

ACER

Agency for the Cooperation
of Energy Regulators

Director ad interim

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~~P. dyr. I. B. ...
P. dyr. K. ...
25.06.2019
P. dyr. U. ...~~

Ljubljana, 19 June 2019
ACER-AP-CGC-as-2019-416



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DEPARTAMENT
WSPÓLPRACY MIĘDZYNARODOWEJ

Wpłynęło dnia 25.06.2019

Znak pisma 826

DO
P. dyr. J. ...

DP
P. dyr. B. ...
27.06.2019

Mr. Eryk Kłossowski
Polskie Sieci
Elektroenergetyczne S.A
Warszawska 165
05-520 Konstancin-Jeziorna
Poland
eryk.klossowski@pse.pl

By registered letter

DZ dyr. R. ...

Re: Decision of the Agency for the Cooperation of Energy Regulators on the all TSOs' proposal for the methodology for coordinating operational security analysis (CSAM)

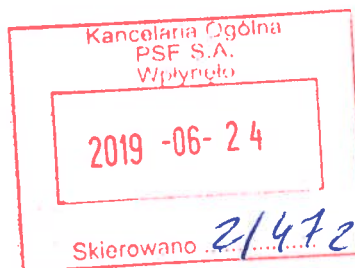
Dear Mr. Kłossowski,

Please find attached to this letter the Decision of the Agency for the Cooperation of Energy Regulators No 07/2019 of 19 June 2019 on the all TSOs' proposal for the methodology for coordinating operational security analysis, pursuant to Article 8(1) of Regulation (EC) No 713/2009 and Article 6(2) and 6(8) of Commission Regulation (EU) No 2017/1485.

Please be informed that this Decision can be appealed pursuant to Article 19 of Regulation (EC) No 713/2009.

Should you have any questions in this matter, please contact us at ACER-ED-015@acer.europa.eu.

Yours sincerely,



Alberto Pototschnig

Enclosures: 1 ACER Decision and 2 Annexes

Annex I – Methodology for coordinating operational security analysis in accordance with Article 75 of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation

Annex II – Evaluation of responses to the public consultation on the amendments of the proposal for coordinating operational security analysis



DECISION No 07/2019
OF THE AGENCY FOR THE COOPERATION OF
ENERGY REGULATORS

of 19 June 2019

ON THE ALL TSOs' PROPOSAL FOR THE METHODOLOGY FOR
COORDINATING OPERATIONAL SECURITY ANALYSIS

THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

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

Having regard to Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators¹, and, in particular, Articles 8(1) thereof,

Having regard to Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation², and, in particular, Article 6(2)(c) and 6(8) thereof,

Having regard to the outcome of the consultation with all national regulatory authorities and transmission system operators,

Having regard to the favourable opinion of the Board of Regulators of 12 June 2019, delivered pursuant to Article 15(1) of Regulation (EC) No 713/2009,

Whereas:

1. INTRODUCTION

- (1) Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (the 'SO Regulation') laid down a range of

¹ OJ L211, 14.8.2009, p. 1.

² OJ L 220, 25.8.2017, p. 1.

requirements for operational security analysis coordination, among which the requirements for the development of a methodology for coordinating operational security analysis ('CSAM') in accordance with Article 75 of the SO Regulation.

- (2) Pursuant to Articles 5(1), 6(2)(c), 6(7) and 6(8) of the SO Regulation, all transmission system operators ('TSOs') are required to develop a proposal for the CSAM in accordance with Article 75 of the SO Regulation and submit it to all regulatory authorities for approval. In turn, all regulatory authorities shall reach an agreement and take a decision on the proposal within six months after the receipt of the proposal by the last regulatory authority. When all regulatory authorities fail to reach an agreement within the six-month period after the submission, the Agency shall adopt a decision concerning the TSOs' Proposal in accordance with Article 8(1) of Regulation (EC) No 713/2009.
- (3) The present Decision of the Agency follows from the request of all regulatory authorities that the Agency adopts a decision on the proposal for CSAM, which all TSOs submitted to all regulatory authorities and on which those regulatory authorities could not agree. Annex I to this Decision sets out the CSAM as decided by the Agency.

2. PROCEDURE

2.1. Proceedings before regulatory authorities

- (4) Article 75(1) of the SO Regulation requires all TSOs to submit a proposal for coordinating operational security analysis no later than twelve months after the entry into force of the SO Regulation. As the SO Regulation entered into force on 14 September 2017, all TSOs were required to submit a proposal for coordinating operational security analysis by 14 September 2018.
- (5) On 26 February 2018, all TSOs published for public consultation the draft 'all TSOs' proposal for coordinating operational security analysis in accordance with Article 75 of Commission Regulation (EU) 2017/1485 of 2 August 2017'. The consultation lasted from 26 February 2018 until 6 April 2018.
- (6) On 14 September 2018, all TSOs submitted to all regulatory authorities an 'all TSOs' proposal for coordinating operational security analysis in accordance with Article 75 of Commission Regulation (EU) 2017/1485 of 2 August 2017' (hereafter referred to as the 'Proposal'). The last regulatory authority received the Proposal on 1 October 2018.

2.2. Proceedings before the Agency

- (7) In a letter received by the Agency on 21 December 2018, the Chair of the all Energy Regulators' Forum³, on behalf of all regulatory authorities, informed the Agency that on 19 December 2018 all regulatory authorities reached a unanimous agreement to request the Agency to adopt a decision on the Proposal pursuant to Article 75 of the SO Regulation.
- (8) In this letter, and the accompanying non-paper, all regulatory authorities highlighted that TSOs did not provide a satisfactory level of detail on the following key topics: (i) principles for common probabilistic risk assessment in accordance with Article 75(1)(b) of the SO Regulation; (ii) handling of uncertainties in accordance with Article 75(1)(c) of the SO Regulation; (iii) requirements on coordination and information exchange between regional security coordinators in accordance with Article 75(1)(d) of the SO Regulation. Therefore, in the assessment of all regulatory authorities, the Proposal was not compliant with the requirements of the SO Regulation, and thus cannot be approved.
- (9) Moreover, all regulatory authorities stressed that the CSAM and the methodology for assessing the relevance of assets for outage coordination ('RAOCM'), to be developed pursuant to Article 84 of the SO Regulation, have been treated as a package, both by TSOs and regulatory authorities. Article 75(1)(a) of the SO Regulation requires a methodology on influence computation to be included in the CSAM. This methodology on influence computation shall, in accordance with Article 84(3) of the SO Regulation, be consistent between the CSAM and the RAOCM. Due to this link, any change in the methodology on influence computation in the CSAM would have an impact on the RAOCM. Therefore, the CSAM and the RAOCM should be dealt with in parallel.
- (10) Finally, the regulatory authorities asked the Agency to give utmost consideration to all regulatory authorities' views on the CSAM provided in their non-paper and on the key topics listed above.
- (11) On 25 January 2019, the Agency launched a public consultation on the Proposal, inviting all market participants to submit their comments by 18 February 2019. The consultation document asked stakeholders to provide views on nine topics which were deemed as the most relevant: (i) common probabilistic risk assessment; (ii) infrastructure for data on common operational probabilistic coordinated security assessment and risk management; (iii) local scenarios; (iv) involvement of regional security coordinators ('RSCs') in cross regional impact of local scenarios; (v) best forecast approach for day-ahead and intraday uncertainty handling; (vi) allocation of remedial actions between regions; (vii) influence thresholds and (viii) the implementation timeline, reporting periods and common hours;

³ The all regulatory authorities' platform to consult and cooperate for reaching a unanimous agreement on NEMO's and TSO's proposals.

(ix) other aspects of concern. The summary and evaluation of the responses received are presented in Annex II to this Decision.

(12) Moreover, the Agency closely cooperated with all regulatory authorities and all TSOs and further consulted on the amendments to the Proposal during teleconferences, meetings and exchanges of amendments. In particular, the following steps were taken:

- 22 February 2019: the Agency circulated an updated draft of the proposed amendments to the CSAM;
- 7 March 2019: workshop with all regulatory authorities and TSOs;
- 13 March 2019: teleconference with all regulatory authorities and TSOs;
- 13 March 2019: the Agency circulated an updated draft of the proposed amendments to the CSAM;
- 22 March 2019: discussion with all regulatory authorities in the framework of the SOGC Task Force;
- 27 March 2019: teleconference between all regulatory authorities and TSOs;
- 3 April 2019: the Agency circulated an updated draft of the proposed amendments to the CSAM;
- 10 April 2019: teleconference with all regulatory authorities and TSOs;
- 24 April 2019: meeting with all regulatory authorities and TSOs;
- 7 May 2019: teleconference between all regulatory authorities and TSOs;
- 13 May 2019: teleconference between all regulatory authorities and TSOs;
- 16 May 2019: orientation discussion at the meeting of the Board of Regulators;
- 21 May 2019: discussion with all regulatory authorities at the Electricity Working Group meeting.

3. THE AGENCY'S COMPETENCE TO DECIDE ON THE PROPOSAL

(13) Pursuant to Article 6(8) of the SO Regulation, where the regulatory authorities have not been able to reach an agreement within six months following the receipt of the terms and conditions or methodologies or upon their joint request, the Agency shall adopt a decision concerning the submitted proposal for terms and conditions or methodologies within six months, in accordance with Article 8(1) of Regulation (EC) No 713/2009.

- (14) According to the letter of the Chair of the all Energy Regulators' Forum of 21 December 2018, all regulatory authorities have agreed to refer the Proposal to the Agency.
- (15) Therefore, under the provision of Article 6(8) of the SO Regulation, the Agency became responsible to adopt a decision concerning the Proposal by the referral of 21 December 2018.

4. SUMMARY OF THE PROPOSAL

- (16) The Proposal consists of the following elements:
 - (a) The 'Whereas' section and Articles 1 and 2, which include general provisions, the scope of application and the definitions;
 - (b) Articles 3 to 6, which contain the determination of influencing elements with methods for influence computation, dynamic aspects for influence assessment, identification of elements of observability area and identification of external contingencies;
 - (c) Articles 7 to 11, which include the management of exceptional contingencies with methods for classification of contingencies, occurrence increasing factors handling, the establishment and sharing of contingency list;
 - (d) Articles 12 to 13, which include the evaluation of contingency consequences;
 - (e) Articles 14 to 21, which include the coordination of remedial actions with methods to design and identify the cross-border relevance of remedial actions, principles for coordination, remedial actions availability and their inclusion in individual grid models;
 - (f) Articles 22 to 25, which include requirements for realisation of operational security analysis with respect to uncertainty management and regional coordination in the long-term, day-ahead and intraday timeframe;
 - (g) Article 26 to 36, which include requirements for cross-regional coordination; definition of overlapping zones, coordinated regional and cross-regional operational security assessment for day-ahead and intraday time frames, tasks related to outage coordination and adequacy assessment;
 - (h) Articles 37 to 39, which include forecast updates with respect to uncertainty management for intermittent generation and load, and principles for grid model updates in intraday;
 - (i) Articles 40 to 44, which are dedicated to rules on governance, coordination and information exchange with RSCs, data quality, monitoring and probabilistic risk assessment;

- (j) Articles 45 to 47, which include the implementation timeline, definition of common hours and provisions on language;
- (k) Annex I, which includes the influence thresholds, a description in words of the influence computation method and mathematical descriptions for the computation of power flow influence for grid elements and significant grid users, as well as voltage influence computation for grid elements.

5. SUMMARY OF THE OBSERVATIONS RECEIVED BY THE AGENCY

5.1. Initial observations of all regulatory authorities

- (17) According to the letter of the Chair of the all Energy Regulators Forum of 21 December 2018, all regulatory authorities jointly identified shortcomings in the Proposal.
- (18) All regulatory authorities identified that not all provisions in Article 75 of the SO Regulation were addressed sufficiently in the Proposal (see paragraph (8) above). Also, the level of harmonisation and the time plan for implementation were lacking ambition.

5.2. Consultation of all regulatory authorities and TSOs

- (19) During the close cooperation between the Agency and all regulatory authorities and TSOs as detailed in paragraph (12) above, and beyond the above-mentioned issues, the Agency:
 - (a) discussed the comments received during the public consultation (see section 5.3.) and the views of all regulatory authorities expressed in the aforementioned non-paper;
 - (b) with respect to regional coordination, including on dynamic aspects for influence assessment and coordinated regional operational security assessments, further discussed the rules for TSOs' coordination and the involvement of RSCs;
 - (c) with respect to the cross-border relevance of network elements on which operational security violations need to be managed in a coordinated way, further discussed the principle for their identification and the process for their determination;
 - (d) with respect to remedial actions, further discussed their design, cross-border relevance, coordination process, as well as, cost sharing and inclusion in the individual grid models;
 - (e) with respect to cross-regional coordination, including the definition of overlapping zones, further discussed cross-border relevant network elements and cross-border relevant remedial actions;
 - (f) regarding the development of the methodology on common probabilistic risk assessment taking full account of the provisions of the SO Regulation, discussed the interplay between the deterministic and probabilistic coordinated security assessment

and risk management, as well as, the aspects on the reporting on the development progress.

5.3. Public consultation

(20) Answers to the public consultation (see paragraph (11) above) are compiled and evaluated in Annex II. They shed light on stakeholders' concerns regarding some of the above-mentioned issues and in particular on the questions, as well as, initial views and proposals made by the Agency:

(a) regarding the suggested approach for all TSOs and RSCs, with the support of the European Network of Transmission System Operators for Electricity ('ENTSO-E'), to set up the infrastructure required to collect and process the data necessary to inform the development of the common operational probabilistic coordinated security assessment and risk management, the majority of stakeholders supported this approach;

(b) regarding the handling of uncertainties in long-term studies, the majority of stakeholders agreed with the Agency's view that local scenarios, as prepared by individual TSOs, need to be thoroughly verified, and in turn issues with regional impact addressed, by TSOs in a coordinated way at a regional level and with the involvement of the RSC(s) in order to optimise the use of remedial actions. The majority of stakeholders also supported the involvement of RSCs in the assessment of regional and cross-regional effects in additional scenarios;

(c) regarding the assessment of cross-regional influence of remedial actions, the majority of stakeholders agreed with the views of the Agency that the Proposal might lead to inefficiencies or even risks to the system operation and suggested a cross-regional coordination by the RSCs;

(d) regarding the implementation of the forecast approach for renewable energy sources (hereafter 'RES'), the majority of stakeholders were in favour of reducing the implementation time for Article 37 of the Proposal to twelve months as forecasts of intermittent generation are state-of-the-art and available widely on the market.

6. ASSESSMENT OF THE PROPOSAL

6.1. Legal framework

(21) Articles 5(1), 5(2) and 6(2)(c) of the SO Regulation require all TSOs to provide an agreed proposal for a methodology for coordinating operational security analysis in accordance with Article 75(1) of the SO Regulation to all Regulatory authorities for their approval.

(22) Article 75 of the SO Regulation sets out the requirements regarding the development of a proposal for a methodology for coordinating operational security analysis and its

implementation. In this context, all TSOs are required to submit a proposal for the CSAM no later than twelve months after entry into force of the SO Regulation. TSOs need to consult the Proposal in accordance with Article 11 of the SO Regulation.

- (23) Article 4 of the SO Regulation lists the objectives and regulatory aspects which are relevant for this Proposal. Nearly all objectives are covered by the Proposal, apart from the objectives on load frequency control which are out of scope for the Proposal. The regulatory aspects on transparency and responsibility assigned to the relevant TSO concerning system security are covered in the Proposal as well.
- (24) Article 20 of the SO Regulation introduces remedial actions as a means to manage operational security violations. Remedial actions that will relieve operational security violations are part of the outcome of the coordinated operational security analysis.
- (25) Articles 21 and 22 of the SO Regulation set out the principles for activating and coordinating remedial actions, as well as the criteria for selecting the appropriate remedial actions and introduce categories for remedial actions. These principles, criteria and categories need to be respected during the coordinated operational security analysis.
- (26) Article 23 of the SO Regulation covers preparation, activation and coordination of remedial actions. Any impact of remedial actions needs to be measured not just inside a TSOs' control area, but also outside it, and all concerned TSOs need to be informed about the impact. This is the legal basis for coordinating and establishing the impact of remedial actions.
- (27) Article 33 of the SO Regulation covers the establishment of the list of contingencies, which sets the basis for the probabilistic risk assessment of such contingencies.
- (28) Article 43 of the SO Regulation covers the structural data exchange between TSOs and distribution system operators ('DSOs') within the TSO's control area, and sets some principles for determining the observability area and the inclusion of non-transmission-connected distribution system into it.
- (29) Article 22 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter 'CACM Regulation') lays down rules for a reliability margin to be taken into account when assessing and dealing with uncertainties of generation and load.
- (30) Article 70 of the SO Regulation contains provisions for the development of the methodology for building day-ahead and intraday common grid models.
- (31) Article 72 of the SO Regulation lays down the rules for the timeframes of day-ahead and intraday coordinated operational security analyses, as well as the rules on how to simulate contingencies in the N-situation and in the (N-1)-situation.

- (32) Article 76 of the SO Regulation lays down the requirements for the proposal for regional security coordination which will be established by TSOs of the different capacity calculation regions ('CCRs') after the approval of the Proposal.
- (33) Article 77(3) of the SO Regulation sets out the tasks that RSCs need to coordinate inside regions and between regions.
- (34) Article 78 of the SO Regulation lays down the rules on regional operational security coordination, especially on sharing the updated contingency list established in accordance with Article 75(1) of the SO Regulation, with the relevant RSCs.
- (35) Article 84(3) of the SO Regulation states that the methodology developed to assess the relevance of assets for outage coordination shall be consistent with the methods developed pursuant to Article 75(1)(a) of the SO Regulation.
- (36) As a general requirement, Article 6(6) of the SO Regulation requires that the proposal for terms and conditions or methodologies include a proposed timescale for their implementation and a description of their impact on the objectives of the same Regulation.

6.2. Assessment of the legal requirements

6.2.1. Assessment of the requirements for the development and for the content of the Proposal

6.2.1.1. Development of the Proposal

- (37) The Proposal fulfils the requirements of Articles 5(1), 5(2) and 6(2)(c) of the SO Regulation, as all TSOs jointly developed and submitted the agreed Proposal for approval to all regulatory authorities.
- (38) The Proposal partly fulfils the requirements of Article 75(1) of the SO Regulation, as the Proposal, while submitted by most TSOs by 14 September 2018, which is within twelve months after entry into force of the SO Regulation, was submitted by the last TSO on 1 October 2018, which is in breach of the twelve months submission deadline. The Proposal was subject to consultation as described in Section 2.1 above.

6.2.1.2. Required content of the Proposal

- (39) The Proposal meets the requirements of Article 75(1)(a) of the SO Regulation as it includes a method for assessing network elements to be part of a TSO's observability area and influence thresholds to constitute external contingencies.
- (40) The Proposal partly fulfils the requirements of Article 75(1)(b) and Article 75(5) of the SO Regulation as it includes an approach for common risk assessment concerning the treatment of exceptional contingencies with the associated permanent occurrence

increasing factor. However, rather than prescribing for a clear plan for the development of operational probabilistic coordinated security assessment and risk management, the Proposal only prescribes for the identification of data that needs to be collected in order to prepare for a potential future use of operational probabilistic coordinated security assessment and risk management by 31 December 2019, and for reporting on the progress on operational probabilistic coordinated security assessment and risk management by 31 December 2021.

- (41) The Proposal partly fulfils the requirements of Article 75(1)(c) and Article 75(6) of the SO Regulation and contains principles for assessing and dealing with uncertainties on load and generation. Concerning the long-term studies, the Proposal does not fully demonstrate that the local scenarios, as prepared by individual TSOs pursuant to Article 22 of the Proposal, will be thoroughly verified, and in turn issues with regional impact addressed, by TSOs and RSC(s) at a regional level in order to optimise the use of remedial actions. Nevertheless, concerning the day-ahead and intraday timeframes, the provisions of Articles 23, 24, 37, 38 and 39 of the Proposal constitute the harmonised maximum level of uncertainties agreed at European level.
- (42) The Proposal partly fulfils the requirements of Article 75(1)(d) of the SO Regulation as it includes to some extent a process for coordination and exchange of information between RSCs. However, relevant information is not always exchanged with the RSCs (e.g. concerning the TSO's observability area in Article 5 of the Proposal or multi-lateral TSOs' agreements pursuant to Article 12 of the Proposal) and the process for the coordination is focused on cross-RSC coordination (Articles 27 and 30(2) of the Proposal) rather than on coordination between the CCRs for which common methodologies for coordinated redispatching and countertrading are developed pursuant to Article 35 of CACM Regulation.
- (43) The Proposal fulfils the requirements of Article 75(1)(e) of the SO Regulation in defining the role of ENTSO-E as a platform for TSOs to coordinate and use its tools for implementing the CSAM.
- (44) The Proposal fulfils the provisions of Articles 75(2) and (3) of the SO Regulation as the influence computation method in Article 4 and Annex I of the Proposal address connectivity status, electrical values, common influence thresholds and scenarios to take into account generation patterns, including outages of assets, as well as cross-border electricity exchanges.
- (45) The Proposal fulfils the requirements of Article 75(4) of the SO Regulation as it includes provisions on:
 - (a) common contingency influence thresholds based on electrical values;

- (b) the range for contingency thresholds to minimise the risk that contingencies, which have an effect on another TSOs control area, are included in the list of external contingencies;
 - (c) a risk assessment for such situations with various conditions using generation level and load pattern, exchange levels and asset outages.
- (46) The Proposal fulfils the requirement of Article 84(3) of the SO Regulation as the influence computation method to establish the elements for the observability area and the contingency influence thresholds is the same as in the proposal for the RAOCM.

6.2.1.3. Proposed timescale for implementation

- (47) The Proposal fulfils the requirements of Article 6(6) of the SO Regulation with regard to the proposed timescale for implementation of the CSAM.
- (48) Former Article 45 of the Proposal lays down detailed implementation deadlines for the different Articles of the Proposal.
- (49) Former Article 45(2) of the Proposal provides that, in general, six months after the adoption of the CSAM, all TSOs and RSCs shall apply the requirements of the Proposal.
- (50) Yet, the Agency finds it necessary to amend paragraph (3) of this Article to reduce the time for the implementation of Article 37 of the Proposal to twelve months after the adoption of the CSAM. The majority of stakeholders advocated for the reduction of the implementation time for forecasts of intermittent generation. Recitals (3) and (5) of the SO Regulation address the objective of RES integration, which is relevant as well for the CSAM. In order properly and without discrimination to address the constant changes of RES integration into the network, the timing of the implementation of forecasts for intermittent generation has to be adapted accordingly. This will help timely assess the operational security in the interconnected system due to changes in generation.
- (51) Concerning the adequacy of the cross-regional day-ahead coordinated operational security assessment, the Agency finds it necessary to introduce in paragraph (14) of former Article 45 of the Proposal the reference to the reporting on the opportunities to start earlier and to reduce the total length of the process on coordinated security analysis because it was missing.
- (52) Additional changes in different paragraphs of this Article were made when RSCs have to apply provisions of the CSAM. This is necessary to take into account the timelines for the establishment of RSCs. Only when the concerned RSCs are fully established in accordance with Article 76 of the SO Regulation and TSOs have appointed RSCs to perform the tasks pursuant to Article 77 of the SO Regulation RSCs will be able to fulfil these tasks.

