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COMMISSION

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COMMISSION REGULATION (EU) …/…

of XXX

establishing a network code on electricity emergency and restoration

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of XXX

establishing a network code on electricity emergency and restoration

THE EUROPEAN COMMISSION,

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

Having regard to Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity and repealing Regulation (EC) No 1228/2003[1], and in particular Article 6(11) thereof,

Whereas:

(1) A fully functioning and interconnected internal energy market is crucial for maintaining security of energy supply, increasing competitiveness and ensuring that all consumers can purchase energy at affordable prices.

(2) Regulation (EC) No 714/2009 sets out non-discriminatory rules governing access to the network for cross-border exchanges in electricity with a view to ensuring the proper functioning of the internal market in electricity.

(3) Commission Regulation (EU) 2017/XXX *[SO GLs]*[2] sets out harmonised rules on system operation for transmission system operators ('TSOs'), regional security coordinators ('RSCs'), distribution system operators ('DSOs') and significant grid users ('SGUs'). It identifies different critical system states (normal state, alert state, emergency state, blackout state and restoration). It also includes requirements and principles to ensure the conditions for maintaining operational security throughout the Union and promote the coordination of system operation, requirements and principles for operational planning and scheduling processes required to anticipate real-time operational security difficulties and requirements and principles for Union-wide load frequency control and reserves.

(4) A common set of minimum requirements and principles needs to be developed for the procedures and actions to be carried out in the emergency, blackout and restoration states.

(5) Even though each TSO is responsible for maintaining operational security in its control area, the secure and efficient operation of the Union's electricity system is a task shared between all the Union TSOs since all national systems are, to a certain extent, interconnected and a fault in one control area could affect other areas. The efficient operation of the Union's electricity system also requires a close collaboration and coordination between stakeholders.

(6) It is therefore necessary to set out harmonised requirements concerning technical and organisational measures in order to prevent the propagation or deterioration of an incident in the national system and to avoid the spread of the disturbance and blackout

[1] OJ L 211, 14.8.2009, p. 15.

[2] Commission Regulation (EU) 2016/XXX of YYY establishing a guideline on electricity transmission system operation (OJ L …, p. …).

state to other systems. It is also necessary to set out harmonised procedures that TSOs should implement in order to restore the alert or normal state after the spread of the disturbance or blackout state.

(7) Each TSO should establish a system defence plan and a restoration plan, through a three steps approach: a design phase, consisting of defining the detailed content of the plan; an implementation phase, consisting in the development and installation of all necessary means and services for the activation of the plan; and an activation phase, consisting of operational use of one or more measure(s) from the plan.

(8) The harmonisation of the requirements for the establishment by TSOs of their respective system defence plan and restoration plan should ensure the overall efficiency of those plans at Union level.

(9) TSOs should ensure the continuity of energy transactions during emergency, blackout or restoration state and only suspend market activities and market's accompanying processes as a last resort. Clear, objective and harmonised conditions under which energy transactions could be suspended and subsequently restored should be established.

(10) Each TSO should support any other TSO in emergency, blackout or restoration state, upon request, where such support does not lead the system of the requested TSO into emergency or blackout state.

(11) On 20 July 2015, the Agency for the Cooperation of Energy Regulators ('the Agency') recommended the adoption by the Commission of the Network Code on Electricity Balancing, subject to the requirements contained in the recommendation of the Agency No 3/2015.

(12) In addition to the general provisions of Regulation (EU) 2017/XXX [SO GLs], specific requirements are needed to guarantee the information exchange and communication during the emergency, blackout or restoration states, as well as the availability of critical tools and facilities necessary to operate and restore the system.

(13) This Regulation has been adopted on the basis of Regulation (EC) No 714/2009 which it supplements and of which it forms an integral part. References to Regulation (EC) No 714/2009 in other legal acts should be understood as also referring to this Regulation.

(14) The measures provided for in this Regulation are in accordance with the opinion of the Committee referred to in Article 23(1) of Regulation (EC) No 714/2009,

HAS ADOPTED THIS REGULATION:

CHAPTER I
GENERAL PROVISIONS

Article 1
Subject matter

For the purposes of safeguarding operational security, preventing the propagation or deterioration of an incident to avoid a widespread disturbance and the blackout state as well to allow for the efficient and rapid restoration of the electricity system from the emergency or blackout states, this Regulation establishes a network code which lays down the requirements on:

(a) the management by TSOs of the emergency, blackout and restoration states;

(b) the coordination of system operation across the Union in the emergency, blackout and restoration states;

(c) the simulations and tests to guarantee a reliable, efficient and fast restoration of the interconnected transmission systems to the normal state from the emergency or blackout states;

(d) the tools and facilities needed to guarantee a reliable, efficient and fast restoration of the interconnected transmission systems to the normal state from the emergency or blackout states.

Article 2
Scope

1. This Regulation shall apply to TSOs, DSOs, SGUs, defence service providers, restoration service providers, balance responsible parties, balancing service providers, nominated electricity market operators ('NEMO') and other entities assigned or delegated to execute market functions pursuant to Commission Regulation (EU) 2015/1222[3].

2. In particular, this Regulation shall apply to the following SGUs:

   (a) existing and new power generating modules classified as type B, C and D in accordance with the criteria set out in Article 5 of Commission Regulation (EU) 2016/631[4];

   (b) existing and new transmission-connected demand facilities;

   (c) existing and new distribution systems, including closed distribution systems;

   (d) providers of redispatching of power generating modules or demand facilities by means of aggregation and providers of active power reserve in accordance with Title 8 of Regulation (EU) 2017/XXX *[SO GLs*]; and

   (e) existing and new high voltage direct current ('HVDC') systems and direct current-connected power park modules in accordance with the criteria set out in Article 4(1) of Commission Regulation (EU) 2016/XXX[5] *[HVDC]*.

3. This Regulation shall apply to existing and new type A power generating modules, as well as to demand facilities, closed distribution systems and third parties providing demand response where they qualify as defence service providers or restoration service providers pursuant to Article 4(3).

4. Type A and type B power generating modules, demand facilities and closed distribution systems providing demand response may fulfil the requirements of this Regulation either directly or indirectly through a third party, under the terms and conditions set in accordance with Article 4(3).

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3 Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and management (OJ L 197, 25.7.2015, p.24).

4 Commission Regulation (EU) 2016/631 of 14 April 2016 establishing a network code on requirements for grid connection of generators (OJ L 112, 27.4.2016, p. 1).

5 Commission Regulation No (EU) 2016/XXX of YYY establishing a network code on requirements for grid connections of high voltage direct current systems and DC-connected power park modules (OJ L … , … p. …).

5. This Regulation shall apply to all transmission systems and interconnections in the Union except transmission systems and distribution systems or parts of the transmission systems and distribution systems of islands of Member States of which the systems are not operated synchronously with Continental Europe, Great Britain , Nordic, Ireland and Northern Ireland or Baltic synchronous area, provided that this non synchronous operation does not result from a disturbance.

6. In Member States where more than one transmission system operator exists, this Regulation shall apply to all transmission system operators within that Member State. Where a transmission system operator does not have a function relevant to one or more obligations under this Regulation, Member States may provide that the responsibility for complying with those obligations is assigned to one or more different, specific transmission system operators.

7. The TSOs of Lithuania, Latvia and Estonia are, as long as and to the extent that they are operating in a synchronous mode in a synchronous area where not all countries are bound by Union legislation, exempted from the application of Articles 15, 29 and 33, unless otherwise provided for in a cooperation agreement with third country TSOs constituting the basis for their cooperation concerning secure system operation in accordance with Article 10.

Article 3
Definitions

For the purposes of this Regulation, the definitions provided for in Article 2 of Directive 2009/72/EC of the European Parliament and of the Council[6], Article 2 of Regulation (EC) No 714/2009, Article 2 of Commission Regulation (EU) No 543/2013[7], Article 2 of Regulation (EU) 2015/1222, Article 2 of Regulation (EU) 2016/631, Article 2 of Regulation [DCC](EU) 2016/XXX[8], Article 2 of Regulation (EU) [HVDC], Article 2 of Regulation (EU) 2017/XXX [SO GLs], Article 2 of Regulation (EU) No 543/2013[9] on submission and publication of data in electricity markets and Article 2 of Directive 2009/72/EC shall apply.

In addition, the following definitions shall apply:

(1) ‘defence service provider’ means a legal entity with a legal or contractual obligation to provide a service contributing to one or several measures of the system defence plan;

(2) ‘restoration service provider’ means a legal entity with a legal or contractual obligation to provide a service contributing to one or several measures of the restoration plan;

(3) ‘high priority grid user’ means the significant grid users for which special conditions apply for disconnection and re-energisation;

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6 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 (OJ L 211, 14.8.2009, p. 55).

7 Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council (OJ L 163, 15.6.2013, p.1).

8 Commission Regulation (EU) 2016/XXX of YYY establishing a network code on demand connection (OJ L …, …, p. …).

9 Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council (OJ L 163, 15.6.2013,p.1).

(4) ‘restoration plan’ means all technical and organisational measures necessary for the restoration of the system back to normal state;

(5) ‘re-energisation’ means reconnecting generation and load to energise the parts of the system that have been disconnected;

(6) ‘top-down re-energisation strategy’ means a strategy that requires the assistance of other TSOs to re-energise parts of the system of a TSO;

(7) ‘bottom-up re-energisation strategy’ means a strategy where part of the system of a TSO can be re-energised without the assistance from other TSOs;

(8) ‘resynchronisation’ means synchronising and connecting again two synchronised regions at the resynchronisation point;

(9) ‘frequency leader’ means the TSO appointed and responsible for managing the system frequency within a synchronised region or a synchronous area in order to restore system frequency back to the nominal frequency;

(10) ‘synchronised region’ means the fraction of a synchronous area covered by interconnected TSOs with a common system frequency and which is not synchronised with the rest of the synchronous area;

(11) ‘resynchronisation leader’ means the TSO appointed and responsible for the resynchronisation of two synchronised regions;

(12) ‘resynchronisation point’ means the device used to connect two synchronised regions, usually a circuit breaker.

