

ENTSO-E Draft Network Code on Operational Planning and Scheduling

30 January 2013

Notice

This document contains a draft Network Code for Operational Planning and Scheduling, prepared by the Drafting Team of the Operational Planning and Scheduling Network Code as of 30 January 2013, in line with the ACER Framework Guidelines on System Operation published on 2 December 2011.

The document does not in any case represent a firm, binding or definitive ENTSO-E position on the contents, the structure, or the prerogatives of the Network Code for Operational Planning and Scheduling. Such position will be released for public consultation following the procedure according to the provisions of the 3rd Legislative Package.

THE EUROPEAN COMMISSION,

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

Having regard to Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC,

Having regard to Regulation (EC) N° 714/2009 of the European parliament and of the Council of 13 July 2009 and in particular Article 6,

Having regard to the priority list issued by the European Commission on 22 December 2010,

Having regard to the Framework Guidelines on Electricity System Operation issued by ACER on 2 December 2011,

Whereas:

- (1) Directive 2009/72/EC and Regulation (EC) N° 714/2009 underline the need for an increased cooperation and coordination among Transmission System Operators (TSOs) within a European Network of Transmission System Operators for Electricity (ENTSO-E) to create Network Codes for providing and managing effective and transparent access to the Transmission Systems across borders, and to ensure coordinated and sufficiently forward-looking planning and sound technical evolution of the Transmission System in the European Union, including the creation of Interconnection capacities, with due regard to the environment.
- (2) Directive 2009/72/EC stresses that a secure supply of electricity is of vital importance for the development of European society, the implementation of a sustainable climate change policy, and the fostering of competitiveness within the internal market.
- (3) According to Article 2 of Directive 2009/72/EC TSOs are responsible for operating, ensuring the maintenance of and, if necessary developing the extra-high and high voltage interconnected system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the transmission of electricity. TSOs are also responsible for the Operational Security of their Control Areas and together in the whole Synchronous Areas and the European Union, with a high level of reliability and quality.
- (4) Secure Transmission System operation can be made possible only if there is an obligation for the TSOs, Distribution System Operators (DSOs) and Significant Grid Users to cooperate and

to meet the relevant minimum technical requirements for the operation of the interconnected Transmission Systems as one entity.

- (5) ENTSO-E has drafted this Network Code for Operational Planning and Scheduling aiming at setting out clear and objective requirements for TSOs, DSOs and Significant Grid Users, in order to contribute to non-discrimination, effective competition and the efficient functioning of the internal electricity market, to ensure RES integration and system security.
- (6) This Network Code has been drafted in accordance with the Article 8(7) of Regulation (EC) N° 714/2009 according to which the Network Codes shall be developed for cross-border Network issues and market integration issues and shall be without prejudice to the Member States' right to establish national Network Codes which do not affect cross-border trade.
- (7) The Network Code should respect the competences of national authorities arising out of Regulation (EC) N° 714/2009 and Directive 72/2009/EC in combination with its implementation in national legislation;
- (8) This Network Code should not hinder National Regulatory Authorities competence to monitor compliance with Network security and reliability rules and to set or approve standards and requirements for quality of service and supply;
- (9) This Network Code should not be detrimental to the right of any party having a complaint against a transmission or distribution system operator in relation to that operator's obligations under this Network Code to direct its complaint to the regulatory authority
- (10) To ensure the Operational Security and to provide a relevant level of security of the interconnected Transmission Systems, common minimum requirements on procedures necessary to prepare for real time operation should be defined for both the cross-border cooperation between the TSOs and for taking into account, where relevant, characteristics of the connected Generation, consumption and distribution systems.
- (11) All TSOs should respect these common requirements on processes necessary to prepare real time operation at every time horizon which proves necessary to anticipate real time operation in order to maintain the Operational Security, quality and stability of the interconnected Transmission System and to support the efficient functioning of the European Internal Electricity Market as ensuring integration of RES. These time horizons and related processes are the basis for the key elements, structure and provisions of this Network Code.
- (12) All TSOs should establish scenarios for each relevant time horizon which the system operation must be prepared to face in a secured way. These scenarios should reflect the uncertainties related to the different Generation, Demand, and Cross border Exchanges patterns. These scenarios should be prepared on the best estimation of TSOs taking into account their knowledge about Generation and demand.

- (13) For each relevant time horizon each TSO should establish Individual Grid Models in line with these scenarios. Where relevant, the Individual Grid Models should include characteristics of the connected Generation, consumption and distribution, and of the installed transmission equipment and should take into account planned outages.
- (14) The European Merging Function should merge these Individual Grid Models into Common Grid Models. These Common Grid Models should allow the coordination of Operational Security Analysis and of congestion and power flow management.
- (15) Using simulation tools, each TSO should perform a Contingency Analysis on these Common Grid Models for each relevant time horizon in order to assess the System State and to adopt the necessary remedial actions.
- (16) Each TSO should contribute to develop grid models, integrating the latest schedules, standardised at least per synchronous area, in order to perform the necessary Operational Security analysis for each relevant time horizon.
- (17) Each TSO should monitor the feasibility of planned outages for each time horizon and where necessary coordinate outages with and between TSOs, DSOs and Significant Grid Users when they have impact on cross border flows affecting the Operational Security of the transmission system.
- (18) In coordination with other TSOs, each TSO should perform an assessment of the balance between the available Generation and the demand for each time horizon. Furthermore, each TSO should ensure the availability of the required amount of Ancillary Services, taking into account planned outages, uncertainties on demand, classic Generation as well as renewable, and the possibilities of cross-border exchanges within available transmission capacities.
- (19) On a D-1 and daily time horizon, TSOs should implement process allowing the acquisition and coherency verification of schedules of energies exchanged.
- (20) The operational and scheduling processes required to anticipate real time Operational Security difficulties and develop relevant preventive and curative measures involve timely and adequate data exchange which should therefore not encounter any barrier between the different actors involved.

HAS ADOPTED THIS NETWORK CODE:

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Chapter 1

GENERAL PROVISIONS

Article 1

Subject matter and scope

1. This Network Code defines the minimum Operational Planning and Scheduling requirements for ensuring coherent and coordinated preparation of real-time operation of the Transmission System applicable to all Significant Grid Users defined in line with [NC OS], all Transmission System Operators and all Distribution System Operators.
2. This Network code aims at:
 - a) determining common time horizons, methodologies and principles allowing to carry out coordinated Operational Security Analysis on the Operational Security and of the Adequacy to maintain Operational Security and support the efficient functioning of the European Internal Electricity Market; and
 - b) determining conditions to coordinate Availability Plans, allowing works required by Relevant Assets.
3. TSOs and DSOs shall always respect relevant provisions for human safety and nuclear safety.
4. None action in fulfilment of this Network Code shall hinder the implementation of new applications.

Article 2

Definitions

1. For the purpose of this Network Code, the definitions contained in Article 2 of Directive 2009/72/EC and in Article 2 of Regulation (EC) N° 714/2009 apply. The definitions contained in the Article 2 of the [NC RfG], [NC CACM], [NC DCC], [NC OS] shall also apply.
2. The following definitions shall apply:

Adequacy means the ability of Generation connected to an area to meet the load of this area;

Aggregated Netted External Schedule means a Schedule representing the netted aggregation of all External TSO Schedules and External Commercial Trade Schedules between two Scheduling Areas or between a Scheduling Area and a group of other Scheduling Areas;

Availability Plan means the combination of all planned Availability Statuses for a Relevant Asset for a given time period;

Availability Status means the capability for a given time period of a Power Generating Module, Transmission line, Ancillary Service, Demand Facility, non-TSO owned interconnector or another facility to provide service, whether or not it is in operation;

Close to Real-Time means a time interval before real-time in an order of magnitude of 15 minutes;

Constraint means a situation in which there is a need to implement Remedial Action in order to respect Operational Security Limits;

Consumption Schedule means a Schedule representing the consumption of a Demand Facility or the aggregation of Consumption Schedules of a group of Demand Facilities;

Demand Facility Operator means the natural or legal person who is the operator of a Demand Facility;

ENTSO-E Operational Planning Data Environment means the set of application programs and equipment developed in order to allow the storage, the exchange and the management of the data used within operational planning processes between TSOs;

External Commercial Trade Schedule means a Schedule representing the commercial exchange of electricity between Market Participants in different Scheduling Areas;

External TSO Schedule means a Schedule representing the exchange of electricity between TSOs in different Scheduling Areas;

Forced Outage means the unplanned removal from service of Relevant Assets for emergency reasons;

Generation Schedule means a Schedule representing the Generation of electricity of a Power Generating Module or the aggregation of Generation Schedules of a group of Power Generating Modules;

Internal Commercial Trade Schedule means a Schedule representing the commercial exchange of electricity within a Scheduling Area between different Market Participants or between Nominated Electricity Market Operators and Market Coupling Operators;

Netted Area AC Position means the netted aggregation of all AC-External Schedules of an area;

Outage Coordination Process means the process of coordinating the Availability Plans of all Relevant Assets;

Outage Coordination Region means a combination of Responsibility Areas in which procedures are defined to monitor and where necessary coordinate Availability Statuses of Relevant Assets on all planning timescales;

Outage Incompatibility means the state in which a combination of one or more Relevant Grid Elements, Relevant Power Generating Modules, Relevant Demand Facilities and/or non-TSO owned Interconnectors outages and the best estimate of the forecasted electricity grid situation leads to violation of Operational Security Limits;

Outage Planning Agent means the role of planning the Availability Status of Relevant Power Generating Modules, Demand Facilities or Relevant Non-TSO Owned Interconnectors;

Power Generating Facility Operator means the natural or legal person who is the operator of a Power Generating Facility;

Relevant Asset means any Relevant Demand Facility, Relevant Power Generating Module, Relevant Non-TSO Owned Interconnector or Relevant Grid Element partaking in the Outage Coordination Process;

Relevant Demand Facility means a Demand Facility which participates in the Outage Coordination Process as its Availability Status influences cross-border Operational Security;

Relevant Grid Element means a transmission or distribution grid element which participates in the Outage Coordination Process as its Availability Status influences cross-border Operational Security;

Relevant Power Generating Module means a Power Generating Module which participates in the Outage Coordination Process as its Availability Status influences cross-border Operational Security;

Relevant Non-TSO Owned Interconnector means a non-TSO owned Interconnector which participates in the Outage Coordination Process as its Availability Status influences cross-border Operational Security;

Schedule means a reference set of values representing the Generation, consumption or exchange of electricity between actors for a given time period;

Scheduling Agent means the role of providing Schedules in accordance with the applicable national legal framework;

Scheduling Area means Responsibility Area except if there are several Bidding Zones within this Responsibility Area. In the latter case, the Scheduling Area equals Bidding Zone;

Week-Ahead means the week before the calendar week of operation;

Year-Ahead means the year before the calendar year of operation.