- (53) The Agency has defined the above mentioned timescales after consultation with all TSOs, regulatory authorities and market participants. The Agency understands that this timescale increases the workload for TSOs, but does not create an unnecessary burden for them.

6.2.1.4. Description of the expected impact on the objectives of the SO Regulation

- (54) The recitals in the Proposal provide a description of the expected impact of the methodology on the objectives of the SO Regulation. All the relevant objectives set in Article 4 of the SO Regulation are addressed in the recitals, apart from the objective on the common load-frequency control process in accordance with Article 4(1)(c) of the SO Regulation, which is out of scope of the CSAM.

6.2.2. Assessment of the definitions

- (55) Besides the additional definitions, which are explained in the following sections, the Agency added two definitions which are needed for clarity. These are the definitions for 'network element' and 'connecting TSO'.

6.2.3. Assessment of the requirements for the influence computation

- (56) Some changes to Articles 3 to 6 of the Proposal were necessary to clarify the coordination between TSOs and DSOs on data provision obligations and to take full account of the existing legal requirements on data collection, processing and exchange.
- (57) Also, in paragraphs (9) and (11) of Article 3 of the Proposal, the Agency removed unclear references to 'own grid model' and provided a clearer wording to address the issue of complementing individual grid models with network elements connected to DSO/closed-DSOs ('CDSO) networks. Also, paragraph (7) of Article 3 of the Proposal was deleted because it was superfluous and already covered by the provisions in paragraph (6) of Article 3 of the Proposal.
- (58) Changes in Article 4 of the Proposal on dynamic aspects for influence assessment were made to align the wording with the respective Articles 38 and 39 of the SO Regulation and to keep the consistency between the Proposal and the SO Regulation. Also, consistency with Article 75(2)(a) of the SO Regulation was established by using the wording 'connectivity status or electrical values' to clarify what TSOs will assess with dynamic studies.
- (59) Yet, the Agency made changes in Articles 4(1), 4(7) and 4(8) of the Proposal also to include the RSC(s) in the information exchange in accordance with Article 75(1)(d) of the SO Regulation and because of the requirement to coordinate on the remedial actions in accordance with Article 21(1) of the SO Regulation. This coordination includes the remedial actions aiming to ensure the dynamic stability referred to in Article 39(1) of the SO Regulation. In addition, in Article 4(1) of the Proposal the information exchange is necessary to allow RSC(s) to be compliant with their tasks stemming from Commission

Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration (hereafter 'ER Regulation'). Especially, the regional coordination in accordance with Article 6(1) of the ER Regulation requires consultation with RSCs to assess the consistency of measures, within the entire synchronous area, of system defence plans, pursuant to Article 11, and restoration plans, pursuant to Article 23 of the same Regulation. In order for RSCs to understand the dynamic behaviour (frequency and voltage-wise) of the system users, and the interconnected power system in general, they need to be informed of the models, studies and criteria defined by the TSOs to be used for the assessment of influence of the connectivity status and electrical values of the network elements, power generating modules and demand facilities located in transmission-connected DSOs/CDSOs networks. For example, TSOs' dynamic studies provide for the necessary information on the behaviour of the system (or of its parts, such as transmission-connected DSOs/CDSOs networks) during stressed situations (emergency and restoration states). In accordance with Article 6(2)(c) of the ER Regulation, regional common mode failures to be assessed by the RSC(s). In complying with this obligation, RSC(s) will need to assess the aforementioned TSOs' dynamic studies and identify potential common mode failures, such as adverse behaviour of a large number of distribution-connected system users during abnormal frequency events.

- (60) The Agency also included the RSC(s) in the information exchange in Article 5(5) of the Proposal so as to allow for an efficient exchange of information in accordance with Article 75(1)(d) of the SO Regulation, knowing that the threshold values as selected by TSOs will in any way be published by ENTSO-E at some point. The Agency added a point (a) in Article 5(6) to the Proposal to include all transmission system elements of a TSO in its observability area. This was missing in the Proposal, but is absolutely essential for defining a TSO's observability area.
- (61) The Agency found it necessary to amend Article 5(11) of the Proposal with regard to the cycle for quantitative re-assessment with the computation method. A three-year cycle for the re-assessment is more compliant with the objectives of the SO Regulation concerning transparency, according to Article 4(2)(b) thereof, and non-discrimination, according with Article 4(2)(a) thereof. Recitals (3) and (5) of the SO Regulation address the objective of RES integration which is relevant as well for the CSAM. In order properly and without discrimination to address the constant changes in the level of RES integration into the network, the cycle of re-assessment has to be adapted accordingly. This will help assess the observability area regularly and synchronise the changes happening due to RES commissioning.
- (62) A new paragraph (13) was added in Article 5 of the Proposal to inform the RSC(s) about the scope of TSOs' observability area in accordance with Article 75(1)(d) of the SO Regulation.

6.2.4. Assessment of the requirements for contingency list and cross-control area consequences

(63) The Agency made minor changes to Article 11 of the Proposal to clarify its meaning and improve readability. A new paragraph (2) was added in Article 12 of the Proposal to include provisions related to the analysis of cross-control area effects of contingencies that do not need to respect the (N-1) criterion by relevant RSC(s) and to report to TSOs.

6.2.5. Assessment of the requirements for coordination of remedial actions and between RSCs

(64) The Proposal defines some high level principles for regional coordination of remedial actions. In this regard, it clearly distinguishes between cross-border impacting remedial actions (measuring physical effect on interconnectors as defined in Article 15(1) of the Proposal) and remedial actions of cross-border relevance (as determined in accordance with Article 35 of the CACM Regulation). The latter include a regional coordination and optimisation of redispatching and countertrading, whereas the former may also include coordination of other remedial actions (not only redispatching and countertrading). The Proposal does not provide for any regional coordination and optimisation for cross-border impacting remedial actions. Thereby, the Proposal only covers the remedial actions whose scope is not already covered in the methodology pursuant to Article 35 of the CACM Regulation and proposes a quasi-coordination for such remedial actions with the central role of a TSO activating those actions coordinating with the TSOs being affected by such actions and without a clear central role for the RSC. The separation of remedial actions into cross-border impacting remedial actions and cross-border relevant is also evident from the definition of the 'agreed remedial action', i.e. a remedial action with cross-border relevance according to Article 35 of the CACM Regulation or a cross-border impacting remedial action. The Proposal does not include any overlap or coordination between the two categories.

(65) The Agency deems this proposed approach not compliant with the SO Regulation because of two main reasons. First, the SO Regulation does not allow to separate remedial actions that need to be managed in a coordinated way into two separate categories with different levels of coordination. In particular, Articles 21(1) and 76(1)(b) of the SO Regulation require that all remedial actions that need to be managed in a coordinated way be used to address operational security violations that need to be managed in a coordinated way and that this coordination ensure the identification of the most effective and economically efficient remedial actions. The Proposal would clearly legitimise two separate coordination procedures which would not be able to identify the most effective and economically efficient remedial actions to address operational security violations that need to be managed in a coordinated way.

(66) Second, the Proposal does not clearly specify that the coordination of cross-border impacting remedial actions is performed at regional level and the central coordination role is not given to the RSC as required by Articles 77 and 78 of the SO Regulation.

- (67) Therefore, the Agency deems that the concept of cross-border relevant redispatching and countertrading actions and cross-border relevant congestions defined within the methodology referred to in Article 35 of the CACM Regulation cannot be separated from the concept of operational security violations and remedial actions that need to be managed in a coordinated way pursuant to Articles 21 and 76 of the SO Regulation, since all remedial actions that need to be managed in a coordinated way (including redispatching and countertrading) are required to be coordinated in one single coordination and optimisation process and not in two separate and materially different coordination procedures. With this respect, the requirement in Article 76(1) of the SO Regulation that the methodology pursuant to Article 76(1) of the SO Regulation shall *'complement where necessary the methodologies developed in accordance with Articles 35 and 74 of the CACM Regulation'* can only be consistently implemented if the methodology pursuant to Article 76(1) of the SO Regulation encompasses the full scope of the methodologies pursuant to Articles 35 and 74 of the CACM Regulation and includes additional elements specifically required by the methodology pursuant to Article 76(1) of the SO Regulation. Any other implementation of the reference to *'complement where necessary'* would not be compliant with Articles 21 and 76 of the SO Regulation.
- (68) For the reasons above, the Agency replaced all references to the cross-border impacting remedial actions with the references to cross-border relevant remedial actions in order to ensure full consistency with the methodologies developed in accordance with Articles 35 and 74 of the CACM Regulation.
- (69) As the Proposal was frequently referring to the designing of remedial actions, the Agency changed Article 14 of the Proposal into *'designing of remedial actions'* in order to explain the process by which the remedial actions are being designed. In this process, TSOs identify all remedial actions that are available to address operational security violations as a first necessary step in the complete coordination process. In that context, the Agency also defined that a designed remedial action can also encompass a combination of remedial actions. This change was introduced in order to increase the clarity of the CSAM and to avoid continuous references to *'remedial action or sets of remedial actions'*. The definition *'set of remedial actions'* was therefore deleted from the Proposal. As fixing combinations of remedial actions could significantly restrict the identification of the most effective and economically efficient remedial actions, the Agency provided specific conditions and rules for defining combinations of remedial actions.
- (70) The Agency made significant changes in Article 15 of the Proposal. The first set of changes aims at clarifying the identification of cross-border relevant network elements, which was implicitly addressed in Articles 20(1) and (2) of the Proposal. The Agency moved Articles 20(1) and (2) of the Proposal into Article 15. To this end, the title of Article 15 was changed to *'identification of cross-border relevant network elements and remedial actions'*. Articles 20(1) and (2) of the Proposal established a minimum principle whereby cross-border relevant network elements are at least critical network elements as established in capacity calculation methodology. This rule does not properly reflect the requirement to identify all network elements where operational security violations need

to be managed in a coordinated way. This is because the critical network elements should respect certain principles, which effectively may exclude certain network elements from becoming critical network elements, however these network elements may still be cross-border relevant, for example when they are significantly impacted by loop flows from neighbouring bidding zones. To address this problem, the Agency is of the opinion that the notion of cross-border relevance should include all network elements where the percentage of flows resulting from exchanges outside the TSO control area where such network element is located is significant. As such, this principle requires deeper analyses by TSOs in a CCR. Therefore, the Agency replaced the proposed principle (i.e. at least critical network elements) with a more comprehensive high level principle to harmonise the identification of cross-border relevant network elements across CCRs. The latter should result in the cross-border relevant network elements to comprise all network elements above certain voltage level except those network elements for which all TSOs in a CCR agree that they are not cross-border relevant. The Agency also understands that including too many network elements in the coordination does not risk a loss of economic efficiency or operational security in regional coordination. However, including not enough network elements would indeed entail such risk. For this reason, the principle for the identification of cross-border relevant network elements as proposed by the Agency is considered as adequate.

- (71) With regard to the identification of cross-border impacting remedial actions in Article 15 of the Proposal, the Agency replaced this notion with the notion of cross-border relevant remedial actions due to reasons described in paragraphs (67) and (68) above. The Agency made significant changes to this article, but mainly with the aim to clarify this process and avoid a risk of disagreement. In particular, the Agency clarified the conditions and rules for the application of quantitative and qualitative approaches to identify the cross-border relevant remedial actions. Specifically, the remedial action influence factor applied in the case of the quantitative approach has been linked to the physical impact on cross-border relevant network elements. With this regard, the Agency also specified the default threshold for the remedial action influence factor unless a different threshold is justified in the methodology pursuant to Article 76 of the SO Regulation. The Agency also removed the references to curative remedial actions from Article 15 of the Proposal, since the assessment of cross-border relevance does not require to distinguish between curative and preventive remedial actions.
- (72) The Agency introduced minor changes to Article 16 of the Proposal to improve clarity and readability as well as to reflect the new definition of cross-border relevant remedial action or 'XRA' and the clarifications on the application of the qualitative and quantitative approach to identify the cross-border relevance of remedial actions as explained in the previous paragraph. Article 16(1)(c) of the Proposal was deleted because the principles concerning the quantitative and qualitative approach were already included in the amended Article 15. The wording on designing remedial actions was replaced by preparing remedial actions in order to reflect the differences between the different stages of remedial actions eventually leading to their activation and the clarification of the design of remedial actions in the amended Article 14 of the Proposal, which means the

identification of the resources available to be used as remedial actions as defined in the amended Article 2 of the Proposal.

- (73) In Article 17 of the Proposal, the Agency amended paragraphs (4) and (5), and introduced an additional paragraph (7). These paragraphs provide high-level principles for the acceptance and rejection of the proposed cross-border relevant remedial actions. Namely, the Agency clarified the conditions under which TSOs accept and implement the recommended remedial actions. Here, the Agency distinguished between the process and conditions by which the connecting TSOs implement the recommended remedial actions and the process and conditions by which the affected TSOs accept or refuse remedial actions. With this regard, the Agency provided references in the amended Articles 17(1), (5), (6) and (7) to the applicable requirements in the SO Regulation and other relevant Union legislation, including a legal act adopted following the proposed regulation of the European Parliament and of the Council on the internal electricity market (recast)⁴. Other additions, like paragraph (2) and the last sentences in paragraphs (3) and (4) address and detail the coordination with RSCs including on the respect of voltage and dynamic limits in the activation of cross-border relevant remedial actions. Also, this article no longer distinguishes between restoring and curative remedial actions as this is not needed for the determination of the cross-border relevance.
- (74) The Agency added the requirements on the exchange of best forecast on possible cross-border relevant remedial actions available for coordination in paragraphs (2) and (3) of Article 18 of the Proposal. These changes were introduced in order to allow for the identification of the most economically efficient remedial actions in accordance with Articles 21(2)(a) and 76(1)(b)(iii) of the SO Regulation. In particular, the Agency also added the requirements on the exchange of information related to prices or costs of remedial actions as, without them, the identification of the most economically efficient remedial actions would not be possible. The required information shall be in the form of prices and costs at which the remedial actions shall be settled, or, in case these cannot be established, in the form of expected or forecasted prices or costs of remedial actions. Other changes to this article help increase the readability and clarify the meaning.
- (75) Article 19 of the Proposal was amended mostly due to changes in the wording in the preceding articles of the Proposal and in order to reflect prior changes on the definition of cross-border relevant remedial actions.
- (76) The Agency amended Article 20 of the Proposal for consistency with changes to Article 15 of the Proposal and for the reasons explained in paragraphs (64) to (68). The

⁴ See e.g. the European Parliament's legislative resolution on the proposal for a regulation of the European Parliament and of the Council on the internal electricity market (recast), http://www.europarl.europa.eu/doceo/document/TA-8-2019-0227_EN.html?redirect.

other changes only concern the wording in order to reflect the changes on cross-border relevant remedial actions.

- (77) In Article 21 of the Proposal, the Agency deleted the possibility for TSOs to include in the individual grid models also remedial actions with cross-border impact subject to non-coordination in paragraph (4) of this Article. This deletion was necessary because all cross-border relevant remedial actions should be identified via the coordinated operational security analysis. Also, the Agency added a new paragraph (5) in Article 21 of the Proposal to clarify that all remedial actions included in the individual grid models have to be clearly distinguishable from the injections and withdrawals established in accordance with Article 40(4) of the SO Regulation and the network topology without remedial actions applied.
- (78) Although Article 21 of the Proposal allows for relieving operational security limit violations identified during the local preliminary assessment by each TSO in accordance with Articles 21(3) and (4) of the Proposal, it is not complete since it does not specify, in accordance with Article 70(4) of the SO Regulation, how remedial actions are included in the day-ahead and intraday individual grid models and how they are clearly distinguishable from the injections and withdrawals established in accordance with Article 40(4) of the SO Regulation and the network topology without remedial actions applied. During its proceedings on the present methodology, the Agency invited TSOs to provide clarity with regard to this question, however TSOs were not able to address it and requested additional time to develop a proposal. However, such specification concerning remedial actions is an essential element for the present methodology and accordingly also for its approval. The Agency considers it necessary to condition the approval of the Proposal to the establishment of this specification. Given this conditionality, it is not relevant that Article 7 of the SO Regulation lays down the principles for amendments, where the Agency is not explicitly referred to as being entitled to request an amendment to the methodologies. The Agency therefore introduced, in paragraph (6) of Article 21 of the Proposal, a condition for all TSOs jointly to develop, no later than eighteen months after the adoption of the CSAM, a proposal for amendment of the CSAM in accordance with Article 7(4) of the SO Regulation. The proposal is to complement the CSAM with rules distinguishing between:
- (a) the up-to-date load and generation forecasts and network topology considered within the individual grid models, which are not aiming at addressing the expected operational security violations identified during the local preliminary assessment and are therefore not considered as remedial actions; and
 - (b) the expected generation and load, as well as network topology considered within the individual grid models, which are aiming at addressing the expected operational security violations identified during the local preliminary assessment and are therefore considered as remedial actions.

The eighteen months' deadline for development of this proposal was established in consistency with the deadline for another amendment established pursuant to Article 27 of Proposal and therefore allows TSOs to bundle all the amendment proposals into one approval package.

- (79) Changes introduced in Articles 22 to 25 of the Proposal are minor and aim at improving the clarity and readability of the Proposal. Also, see section 6.2.6 on changes due to stakeholders' views.
- (80) Articles 27 and 30 of the Proposal provide the general principles for coordination of operational security violations and remedial actions across regions and RSCs. The Proposal established the notion of overlapping zones consisting of network elements where regions and RSCs need to coordinate in order to address the operational security violations on them.
- (81) Articles 27 and 30 of the Proposal are very confusing and unclear. For this reason, the Agency introduced many amendments to these articles to provide for clarity and legal certainty. In particular, the issue of cross-regional coordination is one of the main areas of the CSAM which requires specific attention. This is because this issue cannot be addressed or further explained in the methodology pursuant to Article 76(1) of the SO Regulation, which covers only the regional (i.e. CCR) scope. To avoid the risk that cross-regional coordination fails due to vague and unclear requirements in the CSAM, the Agency introduced major changes to these two articles as specified below.
- (82) As a general approach, the Agency amended the Proposal in two ways. First, by providing high-level principles for cross-regional coordination. Second, based on these high-level principles, by requiring the TSOs to develop detailed rules and submit those rules for regulatory approval in the form of an amendment to the CSAM. This approach takes into account the fact that the exact problems related to cross-regional coordination are not yet fully known at the time of this Decision and TSOs need first to gain some experience related to regional coordination. Nevertheless, the Agency finds it valuable to provide some guiding principles for these detailed rules, which will facilitate the discussions among TSOs and ease their development.
- (83) Taking into account the above approach, the Agency amended Article 27 of the Proposal to specify:
- (a) the high-level principle for defining the overlapping zones based on the estimation of the physical impact of different CCRs on a concerned network element. Thus, when the physical flows on network elements are significantly impacted by more than one CCR, such network elements shall be included in the overlapping zone;

- (b) the high-level principle for identifying overlapping cross-border relevant remedial actions using the same principles as for identifying cross-border relevant remedial actions at regional level;
 - (c) the high-level principle for the process and sequence of interaction between regional and cross-regional coordination. This principle specifies that, first, the operational security violations on overlapping XNEs are to be addressed at the regional level and, subsequently, the residual violations are to be addressed at cross-regional level;
 - (d) the high-level principle for sharing the costs of the overlapping XRAs activated to address the residual operational security violations by assigning the shares of costs to individual overlapping XNEs and to individual impacting CCRs.
- (84) Based on the high-level principles established in the amended Article 27 of the Proposal and based on the approach described above, the Agency provided an obligation for TSOs to develop detailed rules for the implementation of these principles and to propose them as an amendment to the CSAM. The Agency provided an eighteen-month deadline for TSOs to develop these rules. The deadline was established by taking into account that TSOs need to gain some understanding of the regional rules for the coordination of remedial actions in accordance with the methodologies pursuant to Article 76(1) of the SO Regulation. As by eighteen months after the adoption of this Decision, these regional methodologies are expected to be developed and approved, the Agency considers that this is a sufficient time for TSOs better to understand the problems related to regional coordination and which problems require regional vs cross-regional coordination. The approach also allows the use at cross-regional level of the principles established at regional level.
- (85) Finally, the Agency clarified in Article 27 of the Proposal that TSOs should not provide a single remedial action to be used in parallel within several coordinated regional operational security analyses as proposed in Article 30(3) of the Proposal. This, in the Agency's view, should be prohibited as it would hamper the applicability of regional optimisation and coordination of remedial actions. Therefore, the Agency clarified in Article 27 that in cases a remedial action can be used in two or more regions, the concerned TSO shall decide in which regional coordinated security analysis such a remedial action shall be used.
- (86) Article 30 of the Proposal was also subject to some changes introduced by the Agency. Everything therein related to the TSOs' proposal on cross-RSC impacting remedial actions was deleted and replaced by corresponding references to cross-border relevant remedial actions. The provision identifying overlapping remedial actions and remedial actions to be used for several regions were amended and moved to Article 27 as described above. Paragraph (4) of this Article was amended to provide further clarity on the cross-regional coordination process. Finally, a new paragraph (4) was introduced in Article 30

of the Proposal) to specify the process by which the costs of activated overlapping XRAs are shared in three stages:

- (a) first, the total costs of overlapping XRAs are shared between the overlapping XNEs;
- (b) second, the costs attributed to an overlapping XNE are shared between the impacting CCRs;
- (c) third, the costs attributed to an overlapping XNE for the part assigned to a specific CCR are shared based on regional rules for sharing such costs established in accordance with Article 76(1)(b)(v) of the SO Regulation and Article 74(1) of the CACM Regulation.

(87) The specification of the above process is needed, since such rules cannot be established in the regional methodologies in accordance with Article 76(1)(b)(v) of the SO Regulation and Article 74(1) of the CACM Regulation.

6.2.6. Assessment of the requirements for local scenarios in long-term studies

(88) In Article 22 of the Proposal, changes were introduced to take account of stakeholders' views and to clarify the handling of local scenarios in long-term studies. In paragraphs (4) and (5) of Article 22 of the Proposal, RSC(s) were added to coordinate with and help the building of additional scenarios. The reason for this change is that RSC(s) need to have access to all relevant information in order to fulfil the tasks of operational security coordination for different timeframes, common grid model building and regional outage coordination. Involving RSC(s) in the tasks referred to in Article 22 of the Proposal secures this access to relevant information and that any cross-regional effects are identified and dealt with accordingly in a coordinated way.

(89) In addition, paragraph (6) was added to Article 22 of the Proposal to clarify the usage and handling of these additional grid models which originate from local additional scenarios.

(90) The addition of paragraphs (7) and (8) to Article 22 was necessary to provide that RSC(s) analyse the potential cross-regional impact of additional scenarios and to clarify the requirement on reliability margins from the CACM Regulation. Article 22 of the CACM Regulation lays down the rules for reliability margins to be taken into account during capacity calculation. These margins cannot be included in analysing operational security limits during operational planning activities. A reference to Article 11 of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation was added to be consistent in the different timeframes.

