Network Code
on Operational Planning and Scheduling

24 September 2013

Notice
This Network Code represents ENTSO-E's second edition of the Network Code on Operational Planning and Scheduling, in line with the ACER Framework Guidelines on Electricity System Operation published on 02 December 2011 after the EC mandate letter was received by ENTSO-E on 24 February 2012. **It reflects the comments received by ENTSO-E during the public consultation held between 07 November 2012 and 07 January 2013. Furthermore, it is based on the input received through extensive discussions and meetings with stakeholders, ACER and the European Commission. Finally, it takes into account remarks on desired changes, issued in ACER opinion on 19 June 2013.** **This document is called "Network Code on Operational Planning and Scheduling" and is re-submitted to the Agency for the Cooperation of Energy Regulators for its reasoned opinion to be provided pursuant to Article 6 of Regulation (EC) No 714/2009.**

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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 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) Transmission System Operators (TSOs) are according to Article 2 of Directive 2009/72/EC TSOs responsible for operating, ensuring the maintenance and development of the extra-high and high voltage interconnected Transmission System in a given area and, where applicable, its interconnectors with other Transmission Systems, and for ensuring the long-term ability of the Transmission System to meet reasonable demands for the transmission of electricity. TSOs are also responsible for the Operational Security in their Responsibility Areas and together in the Synchronous Areas and in the whole European Union, with a high level of reliability and quality.

(3) 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.

(4) Coordination between TSOs, DSOs and Significant Grid Users is of vital importance for maintaining the security and quality of electricity supply in the Systems of Europe with the rising share of electricity from renewable energy sources and the developing Demand Response, both at the transmission and the distribution level. A framework for effectively exchanging operational information between TSOs, DSOs and Significant Grid Users needs to be established - TSOs and DSOs will in particular need information from Aggregators and Significant Grid Users which are Power Generating Facility Operators connected to their networks, in order to timely detect and cope with Operational Security constraints or other possible threats to security of supply.

(5) Cooperation between TSOs and DSOs should be promoted as cornerstone of such an electric power supply system in Europe that is necessary for integrating all available resources in an

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efficient and sustainable way. Moreover, cooperation of TSOs and DSOs at the Connection Point is essential to minimise investments, reduce cost and electrical losses.

(6) Integration of variable renewable generation represents a challenge for TSOs and DSOs who have never before had to cope with such a degree of volatility and unpredictability. The network code shall contribute to ensuring that the TSOs and DSOs have the operational tools they need in order to fulfil their obligations and that DSOs can support TSOs in ensuring Operational Security. Any measures that would impose barriers to new technologies and solutions for managing the volatility and unpredictability, including Smart Grids and the creation of new system services, should be avoided.

(7) This Network Code for Operational Planning and Scheduling was drafted 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.

(8) 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.

(9) Directive 2009/72/EC and Regulation (EC) No 714/2009 provide for powers and duties of national regulatory authorities with regard to measures taken by Transmission System Operators (TSO), allowing Member States to involve in certain cases also other national authorities. Those competences should also apply to measures taken by TSOs under this Network Code. To ensure consistent cross-border application of the most relevant of those competences, it is necessary to clarify the competence of national regulatory authorities to approve or fix specific terms and conditions or actions necessary to ensure operational security or their methodologies. The Network Code does not preclude Member States from providing for the approval or fixing by national regulatory authorities of other relevant terms and conditions or actions necessary to ensure operational security or their methodologies, within a timeframe allowing the timely delivery of those terms and conditions or actions.

(10) This Network Code is not detrimental to the right of any party having a complaint against a Transmission System Operator or Distribution System Operator in relation to that operator's obligations under this Network Code to direct its complaint to the regulatory authority.

(11) 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.

(12) 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.

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(13) 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.

(14) 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.

(15) The European Merging Function should merge these Individual Grid Models into Common Grid Models in consistency with CACM Network Code. These Common Grid Models should allow the coordination of Operational Security Analysis and of congestion and power flow management.

(16) 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.

(17) 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.

(18) 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.

(19) 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.

(20) On a D-1 and intraday horizon, TSOs should implement process allowing the acquisition and coherency verification of schedules of energies exchanged.

(21) 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.

(22) With respect to costly remedial actions, this Network Code is without prejudice and builds upon the national scrutiny for such Remedial Actions ensured in the [NC CACM].

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 operational planning processes of the Synchronous Areas applicable to all Significant Grid Users, 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 and Adequacy analysis 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. In Member States where more than one TSO exists, this Regulation shall apply to all TSOs within that Member State. Where a TSO does not have a function relevant to one or some obligations under this Network Code, Member States may under the national regulatory regime provide that the responsibility to comply with one or some obligations under this Network Code is assigned to one or more different transmission system operators. In case of such assignment, the Network Code shall apply accordingly to the transmission system operator(s) to which responsibilities have been assigned.

4. The provisions of this Network Code shall not apply to the Transmission System or parts of the Transmission System of a Member State which is not operating synchronously with or which is temporarily disconnected from the rest of the Synchronous Area.

   In addition, the provisions of this Network Code shall not apply to Åland Islands.

5. For the purpose of this Network Code, Existing Power Generating Modules shall be classified as type A, B, C and D according to the criteria defined in Article 3(6) of [NC RfG] for New Power Generating Modules. For the purpose of this Network Code, Existing Demand Facilities shall be classified according to the criteria defined in Article 5 and Article 8 of [NC DC]. The Significant Grid Users within the scope of this Network Code are:
   a) Existing and New Power Generating Modules of type B, C and D according to the criteria defined in Article 3(6) of [NC RfG];
   b) Existing and New Transmission Connected Demand Facilities according to the criteria defined in Article 5 and Article 8 of [NC DC] and all Existing and New Transmission Connected Closed Distribution Networks;
   c) Significant Demand Facilities, Closed Distribution Networks and Aggregators according to the [NC DC], in case that they provide Demand Side Response directly to the TSO;
   d) Redispatching Aggregators and Providers of Active Power Reserve according to the [NC LFCR].

6. In the implementation of the technical and other requirements set in this Network Code, each TSO shall comply with good industry practice.

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Article 2
Definitions

1. For the purposes of this Regulation, the definitions in Article 2 of Regulation (EC) No 714/2009, Commission Regulations establishing Network Codes that have been adopted according to Article 6(11) of Regulation (EC) No 714/2009 as well as Article 2 of Directive 2009/72/EC shall apply.
2. The following definitions shall apply:

   Adequacy means the ability of in-feeds into an area to meet the demand in 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, grid element, Demand Facility, or another facility to provide service, whether or not it is in operation;

   Close to Real-Time means the time delay between last intraday gate closure and real time, no later than 15 min before real time;

   Connecting DSO means the DSO to whose Distribution Network a Power Generating Module, Demand Facility, or grid element is connected;

   Connecting CDSO means the CDSO to whose Closed Distribution Network a Power Generating Module, Demand Facility, or grid element is connected;

   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 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 of TSOs between different Scheduling Areas;

   Forced Outage means the unplanned removal from service of a Relevant Asset for any urgency reason that is not under the operational control of the respective operator;

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

   Internal Commercial Trade Schedule means a Schedule representing the commercial exchange

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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 the Availability Status of Relevant Assets on all planning timescales;

Outage Coordinating TSO means the TSO to which a Relevant Asset is directly connected to its Transmission System or connected via a Transmission Connected Distribution Network or a Transmission Connected Closed Distribution Network

Outage Incompatibility means the state in which a combination of the Availability Status of one or more Relevant Grid Elements, Relevant Power Generating Modules, and/or Relevant Demand Facilities and the best estimate of the forecasted electricity grid situation leads to violation of Operational Security Limits taking into account Non Costly Remedial Actions at the TSO's disposal;

Outage Planning Agent means the role of planning the Availability Status of a Relevant Power Generating Module, a Relevant Demand Facility or a Relevant Grid Element;

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, 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 grid element located in a Transmission System, in a Distribution Network, or in a Closed Distribution Network 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;

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;

Scheduling Area means the Bidding Zone except if there is more than one Responsibility Area within this Bidding Zone. In the latter case, the Scheduling Area equals Responsibility Area or a group of Responsibility Areas;

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

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

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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.