Article 3

Regulatory aspects

1. The requirements established in this Network Code and their applications are based on the principles of proportionality, non-discrimination and transparency as well as on the principle of optimisation between the highest overall efficiency and lowest total cost for all involved parties.
2. Notwithstanding the above, the application of non-discrimination principle and the principle of optimization between the highest overall efficiency and lowest total costs while maintaining Operational Security as the highest priority for all involved parties, shall be balanced with the aim of achieving the maximum transparency in issues of interest for the market and the assignment to the real originator of the costs.
3. The terms and conditions or actions necessary to ensure Operational Security or the methodologies to establish them shall be established by TSOs in accordance with the principles of transparency, proportionality and non-discrimination. The definition of these terms and conditions or actions necessary to ensure Operational Security shall be performed in compliance with and respecting the TSO's responsibility to ensure system security according to national legislation.

Article 4

Regulatory approvals

1. National Regulatory Authority or, when explicitly foreseen in national law, other relevant national authority shall be responsible for approving the methodologies and conditions establishing the framework for the adoption by TSOs of terms and conditions or actions necessary to ensure Operational Security.
2. Each TSO shall submit the following methodologies and conditions established by the TSO to the National Regulatory Authority or, when explicitly foreseen in national law, other relevant national authority for approval:
 - a) Principles for the categorization of Remedial Actions pursuant to Article 16.

3. All TSO shall submit the following methodologies and conditions established by the TSO to the National Regulatory Authorities or, when explicitly foreseen in national law, other relevant national authority for common approval:
 - a. Methodology for summer and winter generation Adequacy outlooks pursuant to Article 47
4. Each TSO of a Synchronous Area shall submit the following methodologies and conditions established by the TSOs of a Synchronous Area to the National Regulatory Authorities or, when explicitly foreseen in national law, other relevant national authority for approval:
 - a) The methodology set up pursuant to Article 19 for coordinating Operational Security Analysis.
 - b) The methodology set up pursuant to Chapter 4 Article 22 for assessing relevance of assets for the Outage Coordination Process
5. National Regulatory Authorities shall, no later than six months after having received the methodologies or conditions establishing the framework for the adoption by TSOs of terms and conditions or actions necessary to ensure Operational Security, provide TSOs with an approval or request to amend the proposed methodology or condition.
6. Where the concerned National Regulatory Authorities have not been able to reach an agreement within a period of six months from when the case was referred to the last of those National Regulatory Authorities, or upon a joint request from the competent National Regulatory Authorities, the Agency shall decide upon those regulatory issues that fall within the competence of National Regulatory Authorities as specified under Article 8 of Regulation (EC) No 713/2009.

Article 5
Recovery of costs

1. The costs related to the obligations referred to in this Network Code which have to be borne by regulated Network Operators shall be assessed by National Regulatory Authorities.
2. Costs assessed as efficient, reasonable and proportionate shall be recovered in a timely manner via Network tariffs or appropriate mechanisms as determined by National Regulatory Authorities.
3. If requested by National Regulatory Authorities, regulated Network Operators shall, within three months of such a request, use best endeavours to provide such additional information as reasonably requested by National Regulatory Authorities to facilitate the assessment of the costs incurred.

Article 6
Confidentiality obligations

1. Each TSO, DSO, Power Generating Facility Operator, Demand Facility Operator and Owners of these Facilities shall preserve the confidentiality of the information and data submitted to them pursuant to this Network Code and shall use them exclusively for the purpose they have been submitted in compliance with the Network Code.

2. Without prejudice to the obligation to preserve the confidentiality of commercially sensitive information obtained in the course of carrying out its activities, each TSO shall provide to the operator of any other Transmission System with which its system is interconnected, sufficient information to ensure the secure and efficient operation, coordinated development and interoperability of the interconnected system.
3. The Regional Security Coordination Initiatives which are taking the form of a legal entity shall preserve the confidentiality of the information and data submitted to them in connection with this Network Code and shall use them exclusively for the purpose they have been submitted, in compliance with this Network Code.

Article 7

Roles in operational planning and scheduling and delegation

1. When delegation is done in accordance with Article 19, Article 25 and Article 52, the delegating entity shall remain responsible for ensuring compliance with the obligations under this Network Code.
2. In all cases a third party shall have clearly demonstrated its ability to fulfil each of the obligations of the Network Code, to the satisfaction of the delegating party, prior to delegation.
3. In the event that the whole or a part of any role specified in this Network Code is delegated to a third party, the delegating party shall ensure that suitable confidentiality agreements have been put in place prior to delegation.
4. When a Regional Security Coordination Initiative is being referred to in this Network Code, it shall abide by the following requirements:
 - a) The RSCI shall only provide services mandated by TSOs; and
 - b) The RSCI shall be owned only by TSOs independent of whether it is a cooperation of TSOs or a legal entity.

Chapter 2

DATA FOR OPERATIONAL SECURITY ANALYSIS IN OPERATIONAL PLANNING

Article 8 **Common Grid Model general provisions**

1. TSOs shall establish Individual Grid Models for merging into Common Grid Models consistent with the objectives of this Network Code for each of the following timeframes:
 - a) Year-Ahead, in accordance with Article 11;
 - b) where relevant, Week-Ahead, in accordance with Article 13;
 - c) D-1, in accordance with Article 14; and
 - d) where relevant, Intraday, in accordance with Article 14.
2. Whenever a TSO establishes an Individual Grid Model for a timeframe consistent with both this Network Code and [NC CACM], the TSO shall ensure that the Individual Grid Model is in line with the requirements established in both Network Codes.
3. All TSOs shall ensure that the European Merging Function fulfils its tasks as defined in this Network Code in accordance with the rules defined in accordance with Article 32(1) of [NC CACM].
4. The European Merging Function shall establish Common Grid Models consistent with the objectives of this Network Code based on:
 - a) scenarios or forecasts provided in accordance with Article 9 and Article 13, Article 14 and when relevant Article 13;
 - b) Individual Grid Models developed in accordance with Article 10, Article 12 and Article 14, and when relevant Article 13; and
 - c) the provisions agreed upon in accordance with Article 11(1) and Article 14 .

Article 9 **Year-ahead scenarios**

1. Allowing ENTSO-E sufficient time for publication according to Article 9(3), each year all TSOs shall establish a common list of scenarios against which the operation of the interconnected system shall be assessed by TSOs. These scenarios shall be sufficiently representative to allow the identification and the assessment of the influence on the Operational Security of the interconnected Transmission System of at least the following variables:
 - a) load;
 - b) conditions in relation with Renewable Energy Sources contribution in line with Article 10;
 - c) defined import/export positions, including agreed reference values allowing the merging task; and
 - d) standard Generation pattern given a fully available production park.
2. These scenarios shall be defined taking into account:

- a) typical cross-border exchange patterns for different levels of consumption and of Renewable Energy Sources and conventional Generation;
 - b) their probability of occurrence; and
 - c) the potential for possible deviations from Operational Security Limits associated with each scenario.
 - d) the amount of power generated and consumed by the Power Generating Facilities and Demand Facilities connected to Distribution Networks.
3. ENTSO-E shall publish the latest version of the common list of scenarios together with their full description on the ENTSO-E website by 15 July of each year.

Article 10

Construction of Year-Ahead Individual Grid Models

1. In accordance with Article 11(1), each TSO shall construct a Year-Ahead Individual Grid Model for each of the scenarios defined in accordance with Article 9, and make it available on the ENTSO-E Operational Planning Data Environment as specified in Chapter 8.
2. When developing its Individual Grid Models, each TSO shall:
 - a) agree upon the net exchanges on AC interconnections with the directly connected TSOs;
 - b) agree upon the estimated power flow on DC interconnections with the directly connected TSOs; and
 - c) balance the sum of the following for each scenario:
 - i. net exchanges;
 - ii. estimated power flows on DC Interconnections;
 - iii. load, including losses estimation; and
 - iv. Generation.
3. When developing Individual Grid Models, each TSO shall ensure that the aggregated power outputs for Power Generating Facilities connected to Distribution Networks are:
 - a) consistent with the structural data provided pursuant to the requirements of Article 26 of [NC OS];
 - b) consistent with the scenarios defined in Article 9; and
 - c) differentiated according to the type of primary energy source.

