the Electricity Regulation does not explicitly mention that the Member States shall apply the VOLL/CONE/RS methodology.
- (97) ACER found it necessary to amend paragraph (1) of Article 22, as the Electricity Regulation does not explicitly require the TSOs to translate the VOLL/CONE/RS methodology. As such, ACER considers that this aspect is beyond the scope of the methodology.
- (98) ACER found it necessary to introduce Annex 1 in order to describe a minimum survey template to use for estimating the VOLL of various consumer types (or subtypes). The survey template specifies the requirements of Article 6 in more details. The structure and wording of the survey may be adapted, as applicable, to ensure that realistic information will be collected (e.g. to reflect local specificities in line with paragraph (19)). In addition, some questions may be removed if the necessary information is already available to the entity calculating the single VOLL for RS, to avoid unnecessary work.
- (99) ACER found it necessary to amend Annex 2 by removing references to specific sources of information, as defining specific sources of information is beyond the scope of the CONE methodology.
- (100) ACER found it necessary to amend Annex 3 to ensure a consistent approach for the correction of LOLE targets for new entrants and renewals or prolongation and to reflect the variable CONE. This amendment aims to enable a consistent RS calculation.
- (101) ACER removed Annex 3 of the Proposal, because setting the RS is beyond the scope of the RS methodology (see paragraph (42) above).
- (102) Finally, ACER made several editorial changes to the Proposal with the aim to fix typos and punctuation, to reorganise the text in a more consistent way and to add omitted words in order to improve readability.
- (103) Following this Decision, in order to address ENTSO-E's concerns set out in paragraph (21), ACER will endeavour to release a non-binding explanatory document describing examples of the application of the VOLL/CONE/RS methodology. This explanatory document will also facilitate the implementation and understanding of this methodology.

7. CONCLUSION

- (104) For all the above reasons, ACER considers the Proposal in line with the requirements of the Electricity Regulation, provided that the amendments described in this Decision are integrated in the Proposal, as presented in Annex I.

- (105) Therefore ACER approves the Proposal subject to the necessary substantive and editorial amendments. To provide clarity, Annex I to this Decision sets out the Proposal as amended and approved by ACER.

HAS ADOPTED THIS DECISION:

Article 1

The methodology for calculating the value of lost load, the cost of new entry and the reliability standard in accordance with Article 23(6) of Regulation (EU) 2019/943 is adopted as set out in Annex I to this Decision.

Article 2

This Decision is addressed to ENTSO-E.

Done at Ljubljana, on 2 October 2020.

- SIGNED -

*For the Agency
The Director*

C. ZINGLERSEN

Annexes:

Annex I – Methodology for calculating the value of lost load, the cost of new entry and the reliability standard in accordance with Article 23 of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity.

Annex II (for information only) – Evaluation of responses to the public consultation on the Draft methodologies for the European resource adequacy assessment and for calculating the value of lost load, the cost of new entry and the reliability standard.

Annex III (for information only) – ENTSO-E’s comments and proposed changes based on ACER’s 24 July preliminary views

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

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