Article 4
Regulatory aspects

1. When applying this Regulation, Member States, regulatory authorities, competent entities and system operators shall:

(a) apply the principles of proportionality and non-discrimination;

(b) ensure transparency;

(c) apply the principle of optimisation between the highest overall efficiency and lowest total costs for all parties involved;

(d) ensure that TSOs make use of market-based mechanisms as far as is possible to ensure network security and stability;

(e) respect technical, legal, personal safety and security constraints;

(f) respect the responsibility assigned to the relevant TSO in order to ensure system security, including as required by national legislation;

(g) consult with relevant DSOs and take account of potential impacts on their system; and

(h) take into consideration agreed European standards and technical specifications.

2. Each TSO shall submit the following to the regulatory authority for approval:

(a) the terms and conditions to act as defence service providers on a contractual basis in accordance with paragraph 3;

(b) the terms and conditions to act as restoration service providers on a contractual basis in accordance with paragraph 3;

(c) the terms and conditions for disconnecting and re-energizing the high priority grid users listed in accordance with point (e) of Article 11(4) and point(d) of Article 23(4);

(d) the rules for suspension and restoration of market activities in accordance with Article 35(1);

(e) specific rules for imbalance settlement and settlement of balancing energy in accordance with Article 39(1);

(f) the test plan in accordance with Article 43(2).

3. The terms and conditions to act as defence service provider and as restoration service provider shall be defined either in the national legal framework or on a contractual basis. If defined on a contractual basis, each TSO shall define at least:

(a) the characteristics of the service to be provided;

(b) the possibility of and conditions for aggregation; and

(c) for restoration service providers, the target geographical distribution of power sources with black start and island operation capabilities.

4. Each TSO shall notify the regulatory authority or the entity designated by the Member State the system defence plan designed pursuant to Article 11 and the restoration plan designed pursuant to Article 23, or at least the following elements of those plans:

(a) the objectives of the system defence plan and the restoration plan, including the phenomena to be managed or the situations to be solved;

(b) the conditions triggering the activation of the measures of the system defence plan and the restoration plan;

(c) the rationale of each measure, explaining how it contributes to the objectives of the system defence plan and the restoration plan, and the party responsible for implementing those measures; and

(d) the deadlines set out pursuant to Articles 11 and 23 for the implementation of the measures.

5. Regulatory authorities shall take decisions on the approval of the proposals for terms and conditions or methodologies in accordance with paragraph 2 within six months following the receipt of such proposals.

6. Where a TSO is required or permitted under this Regulation to specify, establish or agree on requirements, terms and conditions or methodologies that are not subject to approval in accordance with paragraph 2, Member States may require prior approval by the regulatory authority, the entity designated by the Member State or other competent authorities of the Member States of these requirements, terms and conditions or methodologies.

7. If a TSO deems an amendment to requirements or methodologies, approved in accordance with paragraph 5, to be necessary, the requirements provided for in paragraphs 2 to 5 shall apply to the proposed amendment. TSOs proposing an amendment shall take into account the legitimate expectations, where necessary, of power generating facility owners, demand facility owners and other stakeholders based on the initially specified or agreed requirements or methodologies.

8. Any party can complain against a relevant system operator or TSO in relation to that relevant system operator’s or TSO's obligations or decisions under this Regulation and

may refer the complaint to the regulatory authority which, acting as dispute settlement authority, shall issue a decision within two months after receipt of the complaint. That period may be extended by a further two months where additional information is sought by the regulatory authority. That extended period may be further extended with the agreement of the complainant. The regulatory authority's decision shall be binding unless and until overruled on appeal.

Article 5
Consultation and coordination

1. Where this Regulation provides that a TSO shall consult concerned parties for the terms and conditions or actions it defines before real-time or in real-time, the following procedure shall apply:

   (a) the TSO shall liaise with at least the parties identified in the Articles of this Regulation requiring consultation;

   (b) the TSO shall explain the rationale and objective of the consultation and of the decision that it has to take;

   (c) the TSO shall collect from the parties referred to in point (a) any relevant information and their assessment;

   (d) the TSO shall duly take into account the views, situations and constraints of the parties consulted;

   (e) before taking a decision, the TSO shall provide an explanation to the parties consulted of the reasons for following or not their views.

2. Where this Regulation provides that a TSO shall coordinate the execution of a set of actions in real-time with several parties, the following procedure shall apply:

   (a) the TSO shall liaise at least with the parties identified in the Articles of this Regulation requiring real time coordination;

   (b) the TSO shall explain the rationale and objective of the coordination and of the actions to be taken;

   (c) the TSO shall make an initial proposal on actions to be taken by each party;

   (d) the TSO shall collect from the parties referred to in point (a) any relevant information and their assessment;

   (e) the TSO shall make a final proposal on actions to be taken by each party, duly taking into account the views, situations and constraints of the concerned parties and setting a deadline for parties to express their opposition to the actions proposed by the TSO;

   (f) where the concerned parties do not oppose executing the actions proposed by the TSO, each party, including the TSO, shall execute the actions in line with the proposal;

   (g) where one or more of the parties refuse the action proposed by the TSO within the set deadline, the TSO shall refer the action proposed to the relevant authority for decision, together with a justification of the rationale and objectives of the action proposed by the TSO and of the assessment and position of the parties;

(h) if real-time referral to the relevant authority is not possible, the TSO shall initiate an equivalent action that has the least or no impact on the parties that refused to execute the action proposed;

(i) a party may refuse to take the alternative action if it justifies that this action would lead to the violation of one or more technical, legal, personal safety or security constraint(s).

Article 6
Regional coordination

1. When designing its system defence plan pursuant to Article 11 and its restoration plan pursuant to Article 23 or when reviewing its system defence plan pursuant to Article 50 and its restoration plan pursuant to Article 51, each TSO shall ensure the consistency with the corresponding measures in the plans of TSOs within its synchronous area and in the plans of neighbouring TSOs belonging to another synchronous area of at least the following measures :

   (a) inter-TSO assistance and coordination in emergency state, pursuant to Article 14;

   (b) frequency management procedures, pursuant to Articles 18 and 28;

   (c) assistance for active power procedure, pursuant to Article 21;

   (d) top-down re-energisation strategy, pursuant to Article 27.

2. The RSC set up pursuant to Article 77 of Regulation 2017/XXX(EU) [SO GLs] shall assess the consistency of the system defence plans and the restoration plans referred to in paragraph 1. By *[12 months after entry into force of this Regulation]*, each TSO shall transmit those plans to the relevant RSC. Each TSO shall ensure the availability of its own skilled experts to perform the consistency assessment.

3. The consistency assessment of the system defence plan and the restoration plan in accordance with paragraphs 1 and 2 shall include the following tasks:

   (a) exchange of information and data related to the measures referred to in paragraph 1 among the TSOs concerned;

   (b) identification of incompatibilities of measures referred to in paragraph 1, in the plans of the involved TSOs;

   (c) identification of potential threats to operational security in the capacity calculation region. These threats include, inter alia, regional common mode failures with significant impact on the transmission systems of the involved TSOs;

   (d) assessment of the effectiveness of measures referred to in paragraph 1 specified in the system defence plans and the restoration plans of the involved TSOs, to manage the potential threats referred to in point (c);

   (e) consultation with RSC to assess the consistency of measures referred to in paragraph 1 within the entire concerned synchronous area;

   (f) identification of mitigation actions in case of incompatibilities in the system defence plans and the restoration plans of the involved TSOs or in case that measures are missing in the system defence plans and the restoration plans of the involved TSOs.

4. Each TSO shall amend its system defence plan or restoration plan based on the results of the consistency assessment referred to in paragraph 2.

5. All TSOs of each capacity calculation region shall agree on a threshold above which the impact of actions of one or more TSOs in the emergency, blackout or restoration states is considered significant for other TSOs within the capacity calculation region.

Article 7
Public consultations

1. The relevant TSOs shall carry out consultations with stakeholders, including the competent authorities of each Member State, on proposals subject to approval in accordance with Article 4(2). The consultation shall last for a period of not less than one month.

2. The relevant TSOs shall duly take into account the views of the stakeholders resulting from the consultations prior to the submission of the draft proposal. In all cases, a sound justification for including or not the views of the stakeholders shall be provided and published in a timely manner before, or simultaneously with, the publication of the proposal.

Article 8
Recovery of costs

1. The costs borne by system operators subject to network tariff regulation and stemming from the obligations laid down in this Regulation shall be assessed by the relevant regulatory authorities. Costs assessed as reasonable, efficient and proportionate shall be recovered through network tariffs or other appropriate mechanisms.

2. If requested by the relevant regulatory authorities, system operators referred to in paragraph 1 shall, within three months of the request, provide the information necessary to facilitate assessment of the costs incurred.

Article 9
Confidentiality obligations

1. Any confidential information received, exchanged or transmitted pursuant to this Regulation shall be subject to the conditions of professional secrecy laid down in paragraphs 2, 3 and 4.

2. The obligation of professional secrecy shall apply to any persons subject to the provisions of this Regulation.

3. Confidential information received by the persons referred to in paragraph 2 in the course of their duties may not be divulged to any other person or authority, without prejudice to cases covered by national legislation, the other provisions of this Regulation or other relevant Union legislation.

4. Without prejudice to cases covered by national or Union legislation, regulatory authorities, bodies or persons who receive confidential information pursuant to this Regulation may use it only for the purpose of carrying out their duties under this Regulation.

Article 10
Agreement with TSOs not bound by this Regulation

Where a synchronous area encompasses both Union and third country TSOs, by *[18 months after entry into force of this Regulation]*, all Union TSOs in that synchronous area shall endeavour to conclude with the third country TSOs not bound by this Regulation an agreement setting the basis for their cooperation concerning secure system operation and setting out arrangements for the compliance of the third country TSOs with the obligations set in this Regulation.

CHAPTER II
SYSTEM DEFENCE PLAN

SECTION 1
GENERAL PROVISIONS

Article 11
Design of the system defence plan

1. By *]12 months after entry into force of this Regulation],* each TSO shall design a system defence plan in consultation with relevant DSOs, SGU, neighbouring TSOs and the other TSOs in its synchronous area.

