Italy North TSOs proposal for common provisions for regional operational security coordination in accordance with Article 76 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation

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DISCLAIMER This document is released on behalf of the transmission system operators ("TSOs") of Italy North Region solely for the purposes of public consultation on the proposal on operational security coordination in accordance with Article 76 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation ("SO Regulation"). This version is a draft proposal and does not constitute a firm, binding or definitive TSOs' position on the content.

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TSOs of the Italy North Region, taking into account the following:

Whereas

(1) Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as the "SO Regulation") entered into force on 14 September 2017.

(2) This document, including its annexes, is a common proposal developed by all Transmission System Operators (hereafter referred to as "TSOs") of the Italy North Capacity Calculation Region (hereafter referred to as "Italy North Region"), as defined in accordance with Article 15(1) of Regulation (EU) 2015/1222 on Capacity Allocation and Congestion Management (hereafter referred to as the "CACM Regulation"), for the methodology for regional operational security coordination (hereafter referred to as "ROSC methodology") inside the Italy North Region, required by Article 76(1) of the SO Regulation.

(3) This ROSC methodology takes into account the principles and goals set out in the SO Regulation, as well as those of the CACM Regulation, established according to Article 6 of 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"). Moreover, this ROSC methodology in accordance with Article 76(1) of the SO Regulation follows the principles set out in the methodology for coordinating operational security analysis (hereafter referred to as "CSAm") established by the Agency for the cooperation of energy regulators (hereafter referred to as "the Agency") in its decision No 07/2019.

This proposal takes also into account the effective structure of the grid by establishing TSO-TSO based contractual framework to include Third Countries as Technical Counterparties. Therefore, this proposal is developed by TSOs of the Italy North Region, taking into account Technical Counterparties' grid elements.

(4) Ensuring operational security, which is among the objectives of the SO Regulation as laid down in Article 4, requires the inclusion of Third Countries' Remedial Actions in the coordinated security analysis processes of Italy North Region. SO Regulation's objectives cannot be achieved in any other way but by including Third Countries' Remedial Actions. This inclusion is in line with Article 13 of the SO Regulation, providing that EU TSOs must establish "*cooperation concerning secure system operation*" with non-EU TSOs belonging to the same synchronous area via an agreement with these non-EU TSOs. In order to comply with the requirement laid down by EU Regulations, this ROSC methodology Proposal will include Third Countries as Technical Counterparties.

To ensure operational security by including Third Countries' Remedial Actions, TSOs of Italy North Region will conclude an agreement with relevant Technical Counterparties. In order to be taken into consideration in the regional operational security coordination, and enter into a TSO-TSO based contractual framework, Technical Counterparties must fulfil the conditions laid down by Article 1(3) of the CSAm, applicable to TSOs from jurisdictions outside the area referred to in Article 2(2) of the SO Regulation. This agreement will include ROSC methodology's provisions and ensure that the Technical Counterparty is contractually bound by the same obligations as the ones binding upon TSOs of the Italy North Region by virtue of EU Regulations. Such agreement will govern mutual obligations

and responsibilities of the Technical Counterparty with TSOs of Italy North Region in relation to the regional operational security coordination.

(5) In accordance with Article 76(1) of the SO Regulation, the ROSC methodology "*shall determine:*

(a) conditions and frequency of intraday coordination of operational security analysis and updates to the common grid model by the regional security coordinator;

(b) the methodology for the preparation of remedial actions managed in a coordinated way, considering their cross-border relevance as determined in accordance with Article 35 of Regulation (EU) 2015/1222, taking into account the requirements in Articles 20 to 23 and determining at least:

(i) the procedure for exchanging the information of the available remedial actions, between relevant TSOs and the regional security coordinator;

(ii) the classification of constraints and the remedial actions in accordance with Article 22;

(iii) the identification of the most effective and economically efficient remedial actions in case of operational security violations referred to in Article 22;

(iv) the preparation and activation of remedial actions in accordance with Article 23(2);

(v) the sharing of the costs of remedial actions referred to in Article 22, complementing where necessary the common methodology developed in accordance with Article 74 of Regulation (EU) 2015/1222. As a general principle, costs of non-cross-border relevant congestions shall be borne by the TSO responsible for the given control area and costs of relieving cross-border-relevant congestions shall be covered by TSOs responsible for the control areas in proportion to the aggravating impact of energy exchange between given control areas on the congested grid element."

(6) In accordance with Article 77(1) of the SO Regulation, the ROSC methodology "*shall also include common provisions concerning the organisation of regional operational security coordination, including at least:*

(a) the appointment of the regional security coordinator(s) that will perform the tasks in paragraph 3 for that capacity calculation region;

(b) rules concerning the governance and operation of regional security coordinator(s), ensuring equitable treatment of all member TSOs;

(c) where the TSOs propose to appoint more than one regional security coordinator in accordance with subparagraph (a):

(i) a proposal for a coherent allocation of the tasks between the regional security coordinators who will be active in that capacity calculation region. The proposal shall take full account of the need to coordinate the different tasks allocated to the regional security coordinators;

(ii) an assessment demonstrating that the proposed setup of regional security coordinators and allocation of tasks is efficient, effective and consistent with the regional coordinated capacity calculation established pursuant to Articles 20 and 21 of Regulation (EU) 2015/1222;

(iii) an effective coordination and decision making process to resolve conflicting positions between regional security coordinators within the capacity calculation region."

(7) In accordance with Article 77(3) of the SO Regulation, the TSOs of each capacity calculation region shall propose the delegation of the following tasks in accordance with paragraph 1:

(a) regional operational security coordination in accordance with Article 78 of SO Regulation in order to support TSOs fulfil their obligations for the year-ahead, day-ahead and intraday time-frames in Article 34(3) and Articles 72 and 74 of SO Regulation;

(b) building of common grid model in accordance with Article 79 of SO Regulation;

(c) regional outage coordination in accordance with Article 80 of SO Regulation, in order to support TSOs fulfil their obligations in Articles 98 and 100 of SO Regulation;

(d) regional adequacy assessment in accordance with Article 81 of SO Regulation in order to support TSOs fulfil their obligations under Article 107.

