



REPUBLIKA E SHQIPËRIË
ENERGY REGULATORY AUTHORITY

BOARD

DECISION

No. 63, Dated 11.04.2022

ON REVIEWING THE REQUEST OF TSO COMPANY TO APPROVE THE
TRANSMISSION NETWORK CODE

Based on article 16, article 20 of Law no. 43/2015 “On Power Sector” as amended, as well as article 15 of the “Regulation for ERE Organization, Operation and Procedures” approved with ERE Board Decision no. 96, dated 17.06.2016; ERE Board on their meeting dated 11.04.2022, after reviewing the report Protocol no. 382 and 382/1, dated 04.04.2022, prepared by Market Monitoring and Inspections Directory “On reviewing the request of TSO company to approve the transmission network code”

Observed that:

- ERE Board with decision no. 160, dated 02.07.2021 decided to open the procedure to review the request of TSO company to approve the transmission network code.
- ERE in implementation of decision no. 160, dated 02.07.2021 and in fulfillment of the legal obligations, with official letter Protocol no. 828, dated 15.07.2021, requested from the interested parties to express their opinion on the draft Transmission Network Code prepared by TSO company.
- Following the communication, the Ministry of Infrastructure and Energy (MIE) through official letter Protocol no. 5737/2, dated 21.09.2021, states, among other things, that it agrees to the continuation of the procedure pursuant to law 43/2015 "On Power sector", as amended, and the by-laws issued in its implementation.
- The General Directorate of Metrology (DPM) with official letter Protocol no. 1086/1, dated 26.07.2021, suggested on the content of article 314, point 5, of the draft transmission network code, proposing that the inspection shall be carried out in the electrical measurement laboratory in the General Directorate of Metrology as the electrical laboratory of (DPM), does not provide on-site services.
- Regarding DPM's comment, ERE evaluates that the purpose of the inspection is to be carried out on-site in the conditions and in the situation in which the meter is operating. At the same time, the on-site inspection process is an activity that is carried out periodically and is different from the one carried out in laboratory conditions. If during the on-site inspection it is judged and evaluated for further examinations, then it is decided on a case-by-case basis according to the need for these laboratory evaluations.
- AREA through official letter Protocol no. 1810/211 dated 19.08.2021, submitted the relevant comments on the draft of the transmission network code.

— *Article 42.2 "Procedures for the system management" of the new Transmission Code, provides for the conclusion of the operation agreement between the user and the TSO, an agreement which must define some elements that are evident in this provision. A similar provision is not found in the existing Transmission Code. It is proposed that a sentence can be clarified and added that stipulates that this agreement is prepared by the TSO. To assess*

whether it is thought that this agreement should also be approved by ERE, in the conditions where the new Transmission Code provides in general only some of the key elements that shall contain the operation agreement. It can be evaluated from a technical point of view to add other elements to the agreement in order to make it as practical, transparent and valid as possible.

- Regarding this comment, ERE based on the legal acts into force respectively in the "Regulation for ERE Organization, Operation and Procedures", approved with ERE Board decision no. 96, dated 17.06.2016 and in the "Regulation on the procedures for notification and public consultation", approved with ERE Board decision no. 162, dated 20.10.2020, carries out the process of public consultation of the by-laws which include the agreements approved by ERE. In this context, if the operation agreement suggested by AREA shall have to be approved by ERE, it shall undergo through the public consultation process according to the provisions of the legal acts into force. At the same time, TSO company must take measures to revise all other acts which are affected by the changes in the Transmission Code and therefore also the operating agreement. All acts that are subject to approval by ERE must be submitted at ERE in accordance with the legal provisions and rules in force for this purpose.

— **Article 282 "Rules for settlement in case of suspension of market activities"** of the new Transmission Code provides the competence of TSO company to design the rules on imbalances, balancing capacity and balancing energy which apply to imbalance settlement periods during which market activities were suspended. Regarding the financial neutrality of TSO company in defining these rules, it can be added and reinforced the concept of setting the price of imbalances with the real cost for TSO company for system balancing. For reference, the provision of Article 191/1/f/vi of the existing Transmission Code can be considered.

- ERE evaluates that the Transmission Code in itself is not a specific document that deals with the electricity balancing market in our country. The electricity balancing market in our country operates based on the Albanian electricity balancing market rules, approved with ERE Board decision no. 106, dated 02.07.2020. In point 4.1.1.4, of the Albanian electricity balancing market rules, approved by ERE with decision no. 106, dated 02.07.2020, it is determined that: "TSO company is obliged to keep the electric power system in balance without causing differences in the net result in order to guarantee its financial neutrality regulated in relation to balancing services in accordance with the determinations of the Tariff Calculation Methodology for Electricity Transmission".

— **Article 298 "Roles of TSO, DST, DSO and the transmission system users according to the Market Model"** ... of the new Transmission Code in point 3, provides that "Balance responsible parties (BRP) are all legal entities, that own production and consumption units, connected to the network and with a capacity determined by TSO company and approved by ERE. Including:

- a. any trader who trades in Albania or who supplies cross-border energy.
- b. any party that exercises the activity of the supplier.

It is considered that this should be in line with the conditions to qualify as BRP.

- ERE assesses that: the law is the highest legal act and prevails over other bylaws, therefore the definition of BRP must be in accordance with the provisions of article 99 and article 3, point 60 and point 54, of law no. 43/2015, "On Power Sector as amended". It is evaluated that the wording of point 3 of Article 298 of the Transmission Code should be the same as point 54 of Article 3 of Law no. 43/2015, amended as follows: "**Balancing responsible party**" means an electricity market participant or the representative selected by him, responsible to the Transmission System Operator for the imbalances established during its operation.

- Amendment of point 3, article 298, of the Transmission Code in accordance with point 54, article 3, of law no. 43/2015, as amended, also necessitates the review of point 4, article 298, of the Transmission Code, which was a complementary point to the previous point 3. Following the same reasoning as in the case of point 3, of article 298 and point 4, of article 298, of the Transmission Code, there shall be a definition with that expressed in law no. 43/2015 as amended, this point is proposed to be the same as the definition of point 60, article 3, of law no. 43/2015, amended as follows: ***“Electricity market participant” means any legal person, registered as an electricity market participant, which includes electricity producers, traders, suppliers, customers, Transmission system operator, distribution system operator, closed distribution systems and market operator. Transmission System Operator, Distribution System Operators, closed distribution systems and the market operator. The Distribution and the Transmission System Operators are the electricity market participants only for providing electricity needed to cover the losses in the grid, to provide the balancing and the ancillary services.***
- DSO company through official letter Protocol no. 6807/ dated 19.08.2021, presented a series of comments on the draft Transmission Code, as follows:
 - *The status of DSO, which is treated as one of the network users of the Transmission System, shall change and refer to the status already approved in Law 43/2015 as amended, as a legal person responsible for secure, reliable and efficient operating of the distribution grid, ensuring the maintenance and the development of the distribution system, dispersed at a given area, and if applicable, its connection to other systems in order to provide long-term capabilities to meet the reasonable demands on the distribution of electricity, respecting the environment and electricity efficiency.*
 - Provided that DSO company is connected to the transmission system operated by TSO company to ensure the performance of the functions of the distribution system in order to meet the requirements for electricity distribution of users connected to the network of DSO company, in accordance with the provisions of law no. 43/2015, as amended and in the context of the issues dealt with by the Transmission Code, DSO company is defined as a user of the transmission system without bypassing or minimizing the status defined by the law, as mentioned in the comment submitted by DSO company.
 - **Article 30 "Cost of data and information"** – *TSO company shall have the right to request payment for the data or information for the Transmission network and shall inform the user for these costs". DSO company is interested in knowing that:*
 - a. How much shall these costs be?
 - b. Based on whose reference are they calculated?
 - c. It is believed that network users as well as DSO company must know them in advance, as they shall be included in the project evaluation process and then in the budgeting of each user.
- ERE evaluates that in any case that TSO company has costs for the preparation of information requested by third parties, which are not provided for in other acts, these costs shall be calculated in a transparent way and published on the website of TSO company. In this way, the users of the transmission network shall be aware of these costs and shall be able to take them into consideration in the budgeting of the respective projects. Consequently, with the approval of this Transmission Code, TSO company shall take measures to design a specific section on its website, in order to publish the costs and the method used for their calculation, on the preparation of information for third parties.
- **Data to be completed at the request of TSO company - Load forecast** - *In the table presented for this request, where the graphs for the load, up to 10 years are required for all categories, it is also required to specify in a precise way all the categories and what they include. As informed, DSO company in the current technical state with a lack of accurate historical data of the network; lack of SCADA system for all sub/stations; not completing all*

categories of network users with smart metering, cannot fulfill this obligation in the near future.

- Regarding the impossibilities expressed by DSO company to meet some requirements of the Transmission Code, ERE evaluates that the Transmission Network Code as indicated in law no. 43/2015, as amended, in article 3, point 33, that: *“Transmission Code” means the set of technical rules, which regulate the operation of transmission system and sets out the conditions and terms of service provided by the Transmission System Operator to the transmission system users in conformity with the ENTSO-e rules.* The law clearly defines that the Transmission Code sets the conditions for transmission system users and these conditions must be equal and non-discriminatory for all the transmission system users. If the transmission network code would reflect the exceptions for each user according to their requirements, this code shall lose its meaning and there shall be a conflict with the definition provided in article 3, point 33, of law no. 43/2015, as amended.
- In point 1, article 13, of the Code, it is determined that: *If the user cannot fully and/or partially fulfill the requirements of the code, he is obliged to request and immediately apply for a derogation regarding the relevant requirement according to the legal framework in power for derogation procedures.*
- Regarding the request for an amendment in the code regarding the treatment of DSO company and not through the derogation process, it is estimated that: The Transmission code defines rules which are not discriminatory or favorable to any of the users of the Transmission network, article 56, of law no. 43/2015, as amended, in letter (g), defines the obligation of TSO company for the drafting of the transmission code, at the same time in letter (ç) it is determined that TSO company ensures the provision of system services in a transparent and non-discriminatory way, based on cost principle and lowest environmental impact, also in other letters of this article such as letters (gj) and (h) the emphasis is placed on the realization of the functions of TSO company in a non-discriminatory way.
- **The Connection Code with the Transmission System. Article 37; Point/Location** – *It shall be emphasized that DSO has made its own comments regarding the Network Code and more specifically on type A, B, C generators and clarified that in the current network of DSO, Generators cannot be connected with power exceeding 10 MW, i.e. type A, B generators. This important comment of DSO company was also submitted at ERE and accompanied by a complete analysis on the impossibility of connecting other generators to the network of DSO company, it shall be noted that it is not considered in the Connection Code. The same comment also applies to the obligations provided for by the draft Transmission Code and imposed on DSO company in maintaining the Voltage range, disconnections, charges and relay protection for type A, B, C generators connected in the Distribution network.*
- *Regarding this issue, TSO company provides that the Network code on requirements for grid connection of generators approved with ERE Board decision no. 129, dt. 04/06/2018, which is practically a transposition of Commission Regulation (EU) no. 2016/631, dt. 14/05/2016, specifies in its preamble, point 10, that considering the different voltage level at which the generators are connected and their maximum generating capacity, this regulation makes a distinction (categorization A, B, C, D) between different types of generators setting different demand levels. This regulation does not define the rules for determining the voltage level of the connection point to which the generating module shall be connected.*
- ERE evaluates that the Transmission Code in itself is a document that defines the relationship and technical criteria between TSO company and transmission network users. In the specific case, it defines the relations and technical criteria between TSO company and DSO company. Relations between users of the distribution system and DSO company are defined in other documents respectively in the distribution network code. In these circumstances, the proposal made by DSO company that generators with a power greater than 10 MW cannot be connected to the distribution network shall be addressed in the Distribution Code and not in the Transmission Code.

- If DSO company considers necessary to revise other acts, respectively the Network code on requirements for grid connection of generators approved with ERE board decision no. 129, dated 04.06.2018, it shall present the relevant justified proposals at ERE. In these circumstances, it is believed that this issue referred by DSO company it is not addressed in the appropriate document and therefore cannot be considered. DSO company has all the opportunity and legal capacity to propose in a justified manner this concern with the process of reviewing the Distribution Code in ERE, as well as to evaluate the possibility for proposals in other acts if it finds necessary.
- **Data exchange. Article 125** *"Unless otherwise specified. DSO company must provide in real time to TSO company the information on the monitoring areas of TSO company "It is clear that this article should be re-discussed with TSO company and it shall be considered that in the current situation, even in the near future, this way of information exchange may not be available.*
- ERE Board with decision no. 85, dated 12.05.2020, approved the " Criteria for granting derogations for the power generation modules". In this regulatory act it is provided that in terms of Article 60, of the " Network code on requirements for grid connection of generators" as a transposition of EC Regulation 2016/631, approved with ERE board decision no. 129, dated 04.06.2018, the regulatory authority (ERE) may grant exemptions to existing generators or future generators according to one or more provisions of the code. At the same time, the right to request derogations/suspension is also defined in the Transmission Code approved with ERE board decision no. 186, dated 10.11.2017, amended with ERE board decision no. 129, dated 04.06.2018, respectively article 12. Temporary Suspensions point (1): *In cases where a user of the Transmission Network cannot fully and/or partially fulfill the requirements of the Code, he is obliged to request and immediately apply for temporary suspension at TSO, informing ERE as well.*
- **Regarding the voltage level presented in Annex II, the values are presented in p.u. and vary from 0.9 p.u. - 1.118 p.u. (In comparison to the current Distribution Code) and the time period is "unlimited.** *Maintaining these voltage levels - unlimited, places DSO company in a difficult position in the use of power transformers, as they must be equipped with tap changers and real-time remote monitoring technology (local SCADA/SCADA) in order to respond to voltage levels at other transformation levels below. While according to the "Regulation on the quality of supply and network security performance in the electricity transmission system" approved by ERE, DSO company is excluded according to the security of maintaining the voltage level for end-use consumers.*
- It is considered worth mentioning that the Distribution Code was approved with ERE Board decision no. 100, dated 26.08.2008. As evidenced, the Distribution Code was approved about 14 years ago and does not reflect the current state and status of network development. DSO company based on article 73, of law no. 43/2015, as amended, respectively point (2), of this law, which stipulates that: *"The Distribution Operation Code shall be approved by the ERE, upon proposal from the Distribution System Operator, which will cooperate with all power sector participants for the purpose of reviewing and adopting the Distribution Operation Code."*
- The Distribution Code to which DSO company refers for issues related to the voltage level, was approved with ERE board decision no. 100, dated 26.08.2008 and reflects another stage of the development of the power sector in our country but it does not reflect the current situation or the legal obligations defined in law no. 43/2015 as amended, which was approved later and replaced law no. 9072, dated 22.05.2003, "On power sector" as amended, which served as the basis for the drafting of the electricity distribution code approved with ERE board decision no. 100, dated 26.08.2008. DSO company did not submit the draft of the Distribution Code at ERE in time, for its review and approval, according to the provisions of Law 43/2015, "On Power Sector", as amended.

For all of the above mentioned, ERE Board

Decided:

1. To approve the Transmission Code, as attached.
2. TSO company must review and complete all the acts affected by the amendments in the Transmission Code, including the operation agreement, and submit these acts at ERE in accordance with the legal provisions in force until April 30, 2023.
3. TSO company must report to ERE every 3 months on the fulfillment of point 2 of this decision.
4. The abrogation of ERE Board decision no. 186, dated 10.11.2017, with the entry into force of this decision.
5. Market Monitoring and Inspections Directory shall inform the interested parties about ERE Board decision.

This decision shall entry into force on 1 July 2022.

Any party involved in this procedure can require ERE, within 7 calendar days from the date of the decision, to review this Board decision in case it provides new evidence that could lead the board to approve a decision different from the previous one or due to material errors found. This decision can be appealed to the Tirana Administrative Court, within 30 calendar days from the day of its publication in the Official Gazette.

This decision shall be published in the Official Gazette.

CHAIRMAN

Petrit AHMETI

TRANSMISSION CODE

Tirana 2022

Definitions

On this Code are used the terms defined as follows:

Operational security – shall mean the capacity of the transmission system to maintain a normal state or to return to normal state as soon as possible and is characterized from the limits of operational security;

Restriction – shall mean the situation on which there exist the need for the preparation and activation of a remedial action to respect the operational security restrictions;

N situation – shall mean the situation where (after there are removed the scheduled elements for the repairs) any (other) transmission element is not available, when the occurrence of a contingency is considered (disconnection);

Contingency List – shall mean the list of network elements that shall be simulated on the contingency analysis (unexpected events) to provide the compatibility with the operational safety limits;

Normal status – shall mean the situation on which the system is within the operational security restrictions in N situation and after the occurrence of any contingency from the contingency list, having into consideration even the available remedial actions effect;

Frequency Containment Reserves (FCR) – shall mean the reserves of available active power to maintain the frequency of the system after the occurrence of an imbalance;

Frequency Restoration Reserves (FRR) – shall mean the reserves of active power available to reset the frequency of the system in nominal frequency and for our region that is composed of more than one LFC area, to reset the energy balance at the scheduled value.