Article 11

Year-Ahead Common Grid Models

1. No later than 6 months after the entry into force of this Network Code, all TSOs shall define the provisions dealing with the gathering of the Year-Ahead Individual Grid Models, merging them into Common Grid Models and saving them. These provisions shall cover the following elements:
 - a) data format;
 - b) time granularity;

- c) a procedure to handle modifications to the Network Topology or operational arrangements;
 - d) deadlines for the gathering, merging and saving of the year-ahead Individual Grid Models into Common Grid Models;
 - e) quality control of datasets;
 - f) a procedure for model improvement;
 - g) tasks to be performed at the regional, Synchronous Area and pan-European level; and
 - h) requirements for the ENTSO-E Operational Planning Data Environment as described in Chapter 8.
2. Each TSO shall deliver to the affected TSOs on their request additional information on modifications to the Network Topology or on operational arrangements in such a way that an accurate representation of the system is provided for performing complete Operational Security analysis.

Article 12

Updates of Year-Ahead Common Grid Models

1. Taking into account changes in the TSO's best estimations of data, each TSO shall update its Individual Grid Models in accordance with the newly identified conditions and deliver them to the ENTSO-E Operational Planning Data Environment in accordance with chapter 8.
2. Whenever changes are made to an Individual Grid Model in accordance with Article 12(1) the European Merging Function shall establish an updated Common Grid Model to reflect the changes.

Article 13

Week-Ahead Grid Models

1. All TSOs of an Outage Coordination Region, defined in accordance with Article 20, shall define the most representative scenarios for analysing the Operational Security of the Transmission System for the Week-Ahead time horizons.
2. Each TSO shall provide timely information to all TSOs within its Outage Coordination Region in order to allow them to update their grid model using the scenarios defined in accordance with Article 12(1).

Article 14

D-1 and intraday Grid Models

1. All TSOs shall agree on the provisions dealing with the gathering and merging of the D-1 and intraday Individual Grid Models into Common Grid Models at the level of at least the Synchronous Area. These provisions shall be consistent with the methodology set up pursuant to Article 18 of [NC CACM] and with the requirements of Articles 20 and 21 of [NC CACM] and shall cover the following elements:
 - a) data format;
 - b) time granularity;

- c) a procedure to handle Network Topology modification or operational arrangements in order to manage Operational Security;
 - d) deadlines compatible with setting up Remedial Actions and the Capacity Calculation Process,
 - e) quality control of datasets;
 - f) a procedure for model improvement;
 - g) tasks to be performed at the regional, Synchronous Area and pan-European level including time schedules for the different tasks in all time horizons; and
 - h) specifications of the ENTSO-E Operational Planning Data Environment as described in Chapter 8.
2. Each TSO shall create and deliver on the ENTSO-E Operational Planning Data Environment referred to in Chapter 8 its Individual Grid Models in accordance with Article 14(1) of this Network Code and with Article 21 of [NC CACM].
3. Intraday Individual Grid Models referred to in Article 14(1) and Article 14(2) shall contain at least the following information:
 - a) up to date information on demand and Generation forecast ;
 - b) for Power Generating Facilities connected to Distribution Networks, aggregated active power output differentiated according to the type of primary energy source;
 - c) Topology of the Transmission System; and
 - d) Remedial Actions proposed for Constraints management.
4. Each TSO shall monitor the quality of D-1 and intraday Common Grid Models checking at least the following variables:
 - a) Status of connection of interconnections;
 - b) Voltage deviation from Operational Security Limits,
 - c) Transitory Admissible Overloads,
 - d) Reactive Power injections,
 - e) Tap positions of phase shifters and transformers.
5. If systematic discrepancies are detected during monitoring, the TSO shall perform an analysis to determine the causes of the discrepancies. If the causes depend on the TSOs procedures for creating the Individual Grid Models or scenarios, the concerned TSOs shall adapt the concerned procedures to create more accurate results.

Chapter 3

OPERATIONAL SECURITY ANALYSIS IN OPERATIONAL PLANNING

Article 15

Operational Security Analysis in operational planning

1. Each TSO shall perform coordinated Operational Security Analysis at least at the following time horizons:
 - a) Year-Ahead;
 - b) Week-Ahead;
 - c) D-1; and
 - d) intraday.
2. Each TSO shall perform Operational Security Analyses for each of the time horizons specified in Article 15(1) in N-Situation by simulating each Contingency from the TSO's Contingency List in accordance with Article 11 of [NC OS] and verifying that the Operational Security Limits defined in accordance with Article 6(5) and Article 6(6) of [NC OS] in the (N-1)-Situation are fulfilled.
3. When simulating each Contingency in accordance with Article 15(2), each TSO shall take into account the capabilities of the Significant Grid Users as mentioned in Chapter 2 of [NC OS].
4. TSOs shall coordinate between them their Operational Security Analyses in accordance with the Article 10(2) and Article 11(3) of the [NC OS] and in accordance with Article 19 of this Network Code, in order to verify the respect of the Operational Security Limits affecting their own Responsibility Areas.
5. Each TSO shall use Common Grid Models described in Article 11, Article 12 , Article 14 and where relevant Article 13 to perform the Operational Security Analyses referred to in Article 15(1), Article 15(2) and Article 15(3).

Article 16

Cross Responsibility Area Remedial Actions

1. In accordance with Article 6(9) of [NC OS], TSOs affected by Contingencies detected in the different time horizons in which Operational Security Analyses are performed shall prepare coordinated cross Responsibility Area Remedial Actions to cope with the detected deviations from Operational Security Limits identified through the Operational Security Analysis using the Contingency List detected in the different time horizons in which Operational Security Analyses are performed. Each TSO shall assess through simulations the effectiveness of these Remedial Actions into eliminating possible Constraints.
2. Within 6 months after the entry into force of this Network Code, each TSO shall establish the principles for the categorisation of Remedial Actions.
3. When establishing these cross Responsibility Area Remedial Actions, TSOs shall check:
 - a) that the Remedial Action does not jeopardise the Operational Security of the Interconnected System in which the Remedial Action is activated;
 - b) that the TSO that activates the Remedial Action has agreed to its use;
 - c) that the Remedial Action is in line with the categorisation referred to in Article 16(2);

- d) if Remedial Actions established when calculating capacity in line with Article 30 of [NC CACM] are available, and take them into account;
 - e) the technical-economic efficiency of the Remedial Action; and
 - f) the involvement of possible affected DSOs.
4. When establishing Remedial Actions different from the ones established when calculating capacity in line with Article 30 of [NC CACM], the TSO shall take these different Remedial Actions into account in the framework of the capacity calculation.
 5. Each TSO shall report on cross Responsibility Area Remedial Actions in accordance with the [Regulation on Transparency and provision of information in electricity market].
 6. Costs of Remedial Actions shall be recovered in accordance with the principles approved by NRAs, in compliance with EC Regulation 714/2009, Article 16(6) and in line with Chapter 10 of [NC CACM].

Article 17

Year-Ahead and updated Operational Security Analysis

1. Each TSO shall perform Operational Security Analysis on its Responsibility Area, taking into account all the elements contained in its Contingency List for assessing the feasibility of coordinating Availability Plans taking as an input the updates of the Common Grid Model and relevant information.
2. Each TSO shall perform Operational Security Analysis referred to in Article 17(1), in accordance with the coordination methodology and processes described in Article 19(2) in order to detect at least the following Network Constraints:
 - a) power flows and voltages over Operational Security Limits;
 - b) breach of Stability Limits of the Transmission System; and
 - c) violation of short-circuit thresholds of the Transmission System.
3. When, as a result of Operational Security Analysis referred to in Article 17(1) and Article 17(2), a TSO detects possible Constraints, this TSO shall coordinate with affected TSOs to come to a solution related to the adaptation of Topology and/or the compatibility of outages planning in line with provisions of Chapter 4 of this NC and shall coordinate with DSOs if they are affected.

Article 18

D-1, intraday and Close to Real-Time Operational Security Analysis

1. On a D-1 basis and within the intraday periods, each TSO shall perform an Operational Security Analysis on its Responsibility Area, taking into account all the elements contained in its Contingency List as established in Article 2 of [NC OS] in order to detect possible Constraints and agree upon Remedial Actions with the affected TSOs and, if applicable, with affected DSOs.
2. Each TSO shall monitor load and Generation forecasts and shall proceed to updated Operational Security Analysis when these forecasts lead to significant deviation in load or Generation.
3. In undertaking the analysis pursuant to Article 18(1), each TSO shall take into account:
 - a) the updates of Generation and consumption data as referred in Articles 21 and 22 of [NC OS];

- b) possible significant deviation in load or Generation due to uncertain weather forecasts;
 - c) the results of the D-1 and intraday market processes; and
 - d) the results of the scheduling tasks described in Chapter 7 of this Network Code.
4. On a D-1 and intraday basis, if Constraints are detected by a TSO, this TSO shall evaluate, in line with coordination principles defined in Article 19, the effectiveness of the Remedial Actions in accordance with Article 11 of [NC OS].
 5. Close to Real-Time, each TSO shall perform Operational Security Analysis in its Observability Area by using State Estimation. This analysis shall be performed on a time cycle basis not exceeding 15 minutes.