(8) This ROSC methodology in accordance with Article 76(1) of the SO Regulation considers and, where necessary, complements the common Italy North methodology for coordinated redispatching and countertrading (hereafter referred to as "RDCT methodology") proposed by the TSOs of Italy North Region in accordance with Article 35 of the CACM Regulation and approved by the relevant national regulatory authorities according to Article 9 of CACM Regulation.

(9) Articles 11 of the SO Regulation require that the ROSC methodology Proposal shall be subject to consultation for a duration of not less than one month. The Italy North ROSC methodology Proposal is consulted from mid-October to mid-November 2019. The TSOs of Italy North Region duly considered the views of stakeholders resulting from the public consultation prior to its submission for regulatory approval. To this end, a separate document has been created summarising the feedback received by the stakeholders and a sound justification for including or not including the views resulting from the consultation.

(10) Article 6(6) of the SO Regulation requires that the proposed timescale for the implementation and the expected impact of the Italy North ROSC methodology Proposal on the objectives of the SO Regulation shall be described. The timescale for implementation is detailed in Article 28 of this ROSC methodology Proposal. The impact is presented below (point (11) of this Whereas Section).

(11) The ROSC methodology Proposal contributes and does not in any way hinder the achievement of the objectives of Article 4 of SO Regulation:

a) Article 4(1)(a) of SO Regulation aims at determining common operational security requirements and principles. The Italy North ROSC methodology Proposal serves this objective by introducing common set of principles to be followed by TSOs and Technical Counterparties in the Region for a coordinated operational security coordination.

b) Article 4(1)(d) of SO Regulation aims at ensuring the conditions for maintaining operational security throughout the Union. The Italy North ROSC methodology Proposal serves this objective by setting out the rules for coordination within the Region considering the future amendments to be developed with cross-regional focus (e.g. the ones under Article 27 of the CSAm).

c) Article 4(1)(e) of SO Regulation aims at ensuring the conditions for maintaining a frequency quality level of all synchronous areas throughout the Union. The Italy North ROSC methodology Proposal serves this objective since maintaining the operational security is essential (together with the balancing mechanisms) for safeguarding the frequency quality in the interconnected system.

d) Article 4(1)(f) of SO Regulation aims at promoting the coordination of system operation and operational planning. The Italy North ROSC methodology Proposal serves this objective by setting out rules for the preparation of Remedial Actions to be coordinated, thus extending the scope of coordination also to the operational planning timeframe.

e) Article 4(1)(g) of SO Regulation aims at ensuring and enhancing the transparency and reliability of information on transmission system operation. The Italy North ROSC methodology Proposal serves this objective by introducing specific provisions for the exchange of necessary information among the TSOs or the Technical Counterparties and the Regional Security Coordinator, and among the Regional Security Coordinators in the Region for achieving the necessary coordination.

f) Article 4(1)(h) of SO Regulation aims at contributing to the efficient operation and development of the electricity transmission system and electricity sector in the Union. The Italy North ROSC methodology Proposal serves this objective since this specific Region is an integral part of the European interconnected system. Therefore, by safeguarding secure operation in the Region, the overall security is guaranteed, and the markets can function in a way that provides the right incentives for the development of the system and the electricity sector in the Union.

(12) In conclusion, this ROSC methodology contributes to the general objectives of the SO Regulation.

SUBMIT THE FOLLOWING ROSC METHODOLOGY PROPOSAL TO THE NATIONAL REGULATORY AUTHORITIES OF THE ITALY NORTH REGION:

TITLE 1
General Provisions

Article 1
Subject matter and scope

1. The ROSC methodology as determined in this Proposal is the common proposal of all TSOs of the Italy North Region in accordance with Article 76 of the SO Regulation. In line with the RDCT methodology defined for the same Capacity Calculation Region according to Article 35 of CACM Regulation, Technical Counterparties can be involved in the processes described in this methodology. Technical Counterparties will set up separate contracts, provided that they fulfil the requirements set up in paragraphs 3 and 4 of this Article.

2. This Proposal shall cover the day-ahead and intraday regional operational security coordination within Italy North Region. This Proposal shall apply to all TSOs, Technical Counterparties and RSC(s) within Italy North Region.

3. As provided by Article 1(3) of the CSAm, TSOs from jurisdictions outside the area referred to in Article 2(2) of the SO Regulation may participate in the regional operational security coordination 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 coordinated security analysis as the TSOs referred to in paragraph 2;

   c) they accept any other conditions related to the voluntary nature of their participation in the coordinated 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 regional operational security coordination 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 the regional operational security coordination on a voluntary basis pursuant to paragraph 3 respect their obligations. If a TSO participating in the regional operational security coordination 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 regional operational security coordination 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 this proposal, the terms used shall have the meaning of the definitions included in Article 3 of the SO Regulation, Article 2 of CACM Regulation, Article 2 of the CSAm and the other items of legislation referenced therein. In addition, the following definitions shall apply:

   a) ‘Ordered Remedial Action’ means an agreed Remedial Action which cannot be reassessed in the following operational security assessment considering the lead time required for its activation;

   b) ‘critical network element’ or ‘CNE’ means the network elements significantly influenced by cross-zonal power exchanges whose operational security limits and contingencies are monitored during the capacity calculation process;

   c) ‘Area of Common Interest’ or ‘ACI’ means the list of critical network elements pursuant to the RDCT methodology;

d) 'Remedial Action' or 'RA' means any measure or combination of measures applied by a TSO or several TSOs, manually or automatically, in order to maintain operational security

e) 'Requester of RA' means the TSO owning the element for which a RA needs to be activated;

f) 'RAO' means Remedial Action Optimisation;

g) 'Technical Counterparty' means any non-EU TSO to be included in procedures of this methodology through respective agreements;

h) 'APG' is the Austrian Transmission System Operator;

i) 'ELES' is the Slovenian Transmission System Operator;

j) 'RTE' is the French Transmission System Operator;

k) 'Terna' is the Italian Transmission System Operator.