Article 4
Regulatory approvals

1. National Regulatory Authorities or, when explicitly foreseen in national law, other relevant national authorities 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 as referred to in Article 4(2) to Article 4(4).

2. For the purpose of this Network Code, each TSO shall submit the following methodologies and conditions to the National Regulatory Authority or, when explicitly provided for in national law, other relevant national authority for approval:
    a) Principles of the coordination process to ensure the Availability Status of Relevant Assets in case of Forced Outages pursuant to Article 43(1).

3. For the purpose of this Network Code each TSO shall submit the following methodologies and conditions established in cooperation with the other TSOs bound by this Regulation to the relevant National Regulatory Authority or, when explicitly provided for in national law, other relevant national authority for approval:
    a) the methodology for establishing summer and winter Generation Adequacy outlooks pursuant to Article 47.

4. For the purpose of this Network Code each TSO shall submit the following methodologies and conditions established in cooperation with the other TSOs of the same Synchronous Area to the relevant National Regulatory Authority or, when explicitly provided for in national law, other relevant national authority for approval:
    a) the methodology set up pursuant to Article 19 for coordinating Operational Security Analysis; and
    b) the methodology established pursuant to Article 23 for determining Relevant 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 a request to amend the proposed methodology or condition.

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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) N° 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 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, CDSO, 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

Agreement with TSOs not bound by this Network Code

1. No later than 12 months after entering into force of this Network Code, all TSOs except the TSOs of Lithuania, Latvia and Estonia shall implement a Synchronous Area Agreement to ensure that TSOs with no legal obligation to respect this Network Code, belonging to the Synchronous Area, also cooperate to fulfil the requirements.

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2. No later than 12 months after entering into force of this Network Code, the TSOs of Lithuania, Latvia and Estonia shall endeavour to implement a Synchronous Area Agreement including the requirements of this Network Code.

3. If an agreement according to Article 7(1) or Article 7(2) cannot be implemented, the respective TSOs shall implement, no later than by [*date – 14 months after entry into force*], processes to ensure compliance with the requirements of this Network Code within its Responsibility area.

Article 8

Roles in operational planning and scheduling and delegation

1. When delegation is done in accordance with Article 19, Article 28 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.

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Chapter 2
DATA FOR OPERATIONAL SECURITY ANALYSIS IN OPERATIONAL PLANNING

Article 9
Individual and Common Grid Model general provisions

1. All 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 and Article 13;
    b) where relevant, Week-Ahead, in accordance with Article 14;
    c) D-1, in accordance with Article 15; and
    d) Intraday, where applicable in line with Article 20(2)(c).

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. Individual Grid Models described in Article 9(1) shall include the data described in Article 17(3) of [NC OS], as well as thermal limits of elements of the Transmission System.

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 10, Article 15 and when relevant Article 14;
    b) Individual Grid Models developed in accordance with Article 11, Article 13 and Article 15, and when relevant Article 14; and
    c) the provisions agreed upon in accordance with Article 12(1) and Article 15(1).

Article 10
Year-ahead scenarios

1. Allowing ENTSO-E sufficient time for publication according to Article 10(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 allow the identification and the assessment of the influence on the Operational Security of the interconnected Transmission System. These scenarios shall include the following variables:
    a) demand;
    b) conditions related to the contribution of Renewable Energy Sources ;
    c) defined import/export positions, including agreed reference values allowing the merging task; and
    d) 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) the probability of occurrence of the scenarios;
    c) the potential for possible deviations from Operational Security Limits associated with each scenario; and

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    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 11

Year-Ahead Individual Grid Models

1. In accordance with the provisions defined pursuant to Article 12(1), each TSO shall establish a Year-Ahead Individual Grid Model for each of the scenarios defined in accordance with Article 10, using its best estimates for the variables defined in Article 10(1), and make it available through the ENTSO-E Operational Planning Data Environment.
2. When developing Individual Grid Models in accordance with Article 11(1), each TSO shall:
    a) agree upon the estimated power flow on DC interconnections with the directly connected TSOs; and
    b) balance the sum of the following for each scenario:
        i. net exchanges on AC Interconnections;
        ii. estimated power flows on DC Interconnections;
        iii. demand, including an estimation of losses; and
        iv. Generation.

3. When developing Individual Grid Models referred to in Article 11(1), 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 19, 21, 24 and 27 of [NC OS];
    b) consistent with the scenarios defined in Article 10; and
    c) differentiated according to the type of primary energy source.

Article 12

Year-Ahead Common Grid Models

1. By [*date – 6 months after entry into force*], all TSOs shall define the provisions dealing with the gathering of the Year-Ahead Individual Grid Models referred to in Article 11(1), merging them into Common Grid Models and saving them. These provisions shall cover the following elements:
    a) data format;
    b) a procedure to handle modifications to the Network Topology or operational arrangements;
    c) deadlines for the gathering, merging and saving of the year-ahead Individual Grid Models into Common Grid Models;
    d) quality control of datasets;
    e) a procedure for model improvement;
    f) tasks to be performed at the regional, Synchronous Area and pan-European level; and
    g) requirements for the ENTSO-E Operational Planning Data Environment.

2. Each TSO shall deliver to requesting TSOs, in line with Article 19, 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 13

Updates of Year-Ahead Common Grid Models

1. When a TSO considers a change in its best estimations of variables used for the establishment of Individual Grid Models referred to in Article 11(1) significant in relation to Operational Security, each TSO shall update its Year-Ahead Individual Grid Models and deliver them to the ENTSO-E Operational Planning Data Environment.

2. Whenever changes are made to an Individual Grid Model in accordance with Article 13(1) the European Merging Function shall establish an updated Year-Ahead Common Grid Model.

Article 14

Week-Ahead Individual and Common Grid Models

1. When two or more TSOs consider it necessary for coordinating Operational Security Analysis, they shall define the most representative scenarios for analysing the Operational Security of the Transmission System for the Week-Ahead time horizons.

2. When applicable, each TSO shall create or update their Individual Grid Models for the Week-Ahead in line with the scenarios according to Article 14(1), and make them available to the European Merging Function.

3. The European Merging Function shall build Week-Ahead Common Grid Models from the Individual Grid Models established pursuant to Article 14(2).

Article 15

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. 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) plausibility and quality control of datasets including the Individual Grid Models as well as Common Grid Models in line with Articles 15(4), 15(5) and 15(6);
    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.