6.2.7. Assessment of the requirements for uncertainty management on load and intermittent generation

(91) Articles 37 and 38 of the Proposal deal with uncertainty handling in forecasting intermittent generation and load. The Agency made minor changes in the wording to clarify it and account for different current practices amongst TSOs. TSOs are not required to establish intermittent generation forecasts themselves, but can rely on third parties to provide them with the required forecasts.

6.2.8. Assessment of the requirements for risk assessment

(92) In the Proposal, all TSOs did not fully integrate the requirements of Article 75(1)(b) and 75(5) of the SO Regulation on common operational probabilistic coordinated security assessment and risk assessment. Taking this into account, the Agency introduced changes in former Articles 43 and 45(14) of the Proposal to set up a stepwise approach for introducing probabilistic principles into TSO operations on risk assessment. Therefore, all TSOs have to submit an amendment to the CSAM by 31 December 2027 with a methodology on common probabilistic risk assessment, which will form an annex to the CSAM.

(93) In addition to the stepwise approach on common operational probabilistic coordinated security assessment and risk assessment, the Agency changed the reporting provisions, the requirements on data process and the time plan for implementation, taking account of stakeholders' views as presented in Annex II to this Decision. Changes to the expected content of the report on the progress achieved on operational probabilistic coordinated security assessment and risk assessment were necessary to account for the introduction of probabilistic elements in TSOs' operations. The report should serve as a support to the development of the common operational probabilistic coordinated security assessment and risk assessment.

(94) The Agency got wide support from stakeholders for the proposed approach on collecting data and processing it for common operational probabilistic coordinated security assessment and risk assessment. In order to be consistent with Title II of the SO Regulation on data exchange, a reference in former Article 43(3) of the Proposal was added to Article 40 of the SO Regulation. The TSOs have to collect and process the data and take account of already existing decisions on the methodologies for data collection.

(95) The report has to be developed biennially by 31 December instead of one report by 31 December 2021 only on the progress achieved in Europe on operational probabilistic coordinated security assessment and risk management. This is to allow for the regulatory authorities to monitor the progress on the implementation, and potentially intervene if so required.

(96) The deadline of 31 December 2027 for the development of the methodology on common probabilistic risk assessment takes account of the difficulties associated with introducing

common operational probabilistic coordinated security assessment and risk assessment as raised by the TSOs.

- (97) Article 7 of the SO Regulation lays down the principles for amendments, where the Agency is not explicitly referred to as being entitled to request an amendment to the methodologies. However, this is not relevant in the present case. Article 75(1)(b) of the SO Regulation specifically requires a probabilistic approach for risk assessment, which was also expressed by all regulatory authorities in their non-paper on the CSAM. In addition to the TSOs' proposal only to collect the necessary data for the future use of a probabilistic approach, the Agency introduced the requirement for all TSOs to develop a common probabilistic risk assessment by 31 December 2027. This deadline allows for a stepwise introduction, starting nine months after the adoption of the CSAM with a data collection process taking account of the requirements of Article 40(5) of the SO Regulation.

6.2.9. Assessment of the requirements for consultation, transparency and stakeholder involvement

6.2.9.1. *Consultation and involvement of stakeholders*

- (98) When drafting the Proposal, all TSOs aimed to address the requirements of Article 11 of the SO Regulation regarding the involvement of stakeholders.
- (99) As indicated in paragraph (5) above, all TSOs fulfilled the requirements of Article 11 of the SO Regulation, since stakeholders were consulted on the draft Proposal pursuant to Article 11(1) of the SO Regulation. This involvement took place during a public consultation, which ran from 26 February 2018 until 6 April 2018. In addition, all regulatory authorities were regularly informed and consulted pursuant to Article 11(1) and (2) of the SO Regulation. The justifications regarding the consideration given to the views expressed by stakeholders during the public consultation in the drafting of the Proposal were provided in a separate document dated 10 July 2018 and submitted to all regulatory authorities.

6.2.9.2. *Reporting, monitoring, information exchange and data quality*

- (100) The Agency added paragraph (7) to Article 6 of the Proposal to clarify a reporting obligation for ENTSO-E in the scope of Article 17 of the SO Regulation on any interoperability issues stemming from different external contingency threshold values selected by all TSOs. ENTSO-E shall assess the interoperability first and include any findings into the reporting obligations in accordance with Article 17 of the SO Regulation.
- (101) Article 41 was added to the Proposal so as to collect in one place and clarify the data exchange obligations for the RSCs and TSOs. The data exchange obligations between TSOs and the relevant RSC(s) ensure the required data exchange for the coordination and execution of RSC(s) tasks as stipulated in Articles 75, 77 and 78 of the SO

Regulation. In that way, the obligations can be found in one place and need not be looked up separately in different articles.

- (102) Former Article 41 of the Proposal on data quality assessment has been changed to make the establishment of data quality management provisions obligatory by a fixed date of 1 January 2023. The data in accordance with Title 4 of the Proposal contains information on forecasts for load and intermittent generation as well as update frequency for individual grid models in accordance with Article 70 of the SO Regulation.
- (103) The Agency added a new paragraph (4) in former Article 42 of the Proposal to clarify the amendment process on the monitoring of regional coordination, in accordance with Article 7 of the SO Regulation, which was missing.
- (104) Former Article 44(3) of the Proposal was amended to clarify who will receive the report on adequacy of the cross-regional day-ahead coordinated operational security assessment process and to clarify expectations on the content. The timeline was slightly adjusted to 1 July to be consistent with other reporting obligations and to clarify the starting point.
- (105) In former Article 45 of the Proposal a new reporting obligation was included in paragraph (15) to account for the stepwise implementation approach on probabilistic risk assessment and to reflect the changes in the amended Article 44 of the Proposal towards probabilistic risk assessment. The addition of paragraph (14) in former Article 45 of the Proposal stems from changes in former Article 44 of the CSAM concerning the enlarged reporting obligations for TSOs. Paragraph (8) was also added in former Article 45 of the Proposal to reflect the changes in the amended Article 27 of the Proposal.

7. CONCLUSION

- (106) For all the above reasons, the Agency considers the Proposal in line with the requirements of the SO Regulation, provided that the amendments described in this Decision are integrated in the Proposal, as presented in Annex I.
- (107) Therefore the Agency approves the Proposal subject to the necessary amendments and to the necessary editorial amendments. To provide clarity, Annex I to this Decision sets out the Proposal as amended and approved by the Agency,

HAS ADOPTED THIS DECISION:

Article 1

The methodology for coordinating operational security analysis in accordance with Article 75 of Regulation (EU) 2017/1485 is adopted as set out in Annex I to this Decision.

Article 2

This Decision is addressed to all TSOs:

50Hertz Transmission GmbH,
Amprion GmbH,
AS Augstsprieguma tīkls,
Austrian Power Grid AG,
BritNed Development Limited (NL),
BritNed Development Limited (UK),
C.N.T.E.E. Transelectrica S.A.,
ČEPS a.s.,
Creos Luxembourg S.A.,
EirGrid Interconnector DAC,
EirGrid plc,
Eleclink Limited,
Elektroenergien Systemen Operator EAD,
Elering AS,
ELES, d.o.o.,
Elia System Operator SA,
Elia System Operator NV/SA,
Energinet.dk,
Fingrid Oyj,
HOPS d.o.o. (Hrvatski operator prijenosnog sustava),
Independent Power Transmission Operator S.A.,
Kraftnät Åland Ab,
Litgrid AB,
MAVIR ZRt,
Moyle Interconnector Limited,
National Grid Electricity Interconnector Limited,
National Grid Electricity Transmission plc,
National Grid IFA2 Limited,
Nemo Link Limited,
Polskie Sieci Elektroenergetyczne,
Red Eléctrica de España S.A.,
Rede Eléctrica Nacional, S.A.,
Réseau de Transport d'Electricité,
Slovenská elektrizačná prenosová sústava, a.s.,
Svenska kraftnät,
System Operator for Northern Ireland Ltd,
TenneT TSO B.V.,
TenneT TSO GmbH,
Terna Rete Elettrica Nazionale S.p.A.,

TransnetBW GmbH, and
VUEN - Vorarlberger Übertragungsnetz GmbH.

Done at Ljubljana on 19 June 2019.

- SIGNED -

For the Agency
Director ad interim
Alberto POTOTSCHNIG

Annexes:

Annex I – Methodology for coordinating operational security analysis in accordance with Article 75 of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation

Annex II – Evaluation of responses to the public consultation on the amendments of the proposal for coordinating operational security analysis

In accordance with Article 19 of Regulation (EC) No 713/2009, the addressees may appeal against this Decision by filing an appeal, together with the statement of grounds, in writing at the Board of Appeal of the Agency within two months of the day of notification of this Decision.

ACER Decision on CSAM: Annex I

**Methodology for coordinating operational
security analysis**

in accordance with Article 75 of Commission Regulation (EU) 2017/1485
of 2 August 2017 establishing a guideline on electricity transmission
system operation

19 June 2019

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Whereas

- (1) This document describes a Methodology for coordinating operational security analysis (hereafter referred to as 'CSAM').
- (2) The CSAM takes into account the general principles and goals set in Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as 'SO Regulation') as well as Commission Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management (hereafter referred to as 'CACM Regulation'), and Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity (hereafter referred to as 'Regulation (EC) No 714/2009'). The goal of the SO Regulation is to safeguard operational security, frequency quality and the efficient use of the interconnected system and resources. To facilitate these aims, it is necessary to enhance standardisation of operational security analysis at least per synchronous area. Standardisation shall be achieved through a common methodology for coordinating operational security analysis.
Article 75 of the SO Regulation constitutes the legal basis for the CSAM and defines several specific requirements that it should include at least: *(a) methods for assessing the influence of transmission system elements and significant grid users ('SGUs') located outside of a TSO's control area in order to identify those elements included in the TSO's observability area and the contingency influence thresholds above which contingencies of those elements constitute external contingencies; (b) principles for common risk assessment, covering at least, for the contingencies referred to in Article 33: (i) associated probability; (ii) transitory admissible overloads; and (iii) impact of contingencies; (c) principles for assessing and dealing with uncertainties of generation and load, taking into account a reliability margin in line with Article 22 of Regulation (EU) 2015/1222; (d) requirements on coordination and information exchange between regional security coordinators in relation to the tasks listed in Article 77(3); (e) role of ENTSO for Electricity in the governance of common tools, data quality rules improvement, monitoring of the methodology for coordinated operational security analysis and of the common provisions for regional operational security coordination in each capacity calculation region.*
- (3) With consideration of effective needs for standardisation, the CSAM also contains provisions: (i) to identify remedial actions which need to be coordinated between TSOs and to facilitate efficient remedial actions coordination at the regional level in accordance with the regional methodology to be developed later by all TSOs of a capacity calculation region pursuant to Article 76(1)(b) of the SO Regulation; (ii) to ensure efficient realisation of the operational security analyses for different timeframes under Articles 72 to 74 of the SO Regulation; and (iii) to ensure efficient and timely implementation of relevance assessment of outage coordination assets pursuant to the methodology under Article 84 of the SO Regulation and its necessary coordination with the common influence computation method under Article 75(1)(a) of the SO Regulation.
- (4) In accordance with Article 84(3) of the SO Regulation, the provisions of the CSAM, as regards the definition of the common influence computation method pursuant to Article 75(1)(a), are closely

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- aligned with the common influence computation method provided in the methodology for assessing the relevance of assets for outage coordination in accordance with Article 84(1) of the SO Regulation.
- (5) The CSAM contributes to the objectives of the SO Regulation concerning the maintaining of the operational security throughout the Union by specifying provisions for all TSOs and RSCs on the coordination of system operation and operational planning, transparency and reliability of information on transmission system operation, and the efficient operation of the electricity transmission system in the Union.
 - (6) Furthermore, the CSAM ensures application of the principles of proportionality and non-discrimination; transparency; optimisation between the highest overall efficiency and lowest total costs for all parties involved; and use of market-based mechanisms as far as possible, to ensure network security and stability.
 - (7) In accordance with Recital (5) of the SO Regulation, synchronous areas do not stop at the Union's borders and can include the territory of third countries. The TSOs should aim for secure system operation inside all synchronous areas stretching on the Union. They should support third countries in applying similar rules to those contained in this Regulation. ENTSO for Electricity should facilitate cooperation between Union TSOs and third country TSOs concerning secure system operation.
 - (8) In conclusion, the CSAM contributes to the general objectives of the SO Regulation to the benefit of all TSOs, the Agency for the Cooperation of Energy Regulators, regulatory authorities and market participants.

TITLE 1

General Provisions

Article 1

Subject matter and scope

1. This Methodology establishes a coordinated operational security analysis in accordance with Article 75 of the SO Regulation.
2. This methodology shall cover the coordination of operational security analysis at Pan-European level and it applies to all TSOs, RSCs, DSOs, CDSOs and SGUs as defined in Article 2 of the SO Regulation.
3. TSOs from jurisdictions outside the area referred to in Article 2(2) of the SO Regulation may participate in the coordination of operational security analysis on a voluntary basis, provided that:
 - (a) for them to do so is technically feasible and compatible with the requirements of the SO Regulation;
 - (b) they agree that they shall have the same rights and responsibilities with respect to the coordination of operational security analysis as the TSOs referred to in paragraph 2;

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- (c) they accept any other conditions related to the voluntary nature of their participation in the coordination of operational security analysis that the TSOs referred to in paragraph 2 may set;
 - (d) the TSOs referred to in paragraph 2 have concluded an agreement governing the terms of the voluntary participation with the TSOs referred to in this paragraph;
 - (e) once TSOs participating in the coordination of operational security analysis on a voluntary basis have demonstrated objective compliance with the requirements set out in (a), (b), (c), and (d), the TSOs referred to in paragraph 2, after checking that the criteria in (a), (b), (c), and (d) are met, have approved an application from the TSO wishing to participate on a voluntary basis in accordance with the procedure set out in Article 5(3) of the SO Regulation.
4. The TSOs referred to in paragraph 2 shall monitor that TSOs participating in coordination of operational security analysis on a voluntary basis pursuant to paragraph 3 respect their obligations. If a TSO participating in the coordination of operational security analysis pursuant to paragraph 3 does not respect its essential obligations in a way that significantly endangers the implementation and operation of the SO Regulation, the TSOs referred to in paragraph 2 shall terminate that TSO's voluntary participation in the coordination of operational security analysis process in accordance with the procedure set out in Article 5(3) of the SO Regulation.

Article 2

Definitions and interpretation

1. For the purposes of the CSAM, the terms used shall have the meaning of the definitions included in Article 3 of the SO Regulation, Article 2 of CACM Regulation and Article 2 of Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets. In addition, the following definitions shall apply:
 - (1) 'network element' means any component of a transmission system, including interconnectors, or of a distribution system, including a closed distribution system, such as a single line, a single circuit, a single HVDC system, a single transformer, a single phase-shifting transformer, or a voltage compensation installation;
 - (2) 'connecting TSO' means a TSO whose transmission system is connected directly or indirectly to a CDSO/DSO network;
 - (3) 'permanent occurrence increasing factor' means a factor that explains a permanent increase of the probability of occurrence of an exceptional contingency;
 - (4) 'temporary occurrence increasing factor' means a factor that explains a temporary increase of the probability of occurrence of an exceptional contingency;
 - (5) 'evolving contingency' means the loss of several network elements and/or grid users resulting from the occurrence of a contingency from the contingency list followed by the automatic or manual tripping of additional network elements which are in violation of their operational security limits;

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- (6) 'verifiable evolving contingency' means an evolving contingency for which each and every step subsequent to the initial contingency can be simulated until a stable state is reached;
- (7) 'design of remedial actions' means the identification of resources available to be used as remedial actions;
- (8) 'cross-border relevant network element' or 'XNE' means a network element identified as cross-border relevant and on which operational security violations need to be managed in a coordinated way;
- (9) 'cross-border relevant network element with contingency' or 'XNEC' means an XNE associated with a contingency. For the purpose of this methodology, the term XNEC also cover the case where a XNE is used in operational security analysis without a specified contingency;
- (10) 'XNE connecting TSO' means the TSO responsible for the control area where the XNE is located or connected. In case of an interconnector, the TSOs on both sides of the interconnector shall be considered as XNE connecting TSOs;
- (11) 'remedial action influence factor' means a flow deviation on a XNEC resulting from the application of a remedial action, normalised by the permanent admissible loading on the associated XNE;
- (12) 'cross-border relevant remedial action' or 'XRA' means a remedial action identified as cross-border relevant and needs to be applied in a coordinated way;
- (13) 'restoring remedial action' means a remedial action that is activated subsequent to the occurrence of an alert state for returning the transmission system into normal state again;
- (14) 'XRA connecting TSO' means the TSO responsible for the control area where the XRA is located or connected. In case of an interconnector, the TSO executing the topological change shall be considered as XRA connecting TSO;
- (15) 'XRA affected TSO' means the TSO which is significantly impacted by the activation of the XRA;
- (16) 'coordinated regional operational security assessment' means an operational security analysis performed by a RSC on a common grid model, in accordance with Article 78 of the SO Regulation;
- (17) 'coordinated operational security analysis' means an operational security analysis performed by a TSO on a common grid model, in accordance with Article 72(3) and 72(4) of the SO Regulation;
- (18) 'preventive remedial action' means a remedial action that is the result of an operational planning process and needs to be activated prior to the investigated timeframe for compliance with the (N-1) criterion;

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- (19) ‘agreed remedial action’ means a cross-border relevant remedial action for which TSOs in a region agreed to implement or any other remedial action for which TSOs have agreed that it does not need to be coordinated;
 - (20) ‘local preliminary assessment’ means an operational security analysis performed by a TSO to prepare an individual grid model;
 - (21) ‘delegating TSO’ means a TSO which has delegated tasks to a RSC in accordance with Article 77(3) of the SO Regulation;
 - (22) ‘overlapping XNE’ means an XNE on which the physical flows are significantly impacted by electricity exchanges in two or more CCRs or by XRAs from two or more CCRs;
 - (23) ‘overlapping XRA’ means an XRA that is able to address operational security violations on overlapping XNE;
 - (24) ‘curative remedial action’ means a remedial action that is the result of an operational planning process and is activated straight subsequent to the occurrence of the respective contingency for compliance with the (N-1) criterion, taking into account transitory admissible overloads and their accepted duration;
 - (25) ‘reference load’ means the average load defined as total consumption energy in the control area divided by the number of hours composing the year.
2. Where this Methodology refers to network elements, it includes HVDC systems.
 3. ‘IGM’ and ‘CGM’ respectively stand for ‘individual grid model’ and ‘common grid model’. ‘ENTSO- E’ stands for ‘ENTSO for electricity’. ‘RSC’ stands for ‘regional security coordinator’.

TITLE 2

Determination of influencing elements

Chapter 1

Influence factor determination

Article 3

Influence computation method

1. The influence computation method has the following characteristics:
 - (a) it is able to characterise the influence of the absence of one network element connected to a TSO or DSO/CDSO network on the power flow or voltage of another transmission network element;
 - (b) it is applicable on a year-ahead common grid model developed in accordance with Article 67 of the SO Regulation. This model may be complemented, as appropriate, by the TSO to represent the DSO/CDSO systems;

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- (c) the influence is characterised with respect to the relative or absolute value of power flow or voltage variation and the result is able to be compared against thresholds.
2. Each TSO shall apply the influence computation method provided in Annex I for computing power flow influence factors, of transmission-connected network elements connected outside the TSO's control area, on network elements of its control area.
 3. Each TSO shall apply the influence computation method provided in Annex I for computing power flow influence factors, of network elements connected to transmission-connected DSO/CDSO networks located outside its control area, on network elements of its control area, provided that they are modelled in the CGMs used for the computation.
 4. Where the power flow influence factors do not sufficiently capture the network elements that can cause significant voltage variations in TSO's control area, this TSO shall have the right to use voltage influence factors in the determination of its observability area and external contingency list.
 5. Where applicable according to paragraph 4, each TSO shall inform affected TSOs about the decision to compute voltage influence factors and shall apply the influence computation method provided in Annex I for computing these factors of transmission-connected network elements connected outside its control area.
 6. Where applicable according to paragraph 4 each TSO shall apply the influence computation method provided in Annex I for computing voltage influence factors of network elements connected to transmission-connected DSO/CDSO networks located outside its control area. This TSO shall inform TSOs to which transmission-connected DSO/CDSO networks are connected to and are affected by application of this paragraph about its decision to compute voltage influence factors. In turn, each connecting TSO, shall inform of this application the affected transmission-connected DSO/CDSOs.
 7. Each connecting TSO shall inform the concerned DSOs/CDSOs located in its control area about any decisions to compute power flow and/or voltage influence factors of network elements of their systems. In addition, each connecting TSO shall be entitled to ask these DSOs/CDSOs for technical parameters and data with a reasonable limited depth proportional to the influence computation needs, in order to allow the inclusion of at least part of their networks in the TSO's individual grid models.
 8. When requested according to paragraph 7, each DSO/CDSO shall provide a single coherent set of data within three months after receiving the request, to enable the connecting TSO to incorporate the required part of DSO/CDSO networks in TSO's individual grid models established pursuant to paragraph 10 and 11.
 9. Each TSO shall use the common grid models established according to Article 67 of the SO Regulation, and complemented as needed pursuant to paragraph 11, when computing power flow and/or voltage influence factors of network elements connected directly or through a DSO/CDSO to another TSO's control area of the SO Regulation.
 10. When computing the influence of network elements constituting the grid of DSOs/CDSOs located in its control area, each TSO shall use the common grid models established according to Article 67 of the SO Regulation and complemented as needed pursuant to paragraph 7 to include additional network elements

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than those required by the application of the methodology developed according to Article 67 of the SO Regulation.

11. Each TSO shall include in its individual grid model the relevant transmission-connected DSO/CDSO data model which it identifies as necessary for the computation of influence factors by another TSO.

Article 4

Possible relevance of dynamic aspects for influence assessment

1. Without prejudice to Article 38(1) of the SO Regulation, when a TSO needs to apply Article 38(6)(b) or Article 38(6)(c) of the SO Regulation to ensure a secure operation of its transmission system, this TSO shall have the right to request the support of concerned TSOs to use dynamic studies for assessing influence of the connectivity status or electrical values (such as voltages, power flows and rotor angles) of the network elements, power generating modules, and demand facilities connected outside its control area and connected to a transmission system. In that case, this TSO and the concerned TSOs shall define models, studies and criteria to be used for the assessment and inform their national regulatory authorities and relevant RSC(s) about their agreement. These models, studies and criteria shall be consistent with those developed in the application of Article 38 or 39 of SO Regulation.
2. When a TSO needs to apply Article 38(6)(b) or Article 38(6)(c) of SO Regulation to ensure a secure operation of its transmission system, this TSO shall have the right to use dynamic studies to assess influence of the connectivity or electrical values (such as voltages, power flows and rotor angles) of the network elements, power generating modules, and demand facilities located in transmission-connected DSOs/CDSOs networks located in its control area. In such a case, the TSO shall use models, studies and criteria, consistent with those developed in application of Article 38 or 39 of the SO Regulation.
3. Without prejudice to Article 38(1) of the SO Regulation, when a TSO needs to apply Article 38(6)(b) or Article 38(6)(c) of the SO Regulation to ensure a secure operation of its transmission system, this TSO shall have the right to request the support of concerned TSOs to use dynamic studies for assessing influence of the connectivity or electrical values (such as voltages, power flows and rotor angles) of the network elements, power generating modules, and demand facilities located in transmission-connected DSOs/CDSOs networks connected to other TSOs. In such a case, the TSO performing the computation will inform the TSOs which transmission-connected DSO/CDSOs are connected to about this decision and shall use models, studies and criteria consistent with those developed in application of Article 38 or 39 of the SO Regulation.
4. Each TSO, which transmission-connected DSO/CDSOs are connected to and are affected by the application of paragraphs 2 or 3, shall inform these transmission-connected DSO/CDSOs and concerned SGUs connected to these DSOs/CDSOs about the decision to use dynamic studies to assess their influence. In addition, each TSO shall be entitled to ask these DSOs/CDSOs and SGUs for the corresponding technical parameters and data, provided this request is proportional to the needs of the dynamic study.