Replacement Reserve (RR) – shall mean the active reserves of energy that are available to reset or support the required level of FRR that shall be prepared for the additional imbalances of the system, including the generation reserves;

Reserve provider – shall mean the legal person that is legally or contractually obliged to supply FCR, FRR or RR from at least one security unit reserve or security group of reserve;

Security unit of the reserve – shall mean a unit or joint of generation units of energy and/or load units connected with a joint connection point that fulfills the requirements to provide FCR, FRR or RR;

Group of providing the reserve – shall mean the collection of the energy generation facilities, load units and /or units to provide the reserve connected with more than one connection point that fulfill the requirements to provide FCR, FRR ose RR;

Load – Frequency – Control area or 'LFC area' – shall mean part / whole of a synchronous area, physically defined from the metering points at interconnections with the other LFC areas, operated from one or more TSO that comply the load frequency control obligations;

Time to reset frequency – shall mean the maximum expected time after the occurrence of an immediate power imbalance, in a size smaller or equal to the reference incident on which the frequency of the system is returned to the frequency restoration interval for the synchronous area with only one LFC area, and in the case of synchronous areas with more than one LFC area (our

region), shall mean the maximum expected time after the occurrence of an immediate power imbalance at a LFC area within which the imbalance is compensated;

(N-1) Criteria - shall mean the rule according to which the elements remaining to operation within the TSO control area, after the occurrence of a contingency are able to accommodate the new operational situation without violating the operational security restrictions;

(N-1) situation – shall mean the situation on the transmission system on which a contingency has occurred from the list of the contingencies;

Active energy reserve – shall mean the balancing reserves available to maintain the frequency;

Alarm situation – shall mean the status to which the system is within the restrictions of operational security, but has been determined from the list of contingencies, that on their occurrence, the remedial actions available are not sufficient to maintain the normal situation;

Load – frequency control block or "LFC - Block" – shall mean shall mean part / whole of a synchronous area, physically defined from the metering points at interconnections with the other LFC blocks, operated from one or more TSO that comply the load frequency control obligations;

Area Control Error or 'ACE' – shall mean the amount of the power control error (ΔP), i.e the real time change between the value metered for the active power exchange ('P') and the control programme (P_0) of a specific LFC area or LFC block, and the frequency control area ($K * \Delta f$), that is the K factor product and the frequency deviation of that specific frequency deviation LFC or LFC block, that means, the area control error is equal with $\Delta P + K * \Delta f$;

Control programme - shall mean the sequence of the values set for the net power exchange of a LFC area or LFC block, for alternative current interconnectors. It result as the amount of the exchange programme nominated with the compensation programme and serves as an input for the LFC;

Voltage control – shall mean the manual or automatic actions of control in the production node, the end nodes of AC lines or HVDC systems, at the transformers or other means, designed to maintain a defined level of voltage or the set value of reactive power;

Situation of system black-out – shall mean the situation of the system on which it is disconnected the operation of part or whole transmission system;

Internal contingency – shall mean a contingency within the TSO control area, including interconnectors;

External contingency – shall mean an external contingency outside TSO control area and excludes interconnectors, with an impact factor higher than the contingency impact threshold;

Influence factor– shall mean the numeric value used to define the highest disconnection effect of an element in the transmission system out of the TSO control area excluding the interconnectors, meaning a change on flux flow power or the voltage caused by the mentioned disconnection at each element of the system. The higher the value, the higher the effect;

Contingency influence threshold – shall mean the numeric border value to which are controlled the influence factors, and the occurrence of a contingency set out of the TSO control area with an influence factor higher than the contingency influence threshold shall be considered to have an important influence on the TSO control area, including the interconnectors;

Contingency analysis – shall mean computer simulation of contingency cases from the contingency list;

Critical time to clear the defects – shall mean the maximum duration of the defect for which the transmission system remains in sustainable operation;

Breakdown/defect – shall mean all types of short circuits (single-phase two or three phase with or without earth contact), a disconnected circuit, open circuit, or not-stable connection resulting from the failure of the affected element of the transmission system;

Element of the transmission system – shall mean any element of the transmission system;

Disturbance – shall mean an unplanned event that may cause the deviation of the transmission system from the normal situation;

Dynamic stability – shall mean a common term including the rotor angle stability, frequency stability and voltage stability;

Assessing the dynamic stability – shall mean the assessment of operational safety in the aspect of dynamic stability;

Frequency stability – shall mean the capacity of the transmission system to maintain the stable frequency in N – Situation even after an incident;

Voltage stability – shall mean the capacity of the transmission system to maintain acceptable voltages at all nodes of the system in N-situation and after an incident;

Status of the system – shall mean the operational status of the transmission system regarding the operational security limits, they may be normal status, alarm status, emergency status, disconnection (failure) status and the restoration status;

Emergency situation – shall mean the situation of the system on which are violated one or more operational security limits;

Restoration situation – shall mean the situation of the system on which the object of all transmission system activities is the reset of system operation and maintenance of operational security after the disconnection status or the emergency situation

Extraordinary contingency – shall mean the simultaneous emergence of many contingencies with a common cause;

Frequency deviation – shall mean the difference between current frequency and the nominal one at the synchronous area which might be negative or positive;

System frequency – shall mean the power frequency of the system that may be measured at all synchronous area, under the assumption of a coherent value for the system in the time frame of seconds, with small differences between different measurement locations;

Frequency restoration process (FRP) – shall mean the process aiming the frequency reset in nominal frequency even for the synchronous areas composing of more than one LFC area, a process aiming the reset of power balance in the planned value;

Frequency Restoration Control Error (FRCE) – shall mean the error control for the FRP which is equal with ACE of a LFC area or equal with the frequency deviation when the LFC area geographically corresponds with the synchronous area;

Schedule - shall mean a reference set of values representing the production, consumption or exchange of electricity for a given time-period;

K-factor of an LFC Area or LFC block – shall mean a value expressed in megawatt per hertz (MW/Hz), that is as close as practicable or greater than the amount of automatic control of generation, load self-generation and of the contribution of frequency containment reserve regarding the maximum deviation of frequency in normal situation;

Local situation – shall mean the qualification of an alarm, emergency or disconnection situation when there is no risk for extending the consequences outside the control area including the interconnectors connected on that control area;

Maximum steady – state frequency deviation – shall mean the maximum deviation of expected frequency after the occurrence of an imbalance equal or smaller than the referring incident on which the system frequency is designated to be stabilized;

Observability area – shall mean the TSO transmission system and the relevant parts of the distribution system and the adjacent TSO transmission systems, on which the TSO shall implement the real time monitoring and modeling to maintain the operational safety on its control area including the interconnectors;

Adjacent TSO – shall mean the TSO-s directly connected by at least AC or DC interconnector;

Operational security analysis – shall mean the scope of computer activities, manual or automatic ones performed to access the operational security of the transmission system and to access the necessary remedial actions to maintain the operational security;

Operational security indicator – shall mean the indicators used by the TSO to monitor the operational security in the aspect of system situations, as well as the breakdowns and disturbances that affect the operational security;

Operational security rank – shall mean the rank used by the TSO to monitor the operational security according to operational security indicators;

Operational tests – shall mean the tests used by the TSO or the DSO for maintenance, development of the system operation practices and to receive information regarding the turning

of the transmission system to abnormal conditions of the system and the tests performed by the important network users for similar purposes regarding their objects;

Ordinary contingency – shall mean the occurrence of a contingency for a branch (connection) or the only injection (generation);

Contingency out of the observability area – shall mean the simultaneous occurrence of a series of contingencies without a common cause or the loss of power generation facilities with a total loss of production capacity that exceeds the reference incident;

Slope level – shall mean the change of active power from one generation module of energy, request object or the HVDC system;

Reactive power reserve – shall mean the reactive power which is available to maintain the voltage;

Reference incident – shall mean the maximum deviation of power, positive or negative, that immediately happens between generation and the request of a synchronous area, considered on FCR dimension;

Rotor angle stcapacity – shall mean the capacity of the synchronous vehicles to remain in synchronism with the N – Situation and after being subject of a disturbance;

Safety plan – shall mean the plan that contains the risk assessment of TSO critical assets to the main scenarios of physical and cyber threatening with an assessment of possible influences;

Stability limits – shall mean the permitted limits for the operation of the transmission system respecting the limits of voltage stability, rotor angle stability and frequency stability;

Large scale extension condition – shall mean the qualification of the alarm situation, emergency or black – out situation when there is the expansion risk to the interconnected transmission systems;

System protection plan – shall mean the technical and organizational measures that shall be undertaken to prevent the expansion or worsening of a disturbance in the transmission system, to prevent the wide extent of a disturbance or black-out situation;

Topology – shall mean the data regarding the connection of different elements in transmission or distribution of a substation and includes electric configuration and the position of the switches and the dividers;

Transitory admissible overloads – shall mean the transitory overload of transmission system elements which are permitted for a limited period and do not cause physical damage of transmission system elements for the time it is respected the duration and the defined threshold;

Virtual interconnector – shall mean an additional input of LFC controller (secondary regulation) of the areas included at LFC, that have the same effect as in the metering value of the physical interconnector and permits the power exchange between the respective areas ;

Flexible alternative current transmission systems (FACTS) – shall mean the equipments for electricity alternative current transmission, for the increase of control and increase of active power transmission capacity;

Sufficiency – shall mean the capacity of supply (generation) in an area to complete the load (request) for that area;

Net collected external schedule - shall mean the schedule representing the net collection of all external schedules of TSO company and the external trades schedules between two schedule areas or between one schedule area and a group of other schedule areas;

Availability schedule – shall mean the combination of all planned availability situations for an important asset for a given time;

Availability status – shall mean the capacity of a generation module of energy, the element of the network or subject of the request to ensure the service for a defined period of time, despite if it is in operation or not;

Near to real time – shall mean the transit of time of no more than 15 minutes between the last closing of the gate within the day (intraday) and real time;

Consumption schedule – shall mean the schedule representing the consumption of a load facility or a group of load facilities;

Platform of operational planning data of electricity for ENTSO-E – shall mean the group of the application programs and the developed equipments to permit the maintenance, exchange and the management of the data used for the operational planning processes between the TSO-s;

Commercial schedule of external trading – shall mean the schedule representing the commercial power exchange between the market participants in different schedule areas;

TSO external schedule – shall mean the schedule representing the power exchange between the TSO-s, at different schedule areas, for the unbundling, reserves exchange for balancing purposes;

Mandatory interruption – shall mean the unplanned exit from the service of an important asset for any urgent reason that is not under the operational control of the respective operator (TSO, DSO, or SGU);

Generation schedule – shall mean the schedule representing the power production of an energy generation module or a set of energy generation facilities;

Commercial schedule of internal trading – shall mean the schedule, representing the commercial power exchange within a schedule area between different market participants;

Important internal asset – shall mean an important asset which is part of the TSO control area or an important asset located in a distribution area, including the closed distribution system, correctly or indirectly connected with the TSO control area;

Net position of AC area – shall mean the net amount of all external schedules of TSO control area;

Coordination region of the interruptions – shall mean the combination of the control areas for which TSO shall define the monitoring procedures and when necessary to coordinate the availability status of the important assets of all time periods;

Important customer facility – shall mean the load facility that participates to the coordination of the interruptions and the availability status, which affects the cross-boundary operational security;

Important asset – shall mean any important customer facility, important generation module, or important element of the network that participate on the coordination of the interruptions;

Important element of the network – shall mean any component of the transmission system, including the interconnectors, or the distribution system, including the closed distribution systems, as a sole line, sole circle, sole transformer, or the voltage compensation installation, that participates on the coordination of the interruptions and the availability status that affects the cross-border operational security;

Non – compatibility of the planned interruptions – shall mean the situation on which the combination of the availability status of one or more network important elements, important energy generation facilities and/or important facilities of the request and the best assessment of the provided situation of the power network may lead to the violations of safety limits having into consideration the correction actions without any cost that are available for the TSO.

Agent for planning the interruptions – shall mean the charged entities for planning the availability status of an important generation module of energy, of an important facility of the load or an important element of the network;

Important generation module of electricity – shall mean the generation module of electricity that participates to the coordination of the interruptions and the availability status that affects the cross border operational safety;

Regional security coordinator (RSC) – shall mean the entity/entities, that are owned or controlled by the TSO-s, in one or more regions for calculating the capacities that perform the tasks regarding to regional coordination of the TSO-s;

Schedule agent – shall mean the entity/entities in charge for providing the schedules from the TSO market participants, or the third parties when applicable;

Schedule area – shall mean the area within which are implemented TSO obligations regarding the schedule due to the operational or organizative needs;

Week ahead – shall mean the week before the calendar week of operation;

Year ahead – shall mean the year before the calendar year of operation;

Affected TSO – shall mean the TSO, for which it is needed the information on the exchange of the reserves and/or unbundling of the reserves and/or imbalance netting process and/or crossborder activation process for the analysis and maintenance of the operational safety;

Reserve capacity – shall mean the quantity of FCR, FRR or RR that shall be available for the TSO;

Reserves exchange – shall mean the capacity of a TSO to enter to reserve capacity connected to another LFC area/block, or other synchronous area, to complete the reserve requirements deriving from its dimensioning FCR, FRR or RR process, and where this capacity reserve is specifically for that TSO and is not taken into consideration from any other TSO to complete its requirements for reserve resulting from the respective processes of reserve dimensioning.

Unbundling of the reserves – shall mean the mechanism on which one or more TSO shall have the same reserve capacity, which may be the FCR, FRR or RR, to comply their respective requests resulting from their reserve dimensioning processes;

Release time of alarm status - shall mean the time before the activation of alarm situation;

Automatic FRR (aFRR) – shall mean the FRR that may be activated from the automatic control equipment;

Delay of activating automatic FRR – shall mean the time period between the set of a defined value from the regulator to restore the frequency and the initiation of automatic physical delivery of FRR;

Full time of aFRR activation – shall mean the time period between the set of a new value defined from the regulator to restore the frequency and activation or deactivation of the respective aFRR;

Average data of FRCE (ACE) – shall mean the group of the data composed of the average value of the ACE cast values registered for a LFC area/block within the defined period of time;

TSO that provides the control capacity - shall mean the TSO dealing with the activation of its reserve capacity for (other) TSO that takes the control ability, on the condition of the agreement for the unbundling of the reserves;

TSO that takes the control capacity – shall mean the TSO that calculates the capacity having into consideration the reserve capacity which is reachable through the control capacity provided by insuring (providing) TSO, on the conditions of an agreement for the unbundling of the reserves;

Criteria application process – shall mean the process of calculating the aimed parameters for the synchronous area, the LFC block/area, based on the data received on the collection and data share processes;

Process of collecting and distributing the data – shall mean the process of collecting the set of the data necessary to comply with the assessment criteria of frequency quality;

Cross border activation process of the FRR – shall mean the process agreed between the participating TSO-s on the process that permit the FRR activation connected with another LFC area correcting the input of the included FRP-s;

Activation of cross-border RR process – shall mean the process agreed between the participant TSO-s on the process that permits the RR activation connected with another LFC area and correcting the input of the included RRP;

Dimensioned incident – shall mean the imbalance of highest active power expected to be shown immediately within the LFC block on both positive and negative directions;

Electric time deviation – shall mean the time incompatible between the synchronous time and the Universal Time of Coordination ('UTC');

Frequency deviation for full activation of the FCR – shall mean the nominal value of frequency deviation on which the FCR of a synchronous area is fully activated;

Full time of FCR activation – shall mean the time period between the reference incident occurrence and the activation of full FCR;

FCR obligation – shall mean the total part of the FCR (for the synchronous area) that belong to the responsibility of a TSO;

Frequency containment process (FCP) – shall mean the process aiming frequency stability of the system compensating the imbalances with the suitable reserves;

Frequency pairing process – shall mean the process agreed between all TSO-s of synchronous areas that permits the connection activation of the FCR by adopting HVDC flows between the synchronous areas;

The parameter of defining the frequency quality – shall mean the main variables of system frequency *ënkupton variabellet kryesore të frekuencës së sistemit që përcaktojnë parimet e cilësisë së frekuencës*;

Targeted parameter for the frequency quality – shall mean the main object of the system frequency on which the assessment of FCR, FRR and RR behavior of activation processes, is in normal status;

Criteria for the assessment of the frequency quality – shall mean a series of calculations using the frequency measurements of the system that permit the frequency quality assessment for the system to the parameters that aim the frequency quality;

Data of assessing the frequency quality - shall mean the group of the data that permits the calculation of the frequency quality assessment criteria;

FRCE target parameter (ACE) – shall mean the main target variables of LFC block, according to which shall be assessed the dimensioning criteria for the FRR and the RR of LFC block and shall be used to reflect the LFC block behavior in normal operation;

Power exchange of frequency restoration – shall mean the power that is exchanged between the LFC areas within the cross-border activation process of the FRR;

Frequency work point – shall mean the targeted value of frequency used in FRP, defined as the amount of nominal frequency of the system and a compensation value necessary to reduce the deviation of the electric time;

Availability requests of the FRR – shall mean the set of requirements defined by the TSO-s of a LFC block regarding the availability of the FRR;

Dimensioning rules of the FRR – shall mean the specifications of the FRR dimensioning process of LFC block;

Netting imbalances process – shall mean the process agreed between the TSO-s that permits the avoidance the simultaneous activation of the FRR in opposite directions, taking into account the relevant ACEs, as well as the activated FRR and correcting as appropriate the inputs of the FRPs involved;

Power exchange of imbalances netting - shall mean the power that shall be exchanged to the LFC areas within the imbalances netting process;

Primar obligation of the FCR – shall mean the FCR quantity allocated for the TSO according to the FCR unbundling algorithm for all the synchronous area;

Instantaneous frequency data – shall mean the series of the measures for the general (average) frequency data of the system for the synchronous area with a metering period equal or smaller than a second, used for frequency quality assessment of the system;

Instantaneous frequency deviation – shall mean the series of metering data of the general deviations of system frequency, for the synchronous area with a metering period equal or shorter than a second, used for assessment purposes of system frequency system;