2. Potential categories of RAs shall be classified in accordance with Article 22 of the SO Regulation.

3. Where this Methodology refers to grid elements, it includes HVDC systems.

4. 'IGM', 'CGM' and 'regional CSA' respectively stand for 'individual grid model', 'common grid model' and 'Coordinated Regional Operational Security Assessment' defined in Article 2 of the CSAm.

5. For the avoidance of doubt, a Cross-Border Impacting RA as described in RDCT methodology is equivalent to a Cross-Border Relevant RA (or XRA) as defined in CSAm.

6. In this Proposal, unless the context requires otherwise:

a) the singular indicates the plural and vice versa;

b) the headings are inserted for convenience only and do not affect the interpretation of this ROSC methodology;

c) References to an "Article" are, unless otherwise stated, references to an article of this ROSC methodology;

d) References to a "paragraph" are, unless otherwise stated, references to a paragraph included in the same article of this ROSC methodology where it is mentioned; and

e) any reference to legislation, regulations, directives, orders, instruments, codes or any other enactment shall include any modification, extension or re-enactment of it when in force.

TITLE 2
Provisions for regional operational security coordination

Chapter 1
General provisions for regional operational security coordination

Article 3
Detection of the constraints in regional CSA

1. When performing day-ahead and intraday regional CSA, TSOs and Technical Counterparties of Italy North Region shall detect if power flows exceed operational security limits on the XNEs of the Region.
2. To detect other constraints (such as voltage violations, violations of short-circuit thresholds or violations of stability limits) each TSO and Technical Counterparty of Italy North Region will perform Local Preliminary Assessment and long-term operational security analyses according to Article 31, 38 and 73 of the SO Regulation.
3. After the process according to the all TSOs' proposal for a common grid model methodology in accordance with Articles 67(1) and 70(1) of SO Regulation is fully implemented, the TSOs will assess the possibility to detect other constraints in the day-ahead and intraday regional CSA as described in paragraph 1.

Article 4
Definition of the secured area

1. The secured area consists of all the XNEs of Italy North Region.
2. The XNEs shall include at least all the CNEs of Italy North Region.
3. In addition to the network elements referred to in the previous paragraph, each TSO and Technical Counterparty of Italy North Region have the right to add in the regional list of the XNEs any additional internal network element, provided that it is included in its IGM.

Article 5
Procedure for exchanging the information between relevant TSOs and the RSC(s)

1. TSOs and Technical Counterparties of Italy North Region shall make available to the RSC(s) the contingency list established according to the criteria defined in the CSAm.
2. On a yearly basis or when there is a significant change on the grid, the TSOs and Technical Counterparties of Italy North CCR shall reassess and update this contingency list and share it with RSCs.
3. In day-ahead timeframe, at latest at hour T0 defined in accordance with Article 45 of CSAm or in intraday timeframe, before the starting time of each Coordinated Regional Operational Security Assessment defined in Article 7, each TSO shall provide to the relevant RSCs the last updated information on the transmission systems, including the following information:
    a) the updated list of available RAs, among the categories listed in Article 22 of the SO Regulation, and their anticipated costs provided in accordance with RDCT Methodology

and Article 18(3) of CSAm if a RA includes redispatching or countertrading, aimed at contributing to relieve any constraint identified in the Region;

b) the operational security limits to fulfil Article 3 of this ROSC methodology.

4. In intraday timeframe, if a TSO is not able to provide to the relevant RSCs the updated information described in the previous paragraph, the RSC shall consider the latest available information previously submitted by this TSO.

Article 6
Creation of Individual Grid Models

1. For the day-ahead timeframe, each TSO and Technical Counterparty of Italy North Region shall build and deliver its IGM for each hour of the day of delivery, in accordance with the provisions of Article 21 of CSAm and with the reference times referred to in Article 33 of CSAm.

2. For intraday timeframe, prior to each reference time referred to in Article 7, each TSO and Technical Counterparty of Italy North Region shall build and deliver an intraday IGM for each hour of the day of delivery between the reference time and the end of the business day, in accordance with the provisions of Article 21 of CSAm.

Article 7
Timing of day-ahead and intraday Coordinated Regional Operational Security Assessment

1. TSOs and Technical Counterparties of Italy North Region shall ensure or delegate to the RSC(s) their participation to the day-ahead Coordinated Regional Operational Security Assessment process starting at the reference time.

2. TSOs and Technical Counterparties of Italy North Region shall ensure or delegate to the RSC(s) their participation to the intraday Coordinated Regional Operational Security Assessment process starting 45 minutes before the reference time.

3. The reference times for day-ahead timeframe are defined in the CSAm.

4. The reference times for intraday timeframe are defined in Annex 1.

5. The number of operational security assessments and the reference times referred to in paragraph 4 may be revised on a yearly basis subject to the agreement of the involved TSOs and communicated to NRAs of Italy North Region.

Chapter 2
Remedial Actions cross-border relevance assessment

Article 8
General principles

1. TSOs and Technical Counterparties of Italy North Region shall aim at agreeing on a qualitative approach in accordance with Article 9 to determine the potential RAs that are deemed cross-border relevant and the corresponding TSOs affected by those RAs.