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5. When requested according to paragraph 4, each transmission-connected DSO/CDSO and each SGU shall provide a single coherent set of data within three months after receiving the request to enable the connecting TSO to incorporate the required part of their systems in models developed in application of Article 38 or 39 of the SO Regulation.
6. Each TSO, which transmission-connected DSO/CDSOs are connected to and are affected by the application of paragraph 2 or 3, shall share results of the performed assessment with these transmission-connected DSO/CDSOs and concerned SGUs.
7. Where one or more system elements are identified in application of paragraph 2, the concerned TSO shall inform its regulatory authority and relevant RSC(s) of the system elements identified with reasoning supporting this result.
8. Where one or more system elements are identified in application of paragraph 3, the TSO that performed dynamic studies and the TSOs which transmission-connected DSO/CDSO are connected to, shall inform their regulatory authorities and relevant RSC(s) of the system elements identified with the reasoning supporting this result.

Chapter 2

Identification of influencing elements

Article 5

Identification of observability area elements

1. Each TSO shall define its observability area in accordance with Article 3, Article 4 where applicable and the following paragraphs.
2. Each TSO shall aim at agreeing with each transmission-connected DSO/CDSO located in its control area, which network elements connected to this DSO/CDSO network will be part of its observability area based on qualitative assessment.
3. Where deemed necessary by the TSO, this TSO shall aim to agree with each non-transmission-connected DSO/CDSO located in its control area and its connecting DSO which network elements connected to this DSO/CDSO will be part of its observability area, based on a qualitative assessment.
4. If the TSO and the concerned DSO/CDSO do not agree, the identification of system elements will be done in accordance with Article 3 and where applicable Article 4.
5. Each TSO shall select threshold values inside the range of observability thresholds listed in Annex I that it shall use to determine its observability area in application of paragraphs 6 and 7. The threshold values shall be identical regardless of the network element whose influence is assessed by this TSO. Each TSO shall communicate to its RSC(s) and ENTSO-E those threshold values in time with the application of paragraph 1 and in accordance with Article 46(11). ENTSO-E shall collect those threshold values and shall publish them on its website at least once a year.

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6. Each TSO shall include in its observability area:
 - (a) all transmission system elements of its control area;
 - (b) all network elements connected outside its control area which have an influence factor greater than the corresponding observability influence threshold values selected pursuant to paragraph 5;
 - (c) all network elements of transmission-connected DSOs/CDSOs located in its control area, identified in accordance with paragraph 2, or all network elements of transmission-connected DSOs/CDSOs identified in accordance with paragraph 4 that have an influence factor greater than the corresponding observability influence threshold values selected pursuant to paragraph 5;
 - (d) all network elements of non-transmission-connected DSOs/CDSOs located in its control area, identified in accordance with paragraph 3, or all network elements of non-transmission-connected DSOs/CDSOs identified in accordance with paragraph 4 that have an influence factor greater than the corresponding observability influence threshold values selected pursuant to paragraph 5;
 - (e) all network elements connecting this TSO's control area to another TSO's control area;
 - (f) additional network elements which are necessary to obtain a fully connected observability area;
 - (g) system elements identified in application of Article 4(1) to Article 4(3), where applicable;
 - (h) busbars to which the network elements previously identified in accordance with points ((a)) to (g) can be connected.
7. A TSO shall have the right to discard some network elements identified in accordance with points (b) to (d) of paragraph 6, provided their influence factor is not greater than the maximum value of the range of thresholds defined in Annex 1.
8. In case a TSO intends to include in its observability area network elements, power generating modules or demand facilities that are connected to the transmission system and not connected to a busbar, identified in accordance with paragraph 6, this TSO shall send a request to the concerned TSOs. The TSOs that receive the request are entitled to accept, propose an alternative solution or reject it, if operational security is not jeopardised.
9. TSOs shall have the right to agree to keep existing data exchange for system elements that are not identified in application of paragraph 6.
10. TSOs and DSOs shall have the right to agree to keep existing data exchange for elements that are not identified in application of paragraph 6.
11. Each TSO shall re-assess its observability area in accordance with paragraphs 2 to 8 at least once every 3 years.
12. Between two mandatory assessments in accordance with paragraph 11, any new system element commissioned inside a TSO's observability area shall be included in its observability area. If the owner

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of the new system element disagrees with such a qualitative approach, TSOs shall use the influence computation method in accordance with Article 3 and, where applicable, Article 4 for establishing the relevance of this system element.

13. After any assessment of its observability area or after new elements have been added in accordance with paragraph 12, the TSO shall inform the relevant RSC(s) about the scope its observability area.

Article 6

Identification of external contingencies

1. Each TSO shall define its external contingency list in accordance with Article 3, Article 4, where applicable, and the following paragraphs.
2. Each TSO shall select threshold values inside the range of external contingency thresholds listed in Annex 1 that it shall use to determine its external contingency list in application of paragraph 1. The threshold values shall be identical regardless of the network element whose influence is assessed by this TSO. Each TSO shall communicate to ENTSO-E those threshold values in time with the application of paragraph 1 and in accordance with Article 46(11). ENTSO-E shall collect those threshold values and shall publish them on its website at least once a year.
3. Each TSO shall include in its external contingency list at least:
 - (a) all contingencies of any single network element connected outside its control area which have an influence factor greater than the corresponding external contingency threshold values selected pursuant to paragraph 2;
 - (b) all contingencies of network elements located in transmission-connected DSOs/CDSOs networks connected to this TSO, which are located in the TSO's observability area and commonly agreed between the TSO and the DSO/CDSO according to Article 5(2). In alternative all contingencies of network elements of these DSOs and CDSOs, which are located in the TSO's observability area, and which have an influence factor greater than the corresponding external contingency threshold values selected pursuant to paragraph 2.
4. Each TSO shall have the right to complement its external contingency list with any of the generating modules and demand facilities connected to a busbar identified in accordance with Article 5.
5. All new system elements commissioned inside a TSO's observability area shall either be assessed in accordance with Article 3 and, where applicable, Article 4, or shall be included without any assessment in its external contingency list.
6. Each TSO shall re-assess its external contingency list in accordance with paragraph 2 to 4 at least once every 5 years.
7. ENTSO-E shall assess any interoperability issues stemming from different threshold values selected by all TSOs in accordance with paragraph 2 and report on its findings and proposals in accordance with Article 17 of the SO Regulation.

TITLE 3
Principles of coordination

Chapter 1
Management of exceptional contingencies

Article 7
Classification of contingencies

1. When building its contingency list as required by Article 33 of the SO Regulation, each TSO shall classify for its own control area:
 - (a) the following contingencies as ordinary:
 - (i) loss of a single line / cable;
 - (ii) loss of a single transformer;
 - (iii) loss of a single phase-shifting transformer;
 - (iv) loss of a single voltage compensation device;
 - (v) loss of a single component of a HVDC system such as a line or a cable or a single HVDC converter unit;
 - (vi) loss of a single power generation unit;
 - (vii) loss of a single demand facility.
 - (b) the following contingencies as exceptional:
 - (i) loss of network elements having common fault mode, meaning that a single fault (such as a fault on a busbar, HVDC grounding system, circuit breaker, measurement transformer etc.) will lead to the loss of more than one network element;
 - (ii) loss of overhead lines built on same tower;
 - (iii) loss of underground cables built in same trench;
 - (iv) loss of grid users having common process mode, meaning that the total or partial sudden loss of one grid user will lead to the total or partial loss of the others (for example: Combined cycle units etc.);
 - (v) loss of network elements/users simultaneously disconnected as a result of the operation of a Special Protection Scheme;
 - (vi) loss of multiple generation units (including solar and wind farms) disconnected because of a voltage drop on the network or system frequency deviation.
 - (c) the following contingencies as out-of-range:

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- (i) loss of two or more independent lines;
 - (ii) loss of two or more independent cables;
 - (iii) loss of two or more independent transformers or phase shifter transformers;
 - (iv) loss of two or more independent grid users (power generating unit or demand facility);
 - (v) loss of two or more independent voltage compensation devices;
 - (vi) loss of two or more independent busbars;
 - (vii) loss of two or more independent components of a HVDC system such as lines, cables or HVDC converter units.
2. For any other type of contingency resulting in the simultaneous loss of one or several grid users or network elements and not listed above, each TSO shall classify them in one of the three categories (ordinary, exceptional or out-of-range) according to the definitions provided for in Article 3 of the SO Regulation.

Article 8

Occurrence increasing factors handling

1. Each TSO shall determine for each exceptional contingency the relevance and criteria of application of the following occurrence increasing factors:
 - (a) permanent occurrence increasing factors:
 - (i) specific geographical location;
 - (ii) design conditions;
 - (b) temporary occurrence increasing factors:
 - (i) operational conditions;
 - (ii) weather or environmental conditions;
 - (iii) life time or generic malfunction affecting the risk of failure.
2. When determining the relevance and criteria of application of occurrence increasing factors listed in point (b) of paragraph 1, each TSO shall consider operational, weather or environmental conditions in relation with the specifications and the current state of the equipment.
3. When determining the relevance of application of occurrence increasing factors listed in paragraph 1, each TSO shall take into account where available the history of incidents that occurred on the concerned network elements.

Article 9

Exceptional contingencies with a risk of high cross-control area impact

1. Where a TSO expects that exceptional contingencies located in another TSO's control area may lead to consequences above the consequences within the TSO's control area which are considered as acceptable with respect to its national legislation as referred to in Article 4(2)(e) of the SO Regulation, or, if no national legislation exists, with respect to its internal rules, and this other TSO does not include these exceptional contingencies in its contingency list because it does not identify occurrence increasing factors in accordance with Article 8, these TSOs may jointly establish an agreement on additional exceptional contingencies located in one of their control areas which shall be included in their contingency lists in order to ensure that the consequences in their control areas remain acceptable.
2. When establishing this agreement, these TSOs shall determine the maximum cost of remedial actions above which, the cost of fulfilment of operational security limits shall not be deemed proportionate to the risk. These TSOs shall take into account their national legislation as referred to in Article 4(2)(e) of the SO Regulation, or, if no national legislation exists, take into account their internal rules.
3. When establishing this agreement, these TSOs shall ensure that all affected TSOs are participating in the agreement.

Article 10

Establishment of the contingency list

1. When applying Article 33(1) of the SO Regulation, each TSO shall include in its contingency list at least:
 - (a) the ordinary contingencies;
 - (b) the exceptional contingencies fulfilling the application criteria of at least one of the permanent occurrence increasing factors;
 - (c) the exceptional contingencies fulfilling the application criteria of at least one of the temporary occurrence increasing factors when conditions are met;
 - (d) the exceptional contingencies which lead to consequences above the consequences within the TSO's control area which are considered as acceptable with respect to its national legislation as referred to in Article 4(2)(e) of the SO Regulation, or, if no national legislation exists, with respect to its internal rules.
2. In addition, each TSO part of an agreement established in accordance with Article 9 shall include in its contingency list where needed the identified exceptional contingencies.
3. In addition, each TSO shall include in its contingency list the external exceptional contingencies potentially endangering operational security of its transmission system in accordance with paragraphs 3 and 4 of Article 11.
4. When assessing the contingencies referred to in point (a) of paragraph 1, each TSO shall have the right to exclude those which will never lead to consequences above the consequences which are considered as

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acceptable with respect to its national legislation or, if no national legislation exists, with respect to its internal rules.

5. When assessing the contingencies referred to in point (d) of paragraph 1, each TSO shall take into consideration whether the cost of remedial actions needed to maintain the consequences acceptable is deemed proportional to the risk with respect to its national legislation or, if no national legislation exists, with respect to its internal rules.

Article 11
Sharing of the contingency list

1. Each TSO shall inform without undue delay the TSOs whose observability area contains network elements of its contingency list and the relevant RSC(s) about any update of the exceptional contingencies fulfilling the application criteria of at least one of the permanent occurrence increasing factors.
2. Each TSO shall inform without undue delay the TSOs whose observability area contains network elements of its contingency list, and the relevant RSC(s), about any update of the exceptional contingencies that have the potential to fulfil the application criteria of at least one of the temporary occurrence increasing factors or when conditions are met that fulfil the application criteria of at least one of the temporary occurrence increasing factors.
3. When informed by another TSO pursuant to paragraph 1 or 2, each TSO shall assess whether this contingency endangers the operational security of its transmission system.
4. Each TSO shall inform without undue delay, when conditions are no longer met, the TSOs whose observability area contains network elements of its contingency list and the relevant RSC(s) about any update of the exceptional contingencies no longer fulfilling the application criteria of any temporary occurrence increasing factors.
5. Each TSO shall inform the relevant RSC(s) about the contingencies of their contingency list for which the TSO shall not be required to comply with the (N-1) criterion either:
 - (a) because the TSO decides not to comply with the (N-1) criterion in application of Article 35(5) of the SO Regulation; or
 - (b) because they are part of a set of contingencies jointly agreed in application of Article 12.
6. Each TSO shall inform the relevant RSC(s) about the contingencies identified in application of Article 9 in accordance with Article 78(1)(a) of the SO Regulation.

Chapter 2

Evaluation of contingency consequences

Article 12

Common agreement on cross-control area consequences

1. TSOs shall have the right to agree jointly in a multi-lateral agreement that a set of contingencies of their contingency lists do not respect the (N-1) criterion. The precondition for such a multi-lateral agreement is that the contingencies not respecting the (N-1) criterion have consequences limited to the contracting TSOs' control areas and considered as acceptable within each contracting TSO's control area with respect to their national legislation as referred to in Article 4(2)(e) of the SO Regulation or, if no national legislation exists, with respect to their internal rules. These TSOs shall inform all TSOs and RSCs about this agreement.
2. For each multi-lateral agreement pursuant to paragraph 1, the concerned RSC shall analyse the set of contingencies not respecting the (N-1) criterion for consequences on control areas of TSOs in the concerned capacity calculation region ('CCR') not taking part in the relevant multi-lateral agreement and report to its TSOs. The results of the analysis shall be shared with the affected TSOs and relevant RSCs.

Article 13

Assessment of consequences

1. In addition to Article 35(1) of the SO Regulation, each TSO shall assess the consequences of any contingency of its contingency list:
 - (a) by evaluating that the power deviation between generation and demand resulting of the occurrence of a contingency or from a verifiable evolving contingency does not exceed the reference incident, and that one of the following conditions is fulfilled:
 - (i) the operational security limits determined in accordance with Article 25 of the SO Regulation are respected on all network elements connected in its control area in compliance with Article 35(1) of the SO Regulation and there is no risk of propagating a disturbance to the interconnected transmission system; or
 - (ii) the occurrence of the contingency leads to a verifiable evolving contingency with consequences limited to the perimeter of the TSO's control area and considered as acceptable with respect to its national legislation as referred to in Article 4(2)(e) of the SO Regulation or, if no national legislation exists, with respect to its internal rules, in compliance with Article 35(5) of the SO Regulation;
 - (b) or by evaluating, with the support of the relevant RSC(s), that the power deviation between generation and demand resulting from the occurrence of a verifiable evolving contingency does not exceed the reference incident. In addition to that the occurrence of the contingency leads to consequences limited to the control areas of TSOs which are party to an agreement defined in

accordance with Article 12 and considered as acceptable within each TSO's control area with respect to its national legislation as referred to in Article 4(2)(e) of the SO Regulation or, if no national legislation exists, with respect to its internal rules provided there is no risk of propagating a disturbance to the rest of the interconnected transmission system.

Chapter 3

Coordination of remedial actions

Article 14

Designing of remedial actions

1. When TSOs and RSCs design remedial actions, they shall identify all the resources categorised in Article 22 of the SO Regulation that can be used as remedial actions, which are generally able to address operational security violations.
2. A remedial action can be designed as an individual action or as a combination of actions as defined in Article 22 of the SO Regulation.
3. A remedial action consisting of a combination of actions can be designed at least in the following cases:
 - (a) where the activation requires a specific combination; and
 - (b) where optimisation of remedial actions is unable to find that specific combination of remedial actions.
4. Where a remedial action consists of a combination of actions, its cross-border relevance shall be assessed for the effect of the combination.
5. When designing the remedial action consisting of a combination of actions, TSOs and RSCs shall not unduly restrict the capability of optimisation of remedial actions to identify the most effective and economically efficient remedial actions.
6. All remedial actions designed by TSOs and RSCs of a CCR shall be subject to the identification process for their cross-border relevance pursuant to Article 15.

Article 15

Identification of cross-border relevant network elements and remedial actions

1. The cross-border relevant network elements ('XNEs') shall be all critical network elements ('CNEs') and other network elements above the voltage level defined by TSOs, except for those elements for which all TSOs in a CCR agree that they are not cross-border relevant for the concerned CCR and may therefore be excluded.
2. The common provisions for regional operational security coordination pursuant to Article 76(1) of the SO Regulation shall define the rules and/or criteria to establish the XNEs for which the costs attributed to them shall be shared among the involved TSOs and the XNEs for which the costs attributed to them

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- shall be covered solely by the XNE connecting TSO(s), taking into account rules for cost sharing in accordance with Article 74 of the CACM Regulation.
3. In order to identify whether a remedial action designed in accordance with Article 14 is cross-border relevant, TSOs and RSCs shall use a quantitative or qualitative approach.
 4. In case of quantitative approach, the cross-border relevance of remedial actions shall be assessed with the remedial action influence factor. The remedial action influence factor shall be calculated for at least each cross-border relevant network element and each contingency (for example each 'XNEC') as a simulated flow deviation on a XNEC resulting from the simulated application of a remedial action normalised by the permanent admissible load of the associated XNE.
 5. In case of quantitative approach, at least those remedial actions for which the remedial action influence factors for at least one XNEC is higher than a threshold, defining a significant cross-border impact shall be considered as cross-border relevant. This threshold shall be equal to 5% unless a different threshold is justified and defined in the methodology for the preparation of remedial actions managed in a coordinated way established within the common provisions for regional operational security coordination pursuant to Article 76(1) of the SO Regulation.
 6. In case of qualitative approach, TSOs, in coordination with RSCs, shall qualitatively assess and agree on the cross-border relevance of remedial actions. In case of disagreement, the TSOs shall apply the quantitative assessment in accordance with paragraphs 4 and 5.
 7. In case of qualitative and quantitative approach, TSOs, in coordination with RSCs, shall define for remedial actions that can be applied in different quantities, such as redispatching, countertrading, change of set point on HVDC systems or change of taps on phase-shifting transformers, the quantity above which these remedial actions become cross-border relevant.
 8. In case of qualitative and quantitative approach, TSOs, in coordination with RSCs, shall define for each remedial action, the XRA connecting TSO(s) and XRA affected TSOs. In case of quantitative approach, the XRA affected TSOs shall be those TSOs having at least one affected XNEC for which the remedial action influence is higher than the threshold referred to in paragraph 5.

Article 16

Process for identifying cross-border relevant remedial actions

1. When preparing the methodology for the preparation of remedial actions managed in a coordinated way established within the common provisions for regional operational security coordination pursuant to Article 76(1) of the SO Regulation, all TSOs of each CCR shall jointly determine:
 - (a) rules on a process for establishing a common list of XRAs and the XRA affected TSOs, based on the identification pursuant to Article 15;
 - (b) rules on a process for establishing a list of remedial actions that are not cross-border relevant;
 - (c) the frequency of update of the previous items.

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2. In day-ahead or intraday operational planning, when preparing a remedial action, each TSO and RSC shall assess the cross-border relevance of remedial actions that have not been assessed in application of paragraph 1.
3. During real time operation, if the system is in alert state, when preparing restoring remedial actions, each TSO shall assess the cross-border relevance of remedial actions that have not been assessed in application of paragraph 1.
4. During real time operation, if the system is in emergency state and only when operational conditions allow it, when preparing restoring remedial actions each TSO shall assess the cross-border relevance of remedial actions that have not been assessed in application of paragraph 1.

Article 17

Principles for coordination of cross-border relevant remedial actions

1. In day-ahead or intraday operational planning, all TSOs, in coordination with the RSC(s) of a CCR, shall manage in a coordinated way operational security violations on all cross-border relevant network elements with contingency considering all cross-border relevant remedial actions and taking into account the potential technical restrictions limiting the use of certain remedial actions. To this end, the RSC(s) shall make recommendations for the implementation of the most effective and economically efficient cross-border relevant remedial actions to the concerned TSOs. These TSOs shall implement such remedial actions in accordance with Article 78(4) of the SO Regulation and other relevant Union legislation, following the methodology for the preparation of remedial actions managed in a coordinated way developed in compliance with Article 76 of the SO Regulation.
2. When the TSOs identify that the activation of a specific XRA could lead to violations of voltage limits or dynamic limits, the TSO(s) facing such limits and the XRA connecting TSO(s) shall coordinate with the RSC(s) to define limitations on the activation of such XRAs. These limitations shall then be considered by the RSC(s) in coordination and optimisation of XRAs.
3. During real time operation, if the system is in alert state, when deciding on restoring remedial actions that have been identified as cross-border relevant in accordance with Article 16(3), each TSO shall manage them in a coordinated way with the affected TSOs. This shall be done by ensuring at least that every affected TSO is informed about the operational security limit violation(s) to be relieved by those remedial actions and has accepted the activation of those remedial actions. The concerned TSO shall inform, without undue delay, the relevant RSC(s) of the activation of such remedial actions.
4. During real time operation, if the system is in emergency state and only when operational conditions allow it, when deciding on restoring remedial actions that have been identified as cross-border relevant in accordance with Article 16(4), each TSO shall manage them in a coordinated way with the affected TSOs. This shall be done by ensuring at least that every affected TSO is informed about the operational security limit violation(s) to be relieved by those remedial actions and has accepted the activation of those remedial actions. The concerned TSO shall inform, without undue delay, the relevant RSC(s) of the activation of such remedial actions.