Instantaneous ACE data – shall mean the set of ACE data of the LFC block with an metering period equal or smaller than 10 seconds, used for frequency quality assessment of the system;

ACE diapason 1rst Level – shall mean the first diapason, used for evaluation purposes of frequency quality of the system in LFC block level within which ACE shall be maintained for a defined percentage of time;

ACE diapason 2nd level – shall mean the second diapason used for evaluation purposes of frequency quality of the system in LFC block level within ACE and shall be maintained for a defined percentage of time;

Operational agreement of LFC block – shall mean the multilateral agreement between all TSO-s of the LFC bloc, if this block is operated for more than one TSO-s;

Exchange of substitution reserve – shall mean the power that is exchanged between LFC areas within the cross-border RR activation process;

LFC block imbalance – shall mean the ACE amount, FRR and RR activation within LFC block, the exchange of the imbalances netting power, power exchange for the frequency reset and the exchange of replacement power for that LFC block with other LFC blocks;

Monitoring LFC block – shall mean the TSO charged to collect the data for the frequency quality assessment criteria and the implementation of the frequency assessment criteria for the LFC block;

Control structure for the power – frequency - shall mean the basic structure having into consideration all relevant aspect of frequency – power control and especially regarding the responsibilities of respective obligations, as well as the types and purposes of the active power reserves;

Responsibility process structure – shall mean the structure to define the responsibilities and obligations regarding the energy active power based on the synchronous area control structure;

Activation process structure – shall mean the structure for processes categorization regarding different types of active power reserves within the purpose and activation meaning;

Full activation time mFRR – shall mean the time period between the set – point amendment and the respective activation or deactivation manual of the FRR;

Instantaneous maximum deviation of frequency – shall mean the absolute expected maximum value of the instantaneous frequency deviation after the appearance of an imbalance equal or smaller than the reference incident, beyond which are activated the emergency measures;

Monitoring area – shall mean a part or full synchronous area, physically defined from the metering points at the interconnectors with other monitoring areas, operated from one or more TSO that fulfills the obligations of the monitoring area;

Prequalification – shall mean the process for the compatibility verification of a reserve security unit or a set of security reserves with the requests defined by the TSO;

Ramping (amendment) period – shall mean the time period defined from a fix initial point with a length during which the active power input and/or output shall be increased or decreased;

Guidance TSO of the reserve – shall mean the responsible TSO for guiding the unit or the reserve security group for the FRR and/or RR activation;

DSO connecting reserve – shall mean the responsible DSO for the distribution system on which is connected the unit or the reserve security group, available to the TSO;

TSO connecting reserve – shall mean the responsible TSO for the monitoring area on which is connected the unit or the reserve security group;

TSO recipient reserve – shall mean the TSO included on a reserve exchange with the connecting TSO and/or one unit or the reserve security group that is connected with another area of LFC monitoring;

Replacement Reserve Process RRP – shall mean the process to reset the FRR value currently activated;

Requests for RR availability – shall mean the set of requests defined by the TSO of a LFC block connected with the RR availability;

RR dimensioning rules – shall mean the process specifications for the RR dimensioning of a LFC block;

Standard frequency diapason – shall mean the symmetric interval defined about the nominal frequency within which shall be maintained the system frequency of a synchronous area;

Standard frequency deviation – shall mean the absolute value of frequency deviation limiting the standard frequency interval;

Frequency deviation of the stable status – shall mean the absolute value of frequency deviation after the appearance of an imbalance, after stabilized the frequency of the system;

Synchronous monitoring area – shall mean the responsible TSO to collect the data for assessing the frequency quality criteria and the implementation of the assessment criteria for frequency quality for the synchronous area;

Time control process – shall mean the time control process, to return to zero the electric time deviation, that means the deviation between the synchronous time and the UTC time.

Protection service provider – shall mean the legal person with the legal or contractual obligation to ensure the service contributing to one or some measurement protection plans for the system;

Reset service provider – shall mean the legal person with the legal or contractual obligation to provide the system contributing to one or some reset measurement plans;

High priority, important network user – shall mean the network important user for which shall be implemented the specific conditions for the disconnection and re-energization;

Netting request – shall mean the net value of the active power seen from a specific point of the system, calculated as a (load – generation), generally expressed in kilowatt (kW) or megawatt (MW), in an issued case or the average for any defined time interval;

Reset plan - shall mean the necessary technical and organizational measures to reset the system in normal status;

Re-energization – shall mean the reconnection of generation and the request to energize the disconnected parts of the system;

Reenergization strategy from above-below – shall mean the strategy requiring TSO assistance for re-energising the TSO parts of the system;

Re-energization strategy from above-below – shall mean the strategy where TSO parts of the system may be re-energized without the assistance of another TSO-s;

Re-synchronization – shall mean the synchronization and the re-synchronization at the connection point of two synchronized regions;

Frequency leader – shall mean the TSO defined and responsible for managing the frequency of the system within the synchronized region or a synchronous area to return again the system frequency in nominal frequency;

Synchronized region – shall mean the segment of a synchronous area covered by interconnected TSO-s with a common frequency of the system and that is not synchronous with the other part of the synchronous area;

Re-synchronization leader – shall mean the TSO defined and responsible for the re-synchronization of two synchronized regions;

Re-synchronization point – shall mean the equipment used to connect two synchronized equipments, usually with one switch;

(N-2) – shall mean the system planning criteria according to which the loss of an additional element to the N-1 criteria permits the other elements to remain into operation to accommodate the new operational situation without violating the operational security borders;

NTC (Net Transfer Capacities) - shall mean the maximum capacity for the energy exchange between two areas, in conformity with the applicable security standards in two areas having into consideration the technical insecurities for the future conditions of the network;

(N-1) – system planning criteria according to which the elements shall remain into operation within the control area of the Transmission System Operator (TSO) after the occurrence of a defect are able to accommodate the new operational situation without violating the operational security limits;

Network models – shall mean the set of data describing the characteristics of the system (generation, the typology of the load and the network) and the respective rules to amend these characteristics during the calculation of the capacity prepared by the Transmission System Operator (TSO), to join with the other individual components of the network model to establish the common network model;

Market models – shall mean the set of data describing the characteristics of the individual electricity market;

Insufficiency provision – shall mean the assessment of the supply capacity and the transmission infrastructure if they are sufficient to ensure the adequate energy coverage requirement within the short timeframes and in the circumstances where their may be the risk of security of supply;

Regional investment planning (RgIP) – shall mean the plans analyzing the energy system development from the regional perspective, based on the joint guidelines and the identification of the needs for the investments connected with a series of proposed projects;

Ten-Year European Network Development Plan ENTSO-E (TYNDP) – shall mean the plan providing a summary of the electricity European infrastructure and its development in the future, and shall draft the electricity integrated network according to a set of development schenarios. TYNDP also provides the European perspective sufficient for the supply and a stability assessment of the network;

Investment plan – shall mean the analysis of the investments planned for the respective regulatory period which is submitted every year at ERE for approval

Long-term development plan – shall mean the planning of the needs for long-term investments in production, transmission, and distribution, to comply with the electricity system requiremens and to ensure the supply of the customers;

Access to the transmission system – shall mean the right of an entity to use the transmission system to be connected with it and/or to transmit electricity through the connection with this

system and/ or to provide or receive services according to the effective legal framework regarding the electricity market;

Applicable acts by ENTSO-E – shall mean the codes, regulations, guidelines, agreements and/or any other act that shall be drafted and/or implemented by ENTSO-E but without conflicting with the legal national obligations;

Renewable energy sources – shall mean the non fossil renewable sources, concretely wind, solar, aerothermal energy, geothermal energy, hydrothermal energy and the energy of the oceans, hydro energy, the biomass, the collected gas on the landfills, the gas that is collected from the waste water treatment and the biogases;

De-energization – the remove of the voltage at the connection point with the transmission system and from its internal network and the secondary equipments of the transmission system user;

Derogation – the part suspension of one or more provisions of the code and/or the partial suspension of one or several provisions of the code and/or postponing their implementation for a certain period of time, or allowing the non-implementation of a specific provision due to circumstances, with the approval of the regulator;

Dispatch - shall mean the activity performed by the TSO, that consists on real time management of electricity flows and the necessary implementation of the measures for the coordinated operation of power system components, including the generation plants, the transmission network and the ancilliary services necessary for the system operation;

Force majeure – shall mean the natural or social act or event, such as the earthquakes, lightnings, cyclones, floods, volcanic eruptions, fires or wars, armed conflict, insurrection, terroristic or military action, which prevent the licensee to comply with its obligations according to the license, as well as other acts or events that are beyond the reasonable control and not arising out of the fault of the licensee and the licensee has been unable to prevent such act or event through exercising the will, efforts, skills and its reasonable care;

Transmission Code – shall mean the technical rules, which regulate the operation of the transmission system, and define the service conditions provided by the TSO to the transmission system users, in conformity with ENTSO-E rules;

ENTSO-E - shall mean the European Network of Transmission System Operators for Electricity;

Transmission System Operator or TSO – shall mean the legal person, responsible for the operation, maintenance and development of the transmission system, including the interconnections with the other cross-border systems, to ensure the long-term capacity of the system to complete the reasonable requirements for electricity transmission;

User – shall mean the natural and legal persons, that supply or are supplied with electricity through the transmission or distribution system;

Regulator – shall mean the regulator authority of the power and natural gas sectors, which operates in conformity with the respective laws;

Disconnection of the line – shall mean the physical act of unbundling – disconnection of the

systems/facilities of the transmission network users from the transmission system;

Power system – shall mean the interconnected system, composed of power plants, electric lines, substations, and the transmission and distribution equipments for the electricity transmission or distribution to the customers;

Transmission system – shall mean the system used for electricity transmission in high and very high voltage, connected in parallel with the systems of the other countries, including above all the lines, the supporting structures, the transforming and the connection/disconnection equipments for the electricity delivery of the customers or the in the distribution system, not including the supply;

Abbreviations and Achronyms

Abbreviation, acronym	
TSO	Transmission System Operator
ENTSO-E	European Network of Transmission System Operators for Electricity
EU; BE	European Union
SOGL	System Operation Guideline
OSSH	Distribution System Operator
OSMSH	Closed Distribution System Operator
SGU	Significant Grid User
RES, BRE	Renewable Energy Sources
LFC	Load – frequency control Area
HVDC	High Voltage Direct Current
FCR	Frequency Containment Reserves
FRR	Frequency Restoration Reserve
aFRR	Automatic Reserve of Frequency Restoration
mFRR	Manual Reserve of Frequency Restoration
RR	Replacement Reserve
ACE	Area Control Error
FRP	Frequency Restoration Process
FRCE	Frequency Restoration Control Error
RSC	Regional Security Coordinator
FCP	Frequency Containment Process
RRP	Reserve Replacement Process
FCA	Forward Capacity Allocation
CCRs	Capacity Calculation Regions
KORP	Key Organizational Requirements, Roles and Responsibilities for Data Exchange
RAOCM	Relevant Asset Outage Coordination Methodology
CACM	Capacities Allocation and Congestion Management
FACTS	Flexible Alternative Current Transmission Systems
VQD	Dynamic Stability Assessment
NRA	National Regulatory Authority (ERE)
MIRr	Individual Grid Model
MPRr	Grid Joint Model
MMPRr	Methodology for the Joint Model of the Network
NKGj	Key Generation Amendment
AGC	Automatic Generation Control
ERE	Energy Regulator Authority

Connection Code	<p>Shall mean three connection codes:</p> <ul style="list-style-type: none"> • The code “On the Requirements for the Connection with the Network of the Load Facilities” approved with ERE Board Decision no. 128 dated 04.06.2018
	<ul style="list-style-type: none"> • The code “On the Requirements for Connection with the Generators Network” approved with ERE Board Decision no. 129 dated 04.06.2018 • The Code “On the Requirements for the Connection with the Network of the High Voltage Continuous Current Systems and the Energy Park Facilities Connected with Continuous Current” approved with ERE Board Decision no. 127, dated 04.06.2018
Black-out	Disconnection (partial or complete crash of the system)
LFSM-U	Limited Frequency Sensitive Mode – underfrequency)
LFSM-O	Limited frequency sensitive mode – overfrequency
NEMO	Nominated Electricity Market Operator
DA	Day Ahead
ID	Intraday

GENERAL PROVISIONS CODE

Article 1. Subject matter and object

1. Each code, the entirety of which constitutes the Transmission Code, consists of rules and provisions that are specifically related to that code/issue in particular, the General Provisions Code defines the rules that are generally applied to the entire Transmission Code.
2. The General Provisions Code ensures, as far as possible, that the separate codes, within the meaning of the above paragraph being an integral part of the Transmission Code, work together and are applicable in practice, defining the regulatory framework which sets the conditions for the well functioning of the energy transmission system and its users in particular, as well as the entire electric power system as a whole.
3. The General Provisions Code defines a series of provisions that regulate issues related to interpretation, implementation, unforeseen situations in the document, revision and approval of the document, the relationship between the parties, etc.

Article 2. Scope

1. The General Provisions Code is applied by the Transmission System Operator (hereinafter referred to as TSO) and users, in the interpretation of the entire Transmission Code for all current users of the transmission system or subjects that intend to use the transmission system as users or in another status, as well as regarding the interaction with other institutions and subjects in the power sector.

Article 3. Transmission Code, purpose, object and structure

1. The Transmission Code is the set of rules that aim to define in detail the norms that serve to ensure the smooth operation and development of the transmission system, determine the conditions of the service offered by TSO to the users of the transmission system, as well as defines mutual rights and obligations for TSO and users in accordance with the legal framework in force and the applicable acts by ENTSO-E.
2. The Transmission Code provides:
 - a. methods and criteria for system planning and development;
 - b. the conditions and necessary documentation for the application for access to the transmission system;
 - c. the minimum technical and functional specifications for providing access and connection to the transmission system of power stations, distribution companies, end-use customers as well as interconnection lines;

- d. the deadline within which TSO must respond to the submitted application, as well as the consequences in case the response is not given within the stipulated deadline;
 - e. balancing and ancillary services
 - f. operational plan and planning rules;
 - g. system administration and control under normal and emergency operating conditions;
 - h. measurement rules;
 - i. the criteria applied by TSO for the dispatch of available production installations, as well as for the use of interconnection lines;
 - j. the manner, deadline, conditions and obligations, according to which TSO dispatches the energy produced from the renewable sources of electricity;
 - k. any other activity necessary for the stable and safe administration of the transmission system;
 - l. the way of functioning and operation of the market operator.
3. The Transmission Code is organized as a set of separate codes that address one or several issues according to point (2) above, defining the provisions, parameters, procedures, etc. applicable according to the case.

Article 4. Drafting, approval and amendment of the Transmission Code

1. The Transmission Code shall be drafted and amended by TSO in accordance with the changes in the legal framework in force that affect the Transmission Code or with the purpose to achieve compliance with the framework of the applicable acts from ENTSO-E as well as in any case when the performance of the activity and functions assigned by law or concrete conditions dictate.
2. In each case, when amendments are foreseen, TSO informs and offers the users of the transmission system and the public, the opportunity to present their views on the provided changes, through a public consultation process of at least 30 days, before the submission for approval to the regulator of mentioned changes.
3. Users have the right to propose changes to the Transmission Code, which first shall be presented to the TSO and then to the regulator for approval as a joint proposal after being subject to public consultation according to the provisions in the point above.

4. If TSO and the user do not agree on the proposed changes, each party can submit to the regulator unilaterally to address the issue according to the regulatory framework in force.
5. The Transmission Code or any amendments related to it, proposed by TSO according to the procedure described above or proposed by the users or the TSO unilaterally, are subject to approval by the regulator.
6. TSO publishes the Transmission Code on the website and updates the publication after any changes approved by the regulator.

Article 5. Interpretation and hierarchy

1. The interpretation of each provision of the code is performed by TSO when requested by users, institutions or a third party, as well as in any circumstances in communications and interactions between TSO and users.
2. TSO has the right to draft and issue instructions with temporary binding effect for the users interpreting the provisions of the Transmission Code in order to address situations or circumstances not foreseen in the code or cases that are not directly reflected in the provisions of the code and that otherwise prevent the normal operation of part or all of the system and of the users of the transmission system.
3. In case of any inconsistency between the foresees of any provision of the Transmission Code and any contract or agreement between the TSO and the user, the provisions of the Transmission Code shall prevail.
4. In any case, TSO shall provide and if necessary shall publish the request for interpretation and the response together with a full argumentation regarding the purpose of the relevant provision and its implementation.
5. If the interpretation of TSO is considered incomplete or non-exhaustive or there is no agreement with the interpretation of TSO, the entity that requested the interpretation can refer to the regulator to address the issue according to the regulatory framework in force.
6. Notwithstanding the above, entities that oppose the interpretation of TSO on a certain issue, and in particular the users, shall not prevent the fulfillment of the relevant functions in accordance with the provisions of the Transmission Code and the relevant legal framework, and shall not take any action or shall refuse to carry them out, undermining the security and operation of the transmission system.
7. The users who have different interpretations regarding the provisions of the code shall apply the code including the provision on which there is no agreement as well as the relevant interpretation by TSO until a final decision of the regulator regarding the dispute.