2. Each TSO shall create and deliver, via the ENTSO-E Operational Planning Data Environment its D-1 and intraday Individual Grid Models in accordance with the provisions defined pursuant to Article 15(1) of this Network Code and with Article 21 of [NC CACM].

3. Individual Grid Models referred to in Article 15(1) and Article 15 (2) shall contain at least the following variables:
    a) up to date demand and Generation forecasts;
    b) for Power Generating Facilities connected to Distribution Networks, aggregated Active Power output differentiated according to the type of primary energy source in line with data provided in accordance to Articles 16, 19 and 20 of [NC OS];
    c) Topology of the Transmission System; and
    d) Remedial Actions proposed for Constraints management.

4. Each TSO shall assess the accuracy of the variables referred to in Article 15(3) used to build its Individual Grid Models, comparing it with the actual values and implementing the principles defined pursuant to Article 19(1)(f).

5. If a TSO considers the accuracy of the variables referred to in Article 15(3) to be insufficient in relation to the Operational Security as a result of the assessment pursuant to Article 15(4), that TSO shall perform an analysis to determine the causes of the inaccuracy. If the causes depend on the TSO processes for creating the Individual Grid Models, that TSO shall adapt the related processes to create more accurate results. If the causes depend on variables referred to in Article 15(3) provided by other stakeholders, that TSO and those providers shall use all available economically efficient and feasible means under their control to improve these forecasts.

6. For D-1 and intraday Common Grid Models, TSOs shall check at least the following:
    a) the coherency of the connection status of interconnections;
    b) voltage deviation above the criteria defined in accordance with Article 15(1) for elements of the Transmission System located in the Observability Area of other TSOs;
    c) the coherency of Transitory Admissible Overloads of interconnections; and
    d) implausible Active Power and Reactive Power injections or withdrawals.

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Chapter 3
OPERATIONAL SECURITY ANALYSIS IN OPERATIONAL PLANNING

Article 16
Operational Security Analysis in operational planning

1. Each TSO shall perform coordinated Operational Security Analyses at least at the following time horizons:
   a) Year-Ahead;
   b) Week-Ahead, when applicable according to Chapter 2Article 14;
   c) D-1; and
   d) intraday.
2. Each TSO shall perform Operational Security Analyses for each of the time horizons specified in Article 16(1) in N-Situation by simulating each Contingency from the TSO's Contingency List in accordance with Article 13 of [NC OS] and verifying that the Operational Security Limits defined in accordance with Article 8(5), Article 8(6) and Article 8(8) of [NC OS] in the (N-1)-Situation are not exceeded.
3. When simulating each Contingency in accordance with Article 16(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 12(3) and Article 13(3) of [NC OS] and in accordance with Article 19 of this Network Code, in order to verify that Operational Security Limits affecting their own Responsibility Areas are not exceeded.
5. Each TSO shall use as a minimum Common Grid Models described in Article 12, Article 13 , Article 15 and where relevant Article 14 to perform the Operational Security Analyses referred to in Article 17 and Article 18.

Article 17
Year-Ahead up to and including Week-Ahead Operational Security Analysis

1. Each TSO shall perform Operational Security Analyses for assessing that the Operational Security Limits of its Responsibility Area are not exceeded, taking into account all the Contingencies from its Contingency List and using the applicable Common Grid Models described in Chapter 2 and relevant information as described in Article 20.

2. Each TSO shall perform Operational Security Analyses referred to in Article 17(1), in accordance with the coordination methodology and processes described in Article 19(1)(g) in order to detect at least the following Network Constraints:
   a) power flows and voltages over Operational Security Limits;
   b) breaches of Stability Limits of the Transmission System if applicable according to Article 15(4) and Article 15 (5) of [NC OS]; and
   c) violation of short-circuit thresholds of the Transmission System if applicable according to Article 11(3) of [NC OS].

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3. When, as a result of Operational Security Analysis referred to in Article 17(1) and Article 17(2), a TSO detects possible Constraints, affected TSOs shall prepare, if applicable with affected DSOs or Significant Grid Users, and if available, Non Costly Remedial Actions to solve the Constraint. If these are not available, this shall be considered an Outage Incompatibility and a coordination process according to Article 35 and Article 41 shall be initiated.

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 Operational Security Analyses for assessing that the Operational Security Limits of its Responsibility Area are not exceeded. It shall take into account all the Contingencies from its Contingency List as established in Article 13 of [NC OS] in order to detect possible Constraints and define with the affected TSOs and, if applicable, with affected DSOs or Significant Grid Users the appropriate Remedial Actions.

2. Each TSO shall monitor demand and Generation forecasts and shall proceed to updated Operational Security Analysis when these forecasts lead to significant deviation in demand or Generation.

3. In undertaking the analysis pursuant to Article 18(1), each TSO shall take into account:
   a) the available updates of Generation and consumption data;
   b) possible significant deviation in demand 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 and Article 20, the effectiveness of the joint Remedial Actions in accordance with Article 8(11) of [NC OS] and the technical-economic efficiency of the joint Remedial Action, in line with Article 41 of [NC CACM], respecting the principles of Article 30 of [NC CACM].

5. Close to Real-Time, when performing Operational Security Analysis in its Observability Area, each TSO shall use State Estimation.

Article 19

Methodologies for coordinating Operational Security Analysis

1. By [*date – 12 months after entry into force*], TSOs shall establish a methodology standardized at least per Synchronous Area, for Operational Security Analysis. This methodology shall at least cover:

   a) methods for assessing the influence of external elements;

   b) methods for definition of the Observability Area;

   c) Contingency Influence Thresholds above which Contingencies of external grid elements are deemed as External Contingencies, within each TSO Contingency List;

   d) common risk assessment principles, covering at least, for the Contingencies described in Article 13 of [NC OS]:

      i. associated probability;

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ii. Transitory Admissible Overloads; and
iii. impact of Contingencies;

e) principles for the selection of the appropriate joint Remedial Actions;

f) principles for assessing and dealing with uncertainties of Generation and demand, taking into account at least Reliability Margin in line with Article 25 of [NC CACM]; and

g) methodologies and processes for performing coordinated Dynamic Stability Assessment in line with [NC OS].

2. All TSOs shall make the methodologies established in accordance with Article 19(1) available to ENTSO-E. ENTSO-E shall publish these methodologies on its website.

3. Each TSO within a Synchronous Area shall apply the methodology established for its own Synchronous Area in accordance with Article 19(1).

Article 20

Agreements for coordinating Operational Security

1. By [*date – 15 months after entry into force*], TSOs shall establish a multi-party 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, 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.