2. If the TSOs and Technical Counterparties of Italy North Region cannot agree on a qualitative approach, a quantitative approach shall be used, in accordance with Article 10.
3. Prior to day-ahead or intraday operation planning period, TSOs may identify new RA compared to those identified on an annual basis, according to the frequency established in Article 11. If a new RA is designed, each TSO and Technical Counterparty of Italy North Region shall assess its relevance using quantitative approach.
4. TSOs and Technical Counterparties of Italy North Region can delegate the task described in paragraph 3 to the relevant RSC.
5. If a new RA is activated during real time operation, the XRA connecting TSO or Technical Counterparty of Italy North Region shall use quantitative assessment in order to identify if this RA is cross-border-relevant, unless the system is in emergency state and operational conditions do not allow it.
6. RA influence factor computation for RAs described in paragraphs 2, 3 and 5 shall be performed on the last available CGM, according to Article 15(4) and 15(5) of CSAm.

Article 9

Process for cross-border relevance assessment (qualitative approach)

1. TSOs and Technical Counterparties of Italy North Region shall jointly establish a list of potential RAs, both preventive and curative, which are generally able to address operational security violations in the Region. This list should contain at least the RAs made available for the Capacity Calculation process.
2. For each RA:
   a) Each TSO shall individually assess the cross-border relevance of the RA on its grid;
   b) The TSO owner of the RA shall also assess the cross-border relevance of the RA on each other TSOs grid;
   c) For RAs that are quantifiable (e.g. PSTs, HVDC links or activation of redispatch and countertrading), the quantity above which this RA is deemed cross-border relevant has to be specified.
3. Each TSO shall propose RAs deemed necessary for coordination.
4. If an agreement is reached among all the TSOs affected by a given RA, then the RA is defined as cross-border relevant. If a RA is not proposed as cross-border relevant by any TSO, it is considered as non-cross-border relevant.
5. If an agreement on a RA cannot be reached, then the quantitative approach is used to assess the cross-border relevance of this RA.

Article 10

Process for cross-border relevance assessment (quantitative approach)

1. Quantitative approach shall be used to assess cross-border relevance of RAs only if no agreement can be reached on the cross-border relevance assessment of these RAs using qualitative approach.

2. To assess the cross-border relevance of one RA quantitatively, the following process is defined:
   a) Year-ahead CGMs developed in accordance with Article 67 of the SO Regulation shall be used for assessment;
   b) TSOs shall provide a list of elements on which the influence of the RA shall be assessed;
   c) RSC(s) calculate the influence of each RA on each element according to the RA influence factor defined in Article 15 of CSAm;
   d) For RAs that are quantifiable (e.g. PSTs, HVDC links or activation of redispatch and countertrading), the quantity above which this RA is deemed cross-border relevant has to be specified.
3. TSOs shall consider commonly agreed as cross-border relevant all the RAs for which the RA influence factor is higher than 5%.

Article 11
Frequency of update

1. TSOs and Technical Counterparties of Italy North Region will share with the RSC(s) the agreed list of RAs that are deemed cross-border relevant.
2. When there is a significant change on the grid or a new RA is designed prior to day-ahead operational planning or at least every 12 months, TSOs and Technical Counterparties of Italy North Region shall update the list of XRAs in accordance with Article 8.

Chapter 3
Conditions of coordination of operational security assessment

Article 12
Day-ahead regional CSA and preparation of RAs

1. In accordance with Article 78 of the SO Regulation and in line with the reference times and processes defined in Article 33(1) of the CSAm, each day the appointed RSC(s) shall run the day-ahead Coordinated Regional Operational Security Assessment to check the security of the grid in accordance with Article 3.
2. The appointed RSC(s) shall perform the day-ahead Coordinated Regional Operational Security Assessment using the data listed in Article 5 and the CGM built in accordance with the all TSOs' proposal for a common grid model methodology in accordance with Articles 67(1) and 70(1) of SO Regulation.
3. The day-ahead Coordinated Regional Operational Security Assessment is performed by the appointed RSC(s) with the aim of:
   a) Ensuring that, in accordance with Article 3, the operational security limits of all the network elements belonging to the secured area are respected according to the available CGM;
   b) Selecting in a coordinated way with the concerned TSOs the RAs which allow the achievement of point a) with the minimum cost.

4. Each day-ahead Coordinated Regional Operational Security Assessment shall cover all the 24 hours of the day of delivery.

5. While the appointed RSC(s) perform the assessment run referred to in Article 33(1)(b) of the CSAm, the following process shall be followed for Italy North Region:

   a) The available non-costly RAs are optimised attempting to solve the constraints on all the network elements belonging to the secured area;

   b) If these RAs are not sufficient to secure the grid, the usage of costly RAs is necessary.

6. Following the condition of paragraph 5(b), the selection of the final non-costly and costly RAs is achieved by the appointed RSC(s) as follows:

   a) Non-costly RAs are selected to relieve, in accordance with Article 3, the constraints detected on the ACI. The TSOs and Technical Counterparties of Italy North Region shall evaluate and agree on the recommended RAs in accordance with the principles of Article 20 of SO Regulation and Article 14 of this Proposal;

   b) If the agreed RAs are not enough to ensure the respect of the operational security limits of all the network elements of the ACI, the coordinated Redispatching and Countertrading process is activated in accordance with the RDCT Methodology developed under Article 35 of the CACM Regulation;

   c) The obtained non-costly and costly RAs are assessed to check the respect of the operational security limits of all the network elements belonging to the secured area;

   d) If in accordance with Article 3 constraints are detected on network elements not belonging to the ACI, a new optimised selection of non-costly and costly RAs is performed to solve all the detected constraints on the network elements belonging to the secured area. The TSOs and Technical Counterparties of Italy North Region shall evaluate and agree on the recommended RAs in accordance with the principles of Article 20 of SO Regulation and Article 14 of this Proposal.

7. TSOs, Technical Counterparties and RSC(s) of Italy North Region will participate to the coordinated cross-regional operational security assessment in accordance with Article 30 and Article 33(1)(e) of the CSAm.