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5. When the RSC recommends the activation of XRAs in accordance with paragraph 1, the XRA connecting TSO(s) shall, in accordance with Article 78(4) of the SO Regulation and other relevant Union legislation, plan and activate the recommended remedial action provided that:
 - (a) it is expected to be available in the real time;
 - (b) and it is not leading to violation of operational security limits, taking into account the violations from not activating the XRAs.
6. When the RSC recommends the activation of XRAs in accordance with paragraph 1 or when a TSO proposes a restoring XRA in accordance with paragraphs 3 and 4, the XRA affected TSO(s) shall, in accordance with Article 78(4) of the SO Regulation and other relevant Union legislation, agree on the recommended remedial action provided that it is not leading to violation of operational security limits, taking into account the violations from not activating the XRAs.
7. In case the XRA connecting TSO or the XRA affected TSO refuses the RSC's recommendation or TSO proposal in accordance with paragraph 5 and 6, the concerned TSO(s) shall, in accordance with relevant Union legislation, coordinate with the RSC(s) and other TSOs to identify, plan and activate alternative remedial actions.

Article 18

Information on remedial actions availability and costs

1. When designing remedial actions in application of Article 14 and Article 20 of the SO Regulation or when providing to the relevant RSCs the updated list of possible remedial actions in application of Article 78(1)(b) of the SO Regulation, each TSO shall verify availability and endeavour to ensure that the remedial actions which were available for the coordinated operational security analyses, coordinated regional operational security assessments or capacity calculations previously performed for the same timestamps remain available in the concerned operational planning time-frame in accordance with Article 72(1) of the SO Regulation.
2. Each TSO shall provide to the RSCs the best forecast on possible XRAs available for coordination.
3. Each TSO shall provide to the RSCs prior to coordination the information about the prices or costs of costly XRAs needed to identify the most effective and economically efficient XRAs. To this end, the XRAs resources shall provide in due time to the relevant TSOs all information necessary for calculating the prices and costs at which the activated XRA shall be settled or, in case these cannot be established, the expected or forecasted prices and costs.
4. When relieving a violation of operational security limits during a coordinated operational security analysis in application of Article 72 of the SO Regulation for day-ahead and intraday timeframes, and in line with the common provisions for regional operational security coordination developed pursuant to Article 76 of the SO Regulation, each TSO shall take into consideration all the remedial actions already agreed during capacity calculations, coordinated operational security analyses or coordinated regional

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security assessments previously performed for the same timestamps, except the remedial actions which have become unavailable for technical reasons.

5. When a TSO wants to modify a remedial action, which has previously been managed in a coordinated way and agreed, this TSO shall again assess the cross-border relevance of the modified remedial action and where necessary manage it in a coordinated way with the affected TSOs in accordance with Article 17.

Article 19

Coordinated preventive remedial actions activation

1. Each TSO shall activate XRAs, assessed in accordance with Article 16, as preventive remedial actions at the latest time compatible with their activation lead-time if their need is confirmed by the latest coordinated operational security analysis or coordinated regional operational security assessment performed for the concerned timeframe.
2. When preparing the activation of the cross-border relevant remedial actions, managed in accordance with Article 17, as preventive remedial actions, in order to provide enough flexibility in the daily operational activities, each TSO shall have the right to decide to activate them earlier than when it is necessary with consideration of the operational conditions and provided that it does not introduce any operational security limit violations.

Article 20

Requirements for coordinated regional operational security assessments

1. Within the proposal for common provisions for regional operational security coordination in accordance with Article 76(1) of the SO Regulation, all TSOs of each CCR shall, in accordance with Article 21(1) of the SO Regulation, jointly define the rules on the process for determining the cross-border relevant network elements on which the operational security violations shall be managed in a coordinated way (i.e. cross-border relevant network elements), taking into account provisions of Article 15(1).
2. The common provisions for regional operational security coordination developed in accordance with Article 76(1) of the SO Regulation by all TSOs of each CCR shall ensure that, when coordinated regional operational security assessments are performed in application of Article 78 of the SO Regulation, the following objectives are met:
 - (a) agreed remedial actions are included in the individual grid models;
 - (b) all violations of operational security limits on the network elements identified in application of paragraph 1 are relieved using at least cross-border relevant remedial actions;
 - (c) every XRA affected TSO is informed about the operational security limit violations to be solved by this remedial action and has agreed to it; and
 - (d) the coordination of cross-border relevant remedial actions pursuant to this methodology and pursuant to the coordinated redispatching and countertrading methodology established in

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accordance with Article 35 of the CACM Regulation is fully consistent and managed within a single coordination process.

Article 21

Remedial actions inclusion in individual grid models

1. When preparing individual grid models pursuant to Article 70 of the SO Regulation, each TSO shall include all remedial actions already agreed as a result of previous coordinated operational security analyses in accordance with Article 17(1) and Article 18(4) or previous coordinated regional operational security assessments in accordance with Article 78 of the SO Regulation.
2. When preparing individual grid models pursuant to Article 70 of the SO Regulation, each TSO shall have the right to perform a local preliminary assessment.
3. When performing a local preliminary assessment, and provided this is consistent with the common provisions developed as required by Article 76(1) of the SO Regulation, each TSO may choose whether or not to relieve operational security limit violations on:
 - (a) network elements identified in accordance with Article 20(1) if the TSO expects it to be relieved during the subsequent coordinated regional operational security assessment;
 - (b) any other network elements provided those operational security limit violations are likely to be solved by non-cross-border relevant remedial action;
 - (c) any other network elements provided those operational security limit violations are likely to be relieved by subsequent coordinated regional operational security assessment.
4. When preparing individual grid models pursuant to Article 70 of the SO Regulation, in addition to the remedial actions referred to in paragraph 1 and taking into account where applicable the results of the local preliminary assessment referred to in paragraph 2, each TSO may include any non-cross-border relevant remedial actions in accordance with Article 21(1)(a) of the SO Regulation.
5. Remedial actions included pursuant to paragraphs 1 and 4 shall be clearly distinguishable from the injections and withdrawals established in accordance with Article 40(4) of the SO Regulation and the network topology without remedial actions applied.
6. No later than eighteen months after the adoption of this methodology, all TSOs shall jointly develop a proposal for amendment of this methodology in accordance with Article 7(4) of the SO Regulation. The proposal shall complement this methodology with the rules on distinguishing between:
 - (a) up-to-date load and generation forecasts and network topology considered within the individual grid model which are not aiming at addressing expected operational security violations identified during the local preliminary assessment and are therefore not considered as remedial actions; and
 - (b) the expected generation and load, as well as, network topology considered within the individual grid model, which are aiming at addressing expected operational security violations identified during the local preliminary assessment and are therefore considered as remedial actions.

Chapter 4

Realisation of operational security analyses with respect to uncertainty management and regional coordination

Article 22

Long term studies (year-ahead up to week-ahead)

1. In order to improve the robustness of the analyses against uncertainties in the coordinated operational security analyses in accordance with Article 72(1)(a) or (b) of the SO Regulation and in the validation and amendment of year-ahead availability plans within outage coordination regions in accordance with Articles 98(3), 100(3) and 100(4) of the SO Regulation, when deemed necessary by the TSO, the TSO shall develop and apply local scenarios for its control area in addition to the scenarios required according to Article 65 of the SO Regulation.
2. In developing these additional scenarios, the TSO shall determine for which operational planning activities those additional scenarios are to be considered and shall inform the TSOs of its capacity calculation region or of its outage coordination region and the relevant RSC(s) about the content of those additional scenarios and their usage purpose.
3. Where a TSO identifies additional scenarios for coordinated operational security analysis in accordance with Article 72(1)(a) or (b) of the SO Regulation or for outage coordination in accordance with Articles 98(3), 100(3) and 100(4) of the SO Regulation, and these scenarios differ from the scenarios defined by all TSOs according to Article 65 of the SO Regulation, other TSOs shall assess the impact on their control area and, where so relevant, build their individual grid models for these additional scenarios.
4. Where a TSO defines additional scenarios for operational security analysis in accordance with Article 72(1)(a) or (b) of the SO Regulation, this TSO shall define, in coordination with other TSOs of the concerned capacity calculation region and the relevant RSC(s), which common grid models shall be used to study these additional scenarios. These additional common grid models shall be derived from the common grid models established pursuant to Article 67 of the SO Regulation, using appropriate substitutes or derived models where appropriate.
5. Where a TSO identifies additional scenarios for outage coordination in accordance with Articles 98(3), 100(3) and 100(4) of the SO Regulation, this TSO shall build, in coordination with other TSOs of the outage coordination region and the relevant RSC(s), grid models corresponding to these additional scenarios. These grid models shall be derived from the common grid models established pursuant to Article 67 of the SO Regulation, using appropriate substitutes or derived models where appropriate.
6. These additional common grid models shall be studied by relevant RSCs and TSOs by applying the methodology for coordinating operational security analysis in accordance with Article 76(1) of the SO Regulation and regional coordination operational procedure developed in accordance with 83(1) of the SO Regulation.
7. Each RSC shall check the presence of cross-regional impact in studying additional common grid models. In case of the existence of cross-regional impact, the RSC shall coordinate the building and analysis of

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appropriate additional common grid models with relevant RSCs and respective TSOs while applying principles referred to in paragraphs 3 to 6.

8. Considering that reliability margins in line with Article 22 of the CACM Regulation and Article 11 of Commission Regulation (EU) 2016/1719¹ shall be taken into account for capacity calculation processes, and that the goal of the operational security analysis is to identify expected operational security limit violations and consequent remedial actions, each TSO shall not include any reliability margins to its operational security limits when evaluating the results of the operational planning activities.

Article 23

Day-ahead operational security analysis

1. Each TSO shall perform in day-ahead a coordinated operational security analysis on the basis of a best forecast approach where the forecasted situation of each timestamp of the next day shall be established in accordance with the following:
 - (a) considering that a margin in line with Article 22 of the CACM Regulation shall be taken into account for capacity calculation processes, and that the goal of the operational security analysis is to identify expected operational security limit violations and consequent remedial actions, each TSO shall not include any reliability margin to its operational security limits or in the coordinated operational security analysis;
 - (b) individual grid models and subsequent common grid models, created in the application of Article 70(2) of the SO Regulation and according to the methodology of Article 70(1) of the SO Regulation, shall include:
 - (i) load and intermittent generation forecasts established on the basis of the latest available forecasts for load and intermittent generation according to Article 37 and Article 38; and
 - (ii) market results, schedules, and planned topology of the transmission system;
 - (c) remedial actions shall be included in individual grid models and subsequent common grid models as required in Article 20 Article 21 and Article 21.
2. The coordinated operational security analysis referred to in paragraph 1 shall be performed in accordance with Articles 72(1)(c), 74(1) and (2) of the SO Regulation, between T1 and T5 on the basis of the day-ahead common grid model built in accordance with Article 33(1), where T1 and T5 are defined in accordance with Article 45.
3. Each TSO shall have the right to delegate this task to the RSC(s) to which it has delegated tasks in accordance with Article 77(3) of the SO Regulation, while the TSO shall keep the legal responsibility of this task.

¹ Commission Regulation (EU) 2016/1719 of 26 September establishing a guideline on forward capacity allocation

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4. When preparing the proposal for the common provisions for regional operational security coordination as required by Article 76 of the SO Regulation, all TSOs of a CCR shall have the right to establish particular rules and processes, applicable in day-ahead to the coordinated operational security analyses performed by these TSOs and the coordinated regional operational security assessments performed by the RSCs. Where they are needed to manage the exceptional situations where the accuracy of one or more of the forecasts variables included in the individual grid models is insufficient to allow the correct identification of operational security limit violations by application of paragraph 1. These rules and processes shall ensure that, when they are activated, all affected TSOs and RSCs, including those not involved in the proposal, are informed and can take account of these activations in their own processes.

Article 24

Intraday operational security analysis

1. Each TSO shall determine the minimum number and hours of assessment runs in intraday timeframe where it performs a coordinated operational security analysis in accordance with Article 72(1)(d), 74(1) and (2) of the SO Regulation, taking into account at least:
 - (a) conditions and frequency for coordinated regional operational security assessment provided by an RSC and adopted pursuant to Article 76(1)(a) of the SO Regulation in the capacity calculation regions the TSO is taking part;
 - (b) intraday relative timeline distribution of the market activity affecting the positions of market participants in its control area;
 - (c) time needed to activate remedial actions;
 - (d) impact of solar or wind generation variations on its system, due to locally connected generation assets or connected inside other control areas;
 - (e) impact of load variations.
2. The minimum number shall be greater than or equal to three.
3. Each TSO shall perform the coordinated operational security analyses as required in paragraph 1 on the basis of a best forecast approach, where the forecasted situation of each timestamp in the intraday timeframe shall be established in accordance with the following:
 - (a) considering that a margin in line with Article 22 of the CACM Regulation shall be taken into account for capacity calculation processes, and that the goal of the operational security analysis is to identify expected operational security limit violations and consequent remedial actions. Each TSO shall not add any reliability margin to its operational security limits or in the coordinated operational security analysis;
 - (b) individual grid models and subsequent common grid models, created in the application of Article 70(2) of the SO Regulation and according to the methodology of Article 70(1) of the SO Regulation, shall include load and intermittent generation forecasts. They shall be established on

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- the basis of the latest available forecasts for load and intermittent generation according to Article 37 and Article 38;
- (c) individual grid models and subsequent common grid models, created in the application of Article 70(2) of the SO Regulation and according to the methodology of Article 70(1) of the SO Regulation, shall include market results, schedules, and planned topology of the transmission system;
 - (d) remedial actions shall be included in individual grid models and subsequent common grid models as required in Article 20 Article 21 and Article 21 Article 20.
4. When performing a coordinated operational security analysis in intraday, and where the results of the coordinated operational security analysis have significantly evolved with a regional impact compared to the previous ones, the TSO shall coordinate with the affected TSOs in accordance with Article 72(5) of the SO Regulation and the relevant RSC(s), in order to:
- (a) share information about the significant changes of results, at least flows;
 - (b) agree on change of previously-agreed remedial action or on new remedial actions with cross-border relevance which may become required due to moving closer to or exceeding the operational security limits.
5. With respect to the conditions and frequency of intraday coordination of operational security analysis established pursuant to Article 76(1)(a) of the SO Regulation, the TSO shall have the right to delegate part or all of the coordinated operational security analyses defined in accordance with paragraph 1 to the RSC(s) to which it has delegated tasks in accordance with Article 77(3) of the SO Regulation, while the TSO shall keep the legal responsibility of these tasks.
6. When preparing the proposal for the common provisions for regional operational security coordination as required by Article 76 of the SO Regulation, all TSOs of a CCR shall have the right to establish particular rules and processes, applicable in intraday to the coordinated operational security analyses performed by these TSOs and the coordinated regional operational security assessments performed by the RSCs. Where they are needed to manage the exceptional situations where the accuracy of one or more of the forecasts variables included in the individual grid models is insufficient to allow the correct identification of operational security limit violations by application of paragraph 3. These rules and processes shall ensure that, when they are activated, all affected TSOs and RSCs, including those not involved in the proposal, are informed and can take account of these activations in their own processes.

Article 25

Handling of extreme event

1. In case of an expected extreme event, such as an extreme weather event, able to trigger significant effects on network assets' or generation assets' availability or on load demand, each TSO shall evaluate the expected consequences within its control area. The focus shall be on the period of the day from the moment where the event will take place until the end of the day.

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2. Where the result of this analysis is that such an event is possibly leading to an emergency or black-out state, the TSO shall inform without undue delay neighbouring TSOs and the relevant RSC(s), and, where necessary, affected DSOs and SGUs.

Chapter 5
Cross-regional coordination

Article 26
General requirements

1. RSCs shall use English for all communication and documentation exchanges between them.
2. RSCs shall aim at providing permanent capability for coordination with other RSCs twenty-four seven. Where an RSC is not organised for that, a back-up solution shall be defined by the RSC and its delegating TSOs to allow possible exchange of information at the request of other RSCs during the periods when this RSC is unavailable.

Article 27
Overlapping zones, XNEs and XRAs

1. Where a network element has been defined as cross-border relevant in two or more different CCRs and where the physical flows on this XNE are significantly impacted by flows from electricity exchanges or activation of XRA in two or more CCRs, this XNE shall be defined as overlapping XNE. Such XNEs shall be grouped into overlapping zones and the concerned CCRs shall be considered as impacting CCRs for these overlapping zones.
2. The operational security violations on the overlapping XNEs shall be addressed first in one or more impacting CCRs at a regional level, and subsequently, the residual operational security violations, resulting after each regional operational security assessment is finalised, shall be addressed with a common cross-regional coordination process involving TSOs and RSCs of all impacting CCRs.
3. No later than eighteen months after the adoption of this methodology, all TSOs shall jointly develop a proposal for amendment of this methodology in accordance with Article 7(4) of the SO Regulation. The proposal shall complement this methodology with the following rules:
 - (a) rules for the identification and definition of overlapping XNEs, overlapping zones and impacting CCRs;
 - (b) rules for the identification of an impacting CCR and the competent RSC(s) that shall be responsible to first address operational security violations on overlapping XNEs at a regional level or, in case of shared responsibility, for defining the share of the operational security violation to be addressed by each impacting CCR and corresponding competent RSC(s) at a regional level;

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- (c) rules for the identification of overlapping XRAs that may be used to address residual operational security violations as referred to in paragraph 2;
 - (d) the principles and rules for consistent interaction between coordinated regional and cross-regional operational security assessments and the rules for the identification of the most economically efficient remedial actions to address residual operational security violations at cross-regional level; and
 - (e) rules for the sharing of costs of the overlapping XRAs activated to address the residual operational security violations by assigning the shares of costs to individual overlapping XNEs and to individual impacting CCRs.
4. The rules pursuant to point (a) of paragraph 3 shall be based on objective and coordinated identification of the contributions of physical flows originating from different impacting CCRs, as well as, the criteria and threshold(s) above which the contribution of an impacting CCR is considered significant.
 5. The rules pursuant to point (b) of paragraph 3 shall specify, *inter alia*, that the operational security violations on the overlapping XNEs shall be addressed at the regional level first. This shall be done either by the TSOs and RSC(s) of an impacting CCR, which has the highest contribution to the physical flows on such overlapping XNE or by the TSOs and RSC(s) of two or more impacting CCRs in proportion to the historical or expected contribution of a given impacting CCR to the physical flows on such overlapping XNE.
 6. The rules pursuant to point (c) of paragraph 3 shall be consistent with the rules established in Article 15(3) to (8).
 7. The principles and rules pursuant to point (d) of paragraph 3 shall describe how the coordinated cross-regional operational security assessment will interact with coordinated regional operational security assessments and how the identification of the most economically efficient remedial actions to address residual operational security violations at cross-regional level shall be performed.
 8. The rules pursuant to point (e) of paragraph 3 shall specify, *inter alia*:
 - (a) the rules to identify the costs of overlapping XRAs activated to address residual operational security violations on overlapping XNEs and to attribute these costs to individual overlapping XNEs, which shall be consistent with the regional rules for sharing the costs of remedial actions established in accordance with Article 76(1)(b)(v) of the SO Regulation and Article 74(1) of the CACM Regulation;
 - (b) the rules to identify the share of the costs attributed to individual overlapping XNEs that shall be attributed to each of the concerned impacting CCR. These rules shall be based on the shares of physical flows on the overlapping XNEs originating from different impacting CCRs and shall be consistent to the degree possible with the regional rules for sharing the costs of remedial actions established in accordance with Article 76(1)(b)(v) of the SO Regulation and Article 74(1) of the CACM Regulation.

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9. When an XRA is identified as overlapping XRA in application of the rules pursuant to point (c) of paragraph 3, the XRA connecting TSO(s) shall provide to all RSCs of the concerned impacting CCRs the information about such XRA in accordance with Article 78(1) of the SO Regulation and shall decide on a single impacting CCR to which it shall provide such remedial action. This decision shall take account of the assumptions on remedial actions considered in capacity calculation methodologies established pursuant to Articles 20 and 21 of the CACM Regulation.
10. In the implementation of Articles 78, 80 and 81 of the SO Regulation, RSCs and TSOs shall take into account the agreements reached in accordance with paragraphs 1 to 8.

Article 28

Monitoring of inclusion of agreed remedial actions in the individual grid models

1. Each RSC shall monitor in the relevant timeframes the correct inclusion of the agreed remedial actions in the IGMs by the TSOs, as required by Article 70(4) of the SO Regulation.
2. When a RSC identifies that a previously agreed remedial action has not been included in the IGM by a TSO, that RSC shall inform the other relevant RSCs about it. The RSC in charge of CGM building for this TSO according to Article 77(3)(b) of the SO Regulation shall, in accordance with Article 79(3) of the SO Regulation, ask the relevant TSO to correct its IGM without undue delay.

Article 29

Back-up for the common grid model building task

1. RSCs shall set up the relevant organisation between them to guarantee the availability of common grid models built in application of Article 79 of the SO Regulation with a target of absence of interruption for the different timeframes.
2. In case of an interruption of service, RSCs shall aim at recovering the service availability as soon as possible and inform the TSOs of the expected time of recovery.

Article 30

Coordinated cross-regional operational security assessment

1. Coordinated cross-regional operational security assessment shall be performed for overlapping XNEs within the overlapping zones defined pursuant to Article 27.
2. Residual operational security violations on overlapping XNEs within the overlapping zones, remaining after the coordinated regional operational security assessment in accordance with Article 78 of the SO Regulation, shall be addressed with a common cross-regional coordination process involving the TSOs and RSC(s) of the impacting CCRs. In this process, the RSCs shall coordinate to find the most effective and economically efficient overlapping XRAs to be proposed to their TSOs to address residual operational security limit violations on overlapping XNEs within the overlapping

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zones. The competent RSCs shall ensure that this process does not create new operational security limit violations.

3. After defining the optimal overlapping XRA to address residual operational security violations on overlapping XNEs, the concerned TSOs shall identify the costs of such overlapping XRA and attribute a share of these costs to each individual overlapping XNE. The share of costs attributed to each overlapping XNE shall be further shared among the concerned CCRs first, in application of the rules pursuant to Article 27(3)(d), and subsequently among the TSOs of each CCR according to the regional rules for sharing the costs of remedial actions established in accordance with Article 76(1)(b)(v) of the SO Regulation and Article 74(1) of the CACM Regulation.

Article 31

Investigation of possible additional remedial actions

1. When a RSC is not able to propose to its delegating TSOs effective and economically efficient remedial actions to remove a violation of operational security limits, this RSC shall coordinate with other relevant RSCs in order to try to find another possible remedial action to remove it. When doing so, RSCs may recommend remedial actions other than those provided by the TSOs in accordance with Article 78(2)(a) of the SO Regulation.

Article 32

Exchange of results

1. Each RSC shall exchange the results of coordinated regional operational security assessments with other RSCs, when having an overlapping zone with it, for checking and consolidating them where required, notably for cross-regional operational security assessment. They shall at least exchange information about needed remedial actions and all relevant information useful to support the results.