2. TSOs shall ensure the consistency and the efficiency of the coordination of Operational Security Analyses within the multi-party agreements referred to in Article 20(1). These multi-party agreements shall cover at least:

a) governance and decision making procedures to be adopted by the concerned TSOs;

b) common processes for:

i. sharing the information on external Contingencies in Contingency list affecting each TSO's 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 the range of uncertainties regarding Generation and/or demand and its associated probability;
iv. exchanging the information of the available joint pre-Fault and post-Fault Remedial Actions; and
v. preparing and activating the most suitable joint Remedial Actions.

c) identification of the number and update frequency of intraday grid models, additional to those established as mandatory in accordance with [NC CACM], necessary to reassess the Operational Security;

d) compatible or common tools for performing common processes defined in Article 20(2)(b);

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e) the identification of any tasks within the common processes referred to in Article 20(2)(b) that are delegated;

f) processes for reviewing the contents or the perimeter of the multi-party agreements if so resulted from influence analysis in line with the common approach referred to in Article 19(1);

g) additional datasets, as needed, to the ones described in Chapter 2, including :

   i. protection Set Points or System Protection Schemes;
   ii. single line diagram and substations configuration;
   iii. additional grid models to represent specific situations;

h) necessary information concerning the range of uncertainties regarding Generation and/or demand and its associated probability for each Individual Grid Model.

3. If a TSO involved in multiple multi-party agreements in accordance with Article 20(1) detects conflicts and/or contradictions between these multi-party agreements, all TSOs involved in these multi-party agreements shall ensure a common solution.

4. When TSOs decide to delegate common tasks identified in line with Article 20(2)(e), it shall be considered as a Regional Security Coordination Initiative and abide by the requirements laid down in Article 6(3) and Article 8(4).

5. TSOs shall officially inform all other TSOs and RSCIs about any delegation pursuant to Article 20(4).

6. TSOs shall inform ENTSO-E about the scope of the regions of multi-party agreements established in accordance with Article 20(1). ENTSO-E shall publish this information.

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Chapter 4
OUTAGE COORDINATION

Article 21
Definition of Outage Coordination Regions

1. Each Outage Coordinating TSO shall coordinate the outage planning process within its Responsibility Area.

2. By [*date – 15 months after entry into force*], all Outage Coordinating TSOs shall adopt a multi-party agreement defining Outage Coordination Regions within which the Availability Status of Relevant Assets shall be monitored and coordinated.

3. When defining the Outage Coordination Regions, all Outage Coordinating 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 allows an efficient Outage Coordination Process;
    e) a regional coordination procedure in accordance with Article 22 is defined for each Outage Coordination Region; and
    f) a procedure to amend the definition of the Outage Coordination Regions is established including principles establishing when such a procedure will be undertaken.

4. All Outage Coordinating TSOs shall provide ENTSO-E with the definition of the Outage Coordination Regions, together with all other information required by Article 21(3). ENTSO-E shall publish all information on its website at the earliest opportunity.

Article 22
Regional coordination procedure

1. When developing regional coordination procedures as required by Article 21(3)(e) all Outage Coordinating TSOs of an Outage Coordination Region shall define:
    a) the frequency, scope and type of coordination which shall take place at least for the 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 in the Outage Coordination Process; and
    c) procedures for the validation of the Year-Ahead Relevant Grid Element Availability Plans by all Outage Coordinating TSOs of the Outage Coordination Region.

2. Each Outage Coordinating TSO shall participate in the Outage Coordination Process of its Outage Coordination Regions in accordance with Article 22(1).

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3. If Outage Incompatibilities arise between different Outage Coordination Regions, each Outage Coordinating TSO of those Outage Coordination Regions shall contribute to relieve these Outage Incompatibilities.

4. Each Outage Coordinating TSO shall provide all Outage Coordinating TSOs of its Outage Coordination Region(s) with all relevant information at its disposal on those infrastructure projects relating to the Transmission System, Distribution Network, Closed Distribution Network, Power Generating Modules, or Demand Facilities that impact on the operation of the Responsibility Area of another TSO.

5. Each Outage Coordinating TSO shall provide all DSOs of Transmission Connected Distribution Networks located in its Responsibility Area with all relevant information at its disposal on the Transmission System related infrastructure projects that impact on the operation of the Distribution Network of these DSOs.

6. Each Outage Coordinating TSO shall provide all CDSOs of Transmission Connected Closed Distribution Networks located in its Responsibility Area with all relevant information at its disposal on the Transmission System related infrastructure projects that impact on the operation of the Closed Distribution Network of these CDSOs.

Article 23

Methodology for assessing relevance of assets for the Outage Coordination Process

1. By [*date – 12 months after entry into force*], all Outage Coordinating TSOs shall establish a coordinated methodology, standardised at least per Synchronous Area, for assessing the relevance of Power Generating Modules, Demand Facilities, and grid elements located in a Transmission System, in a Distribution Network, or in a Closed Distribution Network for the Outage Coordination Process.

2. The methodology referred to in Article 23(1) shall include a procedure to quantify the impact of the Availability Status of Power Generating Modules, Demand Facilities, and grid elements located in a Transmission System, in a Distribution Network, or in a Closed Distribution Network on Responsibility Areas of TSOs other than the Outage Coordinating TSO. 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 23(1) shall be consistent with the methods for assessing the influence of external elements referred to in Article 19(1)(a).

4. All Outage Coordinating TSOs shall make the methodology referred to in Article 23(1) available to ENTSO-E. ENTSO-E shall publish the methodology on its website within one week after receiving it.

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Article 24

List of Relevant Power Generating Modules and Relevant Demand Facilities

1. By [*date – 15 months after entry into force*], all Outage Coordinating TSOs of each Outage Coordination Region shall apply the methodology established pursuant to Article 23 to assess the relevance of Power Generating Modules and Demand Facilities for the Outage Coordination Process.

2. All Outage Coordinating TSOs of each Outage Coordination Region shall establish a single list of Relevant Power Generating Modules and Relevant Demand Facilities for the Outage Coordination Process.

3. The list of Relevant Power Generating Modules and Relevant Demand Facilities shall only contain Significant Grid Users.

4. The list of Relevant Power Generating Modules and Relevant Demand Facilities shall contain all Power Generating Modules and Demand Facilities for which the Availability Status impacts on another Responsibility Area to a level beyond the thresholds defined in the methodology established pursuant to Article 23 and for which Article 24(3) applies.

5. All Outage Coordinating TSOs shall make the list of Relevant Power Generating Modules and Relevant Demand Facilities available on the ENTSO-E Operational Planning Data Environment.

6. Each Outage Coordinating TSO shall inform its National Regulatory Authority of the list of Relevant Power Generating Modules and Relevant Demand Facilities.

7. For every Relevant Power Generating Module and every Relevant Demand Facility, the Outage Coordinating TSO shall:
   a) inform the owners of the Relevant Power Generating Modules and the Relevant Demand Facilities about their inclusion in the list;
   b) inform DSOs on the Relevant Power Generating Modules and the Relevant Demand Facilities for which they are the Connecting DSO; and
   c) inform CDSOs on the Relevant Power Generating Modules and the Relevant Demand Facilities for which they are the Connecting CDSO.

Article 25

Re-assessment of the list of Relevant Power Generating Modules and Relevant Demand Facilities

1. Before 1 July of each calendar year, all Outage Coordinating TSOs of each Outage Coordination Region shall re-apply the methodology established pursuant to Article 23 for assessing the relevance of Power Generating Modules and Demand Facilities for the Outage Coordination Process.

2. When, pursuant to the assessment in Article 25(1), all Outage Coordinating TSOs of an Outage Coordination Region identify a need to update the list of Relevant Power Generating Modules and Relevant Demand Facilities established in accordance with Article 24, the concerned Outage Coordinating TSOs shall update this list as soon as reasonably practicable. All Outage Coordinating TSOs shall make the updated list available in accordance with Article 24(5), Article 24(6), and Article 24(7).