2. When designing its system defence plan, each TSO shall take into account at least the following elements:

   (a) the operational security limits set out in accordance with Article 25 of Regulation (EU) 2017/XXX *[SO GLs];*

   (b) the behaviour and capabilities of load and generation within the synchronous area;

   (c) the specific needs of the high priority grid users listed pursuant to point (e) of paragraph 4; and

   (d) the characteristics of its transmission system and of the underlying DSOs systems.

3. The system defence plan shall contain at least the following provisions:

   (a) the conditions under which the system defence plan is activated, in accordance with Article 13;

   (b) the relevant set of technical and organisational measures, and in particular those referred to in paragraph 5;

   (c) the system defence plan instructions to be issued by the TSO; and

   (d) the measures subject to real-time consultation or coordination with the identified parties.

4. In particular, the system defence plan shall include the following elements:

   (a) a list of the measures to be implemented by the TSO on its installations;

   (b) a list of the measures to be implemented by DSOs and of the DSOs responsible for implementing those measures on their installations;

(c) a list of the SGU responsible for implementing on their installations the measures that result from the mandatory requirements set out in Regulations (EU) 2016/631, (EU) 2016/XXX *[NC DCC], [NC HVDC]]* or from national legislation and a list of the measures to be implemented by those SGU;

(d) a list of the measures to be implemented by defence service providers;

(e) a list of high priority grid users and the terms and conditions for their disconnection, and

(f) the implementation deadlines for each measure listed in the system defence plan.

5. The system defence plan shall include at least the following technical and organisational measures specified in Section 2 of Chapter II:

(a) system protection schemes including at least:

(i) automatic under-frequency control scheme in accordance with Article 15;

(ii) automatic over-frequency control scheme in accordance with Article 16; and

(iii) automatic scheme against voltage collapse in accordance with Article 17.

(b) system defence plan procedures, including at least:

(i) frequency deviation management procedure in accordance with Article 18;

(ii) voltage deviation management procedure in accordance with Article 19;

(iii) power flow management procedure in accordance with Article 20;

(iv) assistance for active power procedure in accordance with Article 21; and

(v) manual demand disconnection procedure in accordance with Article 22.

6. The measures contained in the system defence plan shall comply with the following principles :

(a) their impact on the system users shall be minimal;

(b) they shall be economically efficient;

(c) only those measures that are necessary shall be activated; and

(d) they shall not lead the TSO's transmission system or the interconnected transmission systems into emergency state or blackout state.

Article 12
Implementation of the system defence plan

1. By *[24 months after entry into force of Regulation]* each TSO shall implement those measures of its system defence plan that are to be implemented on the transmission system.It shall maintain the implemented measures henceforth.

2. By *[12 months after entry into force of Regulation]* each TSO shall notify the transmission connected DSOs of the measures, including the deadlines for implementation, which are to be implemented on:

(a) the DSO's installations pursuant to Article 11(4); or

(b) the installations of SGU identified pursuant to Article 11(4) connected to their distribution systems; or

(c) the installations of defence service providers connected to their distribution systems; or

(d) the installations of DSOs connected to their distribution systems.

3. By *[12 months after entry into force of Regulation]* each TSO shall notify the SGU identified pursuant to point (c) of Article 11(4) or defence service providers directly connected to its transmission system of the measures which are to be implemented on their installations, including the deadlines for the implementation.

4. When provided for in national legislation, the TSO shall notify directly SGU identified pursuant to point (c) of Article 11(4), defence service providers or DSOs connected to distribution systems of the measures which are to be implemented on their installations, including the deadlines for their implementation. It shall inform the concerned DSO of this notification.

5. Where a TSO notifies a DSO in accordance with paragraph 2, the DSO shall notify in turn, without delay, the SGU, the defence service providers and the DSOs connected to its distribution system of the measures of the system defence plan that they have to implement on their respective installations, including the deadlines for their implementation.

6. Each notified DSO, SGU and defence service provider shall:

(a) implement the measures notified no later than 12 months from the date of notification;

(b) confirm the implementation of the measures to the notifying system operator, who shall, when different from the TSO, notify the confirmation to the TSO; and

(c) maintain the measures implemented on its installations.

Article 13
Activation of the system defence plan

1. Each TSO shall activate the procedures of its system defence plan in coordination with DSOs and SGU identified pursuant to Article 11(4) and with defence service providers.

2. In addition to the automatically activated schemes of the system defence plan, each TSO shall activate a procedure of the system defence plan when:

(a) the system is in emergency state in accordance with the criteria set out in Article 18(13) of Regulation (EU) 2017/XXX *[SO GLs]* and there are no remedial actions available to restore the system to the normal state; or

(b) based on the operational security analysis, the operational security of the transmission system requires the activation of a measure of the system defence plan in addition to the available remedial actions.

3. Each DSO and SGU identified pursuant to point (c) of Article 11(4), as well as defence service provider shall execute without undue delay the system defence plan instructions issued by the TSO, in accordance with the system defence plan procedures.

4. Each TSO shall activate procedures of its system defence plan having a significant cross-border impact in coordination with the impacted TSOs.

Article 14

Inter-TSO assistance and coordination in emergency state

1. Upon request from a TSO in emergency state, each TSO shall provide through interconnectors any possible assistance to the requesting TSO, provided this does not cause its transmission system or the interconnected transmission systems to enter into emergency or blackout state. The assistance may consist in a curtailment of cross zonal allocated capacities in accordance with Article 72 of Regulation (EU) 2015/1222 and assistance for active power in accordance with Article 21.

2. When the assistance needs to be provided through direct current interconnectors, it may consist in carrying out the following actions, taking into account the technical characteristics and capability of HVDC system:

   (a) manual regulation actions of the transmitted active power to help the TSO in emergency state to bring power flows within operational security limits or frequency of neighbouring synchronous area within system frequency limits for alert state defined pursuant to Article 18(2) of Regulation (EU) 2017/XXX **[** *SO GLs*] ;

   (b) automatic control functions of the transmitted active power based on the signals and criteria set out in Article 13 of Regulation 2016/XXX *[NC HVDC]*;

   (c) automatic frequency control pursuant to Articles 15 to 18 of Regulation 2016/XXX *[NC HVDC]* in case of islanded operation;

   (d) voltage and reactive power control pursuant to Article 24 of Regulation 2016/XXX *[NC HVDC]*, and

   (e) any other appropriate action.

3. Each TSO may proceed to a manual disconnection of any transmission system element having a significant cross-border impact, including an interconnector, subject to the following requirements:

   (a) the TSO shall coordinate with neighbouring TSOs; and

   (b) this action shall not lead the remaining interconnected transmission system into emergency state or blackout state.

4. By derogation to paragraph 3, a TSO may manually disconnect any transmission system element having a significant cross-border impact, including an interconnector, without coordination, in exceptional circumstances implying a violation of the operational security limits, to prevent endangering personnel safety or damaging equipment. Within 30 days of the incident, the TSO shall prepare a report in English containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the national regulatory authority and neighbouring TSOs. This report is without prejudice to the obligation laid down in Article 55(d) of Regulation (EU) 2016/XXX *[SO GLs]*.

SECTION 2
MEASURES OF THE SYSTEM DEFENCE PLAN

Article 15
Automatic under-frequency control scheme

1. The scheme for the automatic control of under-frequency of the system defence plan shall include a scheme for the automatic low frequency demand disconnection and the settings of the limited frequency sensitive mode–underfrequency in the TSO load frequency control (LFC) area.

2. In the design of its system defence plan, each TSO shall provide for the activation of the limited frequency sensitive mode–underfrequency prior to the activation of the scheme for the automatic low frequency demand disconnection, where the rate of change of frequency allows it.

3. Prior to the activation of the automatic low frequency demand disconnection scheme, each TSO and DSO identified pursuant to Article 11(4) shall foresee that energy storage units acting as load connected to its system:

   (a) automatically switch to generation mode within the time limit specified by the TSO and at an active power set-point defined by the TSO in the system defence plan; or

   (b) when the energy storage unit is not capable of switching within time limit specified by the TSO, automatically disconnect the energy storage unit acting as load.

4. Each TSO shall establish in its system defence plan the frequency thresholds at which the automatic switching or disconnection of energy storage units shall occur. These frequency thresholds shall be lower or equal to the system frequency limit defined for the emergency state in Article 18(3) of Regulation (EU) 2017/XXX *[SO GLs]* and higher than the frequency limit for demand disconnection starting mandatory level laid down in the Annex.

5. Each TSO shall design the scheme for the automatic low frequency demand disconnection in accordance with the parameters for shedding load in real-time laid down in the Annex. The scheme shall include the disconnection of demand at different frequencies, from a 'starting mandatory level' to a 'final mandatory level', within an implementation range whilst respecting a minimum number and maximum size of steps. The implementation range shall define the maximum admissible deviation of demand to be disconnected from the target demand to be disconnected at a given frequency, calculated through a linear interpolation between starting and final mandatory levels. The implementation range shall not allow the disconnection of less demand than the amount of demand to be disconnected at the starting mandatory level. The starting mandatory level, the final mandatory level, the implementation range, the minimum number of steps and the maximum demand disconnection for each step shall comply with the characteristics in the Annex.

6. Each TSO or DSO shall locate the relays necessary for low frequency demand disconnection taking into account at least load behaviour and dispersed generation.

7. When implementing the scheme for the automatic low frequency demand disconnection pursuant to the notification under Article 12(2), each TSO or DSO shall:

(a) avoid setting an intentional time delay in addition to the operating time of the relays and circuit breakers;

(b) minimise the disconnection of power generating modules, especially those providing inertia; and

(c) limit the risk that the scheme leads to power flow deviations and voltage deviations outside operational security limits.

If a DSO cannot fulfil the requirements under points (b) and (c), it shall notify the TSO and propose which requirement shall apply. The TSO shall establish the applicable requirements.