Article 33

Regional and cross-regional day-ahead coordinated operational security assessment

1. TSOs and RSCs shall apply at least the following regional and cross-regional day-ahead coordinated operational security assessment process, where T0, T1, T2, T3, T4, T5 are defined in accordance with Article 45:
 - (a) at the latest at hour T0, all TSOs shall deliver IGMs covering the whole next day and RSCs shall make available to all TSOs and RSCs the corresponding CGMs before hour T1 where T1 is equal to T0 +60 minutes, in accordance with Article 22(4)(d) of the methodology established pursuant to Article 70(1) of the SO Regulation;
 - (b) at the latest at hour T2, each RSC shall perform a coordinated regional operational security assessment as required by Article 78(2) of the SO Regulation;

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- (c) at the latest at hour T2, RSCs shall share between them the results of these coordinated regional operational security assessments. Between T2 and T3, TSOs shall deliver updated IGMs taking into account the preventive remedial actions agreed during this coordinated regional operational security assessment, and making also available the curative remedial actions agreed during this coordinated regional operational security assessment;
 - (d) at the latest at hour T3, RSCs shall make available to all TSOs and RSCs the corresponding CGMs in accordance with Article 22(4)(e) of the methodology established pursuant to Article 70(1) of the SO Regulation;
 - (e) at the latest at hour T4, each RSC shall perform a coordinated cross-regional operational security assessment as required by Articles 78(2) and (3) of the SO Regulation on the basis of the CGMs established in accordance with paragraph ((d)), including where relevant analysing the use of additional remedial actions pursuant to Article 30(2) and Article 31;
 - (f) between T4 and T5, RSCs shall organise a session, such as a teleconference, where the results of coordinated regional operational security assessments performed according to paragraph (e) and proposed remedial actions are shared. During this session, TSOs and RSCs shall consolidate the final outcomes of the whole process described in paragraphs (a) to (e), and TSOs shall agree on the remedial actions, in application of Article 78(4) of the SO Regulation. Each TSO shall participate in this session or shall appoint its RSC to represent it at the session while the TSO keeps the legal responsibility to agree on remedial actions;
 - (g) each TSO shall include the agreed remedial actions in accordance with paragraph ((f)) in their first intraday IGMs to be provided after T5 in accordance with the requirements of the methodology developed according to Article 70(1) of the SO Regulation.
2. During this process, RSCs and TSOs may have additional exchanges needed to facilitate its effectiveness.
3. Later in intraday, when RSCs perform coordinated regional operational security assessments or TSOs perform coordinated operational security analyses, they shall take the cross-regional day-ahead coordinated operational security assessment's final outcomes and agreed remedial actions as a reference basis, against which needed adaptations shall be assessed.
4. Where violations of operational security limits remain at the end of the cross-regional day-ahead coordinated operational security assessment process, the concerned TSOs and RSCs shall agree on the objectives and the needed steps to follow in intraday, in order to improve the management of these remaining violations.
5. When paragraph 4 applies, the concerned RSCs shall record the event and the outcome of the intraday activity to manage these remaining violations after the cross-regional day-ahead coordinated operational security assessment process, and shall report this information in the report prepared in accordance with Article 17(2) of the SO Regulation.

Article 34

Intraday coordinated regional operational security assessment

1. RSCs shall aim at synchronising the timing of the processes for the coordinated regional operational security assessments they perform in accordance with Article 78 of the SO Regulation, for harmonised time frames in intraday, taking into account the approved proposals set up by TSOs in the different capacity calculation regions in accordance with Article 76(1) of the SO Regulation.

Article 35

Outage planning coordination tasks

1. In application of Articles 80(4) and 80(5) of the SO Regulation, when a RSC and its delegating TSOs have not succeeded to remove an outage planning incompatibility, this RSC shall coordinate with other RSCs to endeavour to propose cross-regional solutions to remove the incompatibility.

Article 36

Regional adequacy assessment tasks

1. RSCs shall define a process in order to strengthen the regional adequacy assessment performed by each RSC as required by Article 81 of the SO Regulation, by identifying the capabilities of further support between regions, for at least the time frame of week-ahead and for other agreed time frames.
2. This process shall at least ensure that RSCs exchange information on available generation capacity, demand and interconnection capacities in each region, when performing regional adequacy assessment as required by Article 81 of the SO Regulation.

TITLE 4

Forecast updates with respect to uncertainty management

Chapter 1

Forecasts

Article 37

Forecast of intermittent generation

1. Each TSO shall consider the following criteria in establishing forecasts of intermittent generation in accordance with paragraphs 2 to 5:
 - (a) the forecasts established shall cover at least the control area of the TSO, including intermittent generation located in underlying DSO/CDSO networks, and shall be complemented where necessary in accordance with paragraph b;
 - (b) each TSO shall evaluate if there are cases where the installed intermittent generation in specific geographical regions within its control area are such that it would be insufficient to establish

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forecasts at control area level only. Where such cases are identified the TSO shall determine an appropriate frequency of forecast for the intermittent sources within the identified geographical region such that deviations from the forecast would not endanger the operational security of the interconnected system or the efficient system operation;

- (c) the requirements of paragraphs 2 to 5 shall be considered as minimal requirements and each TSO shall assess whether the accuracy of the resulting forecasts is sufficient in application of Articles 70(4) and 70(5) of the SO Regulation.
2. Where total wind (resp. total solar) installed capacity is between 1% and 10% of the reference load, each TSO shall ensure the availability of at least one wind (resp. solar) generation forecast in day-ahead for each hour of the day of delivery. It must be established after weather forecast has been made available.
 3. Where total wind (resp. total solar) installed capacity is between 10% and 40% of the reference load:
 - (a) each TSO shall ensure the availability of an update of the wind (resp. solar) hourly forecast at least 2 times per day in intraday, based on at least 2 weather forecast updates;
 - (b) in cases where total wind and total solar installed capacities each are above 10% of the reference load, and the sum of the total installed capacity of wind and solar is above 40%, each TSO shall ensure the availability of an update of the wind and solar forecast for each hour of the day at least 2 times per day in intraday, based on at least 2 weather forecast updates and using the best available estimation of actual generation after having qualified that it allows to improve forecast accuracy, compared to the accuracy resulting of requirement of point (a) of paragraph 3.
 4. Where total wind (resp. total solar) installed capacity is above 40% of the reference load, each TSO shall ensure the availability of an update of the wind (resp. solar) forecast for each hour of the day at least 2 times per day in intraday, based on at least 2 weather forecast updates and using the best available estimation of actual generation after having qualified that it allows to improve forecast accuracy, compared to the accuracy resulting of the application of requirement of point (a) of paragraph 3.
 5. Where another type of intermittent generation installed capacity, such as run of river hydro generation, is above 1% of the reference load, each TSO shall ensure the availability of least one forecast for this generation type, established in day-ahead for each hour of the day of delivery.

Article 38

Forecast of load

1. Each TSO shall consider the following criteria in establishing forecasts of load in accordance with paragraphs 2 to 3:
 - (a) the forecasts established shall cover at least the control area of the TSO, including the load of underlying DSO/CDSO networks and shall be complemented where necessary in accordance with paragraph (b)1;
 - (b) each TSO shall evaluate if there are cases where load and network conditions in specific geographical regions within its control area would make it insufficient to establish forecasts at

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- control area level only. Where such cases are identified, the TSO shall determine an appropriate frequency of forecast for the load within the identified geographical region such that deviations from the forecast would not endanger the operational security of the TSO's system;
- (c) where aspects, such as demand response or energy storage, may affect the load forecast, each TSO shall ensure that the effects of these factors are considered in the forecasts;
 - (d) the requirements of paragraphs 2 to 3 shall be considered as minimal requirements and each TSO shall assess whether the accuracy of the resulting forecasts is sufficient in application of Articles 70(4) and 70(5) of the SO Regulation.
2. Each TSO shall ensure the availability in day-ahead of one load forecast per hour for every day, using the best information available in day-ahead.
 3. Without prejudice to the application of Article 40(5) of the SO Regulation, for a control area where the MW/°C gradient is greater than 1% of the reference load, the TSO shall ensure the availability of at least one load forecast per hour for all the day of delivery, based on a weather forecast established at least in the afternoon of the day before the day of delivery. For the control area, the TSO shall establish at least one update in intraday between 0h and 12h for the remaining hours of the day of delivery.

Chapter 2

Grid model updates in intraday

Article 39

Frequency of grid model updates

1. By 1 January 2023, and then at least every three years, all TSOs shall assess the need to review the individual grid models and common grid models intraday update frequency as defined in the methodology developed according to Article 70(1) of the SO Regulation. They shall take into account the expected evolution of volatile parameters, such as market positions, intermittent generation and load.

TITLE 5

Governance and implementation

Chapter 1

Governance

Article 40

Identification and governance of common functions and tools

1. All TSOs, with the support of the RSCs, shall aim at regularly identifying the common functions and tools needed for a secure and efficient system operational planning and the relevant information that need to be exchanged among them, at least to implement the tasks listed in Articles 78, 79, 80 and 81 of the

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SO Regulation. The functions, tools, and relevant information to be identified shall be of pan-European use or of regional use.

2. For the functions and tools and relevant information identified in accordance with paragraph 1, as well as for those needed to implement the common grid model building task defined in Article 79 of the SO Regulation and the operational planning data environment defined in Article 114 of the SO Regulation, all relevant TSOs, with the support of the RSCs, using, where deemed useful, ENTSO-E bodies, resources and budget and, in that case, in accordance with the provisions of ENTSO-E articles of association, shall:
 - (a) decide on their development;
 - (b) provide the needed budgets for their development and maintenance;
 - (c) agree on the rules applicable for the management of the development and maintenance, including evolutions;
 - (d) agree on the applicable process to select the hosting entities for their operation, notably in terms of competence and resources necessary to achieve the needed levels of reliability, confidentiality and security;
 - (e) and agree on the characteristics of the service delivered by these functions and tools.
3. To facilitate the development and operation of functions and tools identified in accordance with paragraph 1, all TSOs, using, where deemed useful, ENTSO-E bodies and resources, in accordance with the provisions of ENTSO-E articles of association, shall aim at using or defining state-of-the-art standards for project management, data exchange and IT common services.

Article 41

Coordination and information exchange with regional security coordinators

1. All TSOs shall enable all RSCs to execute their tasks delegated in accordance with Articles 77(3), 77(4) and 77(5) of the SO Regulation and provide them with all necessary data.
2. All RSCs shall share with each other all data relevant for the execution of their tasks in accordance with Articles 77(3), 77(4) and 77(5) of the SO Regulation.
3. All TSOs shall duly consider Article 75(1)(d) of the SO Regulation when defining the requirements applicable to the RSCs and the merging process in accordance with Article 23 of the methodology on common grid model pursuant to Article 70(1) of the SO Regulation.
4. All TSOs shall enable all RSCs to assess the impact across CCRs and the impact across RSCs when:
 - (a) designing remedial actions in accordance with Article 78(2) of the SO Regulation;
 - (b) recommending remedial actions in accordance with Article 78(2) of the SO Regulation;
 - (c) conducting regional outage coordination in accordance with Article 80 of the SO Regulation;
 - (d) conducting regional adequacy assessment in accordance with Article 81 of the SO Regulation.

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5. RSCs shall assess the impact across CCRs and across RSCs and inform the relevant TSOs about this impact.

Article 42

Data quality assessment

1. By 1 January 2023, and then at least every three years, for the functions and tools and relevant information identified in accordance with Title 4, all relevant TSOs and RSCs, shall define data quality management provisions for the data exchanged in this process. The provisions shall be developed at least to the same level of detail as the quality monitoring criteria and indicators defined pursuant to Article 2323 of the common grid model methodology adopted in accordance with Article 70 of the SO Regulation.
2. Where such a need is identified, all relevant TSOs and RSCs shall:
 - (a) define the data quality criteria, the process to check that the criteria are satisfied before using the data and the process for monitoring data quality criteria achievement;
 - (b) identify, using where deemed useful ENTSO-E bodies and resources, a common body in charge of analysing results of the data quality monitoring, reviewing the level of quality needed, and preparing when relevant the revisions of the data quality criteria.

Article 43

Monitoring of regional coordination

1. All TSOs, with the support of ENTSO-E bodies and resources, shall organise at least every three years an inquiry towards TSOs and RSCs, in order to collect their evaluation of the appropriateness and efficiency of the processes and rules applied for the coordination of the operational security analyses, outage coordination and short and medium term adequacy analyses in the operational planning time frame. This inquiry shall allow all TSOs to establish conclusions and identify, if any, improvement perspectives in terms of:
 - (a) data quality, including the quality of forecasts of generation, load and remedial actions in accordance with Titles 3 and 4;
 - (b) efficiency and adaptation of processes to day-ahead or intraday activities, and flexibility to handle out-of-procedure situations;
 - (c) availability of remedial actions to solve system security issues in a coordinated way, where a coordinated approach is relevant;
 - (d) existing barriers to coordination.
2. When defining the scope of this inquiry, in order to keep the inquiry process efficient, all TSOs and RSCs shall take account of information and conclusions made in the reports established in accordance with Article 17 of the SO Regulation.
3. The conclusions of this inquiry shall be published on ENTSO-E's website. ENTSO-E shall inform the Agency for the Cooperation of Energy Regulators of this publication and each TSO shall inform its regulatory authority.

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4. If this inquiry reveals the need to amend this methodology, all TSOs shall amend this methodology accordingly by following the process pursuant to Article 7(4) of the SO Regulation.

Article 44

Towards probabilistic risk assessment

1. All TSOs shall publish, with the support of ENTSO-E, a report on the progress achieved in Europe on the operational probabilistic coordinated security assessment and risk management. The first report shall be published in 2021 and afterwards on a biennial basis, by 31 December. ENTSO-E shall publish this report on its website.
2. When reporting on the progress achieved, all TSOs shall at least:
 - (a) provide information on the functioning of the operational processes and infrastructure required to collect and process the data referred to in paragraph 3; and
 - (b) elaborate on the achievements, potential hurdles and forward planning concerning the development of the methodology on common probabilistic risk assessment referred to in paragraph 4.
3. By nine months after the adoption of the CSAM, without prejudice to the application of Article 40(5) of the SO Regulation, all TSOs shall identify the data that needs to be collected in order to develop the operational probabilistic coordinated security assessment and risk management. They shall review it as necessary based on the findings of the reports established in accordance with paragraphs 1 and 2 and of the approval of the methodology on common probabilistic risk assessment in accordance with paragraph 4.
4. By 31 December 2027, all TSOs shall jointly develop the methodology on common probabilistic risk assessment taking full account of the requirements of Article 75(1)(b) and Article 75(5) of the SO Regulation, and shall propose it as an amendment of this methodology in accordance with Article 7(4) of the SO Regulation. After its approval in accordance with Article 7 of the SO Regulation, the methodology on common probabilistic risk assessment shall form an annex to this methodology.
5. All TSOs and RSCs with the support of ENTSO-E shall setup the operational processes and infrastructure required to collect and process the data referred to in paragraph 2(b) by 21 months after the adoption of the CSAM.

Chapter 2

Implementation

Article 45

Definition of common hours

1. By three months after the approval of this methodology, all TSOs, with the support of all RSCs, shall jointly define the hours T0 to T5. ENTSO-E shall publish these hours on its website.

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2. As long as ENTSO-E has not published these hours, the following default values shall apply: T0=18.00 CET; T1= 19.00 CET; T2=20.00 CET; T3=20.45 CET; T4=21.30 CET; T5= 22.00 CET.
3. All TSOs shall assess every three years by 1 July the adequacy of the cross-regional day-ahead coordinated operational security assessment process as defined in Article 33 to the needs. This assessment shall be submitted to the Agency for the Cooperation of Energy Regulators and all regulatory authorities. They shall at least analyse the opportunities to start earlier and to reduce the total duration of the process clearly listing any barriers for starting earlier and reducing the total length of the process. The result of the first assessment shall be reported no later than 24 months after approval of this methodology.

Article 46
Timescale for implementation

1. Upon approval of this methodology, each TSO shall publish it on the internet in accordance with Article 8(1) of the SO Regulation.
2. After approval of this methodology, and unless differently stipulated in the previous articles or in the following paragraphs of this article, each TSO and RSC shall apply the requirements of this methodology within six months after its approval.
3. Each TSO shall apply the requirements of Article 37 and Article 38 within 12 months after approval of this methodology.
4. RSCs and their delegating TSOs concerned by the application of the requirements of Article 27 shall establish the elements defined in paragraph 1 and 2 by six months after the submission of the proposal(s) to be developed by the corresponding TSOs in application of Articles 76 and 77 of the SO Regulation.
5. No later than six months after the RSC task pursuant to Article 78 of the SO Regulation has been implemented for its delegating TSOs, in application of the approved proposal of these TSOs as required by Articles 76 and 77 of the SO Regulation, the concerned RSCs and these TSOs shall participate to the cross-regional day-ahead coordinated operational security assessment process in accordance with Article 33.
6. No later than six months after RSC tasks pursuant to Article 78 of the SO Regulation have been implemented in application of approved proposals as required by Articles 76 and 77 of the SO Regulation, concerned RSCs shall implement the requirements of Article 30, Article 31, and Article 32.
7. No later than twelve months after RSC tasks pursuant to Article 79 of the SO Regulation have been implemented in application of approved proposals as required by Articles 76 and 77 of the SO Regulation, concerned RSCs shall have implemented the relevant organisation between them to guarantee the availability of common grid models in accordance with Article 29.
8. No later than eighteen months after the adoption of this methodology, all TSOs shall jointly develop a proposal for amendment of this methodology with rules for the identification and definition of overlapping zones, overlapping XNEs, overlapping XRAs, impacting CCRs and competent RSC(s), as

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well as, rules for the sharing of costs of the activated overlapping XRAs, in accordance with Article 27(3). The proposal shall include a timescale for the implementation of Article 27 and Article 30.

9. No later than six months after RSC tasks pursuant to Article 80 of the SO Regulation have been implemented in application of approved proposals as required by Articles 76 and 77 of the SO Regulation, concerned RSCs shall implement the requirements of Article 35.
10. No later than six months after RSC tasks pursuant to Article 81 of the SO Regulation have been implemented in application of approved proposals as required by Articles 76 and 77 of the SO Regulation, concerned RSCs shall implement the requirements of Article 36.
11. Each TSO shall apply the requirements of Article 5(1) and Article 6(1) by three months after approval of this methodology. In case the CGMs required by the Article 67 of the SO Regulation are not available when this methodology is approved, each TSO shall apply the requirements of these articles by three months after these CGMs are made available.
12. Each TSO shall apply Article 5(4), where applicable, by three months after receiving needed data from DSO/CDSOs according to Article 3(7).
13. Each TSO shall apply the requirements of Article 4, where applicable, by six months after receiving needed data from concerned TSOs, DSO/CDSOs and SGUs according to Article 4(5).
14. All TSOs shall report on opportunities to start earlier and to reduce the total length of the process on coordinated security analysis by 24 months after approval of this methodology, and then triennially by 1 July, in accordance with Article 45.
15. By 31 December 2027, all TSOs shall develop and submit, with the support of ENTSO-E, the methodology on common risk assessment taking full account of the requirements of Article 75(1)(b) and Article 75(5) of the SO Regulation in accordance with Article 44(4)

Article 47 **Language**

1. The reference language for the CSAM shall be English. Where TSOs need to translate the CSAM into their national language(s), in the event of inconsistencies between the CSAM and any version in another language, the relevant TSOs shall provide, in accordance with national legislation, the relevant regulatory authorities with an updated translation of the CSAM.

Annex I

AI.1 Influence threshold

Power flow influence factor is evaluated by computing two elementary factors: power flow identification influence factor and power flow filtering influence factor. These factors are defined in AI.2.

Set of elements	Power flow identification influence threshold	Power flow filtering influence threshold	Voltage influence threshold
Observability area	5 – 10 %	3 – 5%	0.01 – 0.02 pu
External Contingency list	15 – 25%	3 – 5%	0.03 – 0.05 pu

AI.2 Influence Computation Method

In order to compute influence of system elements connected outside TSO's control area on its control area the following definitions have been introduced (Figure 1):

- Element t is a network element connected in TSO's control area and which is influenced by a system element connected outside TSO's control area;
- Element r is a network element connected outside TSO's control area whose influence is assessed;
- Elements i are network elements connected either in TSO's control area or outside TSO's control area which are disconnected to represent planned (or forced) outages.

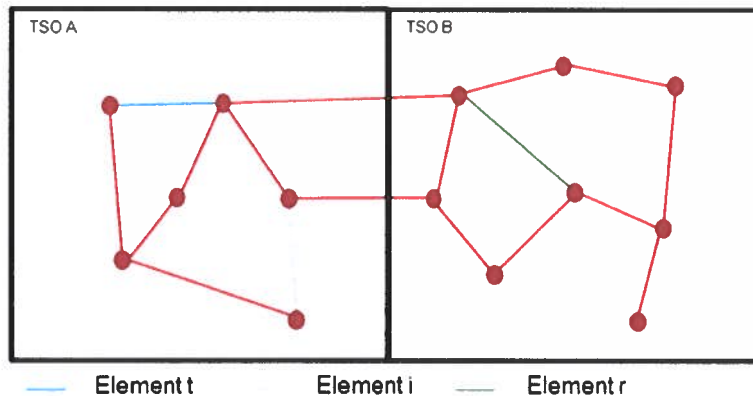


Figure 1

AI.2.1 Power flow influence factor

AI.2.1.1 Network elements

The influence of a network element (r) shall be assessed by each TSO using following formulae:

$$IF_r^{pf,id} (in \%) = MAX_{\forall i \in I, \forall s, \forall t \in T} \left(\frac{P_{s,n-i-r}^t - P_{s,n-i}^t}{P_{s,n-i}^r} \cdot \frac{PATL^{s,r}}{PATL^{s,t}} \cdot 100 \right)$$

$$IF_r^{pf,f} (in \%) = MAX_{\forall i \in I, \forall s, \forall t \in T} \left(\frac{P_{s,n-i-r}^t - P_{s,n-i}^t}{P_{s,n-i}^r} \cdot 100 \right)$$

Where

$IF_r^{pf,id}$: Power flow identification influence factor of a network element r on the TSO's control area; the factor is normalised in order to take into account potential impacts induced by differences in PATL values;

$IF_r^{pf,f}$: Power flow filtering influence factor of a network element r on the TSO's control area; this factor is not normalised;

s: Scenarios. Settings of HVDC systems and PSTs in the different scenarios are assumed to be already defined, in a coherent way, in the context of the scenarios/CGMs development process;

t: Network element connected inside TSO's control area where the active power difference is observed;

T: Set of network elements connected in the TSO's control area, which are part of the CGM and for which the assessment is performed;

i: Network element connected either in TSO's control area or outside TSO's control area (different from elements r and t) considered disconnected from the network when assessing the formula;

I: Set of network elements, connected either in TSO's control area or outside TSO's control area, modelled in the grid model whose possible outage should be taken into account in the assessment;

r: Network element connected outside TSO's control area whose power flow influence factor is assessed;

R: Set of network elements connected outside TSO's control area to be assessed;

P_{n-i}^t : Active power flow through the network element t with the network element r connected to the network and the network element i disconnected from the network;

P_{n-i}^r : Active power flow through the network element r, when connected to the network, considering the network element i disconnected from the network;

P_{n-i-r}^t : Active power flow through the network element t with the network element r and the network element i disconnected from the network;

$PATL^{s,t}$: Permanently Admissible Transmission Loading is the loading in MVA or MW that can be accepted by network element t in the scenario s for an unlimited duration;

$PATL^{s,r}$: Permanently Admissible Transmission Loading is the loading in MVA or MW that can be accepted by network element r in the scenario s for an unlimited duration.