Article 19

Security analysis coordination

1. No later than 12 months after the entry into force of this Network Code, TSOs shall establish a methodology standardized at least per Synchronous Area, for Operational Security Analysis. This methodology shall cover, at least:
 - a) principles for defining the Observability Area;
 - b) principles for defining the external elements of the Contingency List, including at least:
 - i. Methods for assessing the influence of external elements; and
 - ii. Contingency Influence Threshold above which the external elements are deemed as External Contingencies;
 - c) common risk assessment principles, covering at least, for contingencies described in Article 11 of [NC OS]:
 - i. associated probability;
 - ii. Transitory Admissible Overloads; and
 - iii. impact of Contingencies;
 - d) principles for the selection of the appropriated Remedial Actions referred to in Article 16 of this NC;
 - e) principles for assessing and dealing with uncertainties of Generation and load, taking into account at least Reliability Margin in line with Article 25 of [NC CACM]; and
 - f) methodologies and processes for performing coordinated Dynamic Stability Assessment.
2. ENTSO-E shall publish methodologies referred to in Article 19(1) on its website.
3. Each TSO within a Synchronous Area shall apply the methodology applicable for the Synchronous Area the TSO belongs to.
4. TSOs shall establish one multilateral agreement per region within which there is multilateral operational impact resulting from:
 - a) electrical interdependencies between Responsibility Areas including but not limited to loop flows, voltage profiles, and phase-shifting transformers and HVDC influencing each other;
 - b) power flow effects from changes in Generation patterns; or
 - c) the integration of grid elements of a TSO within the Observability Area and the Contingency List of another TSO.

5. TSOs shall ensure the consistency and efficiency of the coordination of Operational Security Analyses within the agreements referred to in Article 19(4). These agreements shall cover at least the following elements:
- a) the governance and decision making procedures adopted by the concerned TSOs;
 - b) common processes for:
 - i. sharing the information on Contingencies in the external Contingency list affecting each TSO Responsibility Area;
 - ii. the evaluation of deviations from Operational Security Limits and their consequences, in accordance with the methodology referred to in Article 19(1);
 - iii. taking into account the information concerning uncertainties regarding Generation and/or demand and associated probability of occurrence;
 - iv. the assessment and implementation of appropriate pre-Fault and post-Fault measures including but not limited to:
 - 1. establishing the available Remedial Actions, such as adapting Topology or phase-shifter transformers, in accordance with Article 14;
 - 2. processes for determining and selecting the most suitable Remedial Actions in accordance with Article 16;
 - 3. processes to coordinate the activation of these Remedial Actions;
 - 4. adopting dedicated solutions concerning planned outages; and
 - 5. using Redispatching or Countertrading in order to prevent violations of the Operational Security Limits between the Responsibility Areas in accordance with Article 14.
 - c) compatible or common tools for performing common processes defined in Article 19(5)(b) ;
 - d) the identification of any tasks within the common processes referred to in Article 19(5)(b) that are delegated;
 - e) processes for reviewing the contents or the perimeter of the agreements if so resulted from influence analysis in line with the common approach referred to in Article 19(3); and
 - f) additional datasets to the ones described in Chapter 2 such as:
 - i. protection set points or special protection schemes;
 - ii. single line diagram and substations configuration;
 - iii. additional grid models to represent specific situations; and
 - iv. needed information concerning uncertainties regarding Generation and/or demand and associated probability of occurrence for each Individual Grid Model.
6. If a TSO signs multiple multilateral agreements in accordance with Article 19(4), the TSO shall ensure that there are no contradictions and/or conflicts between these agreements.
7. When TSOs decide to delegate common tasks identified in line with Article 19(5) (d), it shall be considered as a Regional Security Coordination Initiative and abide by the requirements laid down in Article 5 Article 6(3) and Article 7(4).
8. TSOs shall officially inform other TSOs and RSCIs about the delegation referred to in Article 19(7).

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Chapter 4

OUTAGE COORDINATION

Article 20

Definition of Outage Coordination Regions

1. No later than 6 months after applicability of this Article, all TSOs shall adopt an agreement defining Coordination Regions within which the Availability Status of Relevant Assets shall be monitored and coordinated.
2. When defining the Outage Coordination Regions, all TSOs shall ensure that:
 - a) each Responsibility Area is included within at least one Outage Coordination Region;
 - b) the definition is based on an assessment against the cross-border impact on Operational Security of the Availability Status of a Relevant Asset in a Responsibility Area;
 - c) when the Availability Status of a Relevant Asset located in one Responsibility Area has a major cross-border impact on Operational Security in another Responsibility Area, these Responsibility Areas are included within the same Outage Coordination Region;
 - d) the size of the Outage Coordination Regions guarantees the efficiency of the Outage Coordination Process;
 - e) a regional coordination procedure in accordance with Article 21 is defined for each Outage Coordination Region; and
 - f) a procedure to amend the definition of the Outage Coordination Regions is established including principles for the necessity of such an amendment.
3. All TSOs shall make the definition of the Outage Coordination Regions, together with all other information required by Article 20(2), available to ENTSO-E. ENTSO-E shall publish all information on its website at the earliest opportunity.

Article 21

Regional coordination procedure

1. When developing regional coordination procedures in accordance with Article 20(2)(e) all TSOs shall define:
 - a) the frequency, scope and type of coordination meetings which shall take place at least on Year-Ahead and Week-Ahead time horizons;
 - b) arrangements to ensure the participation of Regional Security Coordination Initiatives operating in the concerned Outage Coordination Region to the Outage Coordination Process; and
 - c) procedures for the validation of the Year-Ahead Relevant Grid Element Availability Plans by all TSOs of the Outage Coordination Region.
2. Each TSO shall participate in the Outage Coordination Process of its Outage Coordination Regions as elaborated in accordance with Article 21(1).
3. If Outage Incompatibilities arise between different Outage Coordination Regions, all TSOs of these Outage Coordination Regions shall coordinate to relieve these Outage Incompatibilities.

4. Each TSO shall provide all TSOs in its Outage Coordination Region(s) with all relevant information at its disposal on those projects relating to the Transmission Network, Power Generating Modules or Demand Facilities that impact the operation of the Responsibility Area of another TSO.
5. Each TSO shall provide all DSOs directly connected to the Transmission Network with all relevant information at its disposal on the Transmission Network related projects that impact the operation of the Distribution Network of this DSO.

Article 22

Methodology for assessing relevance of assets for the Outage Coordination Process

1. No later than 12 months after applicability of this Article, all TSOs shall establish a coordinated methodology, standardised at least per Synchronous Area, for assessing the relevance of Power Generating Modules, Demand Facilities, and transmission and distribution grid elements for the Outage Coordination Process.
2. The methodology referred to in Article 22(1) shall include a procedure to quantify the impact of the Availability Status of transmission and distribution grid elements, Power Generating Modules and Demand Facilities that are or will be located within one Responsibility Area on other Responsibility Areas. This procedure shall be based on:
 - a) Operational Security Analyses using established Common Grid Models;
 - b) sensitivity analyses of power flows through the interconnected Network; and
 - c) a threshold on the sensitivity of power flows, standardized at least per Synchronous Area.
3. The methodology referred to in Article 22(1) shall be consistent with the methods for assessing the influence of external elements referred to in ARTICLE 19(1)(b)(i).

Article 23

List of Relevant Non-TSO Owned Interconnectors, Relevant Power Generating Modules and Relevant Demand Facilities

1. No later than 3 months after the applicability of this Article all TSOs of each Outage Coordination Region shall apply the methodology established pursuant to the requirements set forth in Article 22 for assessing the relevance of Power Generating Modules and Demand Facilities for the Outage Coordination Process.
2. For each Outage Coordination Region, all TSOs shall establish a single list of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors for the Outage Coordination Process.
3. The list of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors shall contain a subset of all Significant Grid Users.
4. The list of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors shall contain:
 - a) all Power Generating Modules and Demand Facilities for which the Availability Status impacts another Responsibility Area to a level beyond the thresholds defined in the methodology established pursuant to the requirements set forth in Article 22 and for which Article 23(3) applies; and

- b) all non-TSO owned Interconnectors.
5. All TSOs shall make the list of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors available on the ENTSO-E Operational Planning Data Environment.
 6. Each TSO shall inform its National Regulatory Authority on the list of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors.
 7. Each TSO shall:
 - a) inform the Relevant Power Generating Modules, Relevant Demand Facilities and Relevant non-TSO owned Interconnectors connected to this TSO about their inclusion in the list; and
 - b) inform connected DSOs on the Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors that are directly connected to the Distribution Network of this DSO.

Article 24

Re-assessment of the list of Relevant Non-TSO Owned Interconnectors, Relevant Power Generating Modules and Relevant Demand Facilities

1. Each calendar year before 1 August, all TSOs of each Outage Coordination Region shall re-apply the methodology established pursuant to the requirements set forth in **Error! Reference source not found.** for assessing the relevance of Power Generating Modules and Demand Facilities for the Outage Coordination Process.
2. When, pursuant to the assessment set forth in Article 24(1), all TSOs of an Outage Coordination Region identify the need to update the list of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors established in accordance with Article 23, the concerned TSOs shall update this list as soon as reasonably practicable. All TSOs shall make the updated list available in accordance with Article 23(5), Article 23(6), and Article 23(7).

Article 25

Appointing Outage Planning Agents

For each Relevant Power Generating Module, Relevant Demand Facility and Relevant non-TSO owned Interconnector, the concerned owner shall ensure that an Outage Planning Agent is appointed.