8. Taking into account the provisions of Article 33(1)(c) and (g) of the CSAm, each TSO and Technical Counterparty of Italy North Region shall implement all the agreed preventive RAs in its subsequent IGMs in accordance with the requirements of the methodology developed according to Article 70(1) of SO Regulation. The list of all agreed RAs, both preventive and curative, shall be logged and made accessible to all TSOs and RSCs, in line with the objectives of Article 41 of the CSAm.

Article 13

Intraday regional CSA and preparation of RAs

1. In accordance with Article 78 of the SO Regulation, each day the appointed RSC(s) shall run the intraday Coordinated Regional Operational security assessment to check the security of the grid in accordance with Article 3.

2. The appointed RSC(s) shall perform the intraday Coordinated Regional Operational Security Assessment using the data listed in Article 5 and the CGM built in accordance with the CGM methodology developed in accordance with Article 67(1) and 70(1) of the SO Regulation.

3. The intraday Coordinated Regional Operational Security Assessment is performed by the appointed RSC(s) with the aim of:
   a) Ensuring that, in accordance with Article 3, the operational security limits of all the network elements belonging to the secured area are respected according to the available CGM;
   b) Selecting in a coordinated way with the concerned TSOs the RAs which allow the achievement of point a) with the minimum cost.
4. Each intraday Coordinated Regional Operational Security Assessment shall start 45 minutes before each reference time defined in Article 7(4) and cover every hour between the reference time and the end of the day.
5. As a first step, all the agreed but not ordered regional costly RAs resulting from the previous coordinated operational security analysis performed in Italy North Region are removed from the CGM but are kept in the list of available RAs unless made technical unavailable, in order to assess if more economically efficient RAs can be found according to the latest available grid information.
6. After the application of paragraph 5 and in accordance with Article 3, a security analysis shall be performed on the CGM by the appointed RSC(s) in order to check the respect of the operational security limits of all the network elements belonging to the secured area;
   a) If constraints are detected on one of these network elements, the curative non-costly agreed RAs coming from the previous intraday Coordinated Regional Operational Security Assessment is implemented for each contingency to check whether it is sufficient to secure the grid;
   b) If there is no previous intraday Coordinated Regional Operational Security Assessment, the curative non-costly agreed RAs coming from the day-ahead Coordinated Regional Operational Security Assessment shall be used.
7. In case after the application of paragraph 6 there are still some violations of the operational security limits in accordance with Article 3, the following additional steps are performed by the appointed RSC(s):
   a) The available non-costly RAs are optimised attempting to solve the constraints on all the network elements belonging to the secured area;
   b) If these RAs are not sufficient to secure the grid, the usage of costly RAs is necessary.
8. Following the application of paragraph 7(b), the selection of the final non-costly and costly RAs is achieved by the appointed RSC(s) as follows:
   a) Non-costly RAs are selected to relieve, in accordance with Article 3, the constraints detected on the ACI. The TSOs and Technical Counterparties of Italy North Region shall evaluate and agree on the recommended RAs in accordance with the principles of Article 20 of SO Regulation and Article 14 of this Proposal;
   b) If the agreed RAs are not enough to ensure the respect of the operational security limits of all the elements of the ACI, the coordinated Redispatching and Countertrading process is activated in accordance with the RDCT Methodology developed under Article 35 of the CACM Regulation;
   c) The obtained non-costly and costly RAs are assessed to check the respect of the operational security limits of all the network elements belonging to the secured area;

d) If in accordance with Article 3 constraints are detected on network elements not belonging to the ACI, a new optimised selection of non-costly and costly RAs is performed to solve all the detected constraints on the network elements belonging to the secured area. The TSOs and Technical Counterparties of Italy North Region shall evaluate and agree on the recommended RAs in accordance with the principles of Article 20 of SO Regulation and Article 14 of this Proposal.

9. Each TSO and Technical Counterparty of Italy North Region shall implement all the agreed preventive RAs in its intraday IGM in accordance with the requirements of the methodology developed according to Article 70(1) of SO Regulation. The list of all agreed RAs, both preventive and curative, shall be logged and made accessible to all TSOs and RSCs, in line with the objectives of Article 41 of the CSAm.

Article 14

Validation and coordination of the remedial actions recommended by the RSC(s) to the relevant TSOs

1. In accordance with Article 78(4) of SO Regulation, each TSO and Technical Counterparty of Italy North Region shall evaluate and decide on whether to implement or not the RAs recommended by the RSC(s) during the day-ahead and intraday regional coordinated operational security assessment performed according to Article 12 and Article 13.
2. RAs which are specified as cross-border relevant (XRAs) in accordance with Chapter 2 of TITLE 2 shall be applied in a coordinated way, in order to prevent negative impact on affected TSOs.
3. Each TSO and Technical Counterparty of Italy North Region shall coordinate and agree on any XRA taking into account the provisions of Article 17(5), Article 27 and Article 30 of the CSAm.
4. TSOs, Technical Counterparties and RSC(s) of Italy North Region shall relieve operational security limits violations on overlapping XNEs and shall coordinate XRAs impacting these overlapping XNEs in accordance with the proposal for amendment to be developed pursuant to Article 27 of CSAm.

Article 15

Monitoring of inclusion of agreed Remedial Actions in the individual grid models

1. In line with Article 28 of CSAm, each RSC shall monitor in the relevant timeframes the correct inclusion of the agreed RAs in the IGMs by the TSOs, as required by Article 70(4) of the SO Regulation.
2. When an RSC identifies that a previously agreed RA has not been included in the IGM by a TSO or that uncoordinated additional XRAs have been added, 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 in accordance with Article 12 and Article 13 of this ROSC Proposal.