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Article 26

List of Relevant Grid Elements

1. By [*date – 15 months after entry into force*], all Outage Coordinating TSOs of each Outage Coordination Region shall apply the methodology established pursuant to Article 23 for assessing the relevance of grid elements located in a Transmission System, in a Distribution Network, or in a Closed Distribution Network for the Outage Coordination Process.

2. All Outage Coordinating TSOs of each Outage Coordination Region 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 grid elements located in a Transmission System or in a Distribution Network connecting Responsibility Areas;
   b) all grid elements located in a Transmission System, in a Distribution Network, or in a Closed Distribution Network for which the Availability Status impacts on another Responsibility Area to a level beyond the thresholds defined in the methodology established pursuant to Article 23; and
   c) all Critical Network Elements.

4. The list of Relevant Grid Elements shall contain the types of information which shall be provided by each Outage Coordinating TSO to the ENTSO-E Operational Planning Data Environment, including at least:
   a) the reason for every unavailable status of a Relevant Grid Element;
   b) specific conditions that need to be fulfilled before executing an unavailable status of a Relevant Grid Element; and
   c) the time required to restore a Relevant Grid Element to service if necessary to maintain Operational Security.

5. All Outage Coordinating TSOs shall make the list of Relevant Grid Elements available on the ENTSO-E Operational Planning Data Environment.

6. Each Outage Coordinating TSO shall inform its National Regulatory Authority of the list of Relevant Grid Elements.

7. For every Relevant Grid Element, the Outage Coordinating TSO shall:
   a) inform the owners and the operators of the Relevant Grid Elements about their inclusion in the list;
   b) inform DSOs of the Relevant Grid Elements for which they are the Connecting DSO; and
   c) inform CDSOs of the Relevant Grid Elements for which they are the Connecting CDSO.

Article 27

Re-assessment of the list of Relevant Grid Elements

1. Before 1 July of each calendar year, all Outage Coordinating TSOs of each Outage Coordination Region shall re-apply the methodology established pursuant to Article 23 for assessing the relevance of grid elements located in a Transmission System, in a Distribution Network, or in a Closed Distribution Network for the Outage Coordination Process.

2. When, pursuant to Article 27(1), all Outage Coordinating TSOs of an Outage Coordination Region identify a need to update the list of Relevant Grid Elements established in accordance with Article

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26, the concerned Outage Coordinating TSOs shall update this list as soon as reasonably practicable. All Outage Coordinating TSOs shall make the updated list available in accordance with Article 26(5), Article 26(6) and Article 26(7).

Article 28

Appointing Outage Planning Agents

1. For each Relevant Asset, the owner shall ensure that an Outage Planning Agent is appointed.

2. Each Outage Coordinating TSO shall be appointed as the Outage Planning Agent for every Relevant Grid Element that is operated by this Outage Coordinating TSO.

Article 29

Treatment of Relevant Assets located in a Distribution Network or in a Closed Distribution Network

1. For the Relevant Assets that are located in a Distribution Network, the Outage Coordinating TSO shall coordinate the outage planning with the Connecting DSO.

2. For the Relevant Assets that are located in a Closed Distribution Network, the Outage Coordinating TSO shall coordinate the outage planning with the Connecting CDSO.

Article 30

Variations to deadlines for the Year-Ahead coordination process

1. 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 Outage Coordinating TSOs in this Synchronous Area agree on the newly defined timeframe. Such timeframes can only be implemented if:
    a) all Outage Coordinating TSOs have agreed that the timeframes of the Outage Coordination Process within other Synchronous Areas are not impacted; and
    b) the approval of all National Regulatory Authorities within the concerned Synchronous Area has been gained.

Article 31

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

1. 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 32

General provisions on Availability Plans

1. The Availability Plans shall contain a separate Availability Status for each Relevant Asset with at least an hourly granularity.

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2. For exchanging Availability Plans between parties, Availability Statuses may be aggregated to a lower time granularity level if agreed by the exchanging parties.

3. On the timeframes when Generation Schedules and Consumption Schedules are submitted to the TSO according to Article 53, Availability Plans shall have a time granularity consistent with Generation Schedules and Consumption Schedules.

4. The Availability Status shall be one of the following three states:
   a) available: the Relevant Asset is capable of and ready for providing service, whether or not it is actually in operation;
   b) unavailable: the Relevant Asset is not capable of or ready for providing service;
   c) testing: the capability of the Relevant Asset for providing service is being tested.

5. The Availability Status "testing" shall only be used when there is a potential impact on the Transmission System, and shall be limited to the time periods:
   a) between first connection and final commissioning of the Relevant Asset; and
   b) directly following maintenance of the Relevant Asset.

Article 33
Long-term indicative Availability Plans

1. Two years prior to the start of the Year-Ahead coordination process, each Outage Coordinating TSO shall assess the indicative Availability Plans for Relevant Assets, provided by the Outage Planning Agents pursuant to Transparency Regulation.

2. Following this assessment, each Outage Coordinating TSO shall provide its preliminary comments, including detected Outage Incompatibilities, to all impacted Outage Planning Agents.

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

Article 34
Provision of Year-Ahead Availability Plan proposals

1. Before 1 August of each calendar year, for every Relevant Asset for which the Outage Planning Agent is not an Outage Coordinating TSO, DSO or CDSO, this Outage Planning Agent shall propose an Availability Plan for its Relevant Assets for the following calendar year to the Outage Coordinating TSO, and if the Relevant Asset is connected to a Distribution Network or to a Closed Distribution Network also to the Connecting DSO or Connecting CDSO respectively.

2. Between 1 August and 1 December, all Outage Planning Agents referred to in Article 34(1) shall have the right to initiate changes to their proposed Availability Plan by sending a change request to the Outage Coordinating TSO(s).

3. Each Outage Coordinating TSO shall handle the change requests received in accordance with Article 34(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 41(2).

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Article 35

Year-Ahead coordination of the Availability Status of Relevant Assets for which the Outage Planning Agent is not an Outage Coordinating TSO, DSO or CDSO

1. Each Outage Coordinating TSO shall assess on a Year-Ahead horizon whether Outage Incompatibilities arise from the proposed Availability Plans provided in accordance with Article 34.

2. In the event that Outage Incompatibilities are detected, the Outage Coordinating TSO(s) and all affected Outage Planning Agents shall coordinate their Availability Plans. Each Outage Coordinating TSO shall:
    a) inform each affected Outage Planning Agent of the conditions to be fulfilled to relieve the detected Outage Incompatibilities;
    b) be entitled to request that one or more Outage Planning Agents submit an alternative Availability Plan fulfilling these conditions; and
    c) repeat the assessment pursuant to Article 35(1) to establish whether any Outage Incompatibilities remains.

3. In the event that no alternative Availability Plan relieving all Outage Incompatibilities is submitted following a request from the Outage Coordinating TSO(s) pursuant to Article 35(2), this Outage Coordinating TSO shall establish such an alternative Availability Plan. In that case, this Outage Coordinating TSO shall:
    a) take into account the impact reported by the affected Outage Planning Agents;
    b) ensure the changes in the alternative Availability Plan are limited to what is strictly necessary to relieve the Outage Incompatibilities; and
    c) inform its National Regulatory Authority, the affected DSOs and CDSOs if any, and the affected Outage Planning Agents about the established Availability Plan, the impact reported to the Outage Coordinating TSO by the affected Outage Planning Agents, and the reasons which motivated its adoption.