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NB: Those computations have to be done inside one synchronous area. By principle, $IF_r^{pf,id}$ and $IF_r^{pf,f}$ are equal to 0 when r and t are not located in the same synchronous area.

The formulae must be applied, for each network element r which belongs to the set R, assessing its influence on every network element t of the TSO's control area for which the assessment is performed, and considering possible outages (network element i) (Figure 1).

The influence factor of an element connected in a given synchronous area on another element connected in a different synchronous area shall be equal to 0. Outages of HVDC links inside a synchronous area are treated as outages of AC elements.

Each TSO shall classify an 'r' element as selected for a given type of influence factor computation (observability area or external contingency) when the following conditions are simultaneously satisfied:

Power flow identification influence factor > Chosen-threshold1
Power flow filtering influence factor > Chosen-threshold2

where Chosen-threshold1 and Chosen-threshold2 are uniquely chosen by the TSO inside the ranges provided above in A1.1

AI.2.2 Voltage influence factor

If a TSO decides to use voltage influence factors in the determination of the aforementioned lists (observability area or external contingency) the influence of a network element r shall be assessed using the following formula:

$$IF_r^v = \text{MAX}_{s, \forall m(m \in M)} \left(\left| \frac{V_{s,n-1}^{m,r} - V_{s,n}^m}{V_{base}^m} \right| \right)$$

Where:

IF_r^v : Voltage influence factor of a network element r on a node m of the TSO's control area;

s : Scenarios. Settings of HVDC systems and PSTs in the different scenarios are assumed to be already defined, in a coherent way, in the context of the scenarios/CGMs development process;

r : Network element connected outside TSO's control area whose voltage influence factor is assessed;

R : Set of network elements connected outside TSO's control area to be assessed;

$V_{s,n-1}^{m,r}$: Voltage at node m with the network element r disconnected from the network;

$V_{s,n}^m$: Voltage at node m with the network element r connected to the network;

V_{base}^m : Nominal voltage in the node m .

The formula must be applied, for each network element r that belongs to the set R , assessing its influence on every node m of the TSO's control area. The voltage influence factor of a network element r is the maximum value of the previous calculations.

Hence, the influence factor on voltage is the maximum Voltage Deviation on any internal node m resulting from the outage of a network element r in any scenario. For sake of simplicity, voltage is expressed in per unit. Contrary to the influence of flows, the influence on voltage of a network element is highly dependent on the load/generation pattern i.e. the active and reactive load of the network element in the investigated scenarios.

Where a TSO intends to use voltage influence factors, the TSO shall classify a 'r' element as selected for a given type of influence factor computation (observability area or external contingency) when the following condition is satisfied:

Voltage influence factor > Chosen-threshold

where Chosen-threshold is uniquely chosen by the TSO inside the ranges provided above in AI.1

ACER Decision on CSAM: Annex II

Evaluation of responses to the public consultation on the amendments of the proposal for a methodology for coordinating operational security analysis

1 Introduction

On 14 September 2018, all transmission system operators ('TSOs') submitted the proposal for the '*methodology for coordinating operational security analysis in accordance with Article 75 of Commission Regulation (EU) 2017/1485 of 2 August 2017*' (hereafter referred to as the '*Proposal*'). The last regulatory authority received the Proposal on 1 October 2018.

All regulatory authorities did reach a unanimous agreement to request the Agency to adopt a decision on the Proposal pursuant to Article 75 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (the '*SO Regulation*'). In accordance with Article 6(8) of the SO Regulation, all regulatory authorities referred the Proposal to the Agency for a decision. In order to take an informed decision, the Agency launched a public consultation on 25 January 2019 inviting all interested parties to express their views on potential amendments of the Proposal. The closing date for comments was 18 February 2019.

More specifically, the public consultation invited stakeholders to comment on the following aspects of the methodology for coordinating operational security analysis ('CSAM'):

- (i) Common probabilistic risk assessment;
- (ii) Infrastructure for data on common operational probabilistic coordinated security assessment and risk assessment;
- (iii) Local scenarios;
- (iv) Involvement of RSCs in cross regional impact of local scenarios;
- (v) Best forecast approach for day-ahead and intraday uncertainty handling
- (vi) Allocation of remedial actions between regions;
- (vii) Influence thresholds;
- (viii) The implementation timeline, reporting periods and common hours;
- (ix) Other aspects of concern.

2 Responses

By the end of the consultation period, the Agency received responses from eight¹ respondents.

This evaluation paper summarises all received comments and responses to them. The table below is organised according to the consultation questions and provides the respective views from the respondents, as well as a response from the Agency clarifying the extent to which their comments were taken into account.

¹ One respondent asked to be treated confidentially and is therefore not listed here nor are the answers provided to the consultation.

Respondents' views	ACER views
<p>Question 1: Please comment on the suggested approach for the development of the methodology on common probabilistic risk assessment. <i>(Initial views by the Agency: Acknowledging that a strict fulfilment of Article 75(1)(b) of the SO Regulation, concerning the common operational probabilistic coordinated security assessment and risk management is not immediately achievable, the Agency finds the TSOs proposal lacking ambition in the fulfilment of Article 75(1)(b). The Agency proposes to set a deadline, 31 December 2027, for all TSOs and RSCs, with the support of ENTSO-E, to develop and submit a proposal. This proposal should be an amendment to the CSAM including a methodology on the common operational probabilistic coordinated security assessment and risk management taking full account of the requirements of Article 75(1)(b) and Article 75(5) of SO Regulation.</i></p> <p><i>In addition, Article 43(5) of the CSAM, as TSOs proposed, envisages a mere setting up of the operational processes required to collect the necessary data. However, the Agency finds this requirement lacking precision and suggests that all TSOs and RSCs, with the support of ENTSO-E, set up the infrastructure required to both collect and process the data referred to in paragraph 3 of Article 44 of the CSAM, as proposed by the Agency. This should happen by 21 months after approval of the methodology on the common operational probabilistic coordinated security assessment and risk management.)</i></p>	<p>One respondent (ENTSO-E) provided an answer to this question.</p>

Respondents' views	ACER views
<p><i>ENTSO-E: As already mentioned in the supporting document provided by all TSOs with the proposal of CSAM, TSOs recognize that, in the recent years, progresses towards full top-down probabilistic and/or risk based processes for common security assessment in operational planning and in real-time activities (as referred to in article 75 of the SO GL) have been achieved in different national or European R&D initiatives in which TSOs have been deeply involved (e.g.: iTesla, Garpur, Umbrella...) and especially for what concern the conceptual, algorithms and tooling aspects. Nevertheless, these initiatives have also reported that there are still important topics and questions that require in depth additional R&D and/or demonstration activities before becoming mature enough to be translated into pan-European operational requirements and processes. Among these topics we may highlight</i></p> <ul style="list-style-type: none"> <i>(i) the principles identifying the collection of data and the related methodology to provide correct evaluation of the density function of the possible grid situations and of the probability of occurrence of contingencies, especially the exceptional ones;</i> <i>(ii) the effective availability of sufficient historical data to estimate these probabilities for each situation and each contingency</i> <i>(iii) the impact assessment on the cost/benefit and on the TSO management endorsement of such significant changes in the way to assess the security of the system, taking into account differences between TSOs/countries in historical grid design choices (i.e. tower design vs wind withstanding capability, different design of substation,) or in risk management.</i> 	<p>The Agency disagrees, and maintains its original views from the public consultation. The latter is aligned with the views of the regulatory authorities expressed in their referral letter explaining that because of an unsatisfactory level of detail, the CSAM proposal is not compliant with the requirements of the SO Regulation.</p> <p>In order to reflect the current situation in the development for probabilistic coordinated security and risk assessment, the Agency introduced changes to former Article 43 of the Proposal to accommodate a stepwise development of operational probabilistic coordinated security assessment and risk management. As a first step, the data that needs to be collected in order to develop the operational probabilistic coordinated security assessment and risk management will be defined. In turn, all TSOs and RSCs with the support of ENTSO-E shall setup the operational processes and infrastructure required to collect and process these data. By 31 December 2027, all TSOs are expected to jointly develop the methodology on common probabilistic risk assessment taking full account of the requirements of Article 75(1)(b) and Article 75(5) of the SO Regulation, and propose it as an amendment of the CSAM in accordance with Article 7(4) of the SO Regulation. The changes to former Article 44 of the Proposal also envisage TSOs' biennial reporting on achievements, potential</p>

<p>Respondents' views</p>	<p>ACER views</p>
<p><i>By definition, topics or questions which are still considered as R&D cannot be associated to strict deadline in terms of deliverables, especially when it concerns deliverables related to operational activities, from D-1 to close to real time: TSOs cannot take any risk to operate the whole interconnected European system using the development and implementation for a fixed deadline of methodologies and processes based on non-mature concepts. In any case, when all the methodologies would have been defined, it would remain a fundamental decision for the executive management of each TSO to operate their system without always having the capability to face the loss of a single element, notably considering their responsibility and image impact towards public and national authorities in case of the occurrence of such an incident with large consequences.</i></p> <p><i>Considering the above, and without reconsidering their willingness to progress on these topics, TSOs cannot engage their responsibility in developing and submitting a proposal for the amendment to the CSAM including a methodology on the common operational probabilistic coordinated security assessment and risk management taking full account of the requirements of Article 75(1)(b) and Article 75(5) of SOGL.</i></p> <p><i>However, TSOs and NRAs might organize recurring workshops following the publication of the reports on probabilistic risk assessment development where they might jointly exchange on the feasibility of a probabilistic risk assessment and discuss the next steps towards developing a methodology on common probabilistic risk assessment.</i></p>	<p>hurdles and forward planning concerning the development of this methodology.</p> <p>In addition, the name of the former Article 43 of the Proposal was changed to reflect better the new content.</p>

Respondents' views	ACER views
<p>Question 2: Please comment on the suggested approach for setting up the infrastructure required to collect and process data necessary to inform the development of the common operational probabilistic coordinated security assessment and risk management.</p>	
<p>Five respondents provided an answer to this question.</p>	
<p>Three respondents agree with the Agency (E.DSO, BDEW, Eurelectric): <i>We agree with the changes proposed by ACER. We welcome the obligation on TSOs to set up the infrastructure to collect and process the data. From our point of view in the former draft version there was a risk for DSOs of being responsible for setting up part of the infrastructure to collect data on behalf of TSOs.</i></p>	<p>The Agency agrees. Changes in the former Article 43 of the Proposal were introduced.</p>
<p>ENTSO-E: <i>TSOs and RSCs, with the support of ENTSO-E, confirm that this is the idea to develop clear requirements and processes to set up and operate the infrastructure required to both collect and process the data referred to in paragraph 3 of Article 43 of the CSAM. Nevertheless, without knowing those detailed requirements, it is impossible for them to engage their responsibility to have this infrastructure developed and operational within a fixed timing defined so far in advance.</i></p>	<p>The Agency agrees. Therefore, the Agency prolonged the proposed timescale to implement a probabilistic approach until 31 December 2027.</p>
<p>EDF: <i>would like to draw the attention on the fact that the development of the methodology on common probabilistic risk assessment must be consistent with the title 2 of SO GL on data exchange. Title 2 of SO GL covers the exchanges of data between TSO, DSO and SGU. These issues have furthermore been complemented by the KORRR document developed by ENTSO-E. EDF understands now that the CSAM methodology may also give the opportunity to TSO to request new data. Therefore, EDF would like to stress that any new data requirement must be consistent with the already numerous requirements in the Regulation and KORRR, justified and limited to what is necessary, as it may imply costs and incoherency with other data provided.</i></p>	<p>The Agency agrees. Therefore, the Agency added a reference to Article 40 of the SO Regulation in the former Article 43(3) of the Proposal to clarify the legal basis for data collection.</p>

Respondents' views	ACER views
<p>Question 3: Please comment on the handling of the local scenarios at a regional level.</p> <p><i>(Initial views by the Agency: The CSAM proposal distinguishes between the long-term and short-term management of uncertainties. In the Annex I of the supporting document, TSOs argue that, in the long-term, CSAM basis for the management of uncertainties is the possibility for TSOs to add local scenarios to the common scenarios defined pursuant to Article 65 of the SO Regulation. Whereas, in the short-term, CSAM relies on the proven classical approach based on best forecasts and frequency of forecast updates to be determined by TSOs at a regional level. This method acknowledges the fact that reliability margins are already taken into account during capacity calculations and thus avoids adding additional unjustified margins.</i></p> <p><i>Long term studies</i></p> <p><i>Concerning the approach on the handling of uncertainties in the long-term, the Agency agrees that any local TSOs studies need to be carried out based on the commonly agreed scenarios in order to improve robustness of the operational security analyses against uncertainties.</i></p> <p><i>However, it is important how individual TSOs escalate the issues identified based on local scenarios to a wider region. The Agency believes that the local scenarios, as prepared by individual TSOs, need to be thoroughly verified, and in turn managed in a coordinated way if the situation so requires, in order to optimise the use of remedial actions, by TSOs and RSC(s) at a regional level. Arguably, such an approach is currently not fully demonstrated in Article 22 of CSAM proposal.)</i></p>	
<p>Four respondents provided an answer to this question.</p>	

Respondents' views	ACER views
<p>Three respondents approve the Agency's proposal (E.DSO, BDEW, Eurelectric): <i>We are convinced local scenarios need to be strongly coupled to and should not deviate significantly from commonly agreed scenarios. If there are local scenarios identified by a TSO which deviate significantly, we see a need to adapt commonly agreed scenarios. Having said this we fully agree to ACER's position local scenarios have to be based on the commonly agreed scenarios.</i></p> <p><i>ENTSO-E: First, let's remind that Art.22 of CSAM proposal only concerns operational security. The way to handle scenarios for long-term capacity calculations is dealt with according to FCA guidelines and the corresponding (all NRA- approved) CGM methodology.</i></p> <p><i>The objective in "long-term" operational planning, i.e. from yearly to week-ahead timeframes, is to assess whether the system will be able to be securely operated, and the main corresponding activity is to plan the outages. SOGL provides a complete development on the regional outage coordination process for "relevant assets", outage planning from Art 82 to 103. In this part, TSOs are required to coordinate between them and with other parties to determine the outage plans. In SOGL, the evaluation of the compatibility of the outages with security is left to each TSO in terms of scenarios to be taken into account. This is consistent with its full responsibility as regards the security of the system.</i></p> <p><i>The detection of outage planning incompatibilities (and the definition of proposals to avoid them), shall be supported by RSCs to which TSOs have delegated this task, according to Art 82. Art 82(3)(c) clearly stipulates that each TSO shall provide the RSC's with the scenarios the TSO believes necessary to take into account for the RSC activity.</i></p> <p><i>It shall be also outlined that, in the scope of operational planning "long-term" activities, TSOs are aiming at detecting risk of insecure situations and to avoid their occurrence.</i></p> <p><i>The main tool for that is the planning of outages, where the resolution of incompatibilities is based on changing the planned period of some outages (with relevant application of the contractual or legal national conditions) or on some particular non-costly remedial actions such as a specific topology. In addition, TSOs can study the effect</i></p>	<p>The Agency agrees. Corresponding changes to the Proposal are listed and explained in section 6.2.6. of the Decision.</p> <p>The Agency partly agrees and introduced changes to Article 22 of the Proposal to reflect on stakeholders' responses along the Agency's views above. In addition, the Agency tackled, in this article, the impact of additional scenarios on TSOs' individual grid models and the link to reliability margins from the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter 'CACM Regulation') Regulation.</p>

Respondents' views	ACER views
<p><i>of potential additional remedial actions where needed. The need to agree to prepare and activate such remedial actions would be confirmed in a much shorter timing, in general day-ahead, where all the agreed rules for coordination and relevant cost-sharing applies.</i></p> <p><i>TSOs believe that:</i></p> <ul style="list-style-type: none"> <i>the evaluation of system security in long-term timeframes require several scenarios of stress to be analyzed, because there is no good forecast at this long-term stage (for example, neither in terms of weather-dependent forecasts, market positions...); this is recognized in ACER comment above.</i> <i>Basic average scenarios are commonly established by all TSOs according to SOGL Art 65, resulting in the establishment of common grid models</i> <i>Each TSO is responsible to define the relevant local scenarios which are needed to simulate a stressed system, according to its specific deep knowledge of its control area sensitivity</i> <i>Each TSO shall require the RSC to study its local scenarios on top of the studies done on the common grid models</i> <i>Where an RSC would detect an incompatibility issue with a local scenario, it shall inform all the TSOs of the region about an incompatibility and proposals to remove it; as a result, the analysis of this incompatibility and the best ways to remove it will be known and agreed in a coordinated way between the TSOs of the region</i> <p><i>The proposal as developed in the CSAM draft delivered by TSOs to NRAs on 14 September of 2018 is consistent with this analysis and with the roles and responsibilities foreseen and defined in the SOGL.</i></p>	
<p>Question 4: What is in your view the appropriate involvement of the RSC(s) in assessing and handling the cross-CCR impact of the local scenarios?</p>	

Respondents' views	ACER views
	<p><i>(Initial views by the Agency: The CSAM proposal distinguishes between the long-term and short-term management of uncertainties. In the Annex I of the supporting document, TSOs argue that, in the long-term, CSAM basis for the management of uncertainties is the possibility for TSOs to add local scenarios to the common scenarios defined pursuant to Article 65 of the SO Regulation. Whereas, in the short-term, CSAM relies on the proven classical approach based on best forecasts and frequency of forecast updates to be determined by TSOs at a regional level. This method acknowledges the fact that reliability margins are already taken into account during capacity calculations and thus avoids adding additional unjustified margins.</i></p> <p><i>Long term studies</i></p> <p><i>Concerning the approach on the handling of uncertainties in the long-term, the Agency agrees that any local TSOs studies need to be carried out based on the commonly agreed scenarios in order to improve robustness of the operational security analyses against uncertainties.</i></p> <p><i>However, it is important how individual TSOs escalate the issues identified based on local scenarios to a wider region. The Agency believes that the local scenarios, as prepared by individual TSOs, need to be thoroughly verified, and in turn managed in a coordinated way if the situation so requires, in order to optimise the use of remedial actions, by TSOs and RSC(s) at a regional level. Arguably, such an approach is currently not fully demonstrated in Article 22 of CSAM proposal.)</i></p>
	<p>Five respondents provided an answer to this question.</p>

Respondents' views	ACER views
<p>Four respondents support the Agency approach overall.</p> <p><i>E.DSO, BDEW, Eurelectric: We agree with the specifications required by ACER. We recommend TSOs to coordinate with the respective RSC as soon as local studies reveal issues with regional impact. Such studies should be verified by the respective TSO and the RSC and, if verified, the appropriate remedial action(s) should be recommended by the RSC.</i></p> <p><i>EDF agrees the local scenarios could be part of the process of long term studies. National TSOs' missions enable them to anticipate trend in local demand/generation/storage evolutions that can impact future global scenarios. Therefore, local scenarios after cross-verification by RSC could be the basis for a change in the global scenarios defined in CGM.</i></p>	<p>Answers to the Public Consultation overall confirm the approach proposed by the Agency. The Agency introduced changes to Article 22 of the Proposal to reflect on stakeholders' responses. Especially, the involvement of RSCs in the assessment of regional and cross-regional effect in additional scenarios.</p>
<p><i>ENTSO-E: As explained above, in the long-term activities for operational planning, the focus is on outage planning. Outage planning incompatibilities may potentially appear across Outage Coordination Regions (OCRs, at least equal to CCRs). It is the view of TSOs that the regional processes shall allow to detect and solve any outage incompatibility, including implying TSOs of different OCRs.</i></p> <p><i>For this reason, the Article 35 of the CSAM proposal requires RSCs to coordinate with other RSCs where needed to elaborate cross-RSC proposals to TSOs to remove any incompatibility. This is consistent with SOGL Art 83(3) which stipulates that "If outage planning incompatibilities arise between different outage coordination regions, all TSOs and regional security coordinators of those regions shall coordinate to resolve those outage planning incompatibilities".</i></p>	<p>The Agency disagrees, and added references to include the RSC(s) in the information exchange, definition and study of the additional common grid models in Article 22 of the CSAM, as well as, in the assessment of cross-regional impact in studying additional common grid models and coordination with other RSCs.</p>
<p>Five respondents provided an answer to this question.</p>	<p>Question 5: Please comment on the best forecast approach as proposed by TSOs in the Day-ahead and Intraday uncertainty handling (Article 23(1) of the CSAM).</p>

Respondents' views	ACER views
<p>Three respondents share the Agency's view (E.DSO, BDEW, Eurelectric): <i>We strongly support that there is a clear definition of the level of uncertainties and its maximum severity. The points raised in the consultation are in line with of our criticism that the influence computation method does not fully clarify nor describe the criteria, which is used to select the scenarios for determining the observability area and how to deal with the probability of occurrence.</i></p> <p><i>We also believe that there is a need for a harmonised maximum level of uncertainties agreed at European level in order to facilitate an optimisation of uncertainty management.</i></p>	<p>Although the majority of stakeholders support a need for a clear definition of the level of uncertainties and its maximum severity, the Agency did not introduce such changes to Article 23(1) of the Proposal. This is because after reviewing TSOs' explanations received during this public consultation, the Agency believes, with the current knowledge, that the provisions of Article 23, Article 24, Error! Reference source not found. and Article 39 of the Proposal constitute the harmonised maximum level of uncertainties agreed at European level. However, the Agency sees room for future improvement when information and experiences collected through the implementation monitoring show inefficiencies with the current approach. At the current stage, it is not possible to form an educated opinion on how uncertainties are handled efficiently because the approach is not yet implemented, as proposed by TSOs.</p>
<p>Two respondents agree with original TSOs' proposal.</p> <p><i>EDF has no concern regarding the best forecast approach proposed by TSOs in Article 23(1) of the CSAM.</i></p>	<p>See the answer above.</p>

Respondents' views	ACER views
<p><i>ENTSO-E: For the short-term horizons, the proposal of the TSOs for managing uncertainties is based on the well-established and proven robust approach of "best-estimates". This takes into account that:</i></p> <ul style="list-style-type: none"> <i>• the situation can be quite well forecasted in the day-ahead and moreover intraday timeframes: market positions, outages, preferred topologies are declared/defined; RES and load forecasts are available;</i> <i>• margins have already been taken into account in the CC process</i> <i>• the experience shows that the current practice, based on best-forecast and sufficient updates of the forecasts, and taking into account that remedial actions are activated at latest respecting the needed delay of activation, provide a well-balanced approach in terms of security (avoiding to face a non-forecasted situation for which no remedial action would be available) and costs (avoiding to activate remedial actions which would appear unnecessary)</i> <i>• for a given level of uncertainties, their impact is not the same for different system situations, depending on the variability of estimated flows with injections and on the proximity of the flows to their limits.</i> <p><i>Moreover, TSOs and RSCs do not have possibility to study a lot of variants in a very constrained operational timing, and, would it be possible, the definition of the criteria to establish a consistent decision making rules, in this kind of probabilistic approaches, remains a controversy topic (R&D issue).</i></p>	