Article 6. Monitoring and implementation of the Transmission Code

1. The Transmission Code is mandatory for TSO, all users of the transmission system as well as any entity or third party that interacts with the TSO and the transmission system in any given circumstance or issue.
2. All users are obliged to implement the orders and instructions issued by TSO and to seek approval from the TSO for carrying out operational actions, especially for actions related to changing the working regime of their systems, in accordance with the relevant provisions defined in the code.
3. TSO monitors the implementation of the Transmission Code by conducting inspections, testing systems and processes or collecting the necessary information from the users of the transmission system to supervise the implementation of the Transmission Code by these users.
4. TSO has the right to request from the user and the latter must provide TSO with all the necessary information, including access to the user's property and documentation to investigate the compliance of its systems and practices with the Transmission Code.
5. The user of the transmission system who fails to implement any provision of the Transmission Code, immediately informs TSO about the case and the reasons for the failure.
6. Based on the data that is available, findings from monitoring or information submitted by the user, TSO verifies and evaluates the user's compliance with this code.
7. In any case of non-compliance, TSO warns the user and informs the regulator about:
 - a. the description of the non-compliance found;
 - b. the user's information/explanation regarding the detected non-compliance;
 - c. the necessary terms for the implementation of obligations by the user, required to resolve the situation of non-compliance with the provisions of the code.
8. Repeated cases of non-compliance, ascertained by TSO during the performance of its functions or reported by the user and for which no measures have been taken to eliminate them, or for which there is no decision for derogate on from the regulator shall be reported by TSO to the regulator with the proposal for penalization according to the legislation in force, up to the de-energization or disconnection of the connection of the relevant user from the transmission system.
9. A user who repeatedly fails to comply with the provisions of the code bears all responsibilities and consequences of de-energization or disconnection, including the cost of damages and compensation of the consequences for TSO and third parties as

well as any other type of obligation derived from the provisions of this code and/or the legislation in force.

10. TSO prepares a detailed annual report regarding the implementation of the Transmission Code and the compliance, based on its findings from monitoring as well as information from users, which is presented to the regulator within January of the following year.

Article 7. Activity and ownership of the Transmission System Operator

1. TSO exercises its activity separately from other activities in the power sector, such as electricity production, distribution, trading and supply, in accordance with the principles and requirements defined in the law.
2. TSO has in its ownership the electricity transmission system, which includes 400 kV, 220 kV and 110 kV lines, electricity transformation substations with high voltage transformation levels 400 kV, 220 kV and 110 kV busbars in all 110/TM kV substations, up to the energy measurement point on the 110-kV side of the 110/TM kV transformers, including the switching/disconnecting devices of the 110 kV lines.
3. TSO operates other similar infrastructures of this voltage level, which are not owned by it, that serve to deliver energy to the distribution operator and/or customers directly connected to the transmission system.

Article 8. Mutual access and technical security

1. The users guarantee TSO the right to physical access to their premises and relevant technical documentation, as well as other necessary facilities for the performance of various services for the accomplishment of TSO responsibilities.
2. TSO and the users have an obligation to mutually allow the entry of personnel to the respective properties, according to a list of authorized persons, to carry out works in mutual properties of the parties.
3. TSO and the users shall define in the connection agreement or when necessary by separate agreements a list of equipment owned by either party, installed in the ownership of the other party (e.g. measurement equipment, telecommunications, SCADA, power cables etc.) including the necessary technical information of the installation as appropriate, as well as floor plans of the property, the location of the equipment and the accessed roads.
4. TSO and the users are respectively responsible for the safety and the implementation of technical security rules during the exercise of their functions, including cases when they work within the properties of the other party.
5. The equipment/group of equipment is put into function and operation after the parties confirm the completion of works and services as well as compliance with technical security measures in accordance with the norms and rules of technical security and

use that are into force.

Article 9. Communication between TSO and the users

1. All communications between TSO and the users shall be carried out in the written form shall be in written form except certain cases where are required verbally, cases which shall be reflected in writing form as soon as possible. Where Transmission Network Code specifies disclosures in writing or confirmed in writing, any means of electronic transfer that enables the recipient to retain this information, such as email, messaging, computer, SCADA, fax, fulfills this provision of communication provided to guarantee the security of information and privacy protection, in accordance with the applicable legal framework.

Article 10. Confidentiality

1. TSO has the right to receive, process and store information and data from the users, in order to perform the functions assigned by law, applying the principles of confidentiality.
2. TSO shall not publish or provide to the third parties the information and data in its possession, without the written approval of the owner of the information, except when this is required by the legal framework in force.
3. Data and information exchanged for a specific purpose shall be used only for that purpose, unless both parties give approval for their use for another purpose. TSO shall be released from obligations under this article when the information should be published or through regular reporting or at the request of national institutions, based on the relevant legal framework.
4. TSO, following in each case the provisions of the public service obligation, or any other legal obligation for providing information, shall maintain the confidentiality of sensitive commercial information, provided during the exercise of the activity and shall prevent the dissemination of information about the activity in a discriminatory manner, that leads in creating a commercial advantage to another party.
5. TSO does not disseminate commercially sensitive information to any other licensees, except when this is considered necessary for the performance of a commercial transaction. To ensure full compliance with the rules of dissemination of information and separation of activities, TSO shall implement measures that avoid the use of joint services, such as joint legal services, except for simple administrative functions or information technology.
6. TSO, while performing its activity, does not misuse sensitive commercial information provided by third parties, within the context of providing or negotiating access to the system.
7. The necessary information that guarantees competition and the normal operation of

the market shall become public in accordance with the regulatory framework for the transparency of the electricity market.

8. Summarized data regarding the consumption, generation and exchange of electricity in the level of the electricity system, data on the system load as well as information on the operation of the transmission system, including information on disturbances and other emergency situations are considered confidential.
9. TSO exchanges relevant data with adjacent operators, which may include confidential or sensitive commercial data. In order to prevent the possible misuse of these data, TSO shall sign agreements with the adjacent operators on the confidentiality of available data, where such data are defined as confidential and the parties undertake the obligation to respect their confidentiality.

Article 11. Unpredicted events

1. TSO has the right to take emergency measures in case of the occurrence of events that are not mentioned in the provisions of this code, or the occurrence of which was impossible to prevent and the effect of such events may provoke a change in the technical conditions regarding the use of the transmission system and lead to consequences for TSO and the users of the transmission system.
2. TSO shall, without delay inform the regulator and the parties affected by the situation or the unpredicted event.
3. In case of unpredicted events, TSO shall determine the actions that are to be taken in order to maintain the operational security of the electric power system and to fulfill the functions defined by law, in accordance with the circumstances created as well as the users have the obligation to follow the instructions of TSO.
4. TSO, in special circumstances that are not provided in this code, which may lead to the violation of the transmission system, security or the users, shall act decisively to ensure the operation of the transmission system, despite the objections from the users or third parties.
5. TSO drafts a report on the unpredicted event and the implementation of measures that shall be taken to address this unpredicted event, as well as informs, at the appropriate time and manner, the parties and in particular the regulator about the circumstances that caused the unpredicted events, the measures taken, actions and/or the relevant instructions issued, their implementation, as well as the effects and consequences based on the results of the analysis and assessment of the unpredicted event.
6. When, according to the analysis mentioned above, it is considered necessary, TSO drafts and presents the necessary changes in the code or other acts or the necessary interventions are carried out as appropriate.

Article 12. Failure of equipment and plants

1. In case of defects or partial failures of a plant and/or equipment that is accompanied by non-compliance with the provisions of the code, but which does not hinder the plants and/ or other equipment in order to operate safely, then the user shall immediately notify TSO, providing as well the plan for eliminating the defect/failure and the incompatibility.
2. The user and TSO must ensure that the plan according to the point above shall prevent the deterioration of the situation or of the operating conditions of the transmission system and shall not create consequences for third parties, for the system or for the user.
3. If the proposed plan does not meet the above requirement, TSO shall request the user to review the plan in the right way.

Article 13. Derogations

1. If the user cannot fully and/or partially fulfill the requirements of the code, he is obliged to request and immediately apply for a derogation regarding the relevant request according to the legal framework in force for the derogation procedures.
2. TSO shall implement the decision of the regulator regarding the derogation and as the case may be, shall monitor its fulfillment by the user, informing the regulator appropriately.

Article 14. Harmonization with the requirements of the Transmission Code

1. With the entry into force of this code, TSO and the users have the obligation to comply with the provisions of this code, taking into account all the characteristics and the operation of the transmission system along with the plants of the users, within a period of 24 months.
2. Within 2 months from the entry into force of this code, TSO shall require the users of the transmission system to declare compliance with the provisions of this code according to the form determined by TSO and by providing all the supportive information that is considered necessary to justify their declarations.
3. The users have the obligation to submit at TSO the complete information related to the request according to paragraph (2), within 2 months after receiving the request.
4. After the submission of data by the users, TSO shall perform verification monitoring when it deems necessary.
5. Based on the information collected, when necessary, within 2 months from the compliance verification, the users and/or TSO shall prepare the plans for achieving compliance that shall address and define the deadlines and steps to be taken in order to achieve compliance of the transmission system and the users with the provisions of

this code.

6. When deemed necessary, TSO shall recommend changes to the deadlines or steps of the plan presented by the users.

Article 15. Time periods of Force Majeure

1. In the time periods of Force Majeure, the provisions of the code that are contrary with the conditions and acts issued under the force majeure, shall be treated as temporarily suspended for all prolongation of this Force Majeure.

Article 16. Transitional provisions

1. Within 24 months from the entry into force of this code, when necessary, TSO and the users have the obligation to harmonize all agreements, contracts, general terms and conditions with the provisions of the code.
2. According to paragraph (1) of this article, the existing rules, agreements and contracts shall remain into force until the end of the deadline.

PLANNING CODE

Article 17. Object

1. The main objective of planning the transmission system is to ensure the proper development of the transmission system in the medium and long term, which shall take into account the following main criteria:
 - a. To guarantee the safe operation of the system;
 - b. To provide a high level of security for the electricity supply;
 - c. To contribute to a sustainable development;
 - d. To facilitate connection to the transmission system for all the electricity market participants;
 - e. To ensure the proper development and operation of the internal electricity market;
 - f. To increase the efficiency of the network use.
2. The Planning Code specifies and defines the norms (standards, conditions, criteria, time periods) for planning the development of the transmission system by TSO.
3. The users of the transmission network shall plan the development or modification of their networks in coherence with the preparation of the Long-Term and Medium-Term Development Plan of the transmission system of TSO.

4. Planning according to the provisions of the code, the exchange of information that is considered necessary for planning, responsibilities for planning and development of the transmission system and the standards defined in this code are mandatory for the users and the participants of the electricity market.
5. Network Development Plan of Transmission System (connection points in the property boundaries, lines and / or equipment, substations) and the power system in its entirety have to consider but not limited to, the following factors and conditions:
 - a. Reconfiguration, reconstruction or optimization of parts of existing Transmission System network; developing/modifying of system/facility network users, connections of new grid users; expansion, increasing capacity and maintaining safety standards in accordance with forecasted increase of demand for active power and/or installing of a new system element
 - b. National legislation and regulatory framework;
 - c. The policies and objectives of the Energy Community, EU and other organizations with a focus on power sector in which Albania adheres or has obligations to respect the policies and objectives;
 - d. Security of people and electricity infrastructure;
 - e. Laws, regulations and environmental requirements of the infrastructures in the power sector;
 - f. Ensuring transparency in applied procedures;
 - g. Economic efficiency;
 - h. The joint effect of a series of developments such as those mentioned above.
6. Transmission Network Development Plan should be in accordance with the Ten-Year Network Development Plan of ENTSO-E (TYNDP), other documents of ENTSO-E such as Regional Investment Plans of ENTSO-E (RgIP) and Scenario Outlook and Adequacy Forecasts (SOAF) as well as the provisions ratified by EC Regulation 714/2009.

Article 18. Implementation of Planning Code

1. Planning Code shall be implemented obviously by TSO and existing /perspective Transmission System users as following:
 - a. Power generating modules with generating units connected to Transmission System Network, according to this code and ERE Board decision no. 129, dated 04/06/2018;

- b. The distribution facilities of the distribution system operator conform to this code and ERE Board decision no. 128, dated 04/06/2018;
- c. Demand facilities connected to the transmission system, in accordance with this code and ERE Board decision no. 128, dated 04/06/2018;
- d. HVDC systems connected to the transmission system in accordance with this code and ERE Board decision no. 127, dated 04/06/2018;
- e. Owners of lines and interconnections;
- f. Suppliers

Article 19. Planning Criteria

- 1. TSO and Transmission System Network Users shall plan the development of their systems/facilities in accordance with the criteria (N-1) of Operational Security, in determinist basis without limitations, justifications/financial arguments, considering, the less favorable generation profile model within relevant limits, while for the less probable situations (N-2) shall use an average model.
- 2. Estimations shall be performed for the typical project lifetime of 35 years, unless otherwise dictated by life durability of facility or project plant.
- 3. Transient Stability should not be threatened in terms of successful protection actions after a single-phase fault/short circuits and in terms of short circuit or three-phase fault, or a fault in the busbar, disconnected within the normal operation of the protection action, without power system damages.
- 4. Lower economic cost criterion shall be applied in conditions when planning the connection of new grid users to the system and planning of investment for improving the reliability and/or quality of supply, to ensure the achievement of defined objectives and limits and to determine and/or verify the desired reserve level of the network and/or its equipment.
- 5. Planning shall consider the value of load and generation in neighboring countries, reducing costs of services, regulatory guidelines, historical data on outages, load shedding, network constraints and unfulfilled supply quality indicators.
- 6. Long-term planning carried out by TSO shall implement the criteria regarding long-term sustainability service provisions, which include:
 - a. The right of servitude / expropriation;
 - b. Replacement of assets regarding to lifetime management planning of assets in accordance with the best practices of asset management;
 - c. Expansion projects and reinforcement of Transmission Network System which

can not be justified by the criterion (N - 1).

Article 20. Long Term (10-year) Development Plan of the Transmission System

1. TSO shall develop a Long Term (10-year) Network Development Plan, in consultation with the interested parties and submits for approval at ERE. This Long Term (10-year) Network Development Plan, shall be coordinated with Ten Year Network Development Plan of ENTSO-E Network (TYNDP), applying its criteria and methodologies for long-term planning of transmission network system.
2. TSO shall conduct the cost-benefit analysis of projects that have a significant impact on the development of the transmission system according to the "Methodology of Cost-Benefit Evaluation of Transmission System Projects" designed by TSO and approved by the regulator.
3. Long Term (10-year) Network Development Plan shall be updated every 2 years. This update, among other things, shall allow grid users to plan the expansion and development of their networks (systems / facilities).
4. Each user of the transmission system shall provide TSO with information and structural data related to the system/facility as well as any other information or data requested by TSO that is considered necessary for the planning process.
5. The data that shall be presented to TSO by users of the transmission system shall be in the formats defined by TSO in Annex 1 of this code.

Article 21. Planning and development of the transmission system

1. Planning of the generation, distribution system, customer demand and energy suppliers shall be based on Long Term (10-year) Network Development Plan of Transmission System.
2. Long-term development plan shall include forecasts for:
 - i. Electricity demand;
 - ii. load in MW;
 - iii. maximum and minimum load of power system
 - iv. additional generation capacities
 - v. lines and transmission capacities
 - vi. substations and their transformation capacities, technical losses in the transmission system

network

- vii. requests for the connection of users to the transmission system based on the possessed information;
 - viii. other important parameters of the transmission system.
3. Long-term Development Plan contains planning the development of interconnections connected with regional network for:
 - a. exports and imports purposes
 - b. increasing the operational security
 - c. reduction of unsupplied electricity restrictions;
 - d. increasing the access of users of the transmission system, as well as
 - e. the efficiency of the electricity market.
 4. TSO shall assess the needs for electricity based on data from the Distribution System Operator, and other users of the transmission system network. However, TSO performs certain research analysis, to determine the needs for Active Power and Demand based on available historical data of TSO.
 5. Distribution System Operator on the basis of detailed analysis of the load for all categories of its users, shall submit to TSO its requirements and needs for expansion, development of the system and load. Similarly, shall act all other system users.
 6. The Users of the transmission system and the Distribution System Operator are responsible for providing detailed technical information according to the data format in annex 1, including any user connected to the distribution system and that may have a particular impact on the operational security.
 7. The data shall be made available to TSO by the users according to the deadlines set by TSO in a way that allows their use for the design of the long-term plan. TSO must be informed in an appropriate manner of any significant data changes in the submitted forecasts.
 8. TSO shall evaluate the technical losses in percentage and value for Transmission System Network in general, and detailed for network elements, as follows:
 - a. Based on the assessment of power losses at peak (max) load of Transmission System network. This assessment shall be carried out by researches and analysis of power flow distribution of power with different softwares assistance;
 - b. By conducting pilot studies and analysis, on specific elements of the transmission network and metering of electricity on both sides of the respective network element in conformity with the relevant standards and regulations of the Metering

Code.

- c. In accordance with the extension of implementation of the SCADA system and other advanced technologies, TSO shall carry out loss assessment and prediction by applying neural network technology, based on the data on generation, loads, flows and exchanges of energy, constructive factors of the elements of the system and its topology.
9. TSO shall take into account the dynamics of economic development of the country (according to forecasting of increased gross domestic product GDP, investment, employment and consumption), changing of power consumption in various sectors of the economy current and expected rate of the use of natural gas in the country, in order to establish the relation between economic development and energy demand.
10. TSO also considers the development of existing and new projects planned by operators of neighboring transmission systems.

Article 22. Planning of generation and distribution system

1. Each electricity producer must draft and submit a medium-term plan (every 2 years) and a long-term plan (10 years) for the development of its system/facility integrating issues of optimization of the operating mode of the power system.
2. The Distribution System Operator shall independently draft its long-term and mid-term plan and submit it at TSO, in full coherence with the relevant time horizons, taking into account the optimization issues of the power system.