Article 36

Year-Ahead coordination of the Availability Status of Relevant Assets for which the Outage Planning Agent is an Outage Coordinating TSO, DSO or CDSO

1. Each Outage Coordinating TSO shall coordinate the Availability Status of Relevant Grid Elements interconnecting different Responsibility Areas and for which it is an Outage Planning Agent with the other Outage Coordinating 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 Assets established in accordance with Article 34 and Article 35.

2. Each Outage Coordinating TSO, DSO and CDSO shall plan the Availability Status of the Relevant Grid Elements for which they are the Outage Planning Agent and that are not interconnecting different Responsibility Areas 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 Assets established in accordance with Article 34 and Article 35 and the Availability Status of Relevant Grid Elements interconnecting different Responsibility Areas established in accordance with Article 36(1).

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3. In case of Outage Incompatibilities, the Outage Coordinating TSO shall be entitled to propose a change to the proposed Availability Plans of the Relevant Assets for which the Outage Planning Agent is not an Outage Coordinating TSO, DSO or CDSO and shall in this event initiate coordination with the concerned Outage Planning Agents.

4. In the event that a DSO or CDSO has been unable to plan the unavailable Availability Status of a Relevant Grid Element, this DSO or CDSO shall report to the Outage Coordinating TSO. In this case or if the Outage Coordinating TSO has been unable to plan the unavailable Availability Status of a Relevant Grid Element, this Outage Coordinating TSO and all affected Outage Planning Agents shall use all available economically efficient and feasible means under their control in accordance with the national legal framework to plan the unavailable Availability Status of the Relevant Grid Element.

5. In the event that, having implemented the provisions of Article 36(4), the unavailable Availability Status of the Relevant Grid Element has not been planned, and if in the reasoned opinion of the Outage Coordinating TSO, not planning this unavailable Availability Status would threaten Operational Security, the Outage Coordinating TSO shall:
    a) take such actions as it deems necessary to plan this unavailable Availability Status while ensuring Operational Security, taking into account the impact reported to the Outage Coordinating TSO by affected Outage Planning Agents;
    b) provide a notification of these actions to all affected parties; and
    c) inform the relevant National Regulatory Authorities and the affected DSO or CDSO if any, and the affected Outage Planning Agents of the actions taken, the impact reported to the Outage Coordinating TSO by affected Outage Planning Agents, the threats which required such actions to be taken and the rationale for using the chosen actions.

6. Each Outage Coordinating TSO shall include all information at its disposal about grid-related conditions that need to be fulfilled and Remedial Actions that need to be taken before executing an unavailable Availability Status of a specific Relevant Grid Element on the ENTSO-E Operational Planning Data Environment alongside information on the Availability Plan.

Article 37

Provision of preliminary Year-Ahead Availability Plans

1. Before 1 November of each calendar year, each Outage Coordinating TSO shall provide the preliminary Year-Ahead Availability Plans for all Relevant Assets for the following calendar year to all other Outage Coordinating TSOs via the ENTSO-E Operational Planning Data Environment.

2. Before 1 November of each calendar year, for every Relevant Asset that is located in a Distribution Network, the Outage Coordinating TSO shall provide the preliminary Year-Ahead Availability Plan for this Relevant Asset to the Connecting DSO.

3. Before 1 November of each calendar year, for every Relevant Asset that is located in a Closed Distribution Network, the Outage Coordinating TSO shall provide the preliminary Year-Ahead Availability Plan for this Relevant Asset to the Connecting CDSO.

4. The Availability Plans referred to in Article 37(1), Article 37(2), and Article 37(3) shall contain at least the information listed in Article 26(4).

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Article 38

Validation of Year-Ahead Availability Plans within Outage Coordination Regions

1. Each Outage Coordinating TSO shall analyse whether Outage Incompatibilities arise when combining all preliminary Availability Plans impacting its Responsibility Area.

2. In the event that Outage Incompatibilities impacting the Year-Ahead Availability Plans for Relevant Assets are identified, each Outage Coordinating TSO shall coordinate with the concerned Outage Planning Agents, DSOs, CDSOs and/or Outage Coordinating TSOs to find a solution.

3. Once a solution is found for each Outage Incompatibility, all Outage Coordinating TSOs of the concerned Outage Coordination Region shall validate the Year-Ahead Availability Plans for all Relevant Grid Elements for which the Outage Planning Agent is an Outage Coordinating TSO, DSO or CDSO in accordance with the procedure established pursuant to Article 22(1)(c).

Article 39

Final Year-Ahead Availability Plans

1. Before 1 December of each calendar year, each Outage Coordinating TSO shall:
    a) finalise the Year-Ahead coordination process of Relevant Assets; and
    b) update the preliminary Year-Ahead Availability Plans for Relevant Assets on the ENTSO-E Operational Planning Data Environment.

2. Before 1 December of each calendar year, for every Relevant Asset, the Outage Coordinating TSO shall confirm the final Year-Ahead Availability Plan for this Relevant Asset to the appointed Outage Planning Agent.

3. Before 1 December of each calendar year, for every Relevant Asset that is located in a Distribution Network, the Outage Coordinating TSO shall provide the updated Year-Ahead Availability Plan for this Relevant Asset to the Connecting DSO.

4. Before 1 December of each calendar year, for every Relevant Asset that is located in a Closed Distribution Network, the Outage Coordinating TSO shall provide the updated Year-Ahead Availability Plan for this Relevant Asset to the Connecting CDSO.

5. The Availability Plans referred to in Article 39(2), Article 39(3), and Article 39(4) shall contain at least the information listed in Article 26(4).

Article 40

Coordination processes in case of detected Outage Incompatibilities

1. For all Outage Planning Agents involved in the coordination process, each Outage Coordinating TSO shall conduct this process for the Relevant Assets of the Outage Planning Agents located in its Responsibility Area in line with the applicable national legal framework.

2. Each Outage Coordinating TSO shall use the means at its disposal according to the applicable national legal framework to find a solution for the detected Outage Incompatibilities.

3. This Article shall apply to each coordination process that is initiated pursuant to the detection of Outage Incompatibilities according to Article 38 and Article 41.

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Article 41

Updates to the Year-Ahead Availability Plans

1. After the finalisation of the Year-Ahead coordination process in accordance with Article 39 and before real-time execution, all Outage Planning Agents shall have the right to initiate an adaptation of the coordinated Availability Plan.