8. The scheme for the automatic low frequency demand disconnection of the system defence plan may provide for demand disconnection based on frequency gradient provided that:

(a) it is activated only:

(i) when the frequency deviation is higher than the maximum steady state frequency deviation and the frequency gradient is higher than the one produced by the reference incident;

(ii). until the frequency reaches the frequency of the demand disconnection starting mandatory level;

and

(b) it complies with the Annex.

9. A TSO may include in the scheme for automatic low frequency demand disconnection of its system defence plan additional steps for demand disconnection below the final mandatory level of demand disconnection set out in the Annex.

10. Each TSO shall be entitled to implement additional system protection schemes that are triggered by a frequency smaller or equal to the frequency of the final mandatory level of demand disconnection and which aim at a faster restoration process. The TSO shall ensure that such additional schemes do not further deteriorate frequency.

Article 16
Automatic over-frequency control scheme

1. The scheme for automatic over-frequency control of the system defence plan shall lead to an automatic decrease of the total active power injected in each LFC area.

2. In consultation with the other TSOs of its synchronous area, each TSO shall set out the following parameters of its scheme for automatic over-frequency control:

(a) the frequency thresholds for its activation; and

(b) the reduction ratio of injection of active power.

3. Each TSO shall design its automatic over-frequency control scheme taking into account the capabilities of the power generating modules in its LFC area concerning the limited frequency sensitive mode – overfrequency. If the limited frequency sensitive mode – overfrequency does not exist or is not sufficient to fulfil the requirements set out in points (a) and (b) of paragraph 2, each TSO shall set up in addition a step-wise linear disconnection of generation in its LFC area. The TSO shall establish the maximum size of the steps for disconnection of power generating

modules and/or of HVDC systems in consultation with the other TSOs of its synchronous area.

Article 17
Automatic scheme against voltage collapse

1. The automatic scheme against voltage collapse of the system defence plan may include one or more of the following schemes depending on the results of a TSO's assessment of system security pursuant to Article 20(3) of Regulation (EU) 2016/XXX *[DCC]*:

   (a) a scheme for low voltage demand disconnection according to Article 19(2) of Regulation (EU) 2016/XXX *[DCC]*;

   (b) a blocking scheme for On Load Tap Changer according to Article 19(3) of Regulation (EU) 2016/XXX *[DCC]*; and

   (c) system protection schemes for voltage management.

2. Unless the assessment pursuant to paragraph 1 demonstrates that implementing a blocking scheme for on load tap changer is not necessary to prevent a voltage collapse in the TSO control area, the TSO shall establish the conditions under which the on load tap changer shall block according to Article19(3) of Regulation (EU) 2016/XXX *[DCC]*, including at least:

   (a) the blocking method (local or remote from control room);

   (b) the voltage level threshold at the connection point;

   (c) the flow direction of reactive power; and

   (d) the maximum lapse of time between the detection of the threshold and the blocking.

Article 18
Frequency deviation management procedure

1. The procedure for the management of frequency deviations of the system defence plan shall contain a set of measures to manage a frequency deviation outside the frequency limits defined for the alert state in Article 18(2) of Regulation (EU) 2017/XXX *[SO GLs]*. The frequency deviation management procedure shall be in line with the procedures set out for remedial actions which need to be managed in a coordinated way in accordance with Article 78(4) of Regulation (EU) 2017/XXX *[SO GLs]* and shall fulfil at least the following requirements:

   (a) a decrease of generation shall be smaller than the decrease of load during under-frequency events; and

   (b) a decrease of generation shall be greater than the decrease of load during over-frequency events.

2. Each TSO shall adapt the operating mode of its load frequency control in order to prevent interference with manual activation or deactivation of active power as laid down in paragraphs 3 and 5.

3. Each TSO shall be entitled to establish an active power set-point that each SGU identified pursuant to point (c) of Article 11(4) shall maintain, provided that the set-point fulfils the technical constraints of the SGU. Each TSO shall be entitled to establish an active power set-point that each defence service provider shall maintain

provided this measure applies to them pursuant to the terms and conditions referred to in Article 4(3) and the set-point respects the technical constraints of the defence service provider. The SGU and defence service providers shall execute without undue delay the instructions given directly by the TSO or indirectly through DSOs and shall remain in that state until further instructions are issued.

4. Each TSO shall be entitled to disconnect SGU and defence service providers, directly or indirectly through DSOs. They shall remain disconnected until further instructions are issued. Within 30 days of the incident, the TSO shall prepare a report containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the national regulatory authority. This report is without prejudice to the obligation laid down in Article 55(d) of Regulation (EU) 2017/XXX *[SO GLs]*.

5. In case of an under-frequency event and provided that the rate of change of frequency allows it, each TSO shall activate demand response from the relevant defence service providers prior to the activation of the automatic low frequency demand disconnection scheme set out in Article 15.

6. Prior to the activation of the automatic low frequency demand disconnection scheme set out in Article 15 and provided that the rate of change of frequency allows it, each TSO shall, directly or indirectly through DSOs, activate demand response from the relevant defence service providers and:

   (a) switch energy storage units acting as load to generation mode at an active power set-point defined by the TSO; or

   (b) when the energy storage unit is not capable of switching fast enough to stabilize frequency, manually disconnect the energy storage unit.

Article 19
Voltage deviation management procedure

1. The procedure for the management of voltage deviations of the system defence plan shall contain a set of measures to manage voltage deviations outside the operational security limits set out in Article 25 of Regulation (EU) 2017/XXX *[SO GLs]*.

2. Each TSO shall be entitled to establish a reactive power range or voltage range and instruct the DSOs and SGU identified for this measure pursuant to Article 11(4) to maintain it, in accordance with Articles 28 and 29 of Regulation (EU) 2017/XXX *[SO GLs]*.

3. Upon request of neighbouring TSO in emergency state, each TSO shall make available all reactive power capabilities that do not lead its transmission system into emergency state or blackout state.

Article 20
Power flow management procedure

1. The procedure for power flow management of the system defence plan shall include a set of measures to manage power flow outside the operational security limits set out in Article 25 of Regulation (EU) 2017/XXX *[SO GLs]*.

2. Each TSO shall be entitled to establish an active power set-point that each SGU identified pursuant to point (c) Article 11(4) shall maintain provided that the set-point respects the technical constraints of the SGU. Each TSO shall be entitled to define an active power set-point that each defence service provider shall maintain provided this

measure applies to them pursuant to the terms and conditions referred to in Article 4(3) and the set-point respects the technical constraints of the defence service providers. The SGU and defence service providers shall execute without undue delay the instructions given directly by the TSO or indirectly through DSOs and shall remain in that state until further instructions are issued.

3. Each TSO shall be entitled to disconnect SGU and defence service providers, directly or indirectly through DSOs. They shall remain disconnected until further instructions are issued. Within 30 days of the incident, the TSO shall prepare a report containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the national regulatory authority. This report is without prejudice to the obligation laid down in Article 55(d) of Regulation (EU) 2017/XXX *[SO GLs]*.

Article 21
Assistance for active power procedure

1. In case of absence of adequacy of the control area identified in the day-ahead or intraday timeframe, as set out in Article 107 of Regulation (EU) 2017/XXX *[SO GLs]*, and prior to any potential suspension of market activities pursuant to Article 35, a TSO shall be entitled to request assistance for active power from:

   (a) any balancing service provider, which, upon the TSO request, shall change its availability status to make available all its active power, provided it was not already activated through the balancing market, and conforming to its technical constraints; and

   (b) any SGU connected in its LFC area, which does not already provide a balancing service to the TSO, and which, upon the TSO request, shall make available all its active power, conforming to its technical constraints.

   A TSO may activate the assistance for active power from a balancing service provider or a SGU only if it has activated all balancing energy bids available both within its LFC area and within the coordinated balancing area(s) it belongs to, taking into account the available cross zonal capacity at the moment of absence of adequacy of the control area.

2. A TSO that is in the restoration state or that has identified within the day-ahead or intraday timeframe an absence of adequacy of the control area, as set out in Article 107 of Regulation (EU) 2017/XXX *[SO GLs]*, shall be entitled to request assistance for active power from neighbouring TSOs which are in the normal or alert state, irrespective of their participation or not in the same coordinated balancing area(s).

3. Each TSO who has been subject to a request for assistance for active power pursuant to paragraph 2 shall:

   (a) make available its unshared bids;

   (b) be entitled to activate the available balancing energy from the coordinated balancing area(s) it belongs to and that do not include the requesting TSO, in order to provide the corresponding power to the requesting TSO; and

   (c) be entitled to request the assistance for active power from its balancing service providers and from any SGU connected in its LFC area which does not already provide a balancing service to the TSO, in order to provide the corresponding assistance for active power to the requesting TSO.

4. When activating the active power requested pursuant to paragraph 2, the requesting and the requested TSOs shall be entitled to use:

   (a) available cross-zonal capacity in case the activation is made before the intraday cross-zonal gate closure time and if the provision of concerned cross-zonal capacities has not been suspended pursuant to Article 35;

   (b) additional capacity that may be available due to real-time status of the system in which case the requesting and the requested TSOs shall coordinate with other significantly affected TSOs in accordance with Article 10(7).

5. Once the requested and requesting TSOs have agreed on the conditions for the provision of assistance for active power, the agreed amount of active power and timeslot for the provision shall be firm, unless the TSO providing the assistance enters into the emergency or blackout state.

Article 22
Manual demand disconnection procedure

1. In addition to the measures set out in Articles 18 to 21, each TSO may establish an amount of demand to be manually disconnected, directly by the TSO or indirectly through DSOs, when necessary to prevent the propagation or worsening of an emergency state.

2. The TSO shall activate this measure to:

   (a) resolve overloads or under voltage situations; or

   (b) resolve situations in which assistance for active power pursuant to Article 21 has been requested but is not sufficient to keep adequacy in its control area in day-ahead and intraday as set out in 107 of Regulation (EU) 2017/XXX [SO GLs], leading to a risk of frequency deterioration in the synchronous area.