Article 26

List of Relevant Grid Elements

1. No later than 3 months after the applicability of this Article all TSOs of each Outage Coordination Region shall apply the methodology established pursuant to Article 22 for assessing the relevance of transmission and distribution grid elements for the Outage Coordination Process.
2. For each Outage Coordination Region, all TSOs shall establish a single list of Relevant Grid Elements for the Outage Coordination Process.

3. The list of Relevant Grid Elements shall contain:
 - a) all transmission and distribution grid elements connecting Responsibility Areas;
 - b) all transmission and distribution grid elements of a Responsibility Area for which the Availability Status impacts another Responsibility Area to a level beyond the thresholds defined in the methodology established pursuant to the requirements set forth in Article 22;
 - c) all transmission and distribution grid elements identified as an External Contingency by at least one TSO; and
 - d) all Critical Network Elements.
4. The list of Relevant Grid Elements shall also contain the types of information which shall be provided by each TSO to the ENTSO-E Operational Planning Data Environment, being at least:
 - a) the reason for every unavailable status of a Relevant Grid Element such as maintenance, grid development, reparation or combined works;
 - b) specific conditions that need to be fulfilled before executing an unavailable status of a Relevant Grid Element; and
 - c) time required to restore service of a Relevant Grid Element if necessary to maintain Operational Security.
5. All TSOs shall make the list of Relevant Grid Elements available on the ENTSO-E Operational Planning Data Environment.
6. Each TSO shall inform its National Regulatory Authority on the list of Relevant Grid Elements.
7. Each TSO shall inform connected DSOs on the Relevant Grid Elements that are located in the Distribution Network of this DSO.

Article 27

Re-assessment of the list of Relevant Grid Elements

1. Each calendar year before 1 August, all TSOs of each Outage Coordination Region shall re-apply the methodology established pursuant to the requirements set forth in Article 22 for assessing the relevance of transmission and distribution grid elements for the Outage Coordination Process.
2. When, pursuant to the assessment set forth in Article 27(1), all TSOs of an Outage Coordination Region identify the need to update the list of Relevant Grid Elements established in accordance with Article 26, the concerned TSOs shall update this list as soon as reasonably practicable. All TSOs shall make the updated list available in accordance with Article 26(4), Article 26(5) and Article 26(6).

Article 28

Treatment of Relevant Assets located in the Distribution Network

For the Relevant Grid Elements, Relevant Power Generating Modules and Relevant Demand Facilities that are located in the Distribution Network, the connecting TSO shall coordinate the Outage Coordination Process with the concerned Distribution System Operator.

Article 29

Variations to deadlines for the Year-Ahead coordination process

The adoption of a timeframe for the Year-Ahead coordination process that deviates from the timeframe defined in this Network Code shall only be possible for an entire Synchronous Area and if all TSOs in this Synchronous Area agree on the newly defined timeframe. Such timeframes can only be implemented if:

- a) all TSOs have agreed that the timeframes of the Outage Coordination Process within other Synchronous Areas are not impacted; and
- b) approval of all National Regulatory Authorities within the concerned Synchronous Area has been gained.

Article 30

Link with data to be provided according to requirements outside this Network Code

In case any party is required to provide or publish information on the Availability Status for Relevant Assets, this party shall ensure that the provided or published data is consistent with the coordinated Availability Plan established in this Network Code, if such a coordinated Availability Plan exists at the concerned point in time and for the covered time period.

Article 31

General provisions on Availability Plans

1. The Availability Plans shall contain a separate Availability Status for each Relevant Asset.
2. The Availability Plans shall contain Availability Statuses with at least a daily granularity.
3. The Availability Status shall be one of the following three states:
 - a) available: the Relevant Asset is capable of and ready to providing service, whether or not it is actually in operation;
 - b) unavailable: the Relevant Asset is not capable of or ready to providing service;
 - c) testing: the capability of the Relevant Asset for providing service is being tested.
4. The Availability Status “testing” shall be limited to the time periods
 - a) between first connection and final commissioning of the Relevant Asset; and
 - b) when needed directly following a maintenance of the Relevant Asset.

Article 32

Long-term indicative Availability Plans

1. Two years prior to the start of the Year-Ahead coordination process, each TSO shall assess the indicative Availability Plans for Relevant Assets, provided by the Outage Planning Agents in the framework of [Regulation on Transparency and provision of information in electricity market].
2. Following this assessment, each TSO shall provide its preliminary comments including detected Outage Incompatibilities to all impacted Outage Planning Agents.

3. This assessment of the TSOs shall be repeated every 12 months until the start of the Year-Ahead coordination process.

Article 33

Provision of Year-Ahead Availability Plan proposals

1. Before 1 August of each year, the Outage Planning Agent of each Relevant Power Generating Module, each Relevant Demand Facility, and each Relevant Non-TSO Owned Interconnector shall propose an Availability Plan for its asset for the following calendar year to the connecting TSO and, if connected to the Distribution Network also to the connecting DSO.
2. Between 1 August and 1 December, all Outage Planning Agents shall have the right to initiate an adaptation of their proposed Availability Plan by sending a change request to the connecting TSO(s).
3. Each TSO shall handle the change requests received in accordance with Article 33(2) after the Year-Ahead coordination process has been finalized, hereby:
 - a) respecting the order in which the change requests were received; and
 - b) following the procedure set forth in Article 40(2).

Article 34

Year-Ahead coordination of the Availability Status of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors

1. Each TSO shall assess on a Year-Ahead horizon whether Outage Incompatibilities arise from the proposed Availability Plans provided in accordance with Article 33.
2. In the event that Outage Incompatibilities are detected, the TSO and all affected Outage Planning Agents shall coordinate their Availability Plans in line with the following:
 - a) each TSO shall inform each affected Outage Planning Agent of the conditions that need to be fulfilled in order to relieve the detected Outage Incompatibilities;
 - b) each TSO shall be entitled to request that one or more Outage Planning Agents submit an alternative Availability Plan fulfilling these conditions; and
 - c) each TSO shall repeat the assessment pursuant to Article 34(1) to establish whether no Outage Incompatibilities remain.
3. In the event that no alternative Availability Plan relieving all Outage Incompatibilities is submitted following a request from a TSO pursuant to Article 34(2), the TSO shall establish such an alternative Availability Plan. In that case, the TSOs shall:
 - a) take into account any technical and financial impact reported by the affected Market Participants;
 - b) ensure the changes in the alternative Availability Plan are limited to what is strictly necessary to relieve the Outage Incompatibilities; and
 - c) inform the applicable National Regulatory Authorities, the affected DSOs if any, and the affected Outage Planning Agents about the established Availability Plan, any technical and financial impact reported to the TSO, and the reasons which motivated its adoption.

Article 35

Year-Ahead coordination of the Availability Status of Relevant Grid Elements

1. Each TSO shall coordinate the Availability Status of Relevant Grid Elements interconnecting different Responsibility Areas with the other TSOs of its Outage Coordination Region(s) in accordance with the following principles:
 - a) minimizing the impact on the market while preserving Operational Security; and
 - b) using as a basis the proposed Availability Plans for Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors established in accordance with Article 33 and Article 34.
2. Each TSO shall plan the Availability Status of all Relevant Grid Elements not interconnecting different Responsibility Areas in cooperation with DSOs for Relevant Grid Elements located in the Distribution Network in accordance with the following principles:
 - a) minimizing the impact on the market while preserving Operational Security; and
 - b) using as a basis the proposed Availability Plans for Relevant Non-TSO Owned Interconnectors, Relevant Power Generating Modules and Relevant Demand Facilities and the Availability Status of Relevant Grid Elements interconnecting different Responsibility Areas.
3. In case of Outage Incompatibilities, the TSO is entitled to propose a change of the proposed Availability Plans of the Relevant Power Generating Modules, of the Relevant Demand Facilities, and of the Relevant Non-TSO Owned Interconnectors and shall in this event initiate coordination with the concerned Outage Planning Agents.
4. In the event that:
 - a) a TSO has been unable to plan the unavailable status of a Relevant Grid Element; and
 - b) if, in the reasoned opinion of that TSO, not planning this unavailable status would threaten Operational Security,the TSO and all affected Outage Planning Agents shall use best endeavours in accordance with the national legal framework to plan the unavailable status of the Relevant Grid Element.
5. In the event that, having implemented the provisions of Article 35(4), the unavailable status of the Relevant Grid Element has not been planned, the TSO shall:
 - a) take such actions as it deems necessary to plan this unavailable status while ensuring Operational Security, taking into account any technical and financial impact reported to the TSO by affected Market Participants;
 - b) provide a notification of these actions to all affected parties; and
 - c) inform the National Regulatory Authorities and the affected DSO if any, of the actions taken, any technical and financial impact reported to the TSO, the threats which required such actions to be taken and the rationale for using the chosen actions.
6. Each TSO shall include with the Availability Plan on the ENTSO-E Operational Planning Data Environment all information at its disposal about grid-related conditions that need to be fulfilled and pre-Fault Remedial Actions that need to be taken before executing an unavailable status of a specific Relevant Grid Element.

Article 36

Provision of preliminary Year-Ahead Availability Plans

1. Each TSO shall provide its preliminary Year-Ahead Availability Plans for all Relevant Assets for the following year to all other TSOs before 1 November of each year via the ENTSO-E Operational Planning Data Environment. These Availability Plans shall contain at least the types of information listed in Article 26(4).
2. Each TSO shall provide to each connected DSO the preliminary Year-Ahead Availability Plans:
 - a) for the Relevant Power Generating Modules and the Relevant Demand Facilities connected to the Distribution Network of this DSO; and
 - b) for the Relevant Grid Elements and Relevant Non-TSO Owned Interconnectors located in the Distribution Network of this DSO;

for the following year before 1 November of each year. These Availability Plans shall contain at least the types of information listed in Article 26 (4).