2. Each Outage Planning Agent that is not an Outage Coordinating TSO that initiates an adaptation of the coordinated Availability Plan of the Relevant Assets under its responsibility shall send a change request to the Outage Coordinating TSO(s). The Outage Coordinating 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 Outage Planning Agents, affected Outage Coordinating TSOs, Connecting DSOs, and Connecting CDSOs for the Relevant Assets of which the Availability Status is impacted;
   d) issue a reasoned decision on the change request at the end of the coordination process, validating the change request when no Outage Incompatibility is detected or no Outage Incompatibility remains after coordination, and rejecting the change request when not all of the detected Outage Incompatibilities can be solved 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 Outage Coordinating TSO which initiates an adaptation of the coordinated Availability Plan of Relevant Grid Elements for which it is the Outage Planning Agent 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 Outage Coordinating TSOs of its Outage Coordination Region(s);
   c) consider additional Outage Incompatibilities related to the change request detected by other Outage Coordinating TSOs of its Outage Coordination Region(s);
   d) in the event that Outage Incompatibilities are detected, initiate a coordination process involving Outage Planning Agents, affected Outage Coordinating TSOs, Connecting DSOs, and Connecting CDSOs for the Relevant Assets of which the Availability Status is impacted;
   e) receive a reasoned decision on the change request from all parties that are impacted by the adaptation of the coordinated Availability Plan at the end of the coordination process, validating the change request when no Outage Incompatibility is detected or no Outage Incompatibility remains after coordination and rejecting the change request when not all of the detected Outage Incompatibilities can 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.

4. In the event that an Outage Coordinating TSO detects that Outage Incompatibilities arise according to Article 17(3), this Outage Coordinating TSO shall initiate a coordination process

involving all Outage Planning Agents, affected Outage Coordinating TSOs, Connecting DSOs, and Connecting CDSOs for the Relevant Assets of which the Availability Status is impacted.

Article 42

Detailing the testing status of Relevant Assets

1. The Outage Planning Agent of a Relevant Asset for which the testing Availability Status is declared shall provide the Outage Coordinating TSO, and if connected to a Distribution Network or to a Closed Distribution Network also the Connecting DSO or the Connecting CDSO respectively, as early as reasonably practicable, and no later than one month before the start of the testing Availability Status with:
    a) a detailed test plan;
    b) an indicative Generation or Consumption Schedule if the concerned Relevant Asset is a Power Generating Module or a Demand Facility; and
    c) changes to the Transmission System or Distribution Network Topology if the concerned Relevant Asset is a Relevant Grid Element.

2. The Outage Planning Agent of a Relevant Asset for which the testing Availability Status is declared shall provide the Outage Coordinating TSO, and if connected to a Distribution Network or to a Closed Distribution Network also the Connecting DSO or the Connecting CDSO respectively with an update of the information required in Article 42(1) as early as reasonably practicable.

3. The Outage Coordinating TSO of a Relevant Asset for which the testing Availability Status is declared shall provide the information it received pursuant to Article 42(1) and Article 42(2) to all other Outage Coordinating TSOs of its Outage Coordination Region(s) on request of these Outage Coordinating TSOs.

4. In case the Relevant Asset referred to in Article 42(1) or Article 42(2) is a Relevant Grid Element which interconnects two Responsibility Areas, the Outage Coordinating TSOs operating the two concerned Responsibility Areas shall coordinate in order to agree on the information to be provided pursuant to Article 42(1) or Article 42(2).

Article 43

Processes for handling Forced Outages

1. Each Outage Coordinating TSO shall establish and manage a coordination process to ensure the available or unavailable Availability 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 Asset, the Outage Planning Agent shall inform the Outage Coordinating TSO and, if connected to a Distribution Network or to a Closed Distribution Network, also the Connecting DSO or the Connecting CDSO respectively of this Forced Outage as soon as reasonably practicable and provide it with information on:
    a) the reason for the Forced Outage;
    b) the expected duration of the Forced Outage; and

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c) if applicable, the impact of the Forced Outage on the Availability Status of other Relevant Assets under its responsibility.

3. Whenever the Outage Coordinating TSO detects that one or several Forced Outages referred to in Article 43(2) has the potential of leading the Transmission System out of a Normal State, this Outage Coordinating TSO shall inform the concerned Outage Planning Agent(s) of the latest time at which Operational Security can be maintained without the Relevant Asset(s) in Forced Outage being available. Outage Planning Agents of the Relevant Asset(s) shall inform the Outage Coordinating TSO of their possibility to respect this time or shall justify their deviation from this time to the Outage Coordinating TSO.

4. 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 Outage Coordinating TSO shall update the ENTSO-E Operational Planning Data Environment with the most recent information.

Article 44

Real-time execution of the Availability Plans

1. Each Power Generating Module 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, except in case of Forced Outages.

2. Each Power Generating Module Owner shall ensure that all Relevant Power Generating Modules under its responsibility that were declared unavailable do not produce electricity.

3. Each Demand Facility Owner shall ensure that all Relevant Demand Facilities under its responsibility that were declared unavailable do not consume electricity.

4. Each Relevant Grid Element owner shall ensure that all Relevant Grid Elements under its responsibility that were declared available, are ready to transport electricity pursuant to their declared technical capabilities when necessary to maintain Operational Security, except in case of Forced Outages.

5. Each Relevant Grid Element owner shall ensure that all Relevant Grid Elements under its responsibility 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 Article 36(6), the concerned Outage Coordinating TSO, DSO or CDSO shall assess if these conditions are fulfilled before the real-time execution of the unavailable Availability Status. If not, the unavailable Availability Status, or a part thereof, shall not be executed.

7. Upon the request of an Outage Coordinating TSO before executing an unavailable Availability Status of a Relevant Asset which puts the Transmission System out of Normal State, each concerned party shall delay the corresponding unavailable Availability Status according to the instructions of the Outage Coordinating TSO to the extent possible while respecting the technical and safety limits.

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8. Upon the request from an Outage Coordinating TSO before executing a planned test of Relevant Assets which puts the Transmission System out of Normal State, each concerned party shall delay the corresponding test according to the instructions of the Outage Coordinating TSO to the extent possible while respecting the technical and safety limits.

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Chapter 5
ADEQUACY

Article 45
Forecasts for assessing Adequacy

Each TSO shall make any forecasts used for Responsibility Area Adequacy analyses in accordance with Article 46 or Article 49 available to all other TSOs through the ENTSO-E Operational Planning Data Environment.

Article 46
Responsibility Area Adequacy analyses

1. When performing Responsibility Area Adequacy analyses, each TSO shall assess the possibility for the sum of Generation within its Responsibility Area and cross border import capabilities to meet the total demand within its Responsibility Area under various operational scenarios, taking into account the required level of Active Power Reserves in line with [NC LFC&R].
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. capabilities of Power Generating Modules in accordance with Article 19(5), Article 21 and Article 27 of [NC OS] and their Availability Statuses; and
      ii. cross border capacities;
   b) take into account:
      i. contributions of Generation from Renewable Energy Sources; and
      ii. 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. As soon as reasonably practicable, each TSO shall inform:
   a) its National Regulatory Authority or when explicitly foreseen in national law, other relevant national authority, and when applicable any affected party, when an absence of Adequacy is detected within its Responsibility Area; and
   b) all TSOs through the ENTSO-E Operational Planning Data Environment when Generation within its Responsibility Area alone is insufficient to meet the demand.

Article 47
Summer and winter Generation Adequacy outlooks and methodology

1. By [*date – 12 months after entry into force*], all TSOs shall define a common methodology to establish pan-European annual summer and winter Generation Adequacy outlooks including:
   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 in accordance with Article 46 taking into account pan-European scenarios;

d) the cross border capacities for exchanges of electricity;

e) the data to be exchanged between TSOs; and

f) conditions for reviewing the methodology established.