Article 16
Activation of Remedial Actions

1. For each market time unit, all the RAs recommended by the RSC(s) and validated by the relevant TSOs and Technical Counterparties of Italy North Region in accordance with Article 14 are considered the reference for the real time operations.
2. Each TSO and Technical Counterparty of Italy North Region shall activate each of the RAs referred to in paragraph 1, unless:
   a) a RA is not anymore available for proven technical reasons (e.g. outage), or
   b) new RAs are agreed by the affected TSOs for a given time period according to the real time conditions of the network, or
   c) the difference between the RAs referred to in paragraph 1 and the new RAs are not considered cross-border relevant, or
   d) a preventive RA is agreed for a subsequent market time unit and, in accordance with Article 19(2) of the CSAm, is activated earlier than when it is necessary with consideration of the operational conditions and provided that it does not introduce any operational security limit violation.
3. In case one TSO detects and communicates that the new RAs referred to in paragraph 2(b), 2(c) or 2(d) is not ensuring anymore the grid security, the RAs referred to in paragraph 1 shall be activated, unless the fast activation process pursuant to Article 17 is activated and new RAs are agreed.
4. Where a TSO refuses to activate any of the RAs according to paragraph 2 and paragraph 3, the non-activation of the RA(s) is considered as a non-coordinated action.
5. The impacts of the non-coordinated actions referred to in paragraph 4 is considered for cost sharing purposes in accordance with the cost sharing rules pursuant to Article 19.

Article 17
Fast activation process

1. The fast activation process is a process that can be triggered in real-time or close to real-time, to relieve physical congestion due to sudden critical situations (such as, but not limited to, an unplanned outage in real time or a relevant forecast error), that lead to overloads on Italy North XNEs and requires fast actions, which cannot be effectively and promptly treated with the regular process described in Article 12 and Article 13 (e.g. critical situations detected between two regular assessment runs or after the last intraday run).
2. The fast activation process shall also be considered as a fallback where coordination through the RSC(s) is no longer possible due to insufficient time and the regular processes described in Article 12 and Article 13 could not be properly applied (e.g. missing data, tools failure).
3. In the fast activation process, the activation of preventive as well as curative XRAs may be designed.
4. In the fast activation process, each TSO or Technical Counterparty of Italy North Region may activate XRAs in direct coordination with XRA affected TSO(s) considering also the provisions of Article 14.

5. In the fast activation process, TSOs and Technical Counterparties of Italy North Region shall aim at activating all the available non-costly RAs for relieving or reducing congestions on the XNEs before using costly measures. However, considering the application of this process should be very infrequent, being linked to extraordinary and unusual events, and that it must be characterized by fast activation, it may be possible that not all RAs available are considered because there is not enough time to evaluate their impact.
6. When designing any costly RA through the fast activation process TSOs shall take into account the provision of Article 7 of the RDCT methodology.
7. The TSO triggering the fast activation process shall ex-post provide the RSC(s) with all the relevant information on which the decision was based. The RSC(s) shall monitor occurrences of fast activation processes and the information provided by the relevant TSOs on those occurrences together with the regular reporting obligations from Article 17 of SO Regulation.
8. RAs agreed among affected TSOs during the fast activation process shall be considered as coordinated RAs and therefore shall be subject to cost sharing in accordance with the principles described in Chapter 4 of TITLE 2.

Chapter 4
Sharing of the costs

Article 18
Sharing of costs of coordinated Remedial Actions

1. The secured area can include elements belonging and not belonging to the ACI. Costly RAs are applied if non-costly RAs are not sufficient to relieve congestions of elements belonging to the secured area according to Article 3.
2. Costs related to the activation of RA(s) used to relieve a congested element belonging to the ACI shall be shared among the TSOs and Technical Counterparties of Italy North Region according to the cost-sharing methodology developed under Article 74 of the CACM Regulation. The costs referred to in this paragraph are the ones obtained following the application of Article 12(6)(b) for Day-ahead timeframe and Article 13(8)(b) for Intraday timeframe, netted by the costs allocated to non-coordinated actions pursuant to Article 19.
3. Costs related to the activation of RA(s) used to solve a congestion on an element which is not part of the ACI shall be borne by the Requester of this RA. The costs referred to in this paragraph are the ones obtained by the difference of the costs coming from the application of Article 12(6)(d) and Article 12(6)(b) for Day-ahead timeframe and Article 13(8)(d) and Article 13(8)(b) for Intraday timeframe, netted by the costs allocated to non-coordinated actions pursuant to Article 19.
4. The same principles described in paragraph 2 and 3 apply to the costs related to the activation of RAs resulting from the fast activation process pursuant to Article 17(8).
5. If RAs reduce overloads on more than one element outside of the ACI, then the costs referred to in paragraph 3 related to these RAs are allocated to the congested elements based on the partitioning coefficients defined in paragraph 6.
6. The partitioning coefficient K_i is evaluated for each element referred to in paragraph 5 as follows:

a) the costs C_i which would be required to solve the congestion on each single element outside the ACI, ignoring potential congestions on other network elements, are evaluated;

b) the sum, C_{eq}, of the costs C_i calculated following point a) is calculated;

c) the partitioning coefficient K_i is defined as the ratio between C_i and C_{eq}.

7. In case of more congested network elements in series, only the higher C_i among the ones calculated for these elements is considered for the definition of C_{eq} and K_i according to paragraph 6.

Article 19
Allocation of costs of non-coordinated actions

1. A non-coordinated action as defined in Article 16(4) can imply some additional costs.
2. The costs to be allocated to the non-coordinated actions, if any, are calculated as the difference between the costs resulting from the application of all the RAs (coordinated and non-coordinated) and the ones resulting from the application of only the coordinated RAs. These additional costs will be borne by the TSOs or Technical Counterparties of Italy North Region activating the non-coordinated action.
3. In case of non-coordinated actions taken by more than one TSO for a specific timeframe, the overall cost resulting from the non-coordinated actions is allocated to each non-coordinated action based on the impact coefficients defined in paragraph 4.
4. The impact coefficient X_i is evaluated for each non-coordinated action referred to in paragraph 3 as follows:

a) the costs C_i, if any, obtained as the difference between the costs resulting from the application of each single non-coordinated action together with all the other coordinated RAs and the cost resulting from the application of only the coordinated RAs, are evaluated. If it is $C_i<0$, then this non-coordinated action is not considered and C_i is set to zero;

b) the sum, C_{eq}, of the costs C_i calculated following point a) is calculated;

c) the impact coefficient X_i is defined as the ratio between C_i and C_{eq}.