Article 37

Validation of Year-Ahead Availability Plans within Outage Coordination Regions

1. Each TSO shall analyse whether Outage Incompatibilities arise when combining all preliminary Availability Plans impacting its Responsibility Area.
2. In case Outage Incompatibilities impacting the Year-Ahead Availability Plans for Relevant Assets are identified, each TSO shall coordinate with the concerned Outage Planning Agents, DSOs and/or TSOs to find a solution.
3. Once a solution is found for each Outage Incompatibility, all TSOs of the concerned Outage Coordination Region shall validate the Year-Ahead Availability Plans for all Relevant Grid Elements in accordance with the procedure established in Article 21(1).

Article 38

Final Year-Ahead Availability Plans

1. Before 1 December of each year, each TSO shall:
 - a) finalise the Year-Ahead coordination process of all Relevant Assets located in its Responsibility Area for the following year; and
 - b) update the preliminary Year-Ahead Availability Plans for all Relevant Assets on the ENTSO-E Operational Planning Data Environment.
2. Each TSO shall confirm to each Outage Planning Agent the final Year-Ahead Availability Plans of the Relevant Non-TSO Owned Interconnectors, Relevant Power Generating Modules and Relevant Demand Facilities for which this Outage Planning Agent was appointed, before 1 December of each year.
3. Each TSO shall provide to each directly connected DSO the updated Year-Ahead Availability Plans:
 - a) for the Relevant Power Generating Modules and the Relevant Demand Facilities connected to the Distribution Network of this DSO; and
 - b) for the Relevant Grid Elements and Relevant Non-TSO Owned Interconnectors located in the Distribution Network of this DSO;

for the following year before 1 December of each year. These Availability Plans shall contain at least the types of information listed in Article 26(4).

Article 39

Coordination processes in case of detected Outage Incompatibilities

1. For all Outage Planning Agents involved in the coordination process, the TSO connecting the Relevant Assets shall conduct this process in line with the applicable legal framework.
2. This Article shall apply to each coordination process that is initiated pursuant to the detection of Outage Incompatibilities according to Article 40.

Article 40

Updates to the Year-Ahead Availability Plans

1. After the finalisation of the Year-Ahead coordination process in accordance with Article 38 and before real-time execution, all Outage Planning Agents, DSOs and TSOs shall have the right to initiate an adaptation of the coordinated Availability Plan.
2. Each Outage Planning Agent or DSO that initiates an adaptation of the coordinated Availability Plan of the Relevant Assets under its responsibility shall send a change request to the connecting TSO(s). The connecting TSO(s) shall follow the following procedure:
 - a) receive the change request;
 - b) assess as soon as reasonably practicable whether Outage Incompatibilities arise as a result of this change to the coordinated Availability Plan of Relevant Assets;
 - c) in the event that Outage Incompatibilities are detected, initiate a coordination process involving:
 - i. Outage Planning Agents and DSOs for the Relevant Assets of which the Availability Status is impacted; and
 - ii. the TSO(s) and DSO(s) connecting the Relevant Assets mentioned in (i);
 - d) issue a reasoned decision on the change request:
 - i. the change request shall be validated when no Outage Incompatibility is detected or remains after coordination; and
 - ii. the change request shall be rejected when all detected Outage Incompatibilities cannot be relieved after coordination;
 - e) incorporate the validated change request in the coordinated Availability Plan and notify all impacted parties; and
 - f) update the ENTSO-E Operational Planning Data Environment, if the change request is validated.
3. Each TSO which initiates an adaptation of the coordinated Availability Plan of its assets shall follow the following procedure:
 - a) assess as soon as reasonably practicable whether Outage Incompatibilities arise as a result of this change to the coordinated Availability Plan of Relevant Assets;
 - b) send a change request and report detected Outage Incompatibilities to all other TSOs of its Outage Coordination Region(s);

- c) consider additional Outage Incompatibilities related to the change request detected by other TSOs of its Outage Coordination Region(s);
- d) in the event that Outage Incompatibilities are detected, initiate a coordination process involving:
 - i. Outage Planning Agents and DSOs for the Relevant Assets of which the Availability Status is impacted; and
 - ii. the TSO(s) and DSO(s) connecting the Relevant Assets mentioned in (i);
- e) receive a reasoned decision on the change request from all parties that are impacted by the adaptation of the coordinated Availability Plan:
 - i. the change request shall be validated when no Outage Incompatibility is detected or remains after coordination; and
 - ii. the change request shall be rejected when all detected Outage Incompatibilities cannot be relieved after coordination;
- f) incorporate the validated change request in the coordinated Availability Plan and notify all impacted parties; and
- g) update the ENTSO-E operational planning data environment if the change request is validated.

Article 41

Detailing the testing status of Relevant Power Generating Modules, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors

1. The Outage Planning Agent of a Relevant Power Generating Module, Relevant Demand Facility or Relevant Non-TSO Owned Interconnector for which the testing Availability Status is declared, shall provide the connecting TSO, and if connected to the Distribution Network also the connecting DSO, as early as reasonably practicable, and no later than two months before the start of the testing Availability Status with:
 - a) a detailed test plan; and
 - b) an indicative Generation or Consumption Schedule.
2. The Outage Planning Agent of a Relevant Power Generating Module, Relevant Demand Facility or Relevant Non-TSO owned Interconnector for which the testing Availability Status is declared shall provide the connecting TSO, and if connected to the Distribution Network also the connecting DSO with an update of the information required in Article 41(1) as early as reasonably practicable.
3. The connecting TSO of a Relevant Power Generating Module, Relevant Demand Facility or Relevant Non-TSO owned Interconnector for which the testing Availability Status is declared shall provide the information it received pursuant to the requirements set forth in Article 41(1) and Article 41(2) to all other TSOs of its Outage Planning Region(s).

Article 42

Detailing the testing status of Relevant Grid Elements located in the Transmission Network

1. The TSO operating a Relevant Grid Element for which the testing Availability Status is declared, shall provide all other TSOs of its Outage Planning Region(s) as early as reasonable practicable, and no later than two months before the start of the testing Availability Status with the following information:
 - a) a detailed testing plan;

- b) changes in the Transmission Network Topology due to the entering into operation of the Relevant Grid Element.
2. The TSO operating a Relevant Grid Element for which the testing Availability Status is declared shall provide all other TSOs of its Outage Planning Region(s) with an update of the information required in Article 42(1) as early as reasonably practicable.
3. In case the Relevant Grid Element referred to in Article 42(1) or Article 42(2) interconnects two Responsibility Areas, the TSOs operating the two concerned Responsibility Areas shall coordinate in order to agree on the information to be provided pursuant to the requirements set forth in Article 42(1) and Article 42(2).

Article 43

Detailing the testing status of Relevant Grid Elements located in the Distribution Network

1. The DSO operating a Relevant Grid Element for which the testing Availability Status is declared, shall provide the connecting TSO as early as reasonable practicable, and no later than two months before the start of the testing Availability Status with the following information:
 - a) a detailed testing plan;
 - b) changes in the Distribution Network Topology due to the entering into operation of the Relevant Grid Element.
2. The DSO operating a Relevant Grid Element for which the testing Availability Status is declared shall provide the connecting TSO with an update of the information required in Article 43(1) as early as reasonably practicable.
3. The connecting TSO of a Relevant Grid Element located in the Distribution Network for which the testing Availability Status is declared shall provide the information it received pursuant to the requirements set forth in Article 43(1) and Article 43(2) to all other TSOs of its Outage Planning Region(s).

Article 44

Processes for handling Forced Outages

1. Each TSO shall establish and manage a coordination process to ensure the available or unavailable status of Relevant Assets in its Responsibility Area in case of Forced Outages and when Operational Security is endangered. The process shall:
 - a) be used only in cases where all attempts to agree to a negotiated solution have been exhausted; and
 - b) ensure, to the extent possible, that the technical limits of the Relevant Assets are respected.
2. In the event of a Forced Outage of a Relevant Power Generating Module, a Relevant Demand Facility or a Relevant non-TSO owned Interconnector, the Outage Planning Agent shall use best endeavours to inform the connecting TSO and the connecting DSO of this Forced Outage as soon as reasonably practicable and provide it with information on:
 - a) the emergency reason that caused the Forced Outage;
 - b) the expected duration of the Forced Outage; and
 - c) the impact of the Forced Outage on the Availability Status of other Relevant Assets under its responsibility.