Article 23. Models of the transmission system for long-term planning issues

1. TSO shall prepare a database for the creation of market models that contains technical, economic and financial parameters of generation, demand units, expected values of the system reserve, allowed limit transmission capacities, etc., covering horizons of different times according to the specifications and format required by ENTSO-E for the medium-term and long-term adequacy studies of the system it carries out.
2. TSO shall prepare network models that reflect the configuration of the transmission system according to the format, timelines and criteria required by ENTSO-E.
3. Depending on the type of analysis, the network models are built with certain degrees of representation of system details and are based on a database of the power system in a certain time horizon, containing the following elements:
 - a. Construction topology and system parameters;
 - b. Information on generating units;
 - c. Information on demand units;

- d. Covering different time horizons and system development scenarios.
4. TSO shall prepare the individual/national model for the transmission system that contains all elements with voltage levels 110 kV, 150 kV, 220 kV, 400 kV. The models are built based on operational scenarios and different development time horizons, in accordance with the purpose of the analysis and study for which they shall be used.
5. The regional model consists of the national transmission network models of the South-East European countries and takes into account all regional projects (defined in the regional group for systems planning in Continental South-East Europe of ENTSO-E) and the equivalent of the rest interconnection part of ENTSO-E. The individual/national model for the transmission system network is integrated into this regional model.

Article 24. Preparation of scenarios for transmission system planning

1. TSO prepares scenarios for development plan based on:
 - a. Increase in demand (uncertainties in the forecasting of distribution and demand of DSO and the users connected to the transmission system);
 - b. Location and installed capacity of new power generating modules;
 - c. Changes in hydrological conditions that cause changes in the import/export of electricity;
 - d. Regional transit capacities, NTC, in different directions of interconnection lines;
 - e. Renewable energy sources (RES) integration.

Article 25. Studies for transmission system planning

1. TSO shall draft the long-term development plan of the transmission system taking into consideration the planning-development of the systems/facilities of the users of the transmission system based on:
 - a. power flow studies;
 - b. short circuit studies and analysis in system nodes and branches;
 - c. static and Dynamic Stability Studies;
 - d. non- supplied energy studies, its quantity and costs;
 - e. studies on voltage stability;

- f. optimal working regimes studies, in country's power system;
- g. optimal working regimes studies, of merchant power flows, in transmission system
- h. studies for the medium and long-term perspective of system adequacy.

Article 26. Sufficiency analysis

1. Within the framework of the studies drafted by ENTSO-E, TSO shall perform in accordance with the methodology defined by ENTSO-E, the analysis of the adequacy of the system for the medium and long-term perspective of network development.
2. Adequacy analysis is performed using market models created in accordance with code specifications and using dedicated computer calculation programs.
3. TSO performs the adequacy analysis using the latest available data about:
 - a. technical and economic parameters of existing and prospective generating units;
 - b. the expected profile of the total load in the system;
 - c. the possible profile of the hourly factors of the use of renewable energy sources;
 - d. the current and expected level of system demand for active power reserves;
 - e. cross-border transmission capacities of the transmission network;
 - f. expected availability of generating units (anticipated repairs or not);
4. The long-term sufficiency analysis is performed on a deterministic or probabilistic basis, simulating the possible regimes for each hour of each analyzed year, thus reflecting the probabilistic character of the hourly demand for electricity and the generation profile of renewable energy sources.
5. TSO assesses for each case the sufficiency of the generation and transmission system to meet the total demand of the country in accordance with the security criteria of network operation and evaluates the probability, duration and energy not supplied for possible cases of lack of sufficiency in the system.
6. Medium and long-term sufficiency is evaluated in accordance with the scenarios prepared by TSO for planning the development of the transmission network according to the requirements of Article 20.
7. In cases of carrying out the cost-benefit analysis of projects with significant impact on the development of the transmission network, TSO uses the long-term sufficiency analysis to identify and evaluate additional indicators of the project's impact, in accordance with the guidelines of the cost-benefit analysis methodology determined

by ENTSO-E.

Article 27. Development Planning Coordination of Transmission System

1. TSO shall coordinate the planning of users of the transmission system based on the planning data according to Annex 1, in the manner and time horizons described in the Transmission Code.
2. TSO shall verify the validity and modify the plans, if necessary, after the study and analysis of the methodology, after comparison with factual and historical data and in coherence with the long-term planning methodologies of ENTSO-E in order to consolidate and present the Integrated Long-Term Plan for all the users and participants of the electricity market.

Article 28. Approval of the long-term development network plan

1. The draft of long-term network development plan drafted by TSO, shall be submitted for review and approval to the regulator.
2. The long-term network development plan shall become mandatory for implementation by TSOs, licensees, users of the transmission system and applicants for connection to this system after approval by the regulator.
3. Models, forecasts and conclusions of TSO's study shall be presented in the relevant institutions in order to be integrated as part of regional investment plan of SEE (RgIP-Regional Investment Plan for Eastern Europe), Ten Year Network Development Plan ENTSO-E (TYNDP).
4. TSO shall prepare the investment plan in the transmission system, based on the long-term development plan, which must be revised every year and in accordance with the criteria defined in ERE Board Decision No. 135, dated 06.09.2017 on the "Procedures of Presentation and Approval of the Investment Plan by the Transmission and Distribution Operators of Electricity".
5. TSO shall review the priority of project implementation, based on the long-term development plan of the transmission system, related to the strengthening of this system and in accordance with the needs and potential demands of the users of the transmission system.
6. TSO shall publish the long-term development plan of the transmission system within 30 days after ERE's approval, in its website.

Article 29. General Planning information provided by TSO

1. Transmission system data consists of the presentation of the existing transmission system and the transmission system planned for future development, as described in the long-term and medium-term development plan. Such data shall include:

- a. Transmission system planimetry scheme shown on the state geographic map showing existing and planned transmission system elements. The geographical map and network diagram (including digitized format) must be of the appropriate scale to allow the necessary details to be clearly displayed;
 - b. The single line diagram of the transmission system showing the existing and planned network elements as well as the corresponding points where the generators are connected or shall be connected.
2. TSO, at the request of the user of the transmission system or any interested third party, provides information and data related to a part of the transmission system, in order to create opportunities for them, access to connection and use of the transmission system.
 3. If requested, TSO shall also provide its own studies, reports and analyzes on the condition of the part of the transmission system specified in the relevant request.

Article 30. Cost of data and information

1. TSO has the right to ask the users of the transmission system a fee for the data or information related to the transmission system and shall inform the user about this cost within 15 days after receiving the specific request from the user of the transmission system. Transmission system data shall be issued within 2 months following the user's request, depending on the nature and complexity of the data required.
2. Costs for providing information to users must be calculated by TSO transparently and published on its website. For this purpose, TSO shall take measures to create a special column on its web page, in order to publish the costs and the method of their calculation, for the preparation of information for third parties.

Article 31. TSO right for data and information reservation

1. TSO shall be entitled to keep confidential any Transmission System data, whether the reasoned opinion by TSO, the issuance or publication of such information shall seriously affect the interest of the business activity of TSO. However TSO shall provide a minimum data sets, without which it is clear that users can not undertake their business activities without these data.
2. The data and information received shall be treated as confidential and shall not be exposed to third parties.

Article 32. Planning for improvement and modification of system equipment

1. Planning to improve existing power system behavior and equipment/installations of it involves modification and/or total replacement of equipment/installations by performing a series of works, but without interfering to the main device.

2. The objectives of such Plans that include small investments, are: improving the behavior of equipment, the quality and level of security of supply, static and dynamic stability of the network, operational system security, economic criterion, reducing of losses and improving of network service indicators, improving the standards of human life and equipment safety and environmental improvement.
3. All Parties in cooperation with TSO, shall identify areas where modification works shall be carried out by making investments, which shall improve the quality and/or quantity of benefits and shall develop plans for quality improvements and contemporary behavioral of their systems/ facilities.
4. TSO shall develop programs to improve Transmission System operational regime. Relevant interventions, in areas where such improvements are planned shall be defined by TSO occasionally.

Article 33. Time limits for two-year user renewal and modification plans Deadlines for 2-year plans for renovation and modification of Transmission System Users

1. The two-year plans for the renewal and modification of system users shall be submitted to TSO by September 30 of each year, for the following two years, and shall contain the data according to the formats of Annex 1.
2. Implementation of modifications and renewals may be extended by mutual agreement of the parties. A party may request an extension of time due to technical reasons or other inherent difficulties. If no agreement is reached between the parties on the program of modifications and renovations, the matter is resolved by the legal framework in force

Annex 1

Planning Data

1. Planning data from transmission system users shall be categorized as follows:
 - a) Standard planning data;
 - b) Detailed planning data;
 - c) Data on works in process;
 - d) Final data.
2. In all cases the data are presented in the formats described in the code and otherwise they are accompanied by appropriate notes and clarifications.
3. The data and information are initially presented at the time/date of the application for the new connection or the modification of the existing connection or the use of the transmission system by the users and shall contain only the standard planning data, until specifically requested the detailed planning data from TSO.
4. After connecting to the transmission system, each user of the transmission system shall submit this data by September 30 of each year, for the subsequent planning year(s).
5. Information and all data presented and received by TSO, based on the Planning Code, are mandatory and shall form the basis for planning the country's power system.
6. Mandatory data shall be treated with the appropriate level of confidentiality, so that TSO can include these data in its data system, in compliance with the provisions of this Code.

Standard planning data

Generators

Type	TPP; HPP; EOLIC
Name of the Applicant	
Contact person	
Address and details of the applicant	
Connection	
Connection Point	Single line diagram of the proposed Connection to the Transmission System
Geographical location	Geographical area of the location of the object/objects on a readable map and not smaller than A3 format
Nominal Voltage	The voltage level at the connection points to the transmission system in kV
Scheduled time for the start of the operation	
Generating capacity	

Nominal installed active power of the generator	Total active power for existing generators. Power for new generators according to the investment stages, in MW.
The number of generating units and their capacity	n x MW
Unit	
Generating Unit	Type, nominal active power
Working regimes	Maximum, Minimum, Average. Work parameters in maximum, minimum, average regimes.
Generator	Type
	Nominal characteristics (Sn, Pn in MVA and MW)
	Minimal power produced by the generator (Pmin in MW)
	Generator reactive power limits (Qmax, Qmin in MVAr)
	Nominal Voltage (Un in kV)
	Nominal Frequency (fn in Hz)
	Phase Nominal Current (In in A)
	Nominal Power Factor (cosφ)
	Short Circuit Power (MVA)
	Direct-Axis Synchronous Reactance Xd (in p.u. of MVA)
	Quadrature-Axis Synchronous Reactance Xq (in p.u. of MVA)
	Direct-Axis Transient Reactance, X'd (in p.u. of MVA)
	Quadrature-Axis Transient Reactance (X'q in p.u. of MVA)
	Direct-Axis Sub-Transient Reactance, X''d (in p.u. of MVA)
	Quadrature-Axis Sub-transient Reactive, X''q (in p.u. of MVA)
	Generator Negative Phase Sequence Synchronous Reactance X2(in p.u. of MVA)
	Generator Zero Phase Sequence Reactance X0(in p.u.of MVA)
	Stator Resistance per phase in 750 (Ra in ohm)
	Nominal Speed (Nn in rot/min)
	Volant moment (GD2 in Tm2) or Inertia Constant H. (sek)
	Mechanical time constant, T'm (in sek)
	Direct-Axis Transient Open Circuit time Constant T'do (in sek) .
	Direct-Axis Sub-Transient Open Circuit Time Constant T''do (in sek)
	Quadrature-Axis Transient Open Circuit Time constant (T'qo in sek)
Quadrature-Axis Sub-Transient Open Circuit Time Constant, T''qo (in sek)	
Direct- Axis Short-Circuit Transient Time Constant, T'd (in sek)	
Direct-Axis Short-Circuit Subtransient Time Constant, T''d (in sek)	

	Short circuit quadrature axis transient time constant, T _q '(in sek)
	Time factor of stator's winding for short circuit T _s (in sek)
	Short Circuit Coefficient (K _c)
	Auxiliary Power Requirement (Own Needs) in MW
	Capability Curve of generator
	Open Circuit Saturation Curve
	Short Circuit Saturation Curve
Transformer of Generator Transformer Block	Type
	Nominal Power in MVA
	Voltage Level (HV/LV) in kV
	Nominal Currents (HV/LV) in A
	Voltage Regulator (no. of degrees and steps ±%);
	Type of Voltage Regulator (off-load/on-load)
	Vector Group
	Short Circuit Impedance in %
	Work losses at the load in kW
	Work losses with no load in kW
	No load current in %
	Cooling type (ONAN/ONAF)
Data on Medium Voltage network	Scheme of connection of generating units among themselves in medium voltage
	Nominal Voltage of the Medium Voltage Network
	Lengths of connection lines
	Sections of electrical conductors (cable/overhead)
Power for personal needs	Total power required for the generator's own equipment in MW and MVA
	Total external power required for Black-Start in MW (not applicable for wind generators and HPP run of river)

Type	PHOTOVOLTAIC
Name of the Applicant	
Contact person	
Address and details of the applicant	
Connection	
Connection Point	Single phase diagram of the proposed connection to the transmission system in hardcopy and in soft
Geographical location	Geographical area of the location of the object/objects on a readable map and not smaller than A3 format
Nominal Voltage	The voltage level at the connection points to the transmission system in kV
Scheduled time for the start of the operation	

Solar Generator Type	Technical description of the generator, its type. Information on radiation in kWh/m ² per year. Azimuth angle. Yield in kWh/kWp (DC) per year
Generating capacity	
Total Generator Power in MWp (DC)	Nominal active power in MW at peak, according to investment phases, in MWp
Total Generator Power in MW (AC)	Nominal active power in MW after DC/AC conversion by investment stages
No. of units generators/modules and PV panels by division	
Number of annual working hours	
Unit	
Generation characteristic	Electricity production curve - daily
Module type and capacity in kW (DC)	Maximum, Minimum, Average. Work parameters in maximum, minimum, average regimes.
Nominal characteristics of the module	Un in V and In in A
Converter (Inverter)	Type, capacity, voltage, performance
Transformer	Type
	Nominal Power in MVA
	Voltage Level (HV/LV) in kV
	Nominal Currents (HV/LV) in A
	Voltage Regulator (no. of degrees and steps ±%);
	Type of Voltage Regulator (off-load/on-load)
	Vector Group
	Short Circuit Impedance in %
	Work losses at the load in kW
	Work losses with no load in kW
	No load current in %
Cooling type (ONAN/ONAF)	
Three-phase short-circuit current on the Medium Voltage busbar in kA	Shall issue the contribution of the photovoltaic park to the short circuit current at the Medium Voltage node of the High Voltage/Low Voltage step up Substation
Data on Medium Voltage network	Scheme of connection of generating units among themselves in medium voltage
	Nominal Voltage of the Medium Voltage Network
	Lengths of connection lines
	Sections of electrical conductors (cable/overhead)
Power for personal needs	Total power required for the generator's own equipment in MW and MVA
	Total external power required for Black-Start in MW

Note: For the types of Generators that are not included in the above types, the data shall be presented according to the special requirements specified by TSO in full implementation of the provisions of the Commission Regulation (EU) 2016/631.

Transmission System Operator.