3. The TSO shall notify DSOs of the amount of demand to be disconnected on their distribution systems. Each DSO shall disconnect the notified amount of demand, without undue delay.

4. Within 30 days of the incident, the TSO shall prepare a report containing a detailed explanation of the rationale, implementation and impact of this action and submit it to the national regulatory authority. This report is without prejudice to the obligation laid down in Article 55(d) of Regulation (EU) 2017/XXX [SO GLs].

CHAPTER III
RESTORATION PLAN

SECTION 1
GENERAL PROVISIONS

Article 23
Design of the restoration plan

1. By *[12 months after the entry into force of this Regulation],* each TSO shall design a restoration plan in consultation with relevant DSOs, SGU, neighbouring TSOs and the other TSOs in that synchronous area.

2. When designing its restoration plan, each TSO shall take into account, at least, the following elements:

(a) the behaviour and capabilities of load and generation;

(b) the specific needs of the high priority grid users listed pursuant to Article 4(4); and

(c) the characteristics of its network and of the underlying DSOs networks.

3. The restoration plan shall contain at least the following provisions:

(a) the conditions under which the restoration plan is activated, as provided for in Article 25;

(b) the relevant set of measures;

(c) restoration plan instructions to be issued by the TSO; and

(d) measures subject to real-time consultation or coordination with identified parties.

4. In particular, the restoration plan shall include the following elements:

(a) a list of the measures to be implemented by the TSO on its installations;

(b) a list of the measures to be implemented by DSOs and of the DSOs responsible for implementing those measures on their installations;

(c) a list of the SGU responsible for implementing on their installations the measures that result from mandatory requirements set out in Regulation (EU) 2016/631, Regulation (EU) 2016/XXX [NC DCC] and Regulation (EU) 2016/XXX [NC HVDC] or from national legislation and a list of the measures to be implemented by those SGU;

(d) the list of high priority grid users and the terms and conditions for their disconnection and re-energisation;

(e) a list of substations which are essential for its restoration plan procedures;

(f) the number of power sources in the TSO's control area necessary to re-energize its system with bottom-up strategy having black start capability, quick re-synchronisation capability (through houseload operation) and island operation capability;

(g) a list of the measures to be implemented by restoration service providers; and

(h) the implementation deadlines for each listed measure.

5. The restoration plan shall include at least the following technical and organisational measures specified in Section 2 of Chapter III:

(a) re-energisation procedure, in accordance with Section 2;

(b) frequency management procedure, in accordance with Section 3; and

(c) resynchronisation procedure, in accordance with Section 4.

6. The measures contained in the restoration plan shall comply with the following principles :

(a) their impact on system users shall be minimal;

(b) they shall be economically efficient;

(c) only those measures that are necessary shall be activated; and

(d) they shall not lead the interconnected transmission systems into emergency state or blackout state.

Article 24
Implementation of the restoration plan

1. By *[24 months after entry into force of Regulation]* each TSO shall implement those measures of its restoration plan that are to be implemented on the transmission system. It shall maintain the implemented measures henceforth.

2. By *[12 months after entry into force of Regulation]* each TSO shall notify the transmission connected DSOs of the measures, including the deadlines for implementation, which are to be implemented on:

(a) the DSO's installations pursuant to Article 23(4); and

(b) the installations of SGU identified pursuant to Article 23(4) and connected to their distribution systems; and

(c) the installations of restoration service providers connected to their distribution systems; and

(d) the installations of DSOs connected to their distribution systems.

3. By *[12 months after entry into force of Regulation]* each TSO shall notify the SGU identified pursuant to Article 23(4) and restoration service providers directly connected to its transmission system of the measures that are to be implemented on their installations, including the deadlines for implementation.

4. When provided for in national legislation, the TSO shall notify directly the SGU identified pursuant to Article 23(4) and restoration service providers and DSOs connected to distribution systems and shall inform the concerned DSO of this notification.

5. Where a TSO notifies a DSO in accordance with paragraph 2, the DSO shall notify in turn, without delay, the SGU, restoration service providers and DSOs connected to its distribution system of the measures of the restoration plan which they have to implement on their respective installations, including the deadlines for implementation.

6. Each notified DSO, SGU and restoration service provider shall:

(a) implement the measures notified no later than 12 months from the date of notification;

(b) confirm the implementation of the measures to the notifying system operator, who shall, when different from the TSO, notify the TSO; and

(c) maintain the measures implemented on its installations.

Article 25
Activation of the restoration plan

1. Each TSO shall activate the procedures of its restoration plan in coordination with the DSOs and SGU identified pursuant to Article 23(4) and with restoration service providers in the following cases :

(a) when the system is in the emergency state in accordance with the criteria in Article 18(3) of Regulation (EU) 2017/XXX *[SO GLs]*, once the system is stabilised following activation of the measures of the system defence plan; or

(b) when the system is in the blackout state in accordance with the criteria in Article 18(4) of Regulation (EU) 2017/XXX *[SO GLs]*.

2. During system restoration, each TSO shall identify and monitor:

(a) the extent and borders of the synchronised region or synchronised regions to which its control area belongs;

(b) the TSOs with which it shares a synchronised region or synchronised regions; and

(c) the available active power reserves in its control area.

3. Each DSO and SGU identified pursuant to Article 23(4), as well as each restoration service provider shall execute without undue delay the restoration plan instructions issued by the TSO, in accordance with the restoration plan procedures.

4. Each TSO shall activate those procedures of its restoration plan that have a significant cross-border impact in coordination with the impacted TSOs.

SECTION 2
RE-ENERGISATION

Article 26
Re-energisation procedure

1. The re-energisation procedure of the restoration plan shall contain a set of measures allowing the TSO to apply:

(a) a top-down re-energisation strategy; and

(b) a bottom-up re-energisation strategy.

2. Regarding the bottom-up re-energisation strategy, the re-energisation procedure shall contain at least measures for:

(a) managing voltage and frequency deviations due to re-energisation;

(b) monitoring and managing island operation; and

(c) resynchronising island operation areas.

Article 27
Activation of the re-energisation procedure

1. When activating the re-energisation procedure, each TSO shall set up the strategy to be applied, taking into account:

(a) the availability of power sources capable of re-energisation in its control area;

(b) the expected duration of possible re-energisation strategies;

(c) the conditions of the power systems;

(d) the conditions of the directly connected systems, including at least the status of interconnectors;

(e) the high priority grid users listed pursuant to Article 23(4); and

(f) the possibility to combine top-down and bottom-up re-energisation strategies.

2. When applying a top-down re-energisation strategy, each TSO shall manage the connection of load and generation with the aim to regulate the frequency towards the nominal frequency with a maximum tolerance of the maximum steady-state frequency deviation. Each TSO shall apply the conditions for connection of load and generation defined by the frequency leader appointed in accordance with Article 29.

3. When applying a bottom-up re-energisation strategy, each TSO shall manage the connection of load and generation with the aim to regulate the frequency towards the target frequency defined in accordance with point (b) of Article 28(3).

4. During re-energisation, the TSO shall, after consultation with DSOs, define and notify the amount of demand to be reconnected on distribution networks. Each DSO shall reconnect the notified amount of demand, while respecting the block loading and taking into account the automatic re-connection of load and generation in its network.

5. Each TSO shall inform its neighbouring TSOs on its capability to support a top-down re-energisation strategy.

6. For the activation of a top-down re-energisation strategy, the TSO shall request neighbouring TSOs to support the re-energisation. The requested TSOs shall provide assistance for the re-energisation, unless it would lead their systems to the emergency or blackout states. In this case, the requesting TSO shall use the bottom-up re-energisation strategy.

SECTION 3
FREQUENCY MANAGEMENT

Article 28
Frequency management procedure

1. The frequency management procedure of the restoration plan shall contain a set of measures aiming at restoring system frequency back to the nominal frequency.

2. Each TSO shall activate its frequency management procedure:

(a) in preparation of the resynchronisation procedure, when a synchronous area is split in several synchronised regions;

(b) in case of frequency deviation in the synchronous area; or

(c) in case of re-energisation.

3. The frequency management procedure shall include at least:

(a) the appointment of frequency leaders;

(b) the establishment of target frequency in case of bottom-up re-energisation strategy;

(c) frequency management after frequency deviation; and

(d) frequency management after synchronous area split.

4. The frequency management procedure shall include the determination of the amount of load and generation to be reconnected, taking into account the available active

power reserves within the synchronised region in order to avoid major frequency deviations.

Article 29
Appointment of a frequency leader

1. During system restoration, when a synchronous area is split in several synchronised regions, the TSOs of each synchronised region shall appoint a frequency leader, in accordance with paragraph 3.

2. During system restoration, when a synchronous area is not split but the system frequency exceeds the frequency limits for the alert state as defined in Article 18(2) of Regulation (EU) 2017/XXX [SO GLs], all TSOs of the synchronous area shall appoint a frequency leader, in accordance with paragraph 3.

3. The TSO with the highest real-time estimated K-factor shall be appointed as the frequency leader, unless the TSOs of the synchronised region, or of the synchronous area, agree to appoint another TSO as the frequency leader. In that case, the TSOs of the synchronised region, or of the synchronous area, shall consider the following criteria:

   (a) the amount of available active power reserves and especially frequency restoration reserves;

   (b) the capacities available on interconnectors;

   (c) the availability of frequency measurements of TSOs of the synchronised region or of the synchronous area; and

   (d) the availability of measurements on critical elements within the synchronised region or the synchronous area.

4. The TSO appointed as frequency leader shall inform the other TSOs of the synchronous area of its appointment without delay.

5. The appointed frequency leader shall act as such until:

   (a) another frequency leader is appointed for its synchronised region;

   (b) a new frequency leader is appointed as the result of resynchronisation of its synchronised region with another synchronised region; or

   (c) the synchronous area has been completely resynchronised, the system frequency is within the standard frequency range and the load frequency control operated by each TSO of the synchronous area is back to its normal operating mode in accordance with Article 18(1) of Regulation (EU) 2017/XXX *[SO GLs]*.