3. Whenever the connecting TSO detects that one or several Forced Outages referred to in Article 44(2) has the potential of leading the Transmission System out of Normal State, this TSO shall inform the concerned Outage Planning Agent(s) of the justified latest time at which the concerned Relevant Asset needs to be available again. Outage Planning Agents of the Relevant Power Generating Facilities, Relevant Demand Facilities and Relevant Non-TSO Owned Interconnectors shall respect this time or shall justify their deviation from this time to the connecting TSO.
4. In the case of a Forced Outage of a Relevant Grid Element, the TSO or DSO in whose Network the Grid Element is located shall use best endeavours to inform all other impacted TSOs, DSOs and Outage Planning Agents as soon as reasonably practicable and shall provide the following information:
 - a) the reason for the Forced Outage;
 - b) the expected duration of the Forced Outage; and
 - c) the impact of the Forced Outage on the Availability Status of other Relevant Elements of the Transmission or Distribution Network.
5. Whenever a TSO detects that one or several Forced Outages referred to in Article 44(2) has the potential of leading the Transmission System out of Normal State, this TSO shall inform the concerned TSO(s) or DSO(s) of the justified latest time at which the concerned Relevant Asset needs to be available again. The concerned TSO or DSO shall respect this limit or shall justify its deviation from the limit to the impacted TSO(s).
6. Following all updates to the Availability Plan due to Forced Outages and in accordance with the timeframe established in [Regulation on Transparency and provision of information in electricity market], the concerned TSO shall update the ENTSO-E Operational Planning Data Environment with the most recent information.

Article 45

Real-time execution of the Availability Plans

1. Each owner shall ensure that all Relevant Power Generating Modules under its responsibility which are declared available are ready to produce electricity pursuant to their declared technical capabilities when necessary to maintain Operational Security, being restricted to possible technical constraints as for example start-up delays, and barring Forced Outages.
2. Each owner shall ensure that all Relevant Power Generating Modules under its responsibility that were declared unavailable do not produce electricity.
3. Each owner shall ensure that all Relevant Demand Facilities under its responsibility that were declared unavailable do not consume electricity.
4. Each TSO, DSO and Outage Planning Agent responsible for a Relevant Non-TSO Owned Interconnector, shall ensure that all Relevant Grid Elements located in its Network including Relevant Non-TSO Owned Interconnectors that were declared available are ready to transport electricity pursuant to their declared technical capabilities when necessary to maintain Operational Security, being restricted to possible technical constraints as for example switching delays, and barring Forced Outages.
5. Each TSO, DSO and Outage Planning Agent responsible for a Relevant non-TSO owned Interconnector, shall ensure that all Relevant Grid Elements located in its Network including

Relevant Non-TSO Owned Interconnectors that were declared unavailable do not transport electricity.

6. If specific grid-related conditions apply for the execution of an unavailable status of a Relevant Grid Element in accordance with **Error! Reference source not found.**(6), the concerned TSO or SO shall assess if these conditions are fulfilled before real-time execution of the unavailable status. If not, the unavailable status, or a part thereof, shall not be executed.
7. Upon the request of a TSO or DSO before executing an unavailable status of a Relevant Asset which puts the system in an Alert, Emergency or Blackout State, each concerned party shall delay the corresponding unavailable status according to the instructions of the TSO or DSO to the extent possible while respecting the technical and safety limits of the Relevant Assets.
8. Upon the request from a TSO or DSO before executing a planned test of Relevant Assets which puts the system in an Alert, Emergency or Blackout State, each concerned party shall delay the corresponding test according to the instructions of the TSO or DSO.

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Chapter 5 ADEQUACY

Article 46

Responsibility Area Adequacy analyses

1. Each TSO shall perform Adequacy analyses in its Responsibility Area by assessing whether the connected Generation and capabilities to import energy into the Responsibility Area meet the demand under various operational scenarios.
2. When performing an Adequacy analysis in accordance with Article 46(1) each TSO shall:
 - a) use the latest Availability Plans and the latest available data for:
 - i. Generation capacities in accordance with data provided in the framework of [NC OS] and their Availability Status; and
 - ii. cross border capacities.
 - b) take into account through statistical analysis the production and consumption of energy assessed for at least:
 - i. Power Generating Modules;
 - ii. Generation from Renewable Energy Sources; and
 - iii. demand.
 - c) assess the probability and expected duration of an absence of Adequacy and the expected energy not served as a result of such a deviation.
3. Each TSO shall inform:
 - a) its National Regulatory Authority and any affected party, including market participants and DSOs, when its Responsibility Area Adequacy is not fulfilled; and
 - b) directly connected TSOs when Generation within its Responsibility Area alone is insufficient to meet the demand.

Article 47

Summer and winter Generation Adequacy outlooks

1. All TSOs shall perform pan-European annual summer and winter Generation Adequacy outlooks before 21 May and 21 November respectively, using a common methodology taking into account at least:
 - a) the criteria used to define the set of operational scenarios by Responsibility Area, taking into account their probability of occurrence;
 - b) the criteria used to combine these operational scenarios by Responsibility Area to build a set of pan-European scenarios, taking into account their probability of occurrence;
 - c) the methods to assess the Adequacy of each Responsibility Area taking into account pan-European scenarios in accordance with Article 42;
 - d) the cross border capacities for exchanges of electricity; and
 - e) the data to be exchanged between TSOs.

2. ENTSO-E shall adopt the summer and winter outlooks performed in accordance with Article 47(1) under the requirement of Article 8(3)(f) of Regulation (EC) N° 714/2009.
3. All TSOs shall monitor the quality of the summer and winter Generation Adequacy outlooks. Whenever they agree that this quality is insufficient or an update is necessary for other reasons, all TSOs shall update the common methodology referred to in Article 47(1) according to Article 47(4).
4. When updating the common methodology referred to in Article 47(1), all TSOs shall:
 - a) collect comments from stakeholders; and
 - b) deliver answers to stakeholders' comments.
5. All TSOs shall make the methodology, updated in accordance with Article 47(4), available to ENTSO-E. ENTSO-E shall publish it on its website as soon as reasonably practicable.
6. All TSOs shall apply the updated methodology 6 months after publication by ENTSO-E.

ARTICLE 48

Responsibility Area Adequacy until and including Week Ahead

1. From the establishment of the annual summer and winter Generation Adequacy outlooks in accordance with Article 47, up to and including the Week-Ahead timeframe, each TSO shall monitor changes on the Availability Status of Power Generating Modules, on demand estimations and on cross border capacities.
2. Each TSO shall perform an updated Adequacy assessment in accordance with Article 46 when the TSO considers the changes observed in accordance with Article 48(1) to be significant in light of maintaining Adequacy.
3. If the TSO detects a situation where Adequacy is not fulfilled through the updated Adequacy assessment of Article 48(2), the TSO shall inform concerned parties in accordance with Article 46(3) and include a description of the changes on the Availability Status of Power Generating Modules, on demand estimations and on cross border capacities that have led to the absence of Adequacy.

Article 49

Responsibility Area Adequacy D-1 and intraday

1. Each TSO shall perform a Responsibility Area Adequacy analysis on a D-1 and intraday basis by using:
 - a) Market Participant Schedules in accordance with the applicable national legal framework;
 - b) forecast for demand;
 - c) forecast of Generation from Renewable Energy Sources;
 - d) Active Power Reserves in accordance with the data provided in the framework of [NC OS];
 - e) cross border capacities;
 - f) Availability Statuses and capabilities of Power Generating Modules in accordance with the data provided in the framework of [NC OS]; and

- g) Availability Statuses and capabilities of Demand Units with Demand Side Response in accordance with the data provided in the framework of [NC OS].
2. Each TSO shall evaluate:
- a) the maximum level of import and export capacity compatible with its Responsibility Area Adequacy;
 - b) the expected duration of a potential absence of Adequacy; and
 - c) the level of load shedding required in the absence of Adequacy.
3. If Adequacy is not fulfilled according to the analysis referred to in Article 49(Article 46) each TSO shall make the results of the Adequacy analysis referred to in Article 49(Article 46) and the evaluations referred to in Article 49(2) publically available.
4. If Adequacy is not fulfilled according to the analysis referred to in Article 49(Article 46), the TSO shall immediately inform the concerned parties as described in Article 46(3)(a) The TSO shall provide the concerned parties with an analysis of the causes of the absence of Adequacy as soon as reasonably practicable.

Chapter 6

ANCILLARY SERVICES

Article 50

Ancillary Services

1. Each TSO shall monitor the availability of Ancillary Services.
2. At least for active power and Reactive Power, either on an autonomous basis or in coordination with other TSOs, each TSO shall:
 - a) design and set up procedures for the procurement of Ancillary Services;
 - b) monitor on the basis of data provided in accordance with Chapter 4 [OS NC] whether the level and location of available capacity of Ancillary Services allows the fulfilment of operational security;
 - c) manage the procedures designed in accordance with Article 50(2)(a); and
 - d) endeavour to procure the level of Ancillary Services required.
3. Each TSO shall publish the required levels of Active Power Reserves.
4. If TSOs decide to exchange Active Power Reserves between LFC Areas, they shall establish one or more procedures in accordance with [NC LFC&R] and [NC Balancing].
5. Each Significant Grid User and DSO shall provide information to the TSO to which they are connected on their availability to provide Ancillary Services and related capacity in accordance with the [NC RfG] and the applicable national legal framework.
6. Each TSO shall communicate the available level of active power Ancillary Services to other TSOs upon their request.

Article 51

Reactive Power Ancillary Services

1. Each TSO shall assess in all operational planning timeframes whether its available Reactive Power sources are sufficient to ensure the Operational Security of the Transmission System, in line with Article 8 of [OS NC].
2. In order to increase the efficiency in operation of the elements of its Transmission System, each TSO shall identify for all operational planning timeframes:
 - a) the available Reactive Power capacities of Power Generating Facilities;
 - b) the available Reactive Power capacities of Transmission Connected Demand Facilities;
 - c) the available Reactive Power capacities of DSOs;
 - d) the transmission connected available equipment dedicated to providing Reactive Power; and
 - e) the ratios of active power and Reactive Power at the interface between Transmission Systems and Distribution Networks.
3. Each TSO shall ensure that the year-ahead scenarios include at least:
 - a) situations with different demands including the maximum and minimum demand;

- b) situation with high and low levels of generation from Renewable Energy Sources feeding into the grid; and
 - c) Generation patterns affecting voltage profiles.
4. Whenever the level of Reactive Power Ancillary Services is not sufficient for maintaining Operational Security, each TSO shall:
- a) inform neighbouring TSOs;
 - b) establish internal or cross Responsibility Area Remedial Actions; and
 - c) prioritise Remedial Actions in accordance with Article 6(9) of [NC OS].