Geographical distribution area for the Distribution System company and deployment plan for customers, on the map	It presents the geographical area in which the Distribution System Operator carries out its business activity and the Customers according to the relevant license, shown on the state map. This map must be legible and no smaller than A3 format).
Data on the load	Data as electricity customers, in MW, MVA.
Connection Points	Single phase diagram of the proposed connection to the transmission system
Nominal Voltage	The voltage level at the connection points to the transmission system in kV
Data on electrical substations	The primary scheme of the substation connecting to the transmission network is provided
	Details (transforming power, configuration of all primary and secondary elements, layout, map, etc.) of substations directly connected to the transmission system are given and
Power Transformers	Type
	Nominal Power in MVA
	Voltage Level (HV/LV) in kV
	Nominal Currents (HV/LV) in A
	Voltage Regulator (no. of degrees and steps $\pm\%$);
	Type of Voltage Regulator (off-load/on-load)
	Vector Group
	Short Circuit Impedance in %
	Work losses at the load in kW
	Work losses with no load in kW
	No load current in %
Cooling type (ONAN/ONAF)	
Details of the installed compensating installations	(capacitive or inductive)
Equipment type	(static / dynamic)
Nominal capacitive and/or inductive load	Operating band in MVA _r ;
Details of any automatic control enabling the determination of operating characteristics	

Loads

Details of loads connected to the transmission system	Provide customer's name
	Technological work process
	Electricity demand according to the contract
Geographical map of the area	It shows the area where the customer is located, the load, as well as the power lines. Gives the map and plan of the place where the connection of the object is planned/decided to be made. The map and layout plan must be legible and, in a format, no smaller than A3
Name of the substation from which the customer is supplied	Transmission system substation name
	Supplying line
	Line length
	The primary scheme of the substation and the main parameters of the primary equipment, input and output power lines;
	Tensionin e furnizimit
	Power Factor, $\cos\phi$
Details of the installed compensation installations	(capacitive or inductive)
Equipment Type	(static / dynamic)
Nominal capacitive and/or inductive load	Operating band in MVar;
Details of any automatic control enabling the determination of operating characteristics	
Loads at connection points	Loads and details of loads placed at the connection point, in MW
Të dhëna të parashikimit të ngarkesës	
Load Sensitivity from voltage and frequency of supply.	
Maximum of Load harmonics	
Average and maximal unbalance of load phases	

Load Forecast Data *(to be completed by the distribution system operator and the load)*

Peak and minimum load	Load profile by category, load forecast for each load category for the next 10 years, long-term demand planning;
Details of the methodology and the database on which the forecasts are based	

Load forecasts	For each category and total load for the next 10 years, accompanied by approximate daily load curves
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Transmission and user lines *(completed by all users)*

Line name	(substation at the beginning of the line and substation at the end of the line)
Line Voltage	(kV)
Line Length	(km)
Conductors	(type, section (mm ²))
Line Parameters (in p.u. and Omik values)	Resistance/Inductance
	Conductivity (B/2 in p.u. and μS)
	Transmitting capacity in 20°C of ambient temperature (Allowed thermal flow in A).
	Definition of j-economic in A/mm ²
Type of poles to be used and respective parameters	
Line Route	(information on the landscape traversed by the line)
Line Map	(information on the topographic map indicating the proposed and existing lines)
Scheduled time for the start of the operation	dd/mm/vv

Detailed Planning Data

Generators

Technical studies	Flow distribution studies Short circuits studies Static and dynamic stability studies Proposal for connection to the transmission system Number of lines, voltage, connection point/s Environmental impact assessment
Technical data on turbines and primary energy source	Main characteristics (reservoir type, operation charts, discharging ports and their capabilities, water consumption for different levels of the reservoirs)
	Boiler (steam temperature/steam pressure) Fuel type, main data of water supply pumps and technical water supply source
Primary scheme Single line diagram of the Generator	

Electrical principle schemes of control-monitoring, protection relay and measurement, telecommunications, SCADA, etc.	
Generator stator neutral status (grounding or not), grounding scheme and grounding resistance value	
The neutral status of the generator step-up transformers on the side of the connection to the transmission network and the values of earthing resistance	
Details of the control-monitoring system, local SCADA of the generator, telecommunications, RTU (remote control unit), etc	
Single-phase primary scheme of the generator	
For commuting equipments that include switches, circuit breakers located at the connection points	Nominal voltage (kV)
	Type of switchers, circuit breakers and their main parameters
	3-phase and 1-phase short-circuit current, (kA)
	Details of autoreclosing Equipment and related charges
Isolation Level (kV)	Busbars
	Commuting equipment (switchers, circuit breakers)
	Current and voltage transformers;
	Transformer branches of voltage regulation
	Transformer's winding
Other technical data required by reasoned request from TSO, for problems of operation, dispatching, frequency control, regulatory reserves, voltage regulation, for Black-Start, and others.	
Exciting System and Voltage Automatic Regulator Parameters (RAT)	Type of Exciter
	Nominal Current of Exciter (In in A)
	Nominal Voltage of Exciter (Un in V)
	Exciter maximal Current along Transient Time (Imax. in A)
	Exciter maximal Voltage (U max in V)
	Excitation System Transient Response (in sek)

	Excitation System Open-Loop Response characteristic
	Excitation System closed-loop Response characteristic
	Dynamic characteristics of over exciting and limits
	Dynamic characteristics of under exciting and limits
	Detailed structural diagram of the entire excitation system, showing in detail the transmitting functions of its elements and the parameters of the transmitting elements based on the type of the excitation system and the structural diagram, transmitting functions and parameters of its elements
Parameters of Regulation and Parameters of Governor	Type of Governor
	The “k” coefficient to define the working range of the Governor (in MW/Hz) as defined by the norms
	Speed and time Constant (TSR)
	Time constant of server engine and Directing Apparatus (TSM)
	Governor valve opening with limit number (Cv. open)
	Governor valve closing with limit number (Cv. close)
	Governor valve limit (Cvmax and Cv.min)
	Structural scheme of the regulation system and the governor showing the transmission functions of the special elements and recommended in the relevant standards
	Regulation Speed of Governor (RASH)
	Normal starting speed
	Emergency starting Speed
	Water Inertia Time constant (Tw)
	Relay protection
Complete description of relay protection including tariffs for all relays installed on all outgoing lines from the step-up substations of the generators	
Full description of the power switches at the point or points of connection to the Transmission System network and the data of the power switches for commuting actions (time of switch on, time of switch off)	

	The most likely duration of electrical faults in Generator systems/facilities (generating units, lines, other transformers).
	Detailing the operation of relay protection, automation and electricity metering including metering transformers and cables on the secondary side.
Technical Specifications of telecommunication equipment	Specifications for the OPGW to be installed on the line that shall connect the new facility to the substation and the configuration of the fiber optic connection where the interface shall be made, according to each specific case and the impact on the network existing OPGW to TSO
	Detailed specifications for rectifiers, industrial cabinets, batteries and other auxiliary equipment
	Digital and analog telephony
Parameters for the power line	Line name and identification code
	Line length (km);
	Number of line circuits
	Thermal transfer capability for each circuit in A or in MVA
	Voltage kV;
	Positive Phases equence reactance (p.u. in 100 MVA), X1
	Positive Phase sequence resistance (p.u. in 100 MVA) R1
	Positive Phase sequence susceptance (p.u. in 100 MVA), B1
	Zero Phase sequence reactance (p.u. in 100 MVA), X0
	Zero Phase sequence resistance (p.u. in 100 MVA), R0
	Zero Phase sequence susceptance (p.u. in 100 MVA), B0

Distribution System Operator and Load

Historical data	the level of technical losses on an annual basis
	daily monitoring for the typical days of the year of technical losses in the network, their systems/objects
Load connected	(Type/Category, cargo details, customer, working regimes and utility)
Daily graphic in 24 hours	Daily graphic in 24 hours (for characteristic/specific days of the year (third Wednesday and third Sunday, before Wednesday, for each month) of the load for each substation of the Distribution System Operator and/or load

	or according the special request of TSO for the necessary day and hours of the time horizon of the necessary study or analysis
Daily graphic	(seasonal and annual) for the total load of the Distribution System Operator and/or the user of the transmission system
Load details as well as the forecast for the next 5 years	Installation and distribution of loads in designed substations
	The main loads to be contracted
Presentation and analysis of the assessment of technical power and energy losses	New lines
	Improvement of the existing lines
	New substations and improvement of existing ones
	Redistribution of loads and utilization and operation regime
	Installation of necessary reactive power compensating installations

Data on works in process

1. This data/information is submitted by all users of the transmission system at least on an annual basis until September 30 of each year, for the following planning year/years.
2. The information shall include:
 - a. Report on works carried out by users related to the transmission system;
 - b. Graphic on completed works;
 - c. The graphic for the works until the end of the project;

Final data

1. The Final Data are submitted by all users of the transmission system and present the date of completion of works and the date of energization to connect to the network of the Transmission System of phased systems/objects of the Users of this network, which affect the operational behavior of the Transmission System and the country's Electricity system as a whole.

TRANSMISSION SYSTEM CONNECTION CODE

Part I – Connection procedure, documentation and energization

Article 34. Purpose and object

1. The Transmission System Connection Code specifies the conditions and technical parameters, procedures, rules and deadlines on a non-discriminatory basis for applying for a new connection to the transmission system or for modifying existing connections in this network.
2. The provisions of this code are mandatory for each user and for third parties connected to the user's systems, in order to ensure the protection of the user's system as well as the transmission system as a whole by guaranteeing the safe design, control and operation and mutually stable.
3. Each subject that applies for connection to the transmission system must implement and document according to the relevant provisions the fulfillment of the requirements of Council of Ministers Decision no. 482 and 483 dated 17/06/2020 and ERE Board decisions no. 127, 128 or 129, dated 04/06/2018 according to user typology.
4. The connection to the transmission system is regulated through a connection agreement between TSO and the user for each connection point in particular, without excluding and including the conclusion of an operation agreement.

Article 35. Application procedures for new connection and/or connection modification

1. Any subject requesting to connect to the transmission system or any existing user requesting to modify an existing connection and agreement shall comply with the requirements and procedures provided in this code.
2. Subjects according to point (1) shall apply for connection, according to the relevant application forms for a new connection or modification of the existing connection in the transmission system designed and published by TSO, pursuant to the regulation in accordance with Article 27 of the law No. 43/2015 "On Power Sector".
3. Any application for a new connection or modification of the existing connection shall be subject to the relevant fees, procedures and deadlines specified in the implementation of the requirements of Article 27, 28 and 29 of Law No. 43/2015 "On Power Sector".

Article 36. General and technical application documentation

1. The applicant shall submit the following information and documentation at TSO:
 - a. Identification data and economic/legal activity (company name, legal representative, address, telephone, fax, e-mail, web, etc.);

- b. Technical data of the user, the system/facility to be connected (generation unit, system/facility of the Distribution System Operator, system/facility of various customers/consumers) including the coordinates on the map of the transmission system for the point/place of connection;
 - c. The study of the connection of generating units, the operator of the distribution system, the customer (according to the affiliation) or the study for the modification of the existing connection and the data according to the standard planning of the Planning Code;
 - d. Data on installations and equipment that generate/absorb reactive power;
 - e. Data for the relevant phases, according to the user's technical-economic study, for the realization of the indicators of the investment project (time horizons: technical design phases, implementation phases, approval-testing, commissioning/taking over and energization);
 - f. The technical project which is subject to the review and approval by the relevant institutions regarding conformity with the harmonized Albanian standards;
 - g. Bank document certifying payment of connection tariffs;
 - h. The list of general and technical documentation attached to the application form for a new connection or modification of an existing connection.
2. The study for the connection to the transmission network according to point 1, letter c, shall include:
- a. the technical solution for connection to the transmission system;
 - b. the analysis of the impact on the transmission system due to the new connection or the modification of the existing one;
 - c. technical characteristics of the infrastructure of the user facility of the transmission system;
 - d. meeting the requirements of the technical framework in force;
 - e. operational issues and user facility management.

Article 37. Optimal connection point/place

- 1. For each application, TSO shall approve a connection point/place that is technically the most optimal, where the applicant can connect his systems/facilities to the transmission system.
 - a. The connection points for the generators shall be in the transmission system with a nominal voltage of 110 kV, 220 kV or 400 kV;

- b. The connection points for the Distribution System Operator shall be in the transmission system with a nominal voltage of 110 kV;
 - c. The connection points for the load shall be in the transmission system with nominal voltage 110 kV and 220 kV.
2. If, after the study of the "Acceptability of the new connection or modification of the existing connection", it turns out that the new connection must be made in the system of the Distribution System Operator at a voltage of < 110 kV, then the application request is officially returned to applicants with relevant information and clarifications.

Article 38. Application process and deadlines

1. For each application for a new connection or modification of the existing connection with the transmission system, the subject submits to TSO the application format accompanied by the documentation for the application.
2. The applicant submits standard planning data, according to the provisions of this code. When it is necessary from a technical point of view, TSO may define additional technical criteria/requirements from those defined in the Transmission Code, but in all cases, it shall notify the other party within the deadlines defined in this code.
3. TSO examines whether the documents filed and the information presented by the applicant are complete and in accordance with the requirements of the framework in force.
4. In cases where the application lacks any of the documents or information provided for in this code or if TSO requests additional data or information from the applicant, according to point (2) the applicant is obliged to submit the required documentation within 30 calendar days from the day of the notification for its completion.
5. If the applicant does not submit the required documentation within the period specified in point (4) of this article, TSO shall reject the application.
6. TSO communicates to the applicant its response for the acceptance or rejection of the application within 60 calendar days from the date of completion of all application requirements or within 90 days in the cases provided for in point (4).

Article 39. New Connection Offer and/or modification of the existing connection

1. After the applicant submits all the required information, TSO shall verify, review and evaluate the entire application according to the requirements of the Transmission Code. TSO conducts the study of "Acceptability of a new connection or modification of existing connection" according to the points below but not limited to:
 - a. application data and technical documentation of connectivity and minuted;
 - b. the possibility for the use of Transmission System network capacity and if there is

no possibility, the Applicant shall take technical measures and shall invest itself to full coverage of the investment within technical security conditions, specified in Transmission Network Code and law No.43 / 2015 "On Power sector", Council of Ministers Decision no. 482 and 483 dated 17/06/2020 and ERE Board decision no. 127,128 or 129, dated 04/06/2018;

- c. defining and selection of the New Connection location, in the right place, according to the security level of supply, static and dynamic stability, magnitudes of short circuits 3 and 1 phase, the impact on technical losses in transmission network with new connection and the power supply of own needs, especially in cases of generating unit's connection, analysis of energy flows, analysis of energy quality.
- d. the operation parameters of the transmission system at the defined operational limits to ensure the connection and operation of the user without negative effects on the transmission system and the violation of the normal operation of the user or third parties;
- e. the applicant's connection costs, in accordance with Article 27 and 28 of Law No. 43/2015 "On the Power Sector" and the relevant regulation;
- f. meeting the requirements of the Code and harmonizing the proposed/requested user connection study with the approved transmission system development plan;
- g. meeting all the conditions and technical standards for the connection of the user, especially for the following:
 - i. The works that must be performed to realize the connection with the transmission system;
 - ii. The necessary works for the expansion and strengthening of the transmission system, as a prerequisite for the realization of the connection;
 - iii. Capacity to connect to the transmission system;
 - iv. Isolation coordination;
 - v. Relay protection system (coordination of transmission system protection and user protection);
 - vi. Maximum and minimum short circuit power;
 - vii. Terms for automatic synchronization;
 - viii. Connecting the neutral point;
 - ix. Continuous maximum and minimum operating voltage, and duration and level of short-term deviations from maximum and minimum values;
 - x. Application of the principle of the minimum power factor, $\cos \varphi = 0.9$, at the point of connection of customers in the transmission system;
 - xi. Provision of ancillary services for the energy system;
 - xii. Conducting large-scale outages (load shedding plan) and disruptions;
 - xiii. Electricity measurement;
 - xiv. System for remote monitoring and management of the connection;
 - xv. Procedures for operational connection management;

- xvi. Coordination of maintenance with TSO;
 - xvii. Fulfillment of security requirements in the facility;
 - xviii. Carrying out technical inspection of facilities;
 - xix. Communications and procedures under normal and emergency operating conditions;
 - xx. Staff training (staff employed by the user must be suitably qualified/trained).
2. Based on the above, within the time limit defined in point (6) of Article 38, the TSO:
 - a. present the connection offer to the applicant by determining a connection point/place or the solution that is technically the most optimal and by technically coordinating applications for connection to the System/modification submitted by other applicants; or
 - b. if after the study of the "Acceptability of the new connection or modification of the existing connection", it results that the optimal solution does not foresee a connection in the transmission system, then the application request is officially returned to the applicant with this argumentation; or
 - c. in case of a negative answer, it notifies the applicant of the rejection of the application, giving the relevant reasoning for the reasons for this decision.
 3. The applicant, within 60 calendar days from receiving the connection offer, must officially inform TSO about its acceptance or not, through the acceptance statement.
 4. In the event that the connection offer according to point (1), letter (a) above is not accepted by the applicant or the applicant does not inform TSO within the specified time limit, then the application process starts again from the beginning.
 5. If the applicant accepts the connection offer, the time period of validity of the connection offer is 18 months from the acceptance of the connection offer by the applicant.
 6. The applicant, within 16 months from the acceptance of the connection offer by TSO, submits the request for the connection agreement and the operation agreement.
 7. TSO and the applicant shall sign the connection agreement together with the relevant annexes within 18 months from the acceptance of the connection offer, taking into consideration the conditions and technical requirements.
 8. In addition to the connection agreement, the applicant shall sign an operation agreement with TSO after issuing the final operational notification (FON) according to ERE Board decision no. 127, 128 or 129, dated. 04/06/2018.

Article 40. Technical requirements and conditions for new connection or modification equipment

1. Users must ensure that all plants and devices at the connection point shall be in accordance with the relevant standards according to Council of Ministers decision no. 482 and 483 dated 17/06/2020 and ERE Board decisions no. 127, 128 or 129, dated 04/06/2018 guaranteeing in the future the operation and maintenance with high technical quality of their system/facility, according to the provisions of this code.
2. New connections and/or modifications of existing ones must not cause any negative effect on existing users of the transmission system and vice versa.
3. Technical equipment requirements for connections in the transmission system are:
 - a. equipment, facilities, installations and technical conditions in Connection Points shall be in conformity with the norms, standards into force the same for all users and according to the relevant categories of them.
 - b. Connections between network users and Transmission System Network should be realized via power switches, capable to be disconnected, with fast action according the requirements and standards the aforementioned acts
 - c. selection and define of the switching and commuting equipment capabilities, and sustainability against short circuit currents, must be within the values and standards in force, defined for each connection point.
 - d. protections installations relays, in the of connection points between Transmission System Network and Network Users must meet clearly the requirements and technical standards in force, to reduce to technical minimum, negative impact on other Transmission System Network Users.
 - e. telecommunications equipment must clearly meet the requirements and technical standards to eliminate negative mutual influence, loss or violation of information security;
 - f. equipment that enable, Transmission Network Users monitoring and control, must meet the technical requirements of the Transmission Network, in order to standardize and to be adapted with the logic of SCADA / EMS.

Article 41. Connection agreement

1. The connection agreement establishes the obligation for the parties to implement the rules, procedures, technical specifications and requirements for equipment and installations, as set forth in this code, as well as according to specific provisions in the relevant connection agreement.
2. The connection agreement specifies, among other things, the general conditions of the connection and any specific technical and financial conditions applied to each connection in particular.