Respondents' views	ACER views
<p>A "result-oriented" approach, based on a maximum acceptable level of uncertainty, would be very difficult to specify and to apply, because, as regards e.g. uncertainties on RES generation, the forecast accuracy is strongly affected by the local weather characteristics affecting these variables; for example, it is not reasonable to request the same level of accuracy for PV forecast in GB and in south of Spain. Facing this fact, the CSA proposal aims at addressing it by requesting differentiating levels of frequency updates. This is to be analysed together with the obligation made to each TSO in SOGL Article 70(5) to monitor the impacts of its forecast quality on the security analysis reliability.</p> <p>Finally, if any (harmonized) additional way was defined to take into account uncertainties on forecasts (and therefore uncertainties on the results of the security analyses), above the average "best-forecast" estimate, it would imply additional remedial actions to be activated, with additional costs to be borne by TSOs, i.e. by network users through tariffs.</p> <p>TSOs, in their CSAM proposal, have considered this option was not necessary in the next years, taking into account that at least 3 updates of the IGMs/CGM will be performed in intraday (according to CGM methodology developed according to SOGL Art 67) and that TSOs of each CCR can already agree to increase this frequency. Nevertheless, TSOs also acknowledge that the situation could degrade in the future, and this is the reason why Article 39 of CSAM proposal require TSOs to review every 3 years the frequency of IGM/CGM intraday updates.</p>	
<p>Question 6: Please comment on the issue of allocation of remedial actions between CCRs by TSOs and potential solutions.</p> <p>(Initial views by the Agency: Currently, some CCRs in Europe are covered by two RSCs. For example, TSCNet and Coreso simultaneously cover the Italy North and Core regions. According to Article 30(3) of CSAM, in providing its RSC with necessary information on the possible remedial actions, each TSO shall decide on whether a remedial action is offered simultaneously to different CCRs or is offered only to one CCR.</p> <p>The Agency understands that a remedial action might have a beneficial effect in one CCR and a detrimental one in another. Notwithstanding the economic effects, this impact might even be big enough to jeopardise the system security. However, there is no guidance in place that would help TSOs to avoid the arbitrage in allocating remedial actions among CCRs (in case a TSO is associated with more than one CCR).)</p>	

Respondents' views	ACER views
<p>Five respondents provided an answer to this question.</p> <p>Three respondents share the Agency's view (E.DSO, BDEW, Eurelectric): <i>We share the view that Art. 30(3) CSAM might bear inefficiencies or even risks. We propose to oblige TSOs to offer an available remedial action to all RSC in case there is more than one. If a remedial action is to be chosen by one RSC, it has to be coordinated not only with the respective TSO(s), but also with the second RSC to avoid detrimental effects on the system.</i></p>	<p>The Agency agrees to the necessary cross-regional coordination of RSCs and introduced changes to Article 27 of the Proposal in order to ensure that appropriate rules will be established to: (i) identify overlapping zones between CCRs; (ii) address operational security violations within the overlapping zones with a common procedure involving RSCs; (iii) share responsibilities between CCRs in terms of identification of remedial actions; (iv) share costs associated with activated remedial actions.</p>
<p><i>EDF acknowledges the challenge with forecasting transit flows from other CCRs, or managing countertrading on borders in other CCRs.</i></p> <p><i>TSOs should offer all available remedial actions simultaneously to different CCRs. Allocation of remedial actions between CCRs must be the best economic-oriented solution in order to achieve the highest global social welfare as long as network security is ensured. When a TSO is associated with more than one CCR, the use of remedial actions must be shared and coordinated with all the CCRs involved in the process by calculating the best solution from an economic point of view.</i></p> <p><i>Transparency to all stakeholders and communication after the use of remedial actions are key to improve confidence in the use of remedial actions. An annual feedback of such an allocation of remedial actions between CCRs could help addressing new challenges in the future.</i></p>	<p>See the answer above.</p> <p>The Agency agrees that the transparency is fundamental and believes that the existing provision of Article 17(2)(b) of the SO Regulation, concerning the reporting on statistics of occurrences, including their duration, location and number of occurrences together with the associated remedial actions activated and their costs in case they have been incurred, meet the transparency obligations at this point.</p>
<p><i>ENTSO-E: The concepts for regional coordination which are formalized in SOGL and CSAM are based on:</i></p>	<p>See the answers above.</p>

Respondents' views	ACER views
<ul style="list-style-type: none"> • Determination by TSOs of each CCR of the rules to be applied within one CCR (e.g.: which congestions to monitor, which remedial actions to coordinate, which remedial actions to offer, which process between RSCs and TSOs, which function for the search of most economical and effective remedial actions...) • Inter-RSC Coordination rules provided by CSAM draft Articles 26 to 36 (e.g.: exchanging results of RSC analyses, evaluation of impacting envisaged remedial actions, search for additional remedial actions if no satisfying solution founded inside a CCR,...) <p>TSOs would like to underline that these concepts for regional coordination are largely new, even if inspired from best practices already established by some RSCs and TSOs. It is therefore very difficult today to anticipate in a top-down approach, based on a theoretical analysis on paper and not yet enhanced by actual tests and effective operation, all the possible effects of the adopted rules and their mitigation/enhancement. This is for example the case with the question raised here by ACER. Moreover, the best fitted answer to this question can significantly differ from one couple of CCRs to another one. It's the reason why TSOs do recommend that any addition on these topics in CSAM should be thoroughly and prudently assessed, and be formulated in a sufficiently open approach to be adaptable to the future reality of its application. Also, any additional requirement must remain consistent with SO GL Article 76.</p> <p>As regards the question raised here, the following elements have to be taken into account:</p>	

Respondents' views	ACER views
<ul style="list-style-type: none"> • <i>With respect to the impacts on costs borne by a TSO due to the different cost-sharing agreements which will be agreed by CCRs, it seems legitimate that a TSO who owns a given remedial action has the right to select the preferred CCR where the use of this remedial action will reduce its own costs</i> • <i>Article 31 of CSAM proposal draft avoids that this TSO right could introduce too extensive limitations: when a supportive RSC tries to identify possible additional remedial actions (located in one CCR) to solve a congestion that a requesting RSC cannot solve by using the available remedial actions at its disposal (in another CCR), the supportive RSC shall not take into account such limitations set by one TSO; obviously, according to SOGL Art 78, all the affected TSOs in both CCRs, including the owner of the remedial action, shall agree to the proposal established by the RSCs.</i> • <i>Making available a given remedial action to 2 CCRs in parallel increase the complexity of the coordination process to ensure that its usage is efficient and secure in both regions</i> • <i>A too "simple" approach based e.g. on compared potential efficiencies of a remedial action on different congestions located in different CCRs to make available this remedial action to a CCR can be detrimental: in some cases, it is preferable to use a remedial action, even with a relatively low efficiency, to decrease a congestion, thus allowing that the rest of very costly remedial actions needed for solving this congestion will be decreased in volume, rather than using it to solve "efficiently" another congestion located in another CCR, provided there are other sufficiently efficient and non-costly or relatively low-cost remedial actions available in this CCR to solve this latter congestion.</i> • <i>More generally, there is no evidence that there would exist a stable rule for allocating at best a given remedial action to a given CCR.</i> 	

Respondents' views	ACER views
<p><i>As a result, TSOs believe the current CSAM proposal includes sufficient requirements on this topic. But TSOs and RSCs acknowledge they will have to look for providing adequate answers, on a case-by-case approach if necessary, to these questions when implementing the Art 76 proposals per CCR and the inter-RSC coordination rules.</i></p>	
<p>Question 7: Please comment on the need to reduce the ranges for the power flow identification influence thresholds as in Annex I of the CSAM proposal.</p> <p><i>(Initial views by the Agency: Article 3 of the proposal on CSAM describes the influence factor computation method while referencing to Annex I to the CSAM where detail to the computational method is provided. This computation method is used both for determining the elements to be included in the observability area of a TSO, and for determining those to be included in the contingency list. However, these vary in the ranges of thresholds to be applied in accordance with Articles 5.5 and 6.2 of CSAM.</i></p> <p><i>The influence factor computation method is clearly described and well understood. However, in the absence of a clear impact of the selected power flow identification influence threshold on the size of the observability area and on the external contingency lists, the Agency is not convinced that such a large range for the thresholds on power flow influence factors as proposed by TSOs in Annex I is needed. The Agency understands that there is a risk of discrimination concerning the effect on system users in different control areas should very different thresholds be applied by TSOs in the identification of the observability area and of external contingencies. The Agency is minded to narrow down the proposed ranges for the power flow identification influence thresholds in Annex I.)</i></p>	
<p>Five respondents provided an answer to this question.</p>	
<p>Four respondents share the Agency's initial view.</p> <p><i>E.DSO, BDEW, Eurelectric: We clearly see the need to reduce the proposed threshold. We propose to choose a small range at the upper end of the bandwidth as currently proposed by TSOs. We are convinced that the chosen scenarios are already an estimation following a very conservative approach. Using lower thresholds in combination with strongly conservative scenarios would lead to unrealistically large observability areas and thus an extremely high number of relevant assets.</i></p> <p><i>EDF agrees on the need to reduce the ranges for the thresholds used in Annex I of the CSAM proposal. This reduction would help limiting the risk of discrimination.</i></p>	<p>The Agency partly agrees.</p> <p>The Agency was looking into the possibility to reduce the ranges for thresholds. However, in the absence of factual consequences of such a reduction and after evaluating the stakeholders' answers and explanations obtained during the consultation with all regulatory authorities and TSOs, the Agency could not find a better compromise than what TSOs are proposing at this point. Therefore, the Agency did not make any changes in the Annex I of the CSAM to reduce the ranges for the power flow identification influence</p>

<p>Respondents' views</p>	<p>ACER views</p>
<p><i>The selection of a threshold must primarily be based on the TSO's experience. The use of these methodologies must not lead to dramatic changes in current practices and improvements should be introduced gradually as the scenarios are modified. So the first step is to properly set the ranges in order to reflect how the coordination among TSOs occurs today.</i></p> <p><i>EDF wishes also the ranges used in Annex 1 of the RAOCM to be reduced in the same way. RAOCM will define the relevant assets which need a coordination more intense between TSO. It would be more appropriate to have a common criteria or at least a reduced range to select relevant assets. Otherwise a discrimination among producers will occur which could impact the competition between generators. In EDF's view, in order to initialize in a proper manner the methodology, TSOs should select threshold for the RAOCM to pick out only the production units whose activities need coordination among TSOs. EDF understands that some assets need coordination even though incompatibilities are rare. It would be inefficient if production units that have never needed coordination among TSOs become relevant assets. EDF wonders whether the selection of a threshold value by each TSO would lead to unequal treatment for the same situation in different countries. In any case, EDF considers it is essential that TSOs justify their choice.</i></p> <p><i>For the choice of a relevant power flow influence threshold, ENTSOE explains in its supporting document that it shall be "low enough to minimize the risk that outages of not relevant grid could treat the security of neighbouring control areas; and high enough to avoid too long relevant asset lists that are not compatible with time requirements of the outage coordination process". The choice of a relevant threshold is also used in the formula proposed to estimate the power flow influence. This formula consists in calculating the asset maximum influence among all the possible combinations of scenarios and disconnected network elements. In this case, a high threshold range should be associated in order to avoid too long relevant asset lists. In case of a lower threshold range, a quantile method would be more appropriate.</i></p>	<p>thresholds. Nevertheless, the Agency added an obligation for ENTSO-E to assess any interoperability issues stemming from different threshold values for the identification of external contingencies selected by TSOs, and report on its findings and proposals within the scope of its reporting obligations pursuant to Article 17 of the SO Regulation.</p>

Respondents' views	ACER views
<p>One respondent disagrees with the Agency.</p> <p><i>ENTSO-E: TSOs want to underline that the ranges provided in the Annex 1 of the CSAm proposal were evaluated by experts of several TSOs to determine which thresholds lead to technically sensible results. These evaluations included comparisons with lists resulting from proven practices previously used in order to take into account the corresponding know-how. Based on the feedback of the TSOs experts the different ranges of thresholds were narrowed down as much as possible.</i></p> <p><i>As stated in the Supporting Document, defining a common threshold for each list at the level of Synchronous Area is not achievable and not advisable:</i></p> <ul style="list-style-type: none"> • <i>Some TSOs need a larger view on the rest of the interconnected system due to the structure of their grid and the conditions under which they operate their grid (typically loading and margins, cross-border market activity and loop flows, actions of other TSOs, etc.).</i> • <i>For other TSOs this necessity is lower and it is not efficient to impose them to invest more resources on it. It would be detrimental to the application of SO GL Article 4(2)(c) to impose the same threshold to these TSOs than the one needed for the previous ones.</i> <p><i>Moreover, lowering the higher value of the range will mean larger Observability Areas for some TSOs that do not really need it; conversely, increasing the lower value of the range could impact security assessment of some TSOs which need larger Observability Areas, in real time.</i></p> <p><i>TSOs would like to remind that the proposed range of thresholds does not have any impact on stakeholders as regards horizontal observability area and associated data exchanges and that for the TSO-DSO observability area a qualitative agreement remains the preferred option.</i></p>	<p>See the answer above.</p>

Respondents' views	ACER views
<p>Question 8: Please comment on the TSOs proposal for implementation times of various CSAM provisions, on the reporting periods and on the default common hours set in Article 44(2) of the CSAM.</p> <p><i>(Initial views by the Agency: The Agency notes different implementation deadlines for the implementation of different CSAM provisions and of the reporting periods. For example:</i></p> <ul style="list-style-type: none"> - <i>on the implementation of Article 37, which is first to be applicable 24 months after the approval of the CSAM proposal, and</i> - <i>on the implementation of Article 38, which is to be applicable 12 months after the approval of the CSAM proposal.</i> <p><i>The Agency wonders if the TSOs proposals concerning the implementation of different CSAM provisions and of the reporting periods are consistent and ambitious enough.)</i></p>	
<p>Four respondents provided an answer to this question.</p> <p>E.DSO, BDEW, Eurelectric: <i>We propose to harmonise the implementation deadline to 12 months. Forecasts of intermittent generation are state of the art and available widely on the market. We do not see the need for TSOs to reserve 24 months to incorporate such technology into their systems.</i></p>	<p>The Agency agrees. The implementation for forecasts on load and intermittent generation was harmonised to 12 months in the former Article 45(3) of the Proposal.</p>
<p>ENTSO-E: <i>TSOs would like to ensure ACER that they have setup the deadlines for implementation as the most realistic and feasible ones. It's always possible to reduce such implementation targets on a paper but the reality will come back: any implementation requires sufficient time to apply the professional processes that are relevant, such as: detailed specification establishment, decision making by the executive management, application of applicable rules regarding competition when external providers are needed, time to develop and test, time to introduce in the business processes and training of concerned operators.</i></p>	<p>Apart from changing the implementation time for the forecasts on load and intermittent generation, the Agency did not change the default common hours for Day-Ahead cross-regional process mentioned by TSOs.</p>

Respondents' views	ACER views
<p>On the differentiation of implementation timings for Articles 37 and 38, elements are already available in the line 31 of the response to public consultation comments on CSAM. It is explained by the fact that the requirements set up in Article 38 (Load forecast) is already satisfied for most of the TSOs. On the contrary, a benchmark made by TSOs during the development of CSAM proposal showed that approximately half of the TSOs do not satisfy the requirements setup in Article 37 (RES forecast). And the upgrades on this topic necessarily request a quite long time: either the TSO aims at procuring such a service (or build its own home-made forecasts) and this requires times to define and qualify the solution, including the fact that it may request additional data (measurements) not yet available; or the TSO requests market participants to provide such forecasts and this also needs times to include that in the national market rules and then for market participants to make it available.</p> <p>As regards the default common hours for Day-Ahead cross-regional process:</p> <ul style="list-style-type: none"> • For T0, the value is based on the current situation where the time necessary to receive from all market participants (and DSOs where applicable) their positions and the corresponding generation or load scheduled programs is quite long and different from one country to another one. This may also include time needed by market participants to program their participation to FCR and FRR reserves, based on the results of the procurement processes. Then each TSO has to run an internal process to establish best forecasts using these market participants data and the own TSO information about the net positions, grid elements; this includes running preliminary security analyses to assess the feasibility of the IGM (a load-flow must be able to run successfully on it). 	

Respondents' views	ACER views
<ul style="list-style-type: none"> For T1 to T5 values, they are provisional, because the corresponding process is not yet in place. Considering this cross-regional process implies successive steps where a lot of coordination RSC/TSOs and RSC/RSC will take place, TSOs rather believe that these timings are challenging rather than comfortable. In any case, it's in the interest of TSOs to make the total time as short as possible because the sooner the results are available, the better it is to prepare the operation and go to intra-day security analyses processes. 	
<p>Question 9: Please provide any further comment on the CSAM or RAOCM. Please make sure to reference any relevant article in case this is needed.</p>	
<p>Eight respondents provided feedback.</p>	

Respondents' views	ACER views
<p>Three respondents provided comments on Article 17(4) of the CSAM (ERU Energy Regulatory Office, EOP Elektrárny Opatovice, a.s., CEZ):</p> <p><i>According to Article 78(4) of SOGL each TSO shall decide on the implementation of each remedial action recommended by the RSC. In case of refusal the only condition is to provide an explanation to the RSC.</i></p> <p><i>„(...) The TSO shall decide whether to implement the recommended remedial action. Where it decides not to implement the recommended remedial action, it shall provide an explanation for this decision to the RSC. Where the TSO decides to implement the recommended remedial action, it shall apply this action for the elements located in its control area provided that it is compatible with real-time conditions. ”</i></p> <p><i>On the other hand, Article 17(4) of CSA Methodology introduces additional conditions under which each affected TSO is obliged to implement the recommended remedial action. These additional conditions are not compliant with provisions of Article 78(4) of SOGL.</i></p> <p><i>In addition, fulfilment of these conditions will not be being performed in real time but on DACF or IDCF Common Grid Model (CGM) instead. System state is determined based on real time grid situation which might differ significantly compared to DACF or IDCF CGM.</i></p> <p><i>Based on the arguments mentioned above these additional conditions introduced in CSA Methodology shall be removed.</i></p>	<p>The Agency agrees.</p> <p>The Agency changed paragraphs (1), (5), (6) and (7) of Article 17 of the Proposal clarifying that such remedial actions shall be implemented by TSOs in accordance with Article 78(4) of the SO Regulation and other relevant Union legislation. In addition, the notions of ‘not refuse to’ were replaced with the aforementioned references.</p>
<p><i>EDF: About CSAM and RAOCM as well, EDF considers that before the operational window, and as long as the potential of remedial actions (costly or not) could be sufficient and economical to restore secure operation, N-1 contingencies could be disregarded. EDF also considers that the proposed methodology for “influence computation” should be less conservative and not systematically take into account N-2 situations (simulation of the loss of both the asset analyzed and the outage of all elements).</i></p>	<p>The Agency disagrees. In accordance with Article 35(4) of the SO Regulation, a TSO shall not be required to comply with the (N-1) criterion during switching sequences and time periods required to prepare and activate remedial actions. Nevertheless, in accordance with Article 35(5) of the SO Regulation, unless a Member State determines otherwise, a TSO shall not be required to comply with the (N-1) criterion</p>

Respondents' views	ACER views
<p><i>EDF recognizes that an IT infrastructure and process must be developed to allow for an efficient coordinated security assessment. In addition to setting a deadline for full implementation of the methodology, EDF believes it could be relevant to promote a stepwise approach, with faster developments for simple yet relatively efficient solutions to be assessed through CSA, such as countertrading for example.</i></p> <p>Three respondents provided the following response (BDEW, E.DSO, Eurelectric): <i>We are very pleased that ACER is currently revising the method.</i></p> <p><i>On one hand from our perspective there are some new improvements and good points related to the Influence computation.</i></p> <p><i>On the other hand it is unclear what happened with other critical points raised up during the first consultation:</i></p> <ul style="list-style-type: none"> - <i>The draft mentions "Own Grid Model" several times in Article 3. However, there is no definition available of such a grid model. In the existent European framework, only IGM and CGM are defined and available. We see a backdoor and huge risk of legal uncertainty in introducing new, undefined models in a secondary document within the European legal framework. Therefore we strongly encourage ACER to delete all references to "Own Grid Model" and replace them by making use of well-known models like IGM instead. Otherwise it is not clear to stakeholders what data will be required in the future.</i> - <i>Regarding Article 4 and the entitlement of TSOs contained in there to use dynamic studies and request data for them, it is difficult for stakeholders to assess how likely such a situation is. We recommend to foresee a coordination between affected SGUs, DSOs and the respective TSO as soon as dynamic stability assessment becomes likely, that is, steady-state limits and dynamic stability limits converge.</i> 	<p>as long as there are only local consequences within the TSO's control area.</p> <p>The Agency agrees and removed the references to "Own Grid Model", as well as, provided a clearer wording to address the issue of complementing individual grid models with network elements connected to DSO/CDSO networks.</p> <p>The Agency partly agrees and introduced references to RSCs in Article 4 of the Proposal. These references are introduced in accordance with Article 75(1)(d) of the SO Regulation and because of the requirement to coordinate on the remedial actions in accordance with Article 21(1) of the SO Regulation. This coordination includes the remedial actions aiming to ensure the dynamic stability referred to in Article 39(1) of the SO Regulation.</p>

Respondents' views	ACER views
<p><i>- According the Article 5(4), the TSO has the final say if there is a disagreement about the necessary data for defining the observability area. In such a case, the DSO has to hand over the complete set of detailed data of its whole distribution system to put the TSO in a position to calculate the observability area. That all is unacceptable for DSOs, as it implies huge costs to DSOs without ensuring added value. A coordination is urgently needed. In such a case the role of the NRA as mediator should be possible. We would be very happy if these points were also considered.</i></p>	<p>The Agency understands stakeholders' concern, but does not think any changes to the CSAM are needed because any such data request by TSOs is subject to Article 4(2) of the SO Regulation, requiring the application of the principles of proportionality, non-discrimination, transparency and principle of optimisation between the highest overall efficiency and lowest total costs for all parties involved. In addition, in case of disputes, Article 6(10) of the SO Regulation applies.</p>
<p><i>ENTSO-E: Network Codes and Guidelines, directives / regulations are so-called delegated acts. Essential specifics should be part of a regulation and not be hidden within a methodology deducted from a guideline obligation.</i></p> <p><i>TSOs suggest to take care of this principle when finalizing CSAM.</i></p>	<p>The Agency did not specify anything in the CSAM without a legal basis. Legal provisions stem from the SO Regulation and CACM Regulation, as well as, other methodologies already approved by NRAs or ACER.</p>

3 List of respondents

Organisation	Type
BDEW Federal Association of the German Energy and Water Industries	Association
CEZ	Energy company
EDF SA	Energy company
E.DSO for Smart Grids	Association
EOP Elektrárny Opatovice, a.s.	Energy company
ENTSO-E	Association of Transmission System Operators
ERU Energy Regulatory Office	Energy Regulator for Czech Republic
Eurelectric	Association