Article 30
Frequency management after frequency deviation

1. During system restoration, when a frequency leader has been appointed pursuant to Article 29(3), the TSOs of the synchronous area, other than the frequency leader, shall as a first measure suspend the manual activation of frequency restoration reserves and replacement reserves.

2. The frequency leader shall establish, after consultation with the other TSOs of the synchronous area, the operating mode to be applied on the load frequency control operated by each TSO of the synchronous area.

3. The frequency leader shall manage the manual activation of frequency restoration reserves and replacement reserves within the synchronous area, aiming at regulating the frequency of the synchronous area towards the nominal frequency and taking into account the operational security limits defined pursuant to Article 25 of Regulation (EU) 2017/XXX *[SO GLs]*. Upon request, each TSO of the synchronous area shall support the frequency leader.

Article 31
Frequency management after synchronous area split

1. During system restoration, when a frequency leader has been appointed pursuant to Article 29(3), the TSOs of each synchronised region, with the exception of the frequency leader, shall as a first measure suspend the manual activation of frequency restoration reserves and replacement reserves.

2. The frequency leader shall establish, after consultation with the other TSOs of the synchronised region, the operating mode to be applied on the load frequency control operated by each TSO of the synchronised region.

3. The frequency leader shall manage the manual activation of frequency restoration reserves and replacement reserves within the synchronised region, aiming at regulating the frequency of the synchronised region towards the target frequency defined by the resynchronisation leader, if any, pursuant to point (a) of Article 34(1) and taking into account the operational security limits set out pursuant to Article 25 of Regulation (EU) 2017/XXX *[SO GLs]*. When no resynchronisation leader is appointed for the synchronised region, the frequency leader shall aim at regulating the frequency towards the nominal frequency. Upon request, each TSO of the synchronised region shall support the frequency leader.

SECTION 4
RESYNCHRONISATION

Article 32
Resynchronisation procedure

The resynchronisation procedure of the restoration plan shall include, at least:

(a) the appointment of a resynchronisation leader;

(b) the measures allowing the TSO to apply a resynchronisation strategy; and

(c) the maximum limits for phase angle, frequency and voltage differences for connecting lines.

Article 33
Appointment of a resynchronisation leader

1. During system restoration, when two synchronised regions can be resynchronised without endangering the operational security of the transmission systems, the frequency leaders of these synchronised regions shall appoint a resynchronisation leader in consultation with at least the TSO(s) identified as the potential resynchronisation leader and in accordance with paragraph 2. Each frequency leader shall inform without delay the TSOs from its synchronised region of the appointed resynchronisation leader.

2. For each pair of synchronised regions to be resynchronised, the resynchronisation leader shall be the TSO that:

(a) has in operation at least one substation equipped with a parallel switching device on the border between the two synchronised regions to be resynchronised;

(b) has access to the frequency measurements from both synchronised regions;

(c) has access to the voltage measurements on the substations between which potential resynchronisation points are located; and

(d) is able to control the voltage of potential resynchronisation points.

3. Where more than one TSO fulfils the criteria under paragraph 2, the TSO with the highest number of potential resynchronisation points between the two synchronised regions shall be appointed as the resynchronisation leader, unless the frequency leaders of the two synchronised regions agree to appoint another TSO as resynchronisation leader.

4. The appointed resynchronisation leader shall act as such until:

(a) another resynchronisation leader is appointed for the two synchronised regions; or

(b) the two synchronised regions have been resynchronised, and all the steps in Article 34 have been completed.

Article 34
Resynchronisation strategy

1. Prior to the resynchronisation, the resynchronisation leader shall:

(a) establish, in accordance with the maximum limits referred to in Article 32:

(i) the target value of the frequency for resynchronisation;

(ii) the maximum frequency difference between the two synchronised regions;

(iii) the maximum active and reactive power exchange; and

(iv) the operating mode to be applied on the load frequency control;

(b) select the resynchronisation point, taking into account the operational security limits in the synchronised regions;

(c) establish and prepare all necessary actions for the resynchronisation of the two synchronised regions at the resynchronisation point;

(d) establish and prepare a subsequent set of actions to create additional connections between the synchronised regions; and

(e) assess the readiness of the synchronised regions for resynchronisation, taking into account the conditions set out in point (a).

2. When carrying out the tasks enumerated in paragraph 1, the resynchronisation leader shall consult the frequency leaders of the involved synchronised regions and, for the tasks listed in points (b) to (e), it shall also consult the TSOs operating the substations used for resynchronisation.

3. Each frequency leader shall inform the TSOs within its synchronised region of the planned resynchronisation.

4. When all conditions established in accordance with point (a) of paragraph 1are fulfilled, the resynchronisation leader shall execute the resynchronisation by activating the actions established in accordance with point (c) and (d) of paragraph 1.

CHAPTER IV
MARKET INTERACTIONS

Article 35
Procedure for suspension of market activities

1. A TSO may temporarily suspend one or more market activities laid down in paragraph 2, where:

   (a) the TSO is in blackout state; or

   (b) the TSO has exhausted all options provided by the market and the continuation of market activities under the emergency state would deteriorate one or more of the conditions referred to in Article 18(3) of Regulation (EU) 2017/XXX *[SO GLs]*; or

   (c) the continuation of market activities would decrease significantly the effectiveness of the restoration process to the normal or alert state; or

   (d) tools and communication means necessary for the TSOs to facilitate market activities are not available.

2. The following market activities may be suspended pursuant to paragraph 1:

   (a) the provision of cross zonal capacity for capacity allocation on the corresponding bidding zone borders for each market time unit where it is expected that the transmission system shall not be restored to the normal or alert state;

   (b) the submission by a balancing service provider of balancing capacity and balancing energy bids;

   (c) the provision by a balance responsible party of a balanced position at the end of the day-ahead timeframe if required by the terms and conditions related to balancing;

   (d) the provision of modifications of position; and

   (e) the provision of schedules referred to in Article 111(1) and (2) of Regulation (EU) 2017/XXX *[SO GLs]*.

3. In case of suspension of market activities pursuant to paragraph 1, upon request of the TSO, each SGU shall operate, where technically possible, at an active power set-point defined by the TSO.

4. When suspending market activities pursuant to paragraph 1, the TSO may fully or partially suspend the operation of its processes impacted by such suspension.

5. When suspending market activities pursuant to paragraph 1, the TSO shall coordinate at least with the following parties:

   (a) the TSOs of the capacity calculation regions of which the TSO is a member of;

   (b) the TSOs of coordinated balancing area of which the TSO is a member of;

   (c) the 'NEMO' and other entities assigned or delegated to execute market functions in accordance with Regulation (EU) 2015/1222 within its control area;

(d) the TSOs of a load-frequency control block of which the TSO is a member of; and

(e) the regional security coordinator(s) of the capacity calculation regions of which the TSO is a member of.

6. In case of suspension of market activities, each TSO shall launch the communication procedure set out in Article 38.

Article 36
Rules for suspension and restoration of market activities

1. By *[12 months after entry into force of this Regulation*], each TSO shall develop a proposal for rules concerning the suspension and restoration of market activities. The TSO may include the proposal for these rules within the proposal for terms and conditions related to balancing pursuant to point (b) of Article 37(6) of Directive 2009/72/EC.

2. The TSO shall publish these rules on its website following their approval by the regulatory authority.

3. The rules for suspension and restoration of market activities shall be compatible to the extent possible with:

(a) the rules on provision of cross zonal capacity within the concerned capacity calculation regions;

(b) the rules for submission by balancing service provider of balancing capacity and balancing energy bids within the concerned coordinated balancing areas;

(c) the rules for provision by balance responsible party of a balanced position at the end of day-ahead timeframe if required by the terms and conditions related to balancing;

(d) rules for provision of modifications of position; and

(e) the rules for provision of schedules referred to in Article 111(1) and (2) of Regulation (EU) 2017/000 *[SO GLs]*.

4. When developing the rules for suspension and restoration of market activities, each TSO shall convert the situations referred to in Article 35(1) into objectively defined parameters taking into account at least the following factors:

(a) the percentage of load disconnection in the LFC area of the TSO corresponding to:

(i) the inability of a significant share of balancing responsible parties to maintain their balance; or

(ii) the necessity for the TSO not to follow the usual balancing processes to perform an efficient re-energization;

(b) the percentage of generation disconnection in the LFC area of the TSO corresponding to the inability of a significant share of balancing responsible parties to maintain their balance;

(c) the share and geographic distribution of unavailable transmission system elements corresponding to:

(i) the desynchronization of a significant part of the LFC area rendering the usual balancing processes counterproductive; or

(ii) the reduction to zero of cross zonal capacity on a bidding zone border(s);

(d) the inability of the following affected entities to execute their market activities for reason(s) outside their control:

(i) balance responsible parties;

(ii) balancing service providers;

(iii) NEMOs and other entities assigned or delegated to execute market functions pursuant to Regulation (EU) 2015/1222;

(iv) transmission connected DSOs;

(e) the absence of properly functioning tools and communication means necessary to perform:

(i) the single day-ahead or intraday coupling; or

(ii) the frequency restoration process; or

(iii) the reserve replacement process; or

(iv) the provision by balance responsible party of a balanced position in day ahead and the provision of change of its position; or

(v) the provision of schedules referred to in Article 111(1) and (2) of Regulation (EU) 2017/XXX *[SO GLs]*.

5. The rules for suspension and restoration of market activities shall define a time delay to be respected for each parameter defined pursuant to paragraph 4, prior to starting the procedure for suspension of market activities.

6. The concerned TSO shall assess in real-time the parameters defined pursuant to paragraph 4, on the basis of the information at its disposal.

7. By *[3 years after entry into force of this Regulation*], ENTSO for Electricity shall submit to the Agency a report assessing the level of harmonization of the rules for suspension and restoration of market activities defined by the TSOs.

8. By *[30 months after entry into force of this Regulation*], each TSO shall submit to ENTSO for Electricity the data required to prepare and submit the report in accordance with paragraph 7.