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Chapter 7 SCHEDULING

Article 52

Establishment of scheduling processes

1. For each Power Generating Facility and Demand Facility to which requirements for scheduling in accordance with the applicable national legal framework apply, the concerned owner shall ensure that a Scheduling Agent is appointed. Each Market Participant and Market Coupling Operator, to which requirements for scheduling in accordance with the applicable national legal framework apply, shall appoint a Scheduling Agent.
2. Each TSO operating a Scheduling Area shall establish the provisions necessary to process Schedules, provided from Scheduling Agents, in accordance with the applicable national legal framework.

Article 53

Notification of schedules within Scheduling Areas

1. Each Scheduling Agent within a Scheduling Area shall submit to the concerned TSO operating the Scheduling Area in accordance with the national legal framework the following Schedules:
 - a) Generation Schedules;
 - b) Consumption Schedules;
 - c) Internal Commercial Trade Schedules; and
 - d) External Commercial Trade Schedules.
2. Each Scheduling Agent of a Market Coupling Operator shall submit Schedules to the concerned TSOs operating a Scheduling Area in accordance with the applicable national legal framework. These Schedules include:
 - a) Net Position related to the Scheduling Area;
 - b) External Commercial Trade Schedules as:
 - i. multilateral exchange between the Scheduling Area and a group of other Scheduling Areas involved in a market coupling; or
 - ii. bilateral exchange between the Scheduling Area and another Scheduling Areaas requested by concerned TSOs;
 - c) Internal Commercial Trade Schedules between Scheduling Agents of Market Coupling Operators and Scheduling Agents of Nominated Electricity Market Operators, if requested by concerned TSOs.
3. Before adopting an External TSO Schedule, all involved TSOs shall agree on the content of such an External TSO Schedule.

Article 54
Coherence of schedules

1. No later than 12 months after the entry into force of this Network Code, each TSO operating a Scheduling Area shall develop and implement a process to ensure its area internal balance for Generation Schedules, Consumption Schedules, External Commercial Trade Schedules and External TSO Schedules.
2. No later than 12 months after the entry into force of this Network Code all TSOs operating Scheduling Areas within Synchronous Area shall implement a process to ensure that all Schedules between all Scheduling Areas within Synchronous Area are balanced. If TSOs within a Synchronous Area without having legal obligation to respect this Network Code do not cooperate to fulfil the Network Code, the other TSOs have to take this in account by implementing the process. This process includes at least:
 - a) the bilateral agreement of External Commercial Trade Schedules and External TSO Schedules between Scheduling Areas; and
 - b) the verification that all Aggregated Netted External Schedules within Synchronous Area sum up to zero.
3. Each Scheduling Agent of a Market Coupling Operator shall follow the process described in Article 54(2)(b) and provide requesting TSOs with the values of External Commercial Trade Schedules of each Scheduling Area involved in market coupling in the form of Aggregated Netted External Schedules.

Article 55
Provision of information to other TSOs

1. Each TSO shall calculate and provide any requesting TSO with:
 - a) Aggregated Netted External Schedules; and
 - b) Netted Area AC Position when the Scheduling Area is interconnected to other Scheduling Areas via AC transmission links.
2. When required for the creation of Common Grid Models, in accordance with Article 14(2), each TSO operating a Scheduling Area shall provide any requesting TSO with:
 - a) Generation Schedules; and
 - b) Consumption Schedules.

Chapter 8

ENTSO-E OPERATIONAL PLANNING DATA ENVIRONMENT

Article 56

General provisions for ENTSO-E Operational Planning Data Environment

1. No later than 24 months after the entry into force of this Network Code, ENTSO-E shall implement and administer an ENTSO-E Operational Planning Data Environment for the storage of all relevant information for operational planning.
2. No later than 12 months after entry into force of this Network Code all TSOs shall define a standardised data format for the data exchanges taking place. The description of this data format shall be an integral part of the ENTSO-E Operational Planning Data Environment.
3. Each TSO shall be responsible for providing and updating the relevant information to this environment.
4. All TSOs and RSCIs shall have access to all information contained on the ENTSO-E Operational Planning Data Environment.

Article 57

Individual Grid Models, Common Grid Models and Operational Security Analysis

1. The ENTSO-E Operational Planning Data Environment shall store all Individual Grid Models and related relevant information for all relevant time horizons defined in this Network Code and in the [NC CACM].
2. The European Merging Function shall have full access to all information contained on the ENTSO-E Operational Planning Data Environment in relation to Individual and Common Grid Models and scenarios, as detailed in Chapter 2 and Article 57.
3. The information on Individual Grid Model contained on the ENTSO-E Operational Planning Data Environment shall allow for the merging into Common Grid Models by the European Merging Function.
4. All Common Grid Models shall be made available on the ENTSO-E Operational Planning Data Environment.
5. For the Year-Ahead time horizon, the following information shall be made available on the ENTSO-E Operational Planning Data Environment:
 - a) description of the scenarios referred to in Article 9;
 - b) Year-Ahead Individual Grid Model per TSO and per scenario defined in accordance with Article 10; and
 - c) Year-Ahead Common Grid Model per scenario defined in accordance with Article 11.
6. For the D-1 and intraday time horizons, the following information shall be made available on the ENTSO-E Operational Planning Data Environment:
 - a) D-1 and intraday Individual Grid Models per TSO and per forecast time period as described in Article 14;

- b) Scheduled Exchanges at the relevant time instances per Scheduling Area or per Scheduling Area Border, whichever is deemed relevant by the TSOs, and per DC interconnection;
- c) D-1 and intraday Common Grid Models per forecast time period as described in Article 14; and
- d) a list of the prepared and agreed upon pre-Fault and post-Fault Remedial Actions identified to cope with cross Responsibility Area Constraints.

Article 58

Outage Coordination Process

1. The ENTSO-E Operational Planning Data Environment shall contain a module for the storage and sharing of all relevant information for the Outage Coordination Process.
2. This information shall include at least:
 - a) Availability Status of Relevant Grid Elements including at least all information described in accordance with Article 26(4);
 - b) Availability Status of Relevant Power Generating Modules including;
 - c) Availability Status of Relevant Demand Facilities including; and
 - d) Availability Status of Relevant Non-TSO Owned Interconnectors including, but not limited to outage period, specific conditions for execution of the outage and time required to restore service if necessary to maintain Operational Security.

Article 59

System Adequacy

1. The ENTSO-E Operational Planning Data Environment shall store all relevant information for coordinated Adequacy analysis.
2. This information shall include at least:
 - a) the season-ahead system Adequacy data provided by the individual TSOs; and
 - b) the season-ahead pan-European system Adequacy analysis report.

Chapter 9

PERFORMANCE INDICATORS

Article 60

Performance indicators

1. The annual reporting according to the yearly report based on and observing the rules of the ENTSO-E incidents classification scale in accordance with Article 8(3)(a) of Regulation (EC) 714/2009 in its current version, shall contain the following Performance Indicators per Synchronous Area relevant for operational planning:
 - a) Indicator OPS 1 – an indicator about the number of events per year and per Synchronous Area leading to degradation in system operation conditions due to incident from the Contingency List taken into account in the Operational Security Analysis according to the [NC OS];
 - b) Indicator OPS 2 – an indicator about the number of events per year and per Synchronous Area leading to degradation in system operation conditions due to Out-of-Range Contingency including unexpected discrepancy of forecast according to the [NC OS]; and
 - c) Indicator OPS 3 – an indicator about the number of events per year and per Synchronous Area leading to degradation in system operation conditions due to lack of Active Power Reserves.
2. Each TSO shall launch a detailed analysis if the occurrence of Category A, B and/or C events shows an increasing trend over time:
 - a) for indicator OPS 1: to identify the wrong/missing/not anymore up to date issues in the operational planning process and what can be improved; and
 - b) for indicator OPS 2 and 3: to improve the Contingency Analysis and handling principles [NC OS] and coordinated Operational Security Analysis methodology according to Article 19(1) of this NC.

Chapter 10 FINAL PROVISIONS

Article 61

Amendment of contracts and general terms and conditions

Within three years after the entry into force of this Network Code, each relevant TSO, DSO and each relevant Significant Grid User shall amend all relevant clauses in contracts and/or relevant clauses in general terms and conditions, regardless of whether the relevant contracts or general terms and conditions contain an amendment process, in order to achieve compliance with the requirements of this Network Code.

Article 62

Entry into force

This Network Code shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

The articles

- 12 (YEAR-AHEAD COMMON GRID MODELS)
- 17 (CROSS CONTROL AREA REMEDIAL ACTIONS)
- 20(1) (SECURITY ANALYSIS COORDINATION)
- 21(1) (OUTAGE COORDINATION REGIONS)
-

Shall apply as from the entering into force of this Network Code.

All other articles shall apply as from the day of expiration of a 2 year period following its publication.

This Network Code shall be binding in its entirety and directly applicable in all Member States.