Chapter 5
Remedial Actions optimisation

Article 20
General principles

The objective of the RAs optimisation is the identification of the most cost-efficient combination of RAs, which will solve all the constraints detected on the XNEs during each run of the coordinated security assessment.

Article 21
Objective function

1. The objective function shall aim at minimizing the overall costs for Italy North Region resulting from the activation of the costly RAs needed to solve the constraints detected during each run of the coordinated security assessment.
2. The objective function shall be defined as:

$$\min \left(\sum \Delta P_i \cdot p_i \right)$$

$$0 \leq \Delta P_i \leq P_{i,max} \text{ for upward resources}$$

$$P_{i,min} \leq \Delta P_i \leq 0 \text{ for downward resources}$$

Subject to the constraints listed in Article 23 and

Where:

a) i is a generic redispatching or countertrading resource;
b) ΔP_i is the activated amount of the resource i;
c) p_i is the price of the resource i;
d) $P_{i,max}$ is the available volume of the upward resource i;
e) $P_{i,min}$ is the available volume of the downward resource i (considered as negative).

3. The RAs obtained pursuant to the objective function defined in paragraph 2 shall also be the most efficient ones in terms of number of actions to be activated.

Article 22
Elements for the optimisation

1. Optimisation step 1 (“Optimisation 1”) shall solve all the constraints detected on the elements of ACI.
2. Optimisation step 2 (“Optimisation 2”) shall solve all the constraints detected on any XNEs.

Article 23
Constraints

1. During the optimisation process at least the following technical constraints shall be considered:
   a) balance of the activated redispatching and countertrading resources;
   b) lead time for activation of a RA;
   c) operational security limit on ACI for optimisation step 1 according to Article 22(1) and any XNEs for optimisation step 2 according to Article 22(2);
   d) only RAs that have an influence on the respective constraints higher than a certain threshold can be used during RAO;

e) maximum number of preventive and curative RAs per TSO, Region and timestamp;

f) PSTs' tap positions, PST flow and HVDC set point inside the available range.

More details about the aforementioned constraints are given in Annex 2.

2. The TSOs and Technical Counterparties of Italy North Region will assess during the implementation of this ROSC Proposal the need to consider intertemporal constraints in RAO in order to ensure consistency of results.

Article 24
Optimisation variables

1. During Remedial Actions optimisation the following optimisation variables shall be considered:

a) Switching states of topological measures;

b) Adjustment of PSTs tap position;

c) Set point of HVDC;

d) Amount and localization of countertrading and redispatching.

2. Topological measures are defined as follows:

a) Opening or closing one or more line(s), cable(s), transformer(s), busbar coupler(s) or

b) Switching one or more network element(s) from one busbar to another, in case of non-explicit modelling of busbar couplers.

Article 25
Other functionalities of Remedial Actions Optimisation

The RAs optimisation shall support the following operating modes for the PSTs:

a) Tap mode (the result of the optimisation is the tap number)

b) Target flow mode (the result of the optimisation is the flow on the PST).

TITLE 3
Appointment, governance and task allocation of the RSC(s)

Article 26
Appointment of RSCs and task allocation

1. The TSOs of Italy North Region appoint CORESO and TSCNET as regional security coordinators that will perform tasks listed in accordance with article 77 (3) of SO Regulation in the Region.

2. CORESO and TSCNET shall perform tasks listed in article 77(3) of SO Regulation in the Italy North Region for all TSOs and for technical counterparties of the Region in a transparent and non-discriminatory manner.

3. In accordance with article 77(3) of SO Regulation all TSOs if Italy North Region delegate the following tasks to CORESO and TSCNET:

   a) Regional operational security coordination in accordance with SO Regulation Article 78 in order to support Italy North TSOs fulfil their obligations for the year-ahead, day-ahead and intraday timeframes in accordance with articles 34(3), 72 and 74 of SO Regulation;

   b) Building of common grid model in accordance with article 79 of SO Regulation;

   c) Regional outage coordination in accordance with article 80 of SO Regulation, in order to support Italy North TSOs fulfil their obligations in articles 98 and 100 of SO Regulation;

   d) Regional adequacy assessment in accordance with article 81 of SO Regulation in order to support Italy North TSOs fulfil their obligations under article 107 of SO Regulation.

TITLE 4
Publication and implementation of the proposal

Article 27
Timescale for publication of the proposal

In accordance with Article 8(1) of the SO Regulation the TSOs of Italy North Region shall publish on their website this ROSC methodology Proposal without undue delay after a decision has been taken by the NRAs of Italy North Region.

Article 28
Timescale for implementation of the proposal

1. The implementation of this ROSC methodology is subject to:

   a) Regulatory approval of this ROSC methodology in accordance with article 6 of SO Regulation;

   b) Regulatory approval of the common Italy North methodology for coordinated redispatching and countertrading cost sharing proposed by the TSOs of Italy North Region in accordance with Article 74 of the CACM Regulation and approved by the relevant national regulatory authorities according to Article 9 of CACM Regulation;

   c) Implementation of common Italy North methodology for coordinated redispatching and countertrading (hereafter referred to as “RDCT methodology”) proposed by the TSOs of Italy North Region in accordance with Article 35 of the CACM Regulation and approved by the relevant national regulatory authorities according to Article 9 of CACM Regulation;

d) Regulatory approval and implementation of the proposal for amendment referred to in Article 14(4);

e) Development, testing and implementation of the IT tools, systems and procedures required to support the Italy North ROSC Methodology, CGMES format included and amendments of the CSAm.