Article 37
Procedure for restoration of market activities

1. The concerned TSO, in coordination with the NEMO(s) active in its control area and with the neighbouring TSOs, shall launch the procedure for the restoration of market activities suspended pursuant to Article 35(1) when:

(a) the situation triggering the suspension has ended and no other situation referred to in Article 35(1) applies; and

(b) the entities referred to in Article 38(2) have been duly informed in advance in accordance with Article 38.

2. The concerned TSO, in coordination with neighbouring TSOs, shall launch the restoration of TSO processes impacted by the suspension of market activities when the

conditions of paragraph 1 are fulfilled or before, if necessary to restore market activities.

3. The concerned NEMO, in coordination with TSOs and entities referred to in Article 35(5), shall launch the restoration of the relevant day ahead market coupling process and/or the relevant intraday market coupling process after being informed by its TSO(s) that TSOs' processes have been restored.

4. When the provision of cross zonal capacity has been suspended and subsequently restored, each concerned TSO shall update the cross zonal capacities for capacity allocation by using, from the following, the most feasible and efficient option for each market time unit:

   (a) by using the latest available cross zonal capacities calculated by the coordinated capacity calculator;

   (b) by launching the regional capacity calculation processes applicable in accordance with Articles 29 and 30 of Regulation (EU) 2015/1222; or,

   (c) by determining, in coordination with TSOs of the capacity calculation region, cross zonal capacities based on the actual physical network conditions.

5. When part of the total coupled area where market activities have been suspended is back to the normal state or alert state, the NEMO(s) of this area shall be entitled to execute a market coupling in a part of the total coupled area, in consultation with the TSOs and entities referred to in Article 35(5), provided that the TSO has restored the capacity calculation process.

6. No later than 60 days after the market activities have been suspended, the TSO(s) that suspended and restored market activities shall publish a report in English containing a detailed explanation of the reasons for market suspension and a reference to the compliance with the rules for suspension and restoration of market activities. The explanation shall be based on an investigation of the market suspension by the TSO(s) based on the process set out in the incidents classification scale adopted by ENTSO for Electricity under point (a) Article 8(3) of Regulation (EC) No 714/2009. The regulatory authorities of the Member States and the Agency may be involved in the investigation upon their request.

7. The regulatory authorities of the Member States or the Agency may issue a recommendation to the concerned TSO(s) to promote good practices and prevent similar incidents in the future.

Article 38
Communication procedure

1. The rules for suspension and restoration of market activities developed pursuant to Article 36 shall also contain a communication procedure detailing the tasks and actions expected from each party in its different roles during the suspension and restoration of market activities.

2. The communication procedure shall provide that information is sent, simultaneously, to the following entities:

   (a) the parties referred to in Article 35(5);

   (b) the balance responsible parties;

   (c) the balancing service providers;

(d) the transmission connected DSOs; and

(e) the regulatory authority of the Member States.

3. The communication procedure shall include at least the following steps :

(a) the notification by the TSO that market activities have been suspended in accordance with Article 35;

(b) the notification by the TSO of best estimate for the time and date for transmission system restoration;

(c) the notification by the NEMO and other entities assigned or delegated to execute market functions according to Regulation (EU) 2015/1222 of the suspension of their activities, if any;

(d) the updates by the TSOs on the process for restoration of the transmission system;

(e) the notification by the entities referred to in points (a) to (d) of paragraph 2, that their market tools and communication systems are operational;

(f) the notification by the TSO(s) that the transmission system has been restored back to normal state or alert state;

(g) the notification by the NEMO and other entities assigned or delegated to execute market functions according to Regulation (EU) 2015/1222 of the best estimate for time and date when market activities will be restored; and

(h) the confirmation by the NEMO and other entities assigned or delegated to execute market functions according to Regulation (EU) 2015/1222 that market activities have been restored.

4. All notifications and updates by the TSO(s), the NEMO(s) and other entities assigned or delegated to execute market functions referred to in paragraph 3, shall be published on the websites of those entities. When notification or update on the website is not possible, the entity subject to the obligation to notify, shall inform via e-mail at least those parties directly participating in the suspended market activities.

5. Notification pursuant to point (e) of paragraph 3 shall be done via email to the concerned TSO.

Article 39
Settlement principles

1. By *[12 months after entry into force of this Regulation]*, each TSO shall develop rules for imbalance settlement and settlement of balancing energy which shall be applicable for imbalance settlement periods during which the market activities were suspended. The TSO may propose the same rules it applies for normal operations. The TSO may include the proposal for these rules within the proposal for terms and conditions related to balancing pursuant to point (b) of Article 37(6) of Directive 2009/72/EC.

The TSO shall publish these rules on its website following their approval by the regulatory authority.

2. The rules referred to in paragraph 1 shall address the settlements of TSO's with balance responsible parties and balancing services providers.

3. The rules developed in accordance with paragraph 1 shall:

(a) ensure the financial neutrality of each TSO;

(b) avoid distortions of incentives or counterproductive incentives to balance responsible parties, balance service providers and TSOs;

(c) incentivise balance responsible parties to strive to be balanced or help the system to restore its balance;

(d) incentivise TSOs to restore the system as soon as possible, and

(e) incentivise balance service providers to offer services to the connecting TSO that helps restore the system to normal state.

CHAPTER V
INFORMATION EXCHANGE AND COMMUNICATION, TOOLS AND FACILITIES

Article 40
Information exchange

1. In addition to the provisions of Articles 40 to 53 of Regulation (EU) 2017/XXX *[SO GLs]*, each TSO, when in the emergency, blackout or restoration states, shall be entitled to gather the following information :

   (a) from DSOs identified in accordance with Article 23(4), the necessary information about at least:

   (i) the part of their network that is in island operation;

   (ii) the ability to synchronise parts of their network that is in island operation; and

   (iii) the capability to start island operation.

   (b) from SGU identified in accordance with Article 23(4) and restoration service providers, information about at least the following conditions:

   (i) the current status of the installation;

   (ii) the operational limits;

   (iii) the full activation time and the time to increase generation; and

   (iv) the time critical processes.

2. During the emergency, blackout or restoration states, each TSO shall provide in due time and for the purposes of system defence plan procedures and restoration plan procedures, the following information, where available to the TSO:

   (a) to neighbouring TSOs, information about at least:

   (i) the extent and borders of the synchronised region or synchronised regions to which its control area belongs;

   (ii) the restrictions to operate the synchronised region;

   (iii) the time limits of active and reactive power at interconnectors; and

   (iv) any other technical or organisational restrictions;

   (b) to the frequency leader of its synchronised region, information about at least:

(i) the restrictions to maintain island operation;

(ii) the available additional load and generation; and

(iii) the availability of operational reserves;

(c) to transmission connected DSOs, information about at least:

(i) the system state of its transmission system;

(ii) the limits of active and reactive power, block loading, tap and circuit breaker position at the connection points;

(iii) the information on the current and planned status of power generating modules connected to the DSO, if not available to the DSO directly; and

(iv) all necessary information leading to further coordination with distribution connected parties;

(d) to defence service providers, information about at least:

(i) the system state of its transmission system; and

(ii) the scheduled measures that require participation of the defence service providers;

(e) to DSOs and SGU identified pursuant to Article 23(4) and to restoration service providers, information about at least:

(i) the system state of its transmission system;

(ii) the ability and plans to re-energise couplings; and

(iii) the scheduled measures that require their participation.

3. TSOs in emergency, blackout or restoration state shall exchange among themselves information concerning, at least:

(a) the circumstances that led to the current system state of its transmission system, to the extent that they are known; and

(b) the potential problems making assistance for active power necessary.

4. A TSO in emergency, blackout or restoration state shall provide, in due time, information about the system state of its transmission system and, where available, additional information explaining the situation on the transmission system:

(a) to the NEMO(s), who shall make this information available to their market participants, as provided for in Article 38;

(b) to its National Regulatory Authority, or when explicitly provided for in national law, to other relevant national authorities; and

(c) to any other relevant party, as appropriate.

5. TSOs shall inform each affected party about the test plan developed pursuant to Article 43(2) and (3).

Article 41
Communication systems

1. Each DSO and SGU identified in accordance with Article 23(4), each restoration service provider and each TSO shall have a voice communication system in place with

sufficient equipment redundancy and backup power supply sources to allow the exchange of the information needed for the restoration plan during at least 24 hours, in case of total absence of external electrical energy supply or in case of failure of any individual voice communication system equipment.

2. Each TSO shall establish, in consultation with the DSOs and SGU identified in accordance with Article 23(4) and with restoration service providers, the technical requirements to be fulfilled by their voice communication systems as well as by the TSO's own voice communication system in order to allow their interoperability and to guarantee that the TSO's incoming call can be identified by the other party and answered immediately.

3. Each TSO shall establish, in consultation with its neighbouring TSOs and the other TSOs of its synchronous area, the technical requirements to be fulfilled by their voice communication systems as well as by the TSO's own voice communication system in order to allow their interoperability and to guarantee that the TSO's incoming call can be identified by the other party and answered immediately.

4. Notwithstanding paragraph 1, those SGUs identified in accordance with Article 23(4) that are type B power generating modules and those restoration service providers that are type A or B power generating modules, shall have the possibility to have only a data communication system, instead of a voice communication system, if agreed upon with the TSO. This data communication system shall fulfil the requirements laid down in paragraphs 1 and 2.

Article 42
Tools and facilities

1. Each TSO shall make available critical tools and facilities referred to in Article 24 of Regulation (EU) 2017/XXX *[SO GLs]* for at least 24 hours in case of loss of primary power supply.

2. Each DSO and SGU identified pursuant to Article 23(4) as well as restoration service provider shall make available critical tools and facilities referred to in Article 24 of Regulation (EU) 2017/XXX *[SO GLs]* and used in the restoration plan for at least 24 hours in case of loss of primary power supply.

3. Each TSO shall have at least one geographically separate backup control room. The backup control room shall include at least the critical tools and facilities referred to in Article 24 of Regulation (EU) 2017/XXX *[SO GLs]*. Each TSO shall arrange a backup power supply for its backup control room for at least 24 hours in case of loss of primary power supply.

4. Each TSO shall prepare an evacuation procedure for moving from the main control room to the backup control room in a maximum time of three hours, including the operation of the system during the evacuation.