2. All TSOs shall perform pan-European annual summer and winter Generation Adequacy outlooks before 21 May and 21 November of each calendar year respectively.

3. Before the methodology according to Article 49(1) has been approved, all TSOs shall apply the methodology previously adopted by ENTSO-E to fulfil the requirement of Article 8(3)(f) of Regulation (EC) N° 714/2009.

4. ENTSO-E shall adopt the summer and winter outlooks established in accordance with Article 47(2) under the requirement of Article 8(3)(f) of Regulation (EC) N° 714/2009.

5. All TSOs shall monitor the quality of the summer and winter Generation Adequacy outlooks.

6. Whenever all TSOs agree on the basis of the conditions defined in accordance with Article 47(1)(f) that the quality of the summer and winter Generation Adequacy outlooks is insufficient or an update is necessary for other reasons, all TSOs shall update the common methodology referred to in Article 47(1).

7. Before submitting of the methodology for NRA approval, all TSOs shall:

a) collect comments from stakeholders; and

b) deliver answers to stakeholders' comments.

8. All TSOs shall make the approved methodology available to ENTSO-E. ENTSO-E shall publish the methodology on its website within one week after receiving it.

9. All TSOs shall apply the approved methodology for all subsequent outlooks after publication by ENTSO-E.

Article 48

Responsibility Area Adequacy up to 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, on Renewable Energy Sources estimations and on cross border capacities.

2. Each TSO shall perform an updated Responsibility Area 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.

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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) forecasted demand;
    c) forecasted Generation from Renewable Energy Sources;
    d) Active Power Reserves in accordance with the data provided pursuant to Article 22 of [NC OS];
    e) cross border capacities consistent with Cross Zonal Capacities as calculated to fulfil the requirements of [NC CACM] where applicable;
    f) capabilities of Power Generating Modules in accordance with the data provided pursuant to Article 19(5), Article 21 and Article 27 of [NC OS] and their Availability Statuses; and
    g) capabilities of Demand Units with Demand Side Response in accordance with the data provided pursuant to Article 28 and Article 29 of [NC OS] and their Availability Statuses.
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 expected energy not served in the absence of Adequacy.
3. If Adequacy is not fulfilled according to the analysis referred to in Article 49(1), each TSO shall inform its NRA or when explicitly foreseen in national law, other relevant national authority. The TSO shall provide its relevant national authority with an analysis of the causes of the absence of Adequacy as soon as reasonably practicable.

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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) use all available economically efficient and feasible means under its control 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].

5. 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 monitor:
    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. Whenever the level of Reactive Power Ancillary Services is not sufficient for maintaining Operational Security, each TSO shall:
    a) inform neighbouring TSOs; and
    b) prepare Remedial Actions for activation in line with Article 8(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. For regions with central dispatching of generation, the Operator responsible for of the central dispatching of generation shall appoint or act as a Scheduling Agent and establish the provisions necessary to produce Schedules in accordance with the applicable national legal framework.

3. 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.

4. When a Scheduling Area covers more than one Responsibility Area, the TSOs responsible for these Responsibility Areas shall agree on which one operates the Scheduling Area.

Article 53
Notification of schedules within Scheduling Areas

1. Each Scheduling Agent within a Scheduling Area, except Scheduling Agents of Market Coupling Operator shall submit to the TSO operating this 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 TSOs operating a Scheduling Area involved in the market coupling 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; or
      ii. bilateral exchange between the Scheduling Area and another Scheduling Area

   as 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.

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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. By [*date – 12 months after entry into force*], 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. By [*date – 12 months after entry into force*], all TSOs operating Scheduling Areas within Synchronous Area shall implement a process to ensure that all Schedules between all Scheduling Areas within the Synchronous Area are balanced. 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 a Synchronous Area sum up to zero.

   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, when implementing this process.

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 15(2), each TSO operating a Scheduling Area shall provide any requesting TSO with:
   a) Generation Schedules; and
   b) Consumption Schedules.

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Chapter 8
ENTSO-E OPERATIONAL PLANNING DATA ENVIRONMENT

Article 56

General provisions for ENTSO-E Operational Planning Data Environment

1. By [*date – 24 months after entry into force*], ENTSO-E shall implement and shall administer an ENTSO-E Operational Planning Data Environment for the storage of all relevant information for operational planning.

2. By [*date – 12 months after entry into force*], all TSOs shall have defined 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.

5. As long as the ENTSO-E Operational Planning Data Environment has not yet been implemented, all TSOs shall ensure applicability of this Network Code and exchange data as referred in this Network Code in a transitory form.

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 10;
   b) Year-Ahead Individual Grid Model per TSO and per scenario defined in accordance with Article 11; and
   c) Year-Ahead Common Grid Model per scenario defined in accordance with Article 12.
6. For the D-1 and intraday time horizons, the following information shall be made available on the ENTSO-E Operational Planning Data Environment:

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a) D-1 and intraday Individual Grid Models per TSO and according to the time granularity defined pursuant to Article 15;

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 according to the time granularity defined pursuant to Article 15; 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; and

    c) Availability Status of Relevant Demand Facilities 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;

    b) the season-ahead pan-European system Adequacy analysis report;

    c) forecasts used for Adequacy in line with Article 45; and

    d) information about a lack of Adequacy in line with Article 46(3)(b).

Chapter 9
PERFORMANCE INDICATORS

Article 60
Performance indicators

1. Each TSO shall contribute to the annual reporting developed pursuant to the common incidents classification scale, adopted by ENTSO-E in accordance with Article 8(3)(a) of the Regulation (EC) 714/2009 and with Article 32(2) of [NC OS].
2. This report shall include the results of quality monitoring of the following Performance Indicators relevant for operational planning:
    a) Indicator OPS 1A – an indicator about the number of events in which an incident contained in the Contingency list led to a degradation of system operation conditions;
    b) Indicator OPS 1B – an indicator about the number of events counted by indicator OPS 1A in which a degradation of system operation conditions occurred as a result of unexpected discrepancies of demand or Generation forecasts;
    c) Indicator OPS 2A – an indicator about the number of events in which there was a degradation in system operation conditions due to an Out-of-Range Contingency;
    d) Indicator OPS 2B – an indicator about the number of events counted by indicator OPS 2A in which a degradation of system operation conditions occurred as a result of unexpected discrepancies of demand or Generation forecasts; and
    e) Indicator OPS 3 – an indicator about the number of events leading to a degradation in system operation conditions due to lack of Active Power Reserves.
3. For OPS 1A, OPS 1b, OPS 2A, OPS 2B and OPS 3, the indicator shall only record the events leading to a degradation in system operation conditions, ranked at Scale 1, Scale 2 or Scale 3, according to the Operational Security Ranking defined in Article 32(3) of [NC OS].

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Chapter 10
FINAL PROVISIONS

Article 61
Amendment of contracts and general terms and conditions

By [*date – the same as the date in Article 62*], 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 the publication in the Official Journal of the European Union of [the Network Code OS, OPS, or LFCR, whichever is the latest].

With the exception of the Articles 4, 7, 12, 19, 20, 21, 23, 24, 26, 47, 54, 56, 61, which shall apply as from the entry into force, this Network Code shall apply as from [*date – the same as in Article 35 NC OS - at minimum 18 months after entry into force]*.

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

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