2. TSOs and Technical Counterparties of Italy North Region, with the support of the Italy North RSCs, shall aim at regularly identifying the common functions and tools needed in accordance with paragraph 1(e). All relevant TSOs and Technical Counterparties of Italy North Region, with the support of the Italy North RSCs, shall:

a) Decide on their development;

b) Provide for the needed budgets for their tendering, development and maintenance;

c) Agree on the rules applicable for the management of the development and maintenance, including evolutions.

3. During the implementation of this ROSC methodology, the TSOs and Technical Counterparties of Italy North Region, with the support of Italy North RSCs shall jointly define the timeline of each step of the day-ahead and intraday regional operational security coordination, in accordance with the article 45 of the CSAM and publish them on their website.

TITLE 5
Final provisions

Article 29
Language

The reference language for this ROSC methodology shall be English. For the avoidance of doubt, where TSOs need to translate this proposal into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 8(1) of the SO Regulation and any version in another language, the relevant TSOs shall, in accordance with national legislation, provide the relevant national regulatory authorities with an updated translation of the proposal.

Annex 1

The reference times for intraday timeframe shall be 00:00h, 08:00h and 16:00h.

Annex 2

More details about, the constraints defined in Article 23 are given below:

a) balance of the activated redispatching and countertrading resources:

$$\sum \Delta P_i = 0$$

Where:

- ΔP_i is the activated amount of the resource i;

b) lead time for activation of a RA:

$$t_i < T_{activation} - T_0$$

Where:

- t_i is the lead time of RA i;
- T_0 is the run of the regional CSA;
- $T_{activation}$ is the T time for which the RA is activated;

c) operational security limit on ACI for optimisation step 1 according to Article 22(1) and any XNEs for optimisation step 2 according to Article 22(2);

$$P_e + \Delta P_{e,preventive} + \Delta P_{e,curative} \leq PATL_e, \forall e \in observed\ element$$

$$P_e + \Delta P_{e,preventive} \leq TATL_e, \forall e \in observed\ element$$

Where:

- P_e is the power flow on the element e (it may be in N or N-1 situation depending on the congestion detected);
- ΔP_e is the effect of the RAs used during the RAO, either preventive or curative;
- TATL is the temporarily admissible transmission loading on the element e;
- PATL is the permanently admissible transmission loading on the element e;

d) only RAs that have an influence on the respective active constraints higher than a certain threshold can be used during the RAO:

$$IF_{RA\ Constraint} \geq MinIF$$

Where:

- $IF_{RA\ Constraint}$ is the influence factor of a RA on a given constraint;
- $MinIF$ is the minimum influence which the RA can have on the given constraint;

e) maximum number of preventive and curative RAs per TSO, Region and timestamp:

$$Number\ PRA_{TSO} \leq Max\ PRA\ Limit_{TSO}$$

$$Number\ PRA_{REGION} \leq Max\ PRA\ Limit_{REGION}$$

$$Number\ CRA_{TSO} \leq Max\ CRA\ Limit_{TSO}$$

$$Number\ CRA_{REGION} \leq Max\ CRA\ Limit_{REGION}$$

Where:

- Number PRA $_{TSO}$ is the number of Preventive RA which are in a set after optimisation per TSO;
- Number PRA $_{REGION}$ is the number of Preventive RA which are in a set after optimisation for the whole Italy North Region;
- Max PRA Limit $_{TSO}$ is the maximum number of Preventive RA that can be used for one TSO during the RAO;
- Max PRA Limit $_{REGION}$ is the maximum number of Preventive RA that can be used for the whole Italy North Region during the RAO;
- Number CRA $_{TSO}$ is the number of Curative RA which are in a set after optimisation per TSO;
- Number CRA $_{REGION}$ is the number of Curative RA which are in a set after optimisation for the whole Italy North Region;
- Max CRA Limit $_{TSO}$ is the maximum number of Curative RA that can be used for one TSO during the RAO;
- Max CRA Limit $_{REGION}$ is the maximum number of Curative RA that can be used for the whole Italy North Region during the RAO;

f) PSTs' tap positions, PST flow and HVDC set point inside the available range:

$$\mathrm{TAP}_{\mathrm{p,min}} \leq \mathrm{TAP}_{p} \leq \mathrm{TAP}_{\mathrm{p,max}} \forall p \in available\ PSTs$$

$$\mathrm{PSTflow}_{\mathrm{p,min}} \leq \mathrm{PSTflow}_{p} \leq \mathrm{PSTflow}_{\mathrm{p,max}} \forall p \in available\ PSTs$$

$$\mathrm{HVDC}_{\mathrm{h,min}} \leq \mathrm{HVDC}_{h} \leq \mathrm{HVDC}_{\mathrm{h,max}} \forall h \in HVDCs$$

Where:

- $\mathrm{TAP}_{\mathrm{p}}$ is the PST's tap position;
- $\mathrm{TAP}_{\mathrm{p,max}}$ is the maximum PST's tap position available for that PST;
- $\mathrm{TAP}_{\mathrm{p,min}}$ is the minimum PST's tap position available for that PST;
- $\mathrm{PSTflow}_{\mathrm{p}}$ is the PST's target flow;
- $\mathrm{PSTflow}_{\mathrm{p,max}}$ is the maximum PST's target flow available for that PST;
- $\mathrm{PSTflow}_{\mathrm{p,min}}$ is the minimum PST's target flow available for that PST;
- HVDC_{h} is the HVDC's set point;
- $\mathrm{HVDC}_{h,\mathrm{max}}$ is the maximum HVDC's set point available for that HVDC;
- $\mathrm{HVDC}_{h,\mathrm{min}}$ is the minimum HVDC's set point available for that HVDC.

The same constraints can be also expressed in relative terms.