5. Substations identified as essential for the restoration plan procedures pursuant to Article 23(4) shall be operational in case of loss of primary power supply for at least 24 hours. For substations in Ireland, the duration on operation in case of loss of primary power supply shall be approved by the regulatory authority or other competent authority of the Member State, on proposal of the TSO.

CHAPTER VI
COMPLIANCE AND REVIEW

SECTION 1
COMPLIANCE TESTING OF TSO, DSO AND SGU CAPABILITIES

Article 43
General principles

1. Each TSO shall periodically assess the proper functioning of all equipment and capabilities considered in the system defence plan and the restoration plan. To this end, each TSO shall periodically verify the compliance of such equipment and capabilities, in accordance with paragraph 2 and with Article 41(2) of Regulation (EU) 2016/631, Article 35(2) of Regulation (EU) 2016/XXX *[DCC]* and Article 69(1) and (2) of Regulation (EU) 2016/XXX *[HVDC]*.

2. By *[24 months after the entry into force of the Regulation]* each TSO shall define a test plan in consultation with the DSOs, the SGU identified pursuant to Articles 11(4) and 23(4), the defence service providers and the restoration service providers. The test plan shall identify the equipment and capabilities relevant for the system defence plan and the restoration plan that have to be tested.

3. The test plan shall include the periodicity and conditions of the tests, following the minimum requirements outlined in Articles 44 to 47. The test plan shall follow the methodology laid down in Regulation (EU) 2016/631, Regulation (EU) 2016/XXX *[DCC]* and Regulation (EU) 2016/XXX *[HVDC]* for the corresponding tested capability. For SGU that are not subject to Regulation (EU) 2016/631, Regulation (EU) 2016/XXX *[DCC]* and Regulation (EU) 2016/XXX *[HVDC]*, the test plan shall follow the provisions of national law.

4. Each TSO, DSO, SGU, defence service provider and restoration service provider shall not endanger the operational security of the transmission system and of the interconnected transmission system during the test. The test shall be conducted in a way that minimises the impact on system users.

5. The test is deemed to be successful when it fulfils the conditions defined by the relevant network operator pursuant to paragraph 3. As long as a test fails to fulfil these criteria, the TSO, DSO, SGU, defence service provider and restoration service provider shall repeat the test.

Article 44
Compliance testing of power generating module capabilities

1. Each restoration service provider which is a power generating module delivering black start service shall execute a black start capability test, at least every three years, following the methodology laid down in Article 45(5) of Regulation (EU) 2016/631.

2. Each restoration service provider which is a power generating module delivering a quick re-synchronisation service shall execute tripping to houseload test after any changes of equipment having an impact on its houseload operation capability, or after two unsuccessful consecutive tripping in real operation, following the methodology laid down in Article 45(6) of Regulation (EU) 2016/631.

Article 45

Compliance testing of demand facilities providing demand side response

1. Each defence service provider delivering demand response shall execute a demand modification test, after two consecutive unsuccessful responses in real operation or at least every year, following the methodology laid down in Article 41(1) of Regulation (EU) 2016/XXX *[DCC]*.

2. Each defence service provider delivering demand response low frequency demand disconnection shall execute a low frequency demand disconnection test within a period to be defined at national level and following the methodology laid down in Article 37(4) of Regulation (EU) 2016/XXX *[DCC]* for transmission connected demand facilities or according to a similar methodology defined by the relevant network operator for other demand facilities.

Article 46

Compliance testing of HVDC capabilities

Each restoration service provider which is an HVDC system delivering a black start service shall execute a black start capability test, at least every three years, following the methodology laid down in Article 70(11) of Regulation (EU) 2016/XXX *[HVDC]*.

Article 47

Compliance testing of low frequency demand disconnection relays

Each DSO and TSO shall execute testing on the low frequency demand disconnection relays implemented on its installations, within a period to be defined at national level and following the methodology laid down in Article 37(6) and Article 39(5) of Regulation (EU) 2016/XXX *[DCC]*.

Article 48

Testing of communication systems

1. Each DSO and SGU identified pursuant to Article 23(4), each TSO and each restoration service provider shall test the communication systems defined in Article 41, at least every year.

2. Each DSO and SGU identified pursuant to Article 23(4), each TSO and each restoration service provider shall test the backup power supply of their communication systems at least every five years.

Article 49

Testing of tools and facilities

1. Each TSO shall test the capability of main and backup power sources to supply its main and backup control rooms, provided for in Article 42, at least every year.

2. Each TSO shall test the functionality of critical tools and facilities referred to in Article 24 of Regulation (EU) 2017/XXX *[SO GLs]*, at least every three years, covering both main and backup tools and facilities. Where these tools and facilities involve DSOs or SGU, these parties shall participate in this test.

3. Each TSO shall test the capability of backup power sources to supply essential services of the substations identified as essential for the restoration plan procedures pursuant to

Article 23(4), at least every five years. When these substations are in distribution systems, DSOs shall execute this test.

4. Each TSO shall test the evacuation procedure for moving from the main control room to the backup control room, provided for in Article 42(4), at least every year.

SECTION 2
COMPLIANCE TESTING AND REVIEW OF SYSTEM DEFENCE PLANS AND RESTORATION PLANS

Article 50
Compliance testing and periodic review of the system defence plan

1. Each DSO concerned by the implementation of the low frequency demand disconnection on its installations shall update once a year the communication to the notifying system operator provided for in point (b) of Article 12(6). This communication shall include the frequency settings at which demand disconnection is initiated and the percentage of demand disconnected at every such setting.

2. Each TSO shall monitor the proper implementation of the low frequency demand disconnection on the basis of the yearly written communication referred to in paragraph 1 and on the basis of implementation details of TSOs' installations where applicable.

3. Each TSO shall review, at least every five years, its complete system defence plan to assess its effectiveness. The TSO shall in this review take into account at least:

   (a) the development and evolution of its network since the last review or first design;

   (b) the capabilities of new equipment installed on the transmission and distribution systems since the last review or first design;

   (c) the SGU commissioned since the last review or first design, their capabilities and relevant services offered;

   (d) the tests carried out and the analysis of system incidents pursuant to Article 56(5) of Regulation (EU) 2017/XXX *[SO GLs]* ; and

   (e) the operational data collected during normal operation and after disturbance.

4. When the TSO identifies the need to adapt the system defence plan, it shall amend its system defence plan and implement these amendments in accordance with Articles 11 and 12.

Article 51
Compliance testing and periodic review of the restoration plan

1. Each TSO shall test the measures of its restoration plan based on computer simulation, using data from the DSOs identified pursuant to Article 23(4) and the restoration service providers, at least every five years. The TSO shall define these simulation tests in a dedicated testing procedure covering at least:

   (a) the energising restoration path from restoration service providers with black start or island operation capabilities;

   (b) the supply of power generating modules main auxiliaries;

   (c) the demand reconnection process; and

(d) the process for resynchronisation of networks in island operation.

2. In addition, where deemed necessary by the TSO for the effectiveness of the restoration plan, each TSO shall execute operational testing of parts of the restoration plan, in coordination with the DSOs identified pursuant to Article 23(4) and the restoration service providers. The TSO shall set out, in consultation with the DSOs and restoration service providers, those operational tests in a dedicated testing procedure.

3. Each TSO shall review its restoration plan to assess its effectiveness, at least every five years.

4. When the TSO identifies the need to adapt the restoration plan, it shall amend its restoration plan and implement these amendments in accordance with Articles 23 and 24.

CHAPTER VII
IMPLEMENTATION

Article 52
Monitoring

1. ENTSO for Electricity shall monitor the implementation of this Regulation in accordance with Article 8(8) of Regulation (EC) No 714/2009. Monitoring shall cover in particular the following matters:

(a) identification of any divergences in the national implementation of this Regulation for the terms and conditions or methodologies listed in Article 4(2);

(b) consistency assessment of system defence plans and restoration plans carried out by RSCs in accordance with Article 6;

(c) thresholds above which the impact of actions of one or more TSOs in the emergency, blackout or restoration states is considered significant for other TSOs within the capacity calculation region in accordance with Article 6;

(d) the level of harmonisation of the rules for suspension and restoration of market activities defined by the TSOs in accordance with Article 36(1) and for the purposes of the report provided for in Article 36(7);

(e) the level of harmonisation of the rules for imbalance settlement and settlement of balancing energy in case of market suspension, referred to in Article 39.

2. The Agency, in cooperation with ENTSO for Electricity, shall produce by [*12 months from the entry into force of this Regulation]* a list of the relevant information to be communicated by ENTSO for Electricity to the Agency in accordance with Articles 8(9) and 9(1) of Regulation (EC) No 714/2009. The list of relevant information may be subject to updates. ENTSO for Electricity shall maintain a comprehensive, standardized format, digital data archive of the information required by the Agency.

3. Relevant TSOs and RSCs shall submit to ENTSO for Electricity the information required to perform the tasks referred to in paragraphs 1 and 2.

4. Following a request of the regulatory authority, DSOs shall provide TSOs with the information under paragraph 2 unless that information is already available to the regulatory authorities, TSOs, the Agency or ENTSO for Electricity in relation to their respective implementation monitoring tasks, with the objective of avoiding duplication of information.

Article 53
Stakeholder involvement

The Agency, in close cooperation with ENTSO for Electricity, shall organise stakeholder involvement regarding the implementation of this Regulation. Such involvement shall include regular meetings with stakeholders to identify problems and propose improvements related to the requirements of this Regulation.

CHAPTER VII
FINAL PROVISIONS

Article 54
Amendments to contracts and general terms and conditions

All relevant clauses in contracts and general terms and conditions of TSOs, DSOs and SGUs relating to system operation shall comply with the requirements of this Regulation. To that effect, those contracts and general terms and conditions shall be modified accordingly.

Article 55
Entry into force

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

Article 15, Article 41 and Article 42(1), (2) and (5) shall apply [5 years after the entry into force of this Regulation].

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

Done at Brussels,

For the Commission
The President
[…]