3. The declaration of acceptance, the documentation (including an electronic copy) that the applicant submits to TSO, as well as the following are attached to the connection agreement:
 - a. The plan-setting on the map of the electric line, its route and its layout general layout line mapping, the track and its layout at such a scale that allows the presentation of its details;
 - b. The main diagram of the user, step up substation and the connection to the transmission system;
 - c. Main scheme of relay protection and measurement (HV part including HV/MV transformer);
 - d. Telecommunication diagram and connection to SCADA system of TSO;
 - e. Relay protection diagram;
 - f. Control-monitoring diagram;
 - g. technical specifications of main equipment (HV part and the transformer HV/MV);
 - h. The form with data for the user according to typology and category;
 - i. The data form for the transmission line;
 - j. The form with the data for the MV/HV station;
 - k. The plan of the MV/HV station;
 - l. Map with the location of the station and connection point in the transmission system;
 - m. The statement on the responsibilities for the control and maintenance of the equipment, for the operation of the equipment and the responsibilities for the technical assurance of the personnel
 - n. Bank document certifying payment of connection tariffs;

Article 42. Procedures for system management

1. The procedures and principles of system management under normal operating conditions and during breakdown are defined in the operating agreement which is signed between TSO and the user.
2. The operation agreement determines:
 - a. the responsibilities of the parties to perform operational actions in accordance with the conditions of the system in normal operation and in case of defects;
 - b. the right of TSO to issue orders for the operating mode of user equipment (active and reactive power) and operation of switching equipment;
 - c. detailed description of responsibilities for system and equipment management, between the user and TSO;
 - d. implementation of legislative measures and security measures.

Article 43. Operational notifications and connection energization by TSO

1. The applicant is obliged to submit a periodical report and a final performance certificate of his connection system with the transmission system, explaining the fulfillment in quantitative and qualitative terms of the technical requirements and operational criteria specified in the Transmission Code, Council of Ministers decision no. 482 and 483 dated 17/06/2020 and ERE Board decision no. 127, 128 or 129, dated. 04/06/2018 as well as additional requirements provided by law, bilateral agreements and/or as required by TSO.
2. The procedure for connecting to the transmission system for each user until the final energization and the start of operation as a user of the transmission system, is carried out in accordance with the relevant provisions of Council of Ministers decision no. 482 and 483 dated 17/06/2020 and ERE Board decision no. 127, 128 or 129, dated 04/06/2018. and detailed as follows:
 - a. Operational notification of energization;
 - b. Temporary operational notification;
 - c. Final operational notification and
 - d. Limited operational notification
3. The applicant/user shall provide assistance and all necessary information to TSO in order to collect data to verify compliance with technical and performance requirements.
4. It is recommended that the applicant/user consult and check with TSO relevant issues at an early stage of the project in order to enable the necessary corrections before the connection/modification project is submitted to the verification of full compliance for the effect of commissioning and final energization of the connection.

PART II – Parameters of non-exhaustive requirements

Title 1 - Parameters for generating modules

Chapter 1 - Voltage requirements

Article 44. Ability to operate in emergency conditions

1. *Profiles of voltage versus time at the connection point, under fault conditions (symmetrical and asymmetric), which describe the conditions under which a D-type generating module is able to remain connected to the grid and continue to operate stably even after the system is excited by the breakdown in transmission, are provided in Annex 1.*
2. *Generating modules of the power park type C and D for which the ability to operate in the breakdown is required shall ensure that the active power contribution has priority during the breakdown and its provision shall be made no later than 150 msec. from the start of the breakdown.*

3. *Distribution system or closed distribution system operators that are users of the transmission system and have type B and/or C generators connected to their generating systems shall ensure that these generators respect the voltage versus time profiles in connection point for emergency conditions as provided in Annex 1.*
4. *Parameters considered for the calculations of the ability to operate under fault conditions (eg short-circuit capacity before and after the fault, operating point before the fault of the active and reactive power of the generating module at the connection point and voltage at the point of the connection; calculations of the minimum capacity of the short connection after the failure at the connection point) are communicated by TSO to the applicant/user at the latter's request during the connection process.*

Article 45. Active power control and control range

1. The minimum period to reach the reference point of active power shall be determined on a case-by-case basis in the connection/operating agreement according to the technical capabilities of flexibility (ramping) depending on the technology and shall be part of the individual requirements of the connection with the relevant operator the system.
2. In cases where automatic remote-control equipment is out of service, the maximum time to reach the set point of work is equal to 15 minutes for a tolerance of +/-5% against the reference point of active power. When stricter requirements are applied in other acts they shall prevail.

Article 46. Voltage ranges

1. A type D generating module connected at a voltage level between 110 kV and 300 kV must be able to remain connected to the grid and operate in the voltage ranges for the following time periods:

Voltage Level	Time
0.85 pu – 0.90 pu	60 minutes
0.90 pu – 1.118 pu	unlimited
1.118 pu – 1.15 pu	21 inutes

2. A type D generator module connected to the grid with a voltage above 300 kV must be able to remain connected to the grid and operate in the voltage ranges for the following time periods:

Voltage Level	Time
0.85 pu – 0.90 pu	60 minutes
0.90 pu – 1.05 pu	unlimited
1.05 pu – 1.10 pu	20 inutes

3. The above ranges are also applicable to offshore power park modules connected to

- alternating current installations.
4. If it is assessed as technically necessary, wider voltage ranges for a longer minimum period of operation should be agreed during the connection process with the system in coordination with the relevant applicant/user case by case and documented in the connection agreement/ operation.
 5. Any new connection of direct current installations must be designed so as not to create negative effects (sub-synchronous resonance, rapid voltage variations, voltage harmonics and interference with telecommunications) on existing equipment connected to network or negative effects (insufficiency for the possibility of voltage reduction or excessive input/output of reactive power) in the functioning/operation of the transmission system.
 6. A bipolar connection of DC installations should also be designed so that the risk of loss for both poles, for the same reason, is as low as possible.

Article 47. Automatic disconnection due to voltage level

1. Type D generator modules must be able to automatically disconnect when the voltage at the connection point reaches the level specified by TSO.
2. The activation, values and parameterizations of this functionality must be agreed during the connection process by TSO in coordination with the relevant applicant on a case by case basis and documented in the connection/operation agreement. The network user shall have to verify the disconnection parameters of the relays through tests. Automatic reconnection to the network after a disconnection is not allowed and must be coordinated with TSO.
3. Distribution system or closed distribution system operators that are users of the transmission system shall ensure that the above requirements are also applied to type C generators connected to their systems.

Article 48. Capability for reactive power

1. A synchronous generator module shall be able to provide reactive power at its maximum capacity under variable voltage conditions within the limits according to the U-Q/Pmax characteristic as provided in Annex 2.
2. Distribution system or closed distribution system operators that are users of the transmission system and have type C generators connected to their generator systems shall ensure that these generators comply with the U-Q/Pmax characteristics as provided in Annex 2.
3. Synchronous generator modules shall be able to move to any operating point within the U-Q/Pmax characteristic in appropriate timeframes to meet the values required by the system operator, according to the generator's technological capabilities, without unjustified time delay and within 20 s.
4. The power park module shall be able to provide reactive power at its maximum capacity under variable voltage conditions within the limits according to the U-

Q/Pmax characteristic as given in Annex 2.

5. Distribution system or closed distribution system operators that are users of the transmission system and have C-type power park modules connected to their systems shall ensure that these generators respect the U-Q/Pmax characteristics as specified in Annex 2.
6. The power park module shall be able to provide reactive power below its maximum capacity under variable voltage conditions within the limits according to the U-Q/Pmax characteristic as given in Annex 2.
7. The power park module shall be able to move to any operating point within the U-Q/Pmax characteristic in appropriate time frames to meet the values required by the system operator, according to the generator's technological capabilities, without unjustified time delay and within 20 s.
8. Distribution system or closed distribution system operators that are users of the transmission system and have C-type power park modules connected to their systems shall ensure that these generators respect the U-Q/Pmax characteristics as given in Annex 2.
9. The voltage stability requirements applicable to offshore power park modules connected to alternating current installations in relation to reactive power capability for capacity below the maximum shall be the same as for onshore power park modules according to points 4 - 7 above.

Article 49. Voltage control system for synchronous generating modules

1. TSO in cooperation with the applicant/user, determines for each D-type generating module the parameters, charges of the components of the voltage control system and automatic voltage regulator specifications on a case-by-case basis for each project and documents them in the connection/operation agreement.

Article 50. Voltage stability for synchronous generating modules

1. D-type generator modules shall install power stabilizer system.
2. Requirements for the power stabilizer system are specified and documented in the connection/operation agreement between the applicant and TSO.

Article 51. Reactive power control modes for power park modules

1. After a step-voltage change, the power park module must be able to reach 90% of the reactive power change within the initial delay time $t_1 \leq 2$ seconds.
2. The power park module must be able to reach 100% of the reactive power change within the time for full activation $t_2 = 30$ seconds.

3. In the power factor control mode, the target power factor shall be in the limits from $\cos\phi = +0.85$ in delivery (injection) to $\cos\phi = -0.95$ in reception (absorption) of the generating unit; the time period to reach the set point and the tolerance shall be agreed upon during the connection process by the relevant system operator in coordination with the applicant on a case-by-case basis and shall be documented in the connection/operation agreement with the relevant system operator.
4. Distribution system or closed distribution system operators that are users of the transmission system and have C-type power park modules connected to their systems shall ensure that these generators comply with the above requirements.
5. The power park module shall be able to provide reactive power automatically from either voltage-controlled mode, reactive power-controlled mode, or power factor-controlled mode. The specifications of which of the reactive power control options and related defined parameters should be applied as well as what additional equipment is required to make the corresponding set point adjustment in remote operation shall be determined on a case by case basis and documented in the agreement of connection/operation.

Chapter 2 – Frequency requirements

Article 52. Frequency ranges

1. The nominal frequency in the electric power system in synchronous operation with the European transmission network is 50 Hz.
2. The minimum periods of time for which a power generating module must be able to operate without being disconnected from the grid at frequencies different from the nominal value, are as follows:

Frequency intervals	Time
47,5 Hz – 48,5 Hz	30 minutes
48,5 Hz – 49,0 Hz	30 minutes
49,0 Hz – 51,0 Hz	unlimited
51,0 Hz – 51,5 Hz	30 minutes

3. Operators of the distribution system or of the closed distribution system that are users of the transmission system and have energy generating modules of type A, B and C connected to their systems shall ensure that these generators comply with the above requirements.

Article 53. The capacity of stability to the rate of change of frequency

1. The maximum rate of change of frequency for which the generator module shall remain connected in operation is equal to or less than the value $\pm 2\text{Hz} / \text{s}$ for the moving average of the 500 msecond window/time space of the frequency measurement, in depending on the type of generator technology and the power/short circuit current at the connection point to the system.
2. Power generation modules must be allowed to disconnect if any of the criteria mentioned above are violated or the frequency exceeds the ranges defined in Article 52 (eg below 47.5Hz or above 51.5Hz).
3. Operators of the distribution system or closed distribution system that are users of the transmission system and have power generating modules of type A, B and C connected to their systems shall ensure that these generators comply with the above requirements.

Article 54. Limited frequency sensitive mode

1. The threshold frequency for limited frequency sensitive mode at underfrequency (LFSM-U) shall be 49.8 Hz and for limited frequency sensitive mode at overfrequency (LFSM-O) shall be 50.2 Hz.
2. Droop parameter shall be adjustable in the range of 2% - 12% and for LFSM-O/U the default value shall be 5%.
3. Control systems of generating modules must allow adjustment and reselection of the droop value, during the lifetime/operation of the module.
4. Flexibility for LFSM-U shall be evaluated based on data for generators who shall prove technical ability for LFSM-U. In any case the parameterization should be coordinated and matched with the measures of other system protection plans to address low frequency events.

5. P_{ref} shall be considered P_{active} available at the moment of reaching the LFSM-O/U threshold as a default parameter for the energy park modules, while for operating regimes close to maximum capacity P_{ref} shall be considered $P_{max} = P_n$.
6. The initial delay time (T_{id}) which covers the time from the frequency change to the start of the response is set to be as fast as technically possible (no intentional delay).
7. For LFSM-O, once the minimum regulation level is reached, the operating mode shall continue at the same level (no further reduction of active power for further frequency increase).
8. The response time (T_{resp}) is parameterized as follows:

T_{resp}	Increase of active power (for frequency drop)	Active power reduction (for increased frequency)
For synchronous power generating modules	≤ 5 min of an active load change of about 20% of maximum load (slow performance is not applied, if the increase is quick (within few seconds after the frequency decrease))	≤ 8 s for a change of active power of about 45% of maximum power
For power park modules (not wind)	≤ 10 s for an active power change of 50% of maximum power	≤ 2 s for an active power change of 50% of maximum power
Power park modules (wind generators)	≤ 5 s for an active power change of 20% of maximum power, if the actual active power is above 50% of maximum power. For duty points below 50% of maximum power a slower response may apply. Notwithstanding this, the response time shall be as fast as is technically possible and technically argued if it is >5 s	≤ 2 s for an active power change of 50% of maximum power

1. Setting time (extinction) (T_{sett}) shall be parameterized as follows:

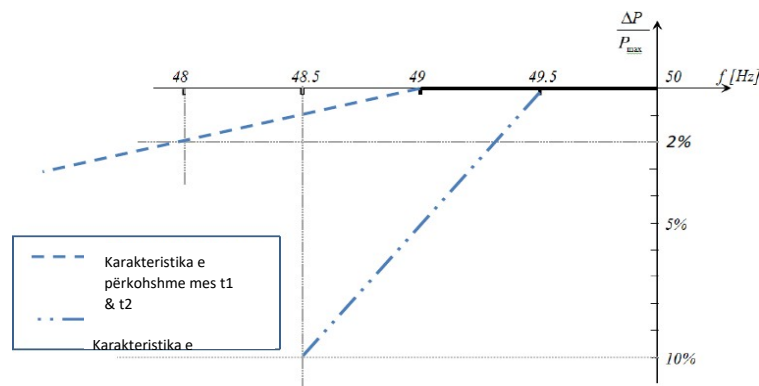
T_{sett}	Increase in active power (for frequency drop)	Active power reduction (for increased frequency)
For synchronous power generating modules	≤ 6 min (slow performance does not apply, if the increase is fast (within seconds) after the frequency drop)	≤ 30 s

For power park modules (not wind)	≤ 30 s	≤ 20 s
Power park modules (wind generators)	≤ 30 s	≤ 20 s

2. Parameterization for LFSM-O applies to all module types while LFSM-U parameterization applies to C and D type modules.
3. Specific provisions to be defined in the connection/operation agreement with the relevant operator and the user.
4. Operators of the distribution system or closed distribution system that are users of the transmission system and have power generating modules of type A, B and C connected to their systems shall ensure that these generators comply with the above requirements.

Article 55. Acceptable reduction of active power from maximum output for decreasing frequency

1. Generating modules shall fulfill the requirements regarding the characteristic F(Hz) - $\Delta P/P_{max}$ for the maximum acceptable reduction of active power at decreasing frequencies according to the graphic below:
2. For all generator modules, the maximum allowed reduction of active power at decreasing frequencies should be parameterized as follows:



	Parameters	Values
Temporary (transient) characteristics	Threshold frequency	49 Hz
	Inclination	2%/Hz
	t1	≤ 2s
Lasting characteristics	t2	30s
	Threshold frequency	49.5Hz
	Inclination	10%/Hz
	t3	30 min

1. Generating modules during the application phase for connection to the system must provide information about their expected temperature characteristics [-10°C, 0°C, 15°C, 25°C, 30°C, 40°C].
2. Ambient temperature of 25°C, altitude of 400 to 500 m and humidity of 15 to 20 g H₂O / 1 kg of air shall be applied as reference and standard ambient conditions for all technologies.
3. Operators of the distribution system or closed distribution system that are users of the transmission system and have power generating modules of type A, B and C connected to their systems shall ensure that these generators comply with the above requirements.

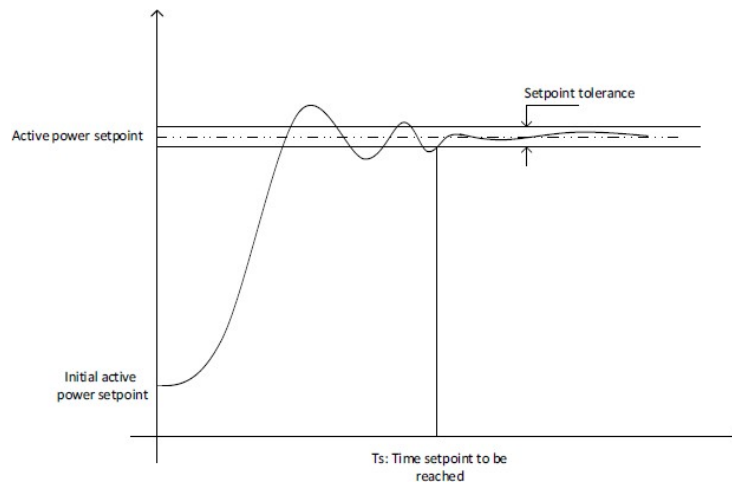
Article 56. Automatic connection to the network

1. Automatic connection shall be permitted for all type A units and for type B units provided that the following requirements are met:
 - a. The frequency must be within 49.9 Hz and 50.1 Hz; and
 - b. The voltage must be within $0.9 \text{ pu} \leq U \leq 1.1 \text{ pu}$; and
 - c. The minimum observation time when the above conditions are met must be over 60 seconds
2. After the connection, charging is applied according to the operational conditions of the adjustable limitation of the active power increase gradient $\leq 20\%$ of $P_{\text{max}} / \text{min}$.
3. When the automatic connection is activated after a network disturbance, the

- maximum acceptable gradient in the active output is 10% of P_{max} / min.
4. For other cases, automatic connection shall be regulated by individual authorization that must be defined as a provision in the individual connection/operation agreement.
 5. Operators of the distribution system or closed distribution system that are users of the transmission system and have power generating modules of type A, B and C connected to their systems shall ensure that these generators comply with the above requirements.

Article 57. Frequency stability

1. Generating modules shall reach the reference point of active power within a minimum period determined case by case in the connection/operation agreement according to the technical capabilities of flexibility (ramping) depending on the technology of the module.
2. Schematically, the required ability is provided in the following graphic:



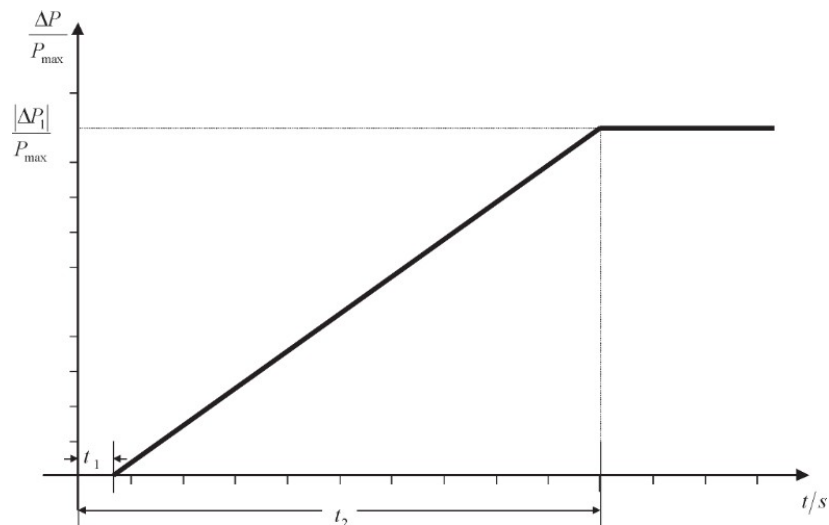
3. In cases where automatic remote-control equipment are out of service, the maximum time to reach the set point of work is equal to 15 minutes for a tolerance of $\pm 5\%$ against the reference point of active power. When stricter requirements are applied in other acts they shall prevail.
4. Distribution system operators or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 58. Frequency sensitive mode

1. Parameterization of the frequency-sensitive mode for generating modules shall be performed according to the following parameters:

Active power range $ \Delta P_1 /P_{max}$	Range between 1.5% - 10%
Droop	Adjustable 2 - 12%, default 5%
Frequency Response Insensitivity $ \Delta f_i $ $ \Delta f /f_n$	Max 10 mHz Max 0.02%
Frequency response deadband	between 0 - 200 mHz, default 10 mHz
Frequency-sensitive mode maximum initial activation delay (t_1)	Synchronous generating modules: as fast as possible to under 2s (to be technically justified by the applicant if > 2s) Power park modules: 500 ms
Maximum frequency-sensitive mode full activation delay (t_2)	Max 30 s
Duration of full activation	Minimum 15 minutes

2. The active power response capability for each generating module is determined according to the following graphic and according to the parameterization in the table above:



3. Generating modules must ensure that the technical capabilities and parameters cover the operational needs, as determined by the minimum technical requirements of the reserve for maintaining the frequency determined by TSO
4. Distribution system operators or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 59. Reset control frequency

1. Reset control frequency parameters are specified in accordance with the provisions of Commission Regulation (EU) 2017/1485, August 2, 2017, for establishing a "Guideline on electricity transmission system operation" and this code. The parameters shall be agreed upon during the connection process with the relevant system operator on a case-by-case basis and shall be included as provisions in the connection/operation agreement or according to the framework in force for the balancing market.
2. Distribution system operators or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 60. Frequency-sensitive mode real time monitoring

1. The connection/operation agreement shall define additional signals to be provided by the power generation facility in connection with real-time monitoring of the frequency-sensitive mode by monitoring and recording the equipment in order to verify the performance of providing response towards the frequency of power generating modules.
2. The reference standard to be used is IEC 60870.
3. Distribution system or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 61. Rate of change of active power

1. The minimum and maximum limits of the rate of change of active power (minimum and maximum limits) in both directions of change, increasing and decreasing, taking into account the specific characteristics of the technology and those of the primary source, are determined by the relevant system operator during network connection procedure for each separate connection point reflecting the parameters in the network connection/operation agreement.
2. Limits are defined between the minimum level of adjustment and the maximum capacity. The rate of change shall range from 1.5%/min – 20%/min in both directions.

3. Distribution system or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Chapter 3 – System Restore Requirements

Article 62. The ability to reconnect after a disconnection caused by a disturbance in the system

1. Automatic connection is not allowed for generating modules type C and D. Automatic connection shall be regulated by individual authorization which must be defined as a provision in the individual connection/operation agreement.
2. For units of type A and B, automatic connection is allowed provided that the following requirements are met:
 - a. the frequency should be between 49.9 Hz and 50.1 Hz;
 - b. the voltage must be within $0.9 \text{ pu} \leq U \leq 1.1 \text{ pu}$;
 - c. the minimum observation time when the above conditions are met should be over 60 seconds
3. After connection, charging is applied according to the operational conditions of the adjustable limitation of the active power increase gradient $\leq 20\%$ of $P_{\text{max}} / \text{min}$. When automatic reconnection is activated after a disturbance in the network, the maximum acceptable gradient in active energy production is 10% of $P_{\text{max}} / \text{min}$.
4. Distribution system operators or closed distribution system operators who are users of the transmission system and have type A, B and C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 63. Operation after switching to houseload

1. The minimum operation time during which a generator module must remain in operation after switching to houseload shall be determined as a provision in the individual connection/operation agreement taking into account the specific characteristics of the primary source technology. The indicative values of 2 - 4 hours of operation at houseload should be taken into consideration.
2. Distribution system operators or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 64. Reset of active power for synchronous generator modules

1. Distribution system or closed distribution system operators that are users of the transmission system and have type B and C synchronous power generating modules connected to their systems must ensure that the generating modules are capable of carry out reset and recovery of 90% of the active power set point within 5 s after fault elimination.
2. Distribution system operators or closed distribution system operators that are users of the transmission system and have power park modules of type B and C connected to their systems must ensure that the generating modules are capable of their active power to recover to 90% of the power before the fault measured with an accuracy of +/- 5% in less than 3 s and the voltage at the switching point $U \geq 0.85$ p.u.
3. For D-type modules, these parameters shall be adjusted and determined as a provision in the individual connection/operation agreement for each facility in particular.

Chapter 4 – Requirements regarding instrumentation, simulation models and protection

Article 65. Control schemes and control equipment tariffs

1. The schemes and tariffs of the control equipment shall be coordinated between the user/applicant, the operator of the system where the module is connected and TSO and shall be defined as a provision in the individual connection/operation agreement.
2. The control schemes and tariffs and any eventual changes of the different equipment of the generating module that are necessary for the stability of the system and for the performance of emergency actions shall be coordinated and agreed between TSO, the relevant system operator and the owner of the generating module.
3. Operators of the distribution system or closed distribution system that are users of the transmission system and have type B and C energy generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 66. Protection schemes and tariffs

1. Protection schemes and tariffs shall be coordinated between the user/applicant, the system operator where the module is connected and TSO and defined as a provision in the individual connection/operation agreement.
2. Operators of the distribution system or closed distribution system that are users of the transmission system and have type B and C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 67. Exchange of information

1. Generation modules connected in transmission shall be equipped in accordance with IEC 60870 standards and shall provide real-time information required by TSO and the relevant operator of the network where they are connected in accordance with the relevant provisions defined in this code.
2. The content of the information to be exchanged, including a list of data to be provided by the generator, shall be detailed, coordinated and determined as a provision in the individual connection/operation agreement.
3. Operators of the distribution system or closed distribution system that are users of the transmission system and have type B and C energy generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 68. Local manual measures when remote control devices are out of service

1. In cases where automatic remote-control equipment is out of service, the maximum time to reach the set point of work is equal to 15 minutes for a tolerance of $-/+5\%$ against the reference point of active power. When stricter requirements are applied in other acts they shall prevail.
2. Parameterizations and other specifications if necessary shall be detailed, coordinated and determined as a provision in the individual connection/operation agreement.
3. Distribution system or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 69. Loss of angular stability or loss of control

1. The criteria for the detection of loss of angular stability or loss of control shall be detailed, coordinated and defined as a provision in the individual connection/operating agreement.
2. Distribution system operators or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.
3. Neutral Point at the Network Side of Step- Up Transformers, fault recording equipment parameterizations, including activation criteria and sampling ranges shall be detailed, coordinated and determined as a provision in the individual connection/operation agreement.
4. System dynamic behavior monitoring, excitation oscillator and equipment parameterizations and specifications of the activation swing that detects undisturbed power swings shall be detailed, coordinated and defined as a provision in the individual connection/operation agreement.
5. The objects for monitoring the quality of supply and the dynamic behavior of the system as well as the communication protocols for the recorded data shall be detailed, coordinated and determined as a provision

in the individual connection/operation agreement.

6. Fluctuation limits, control and measurement procedures shall be based on relevant IEC standards.
7. Operators of the distribution system or closed distribution system that are users of the transmission system and have C-type energy generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 70. Neutral Point at the Network Side of Step- Up Transformers

1. The status of the neutral of the generator step-up transformers on the side of the connection to the transmission network and the values of the grounding resistance are determined by studies and analyzes for the purposes of overvoltages and dimensioning of the transmission network equipment, which determine the connection factor with the grounding. The relevant specifications shall be detailed, coordinated and defined as a provision in the individual connection/operation agreement.
2. Distribution system operators or closed distribution system operators that are users of the transmission system and have type C power generating modules connected to their systems shall ensure that these generators comply with the above requirements.

Article 71. Synchronization

1. Synchronization of generator modules shall be performed only after the authorization by the system operator.
2. Relevant specifications regarding voltage, frequency, phasing, phase sequence and deviation of voltage and frequency during synchronization shall be detailed, coordinated and determined as a provision in the individual connection/operation agreement in accordance with the frequency, voltage ranges as well as the specific conditions of each generator depending on the technology and connection point.

Article 72. Angular stability under fault conditions

1. Technical capacities related to angular stability under fault conditions to be met by the generating module shall be detailed, coordinated and defined as a provision in the individual connection/operation agreement

Title 2 - Parameters for load users

Chapter 1 - Voltage requirements

Article 73. Voltage ranges

1. Transmission-connected load facilities, transmission-connected distribution facilities and closed transmission-connected distribution systems must be able to remain connected to the network and operate in the voltage and time ranges specified as follows :

Voltage Level 110 - 300 kV	Time
0.90 pu – 1.118 pu	unlimited
1.118 pu – 1.15 pu	20 minutes

Voltage Level > 300 kV	Time
0.90 pu – 1.05 pu	unlimited
1.05 pu – 1.10 pu	20 inutes

Article 74. Automatic disconnection due to voltage level

1. Automatic disconnection due to voltage level is considered specific for each connection point. The activation, values and parameterizations of this functionality must be agreed upon during the connection process by the relevant system operator in coordination with the relevant operator/user on a case-by-case basis and documented in the connection/operation agreement with the relevant system operator.
2. The network user shall have to verify the relay disconnection parameters through tests with the relevant operator.
3. Automatic reconnection to the network after a disconnection is not allowed and must be coordinated with the relevant operator.

Article 75. Capability of reactive power for load units and transmission-connected distribution systems

1. Load objects connected to the transmission must have a power factor ($\cos\phi$) as close as possible to unit 1 ($\cos\phi \geq 0.9$);
2. The minimum permissible power factor for transmission-connected distribution systems is 0.9 ($\cos\phi = 0.9$)
3. The power factor measurement is done continuously along with the voltage measurement, in real time, through the SCADA/EMS system and the telemetry system.
4. Transmission-connected load facilities and transmission-connected distribution systems with power factor lower than the permitted value must immediately install reactive energy compensating devices to improve $\cos\phi$.

5. Reactive power capability for distribution systems connected in transmission is determined by analysis which must address possible solutions and determine optimal solutions for reactive power exchanges of transmission and distribution systems taking into consideration the principles according to which:
 - a. The available reactive power sources must be sufficient to ensure operational safety and be able to maintain appropriate voltage levels as well as enable reactive power management through reactive power control capability.
 - b. The study and determination of installations for the generation/absorption of reactive power is based on the analysis and voltage levels at all nodes of the system, in all modes of operation of the network in the configuration (n) and the presence of contingencies according to the criterion (n-1) respecting the permitted voltage levels.
 - c. The study and analysis for the technical determination of the installations for the generation/absorption of reactive power shall determine the measures for the optimization and improvement of the technical and economic performance of the operation of the electric power system with voltages within the permitted levels, reducing technical losses and increasing the dynamic stability margin of the power system operation.
 - d. The study and analysis for this purpose shall be carried out for a 2-year time horizon, evaluating both the regimes with maximum loads and those with minimum loads of the electric power system.

Article 76. Quality of supply

1. The user's system must be designed and installed in such a way that during operation it does not affect the quality of the energy of third parties and the deformation of data and information signals.
2. Users must take the necessary measures to limit disturbing harmonics as much as possible.
3. Users' installations and their operation shall meet the power quality requirements according to standards IEC / 61000-3-6 (Limits of harmonic distortion), IEC / 61000-3-7 (Limits of voltage fluctuation) and CENELEC -EN 50160.

Chapter 2 - Frequency requirements

Article 77. Frequency ranges

1. The minimum periods of time for which transmission-connected demand facilities, transmission-connected distribution facilities and distribution systems must be able to operate without disconnection from the network at frequencies other than the nominal value, are as follows:

Intervals	Duration
47,5 Hz – 48,5 Hz	30 minutes
48,5 Hz – 49,0 Hz	30 minutes
49,0 Hz – 51,0 Hz	unlimited
51,0 Hz – 51,5 Hz	30 minutes

Chapter 3 – Requirements regarding system restoration

Article 78. Requirements for short circuit

1. The selection and determination of the disconnecting capabilities of the switching devices and the resistance to short-circuit currents must be within the values and standards in force determined for each connection point.
2. Users provide the required data for determining the short-circuit currents at each user connection point of the transmission system, as well as the disconnecting capabilities for short-circuits, of switching devices at the technical and property boundaries with the transmission system.
3. The maximum short-circuit current at the connection point is measured during the connection process by the relevant system operator in coordination with the relevant operator/user on a case-by-case basis and is documented in the connection/operation agreement with the relevant system operator.
4. TSO shall specify in the agreement with the user the list of possible unplanned events and the maximum threshold short-circuit current above which TSO is obliged to inform the user in case of a change on this threshold.
5. TSO shall specify in the agreement with the user the list of possible planned events and the maximum threshold short-circuit current above which TSO is obliged to inform the user in case of a change on this threshold.
6. Similarly, the agreement with the user shall list possible planned and unplanned events as well as the maximum threshold short-circuit current with which the user, the load facilities connected in transmission and/or the distribution facilities connected in transmission are obliged to inform TSO in case of a change above this threshold.

Article 79. Load disconnection for system protection

1. TSO, transmission-connected load facilities and/or the distribution transmission-connected load facilities shall agree and define as provisions in the connection/operation agreement the requirements and parameterization of the capabilities of the low frequency demand decoupling scheme.
2. TSO, transmission-connected load facilities and/or transmission-connected distribution facilities shall agree and define as provisions in the connection/operation agreement the requirements and parameterization of the capabilities of the Low Voltage Demand Disconnection scheme for the transmission-connected demand and

distribution facilities.

3. Transmission-connected demand facilities and transmission-connected distribution systems shall comply with requirements regarding automatic disconnection or reconnection of transmission-connected demand facilities or transmission-connected distribution systems. The activation, values and parameterizations of the functionality must be agreed upon during the connection process by the relevant system operator in coordination with the relevant operator/user on a case-by-case basis and documented in the connection/operation agreement with the relevant system operator.
4. TSO, the transmission-connected demand facilities and the transmission-connected distribution systems shall agree and include as provisions in the connection/operation agreement the requirements and parameterization of the synchronization equipment (including frequency, voltage, angle of phase range and deviation of voltage and frequency).

Chapter 4 – Requirements regarding instrumentation, simulation models and protection issues

Article 80. Relay protection schemes and parameters

1. TSO, the transmission-connected load facilities or the transmission-connected distribution system operator shall agree and include as provisions in the connection/operation agreement the protection schemes and the corresponding tariffs for the demand facilities connected to the transmission or transmission-connected distribution systems.

Article 81. Schemes and parameters for control devices

1. TSO, the transmission-connected load facilities or the transmission-connected distribution system operator shall agree and include as provisions in the connection/operation agreement the control schemes and the corresponding tariffs for the demand facilities connected to the transmission or transmission-connected distribution systems.

Article 82. Information exchange

1. Transmission-connected load facilities and transmission-connected distribution systems shall be equipped in accordance with IEC 60870 standards in order to exchange information between TSO and transmission-connected load facilities and transmission-connected distribution systems according to the specifications in the provisions of this code.
2. The list of required data shall be drafted in accordance with the requirements and deadlines related to the operation specified in the provisions of this code, shall be agreed and included as a provision in the connection/operation agreement.

Title 3 - Direct current systems and direct current-connected power park modules

Article 83. Non-exhaustive parameters for direct current systems and direct current-connected power park modules

1. Non-exhaustive parameters in terms of ERE Board decision no. 127, dated 04/06/2018 shall be applied according to the guidance document for the implementation of ENTSO-E codes, "HVDC systems default parameters - ENTSO-E guidance document for national implementation for network codes on grid connection - 4. June 2018"

PART III – Other technical requirements for relay protection and grounding

Article 84. Relay protection requirements and coordination with the transmission system user's relay protection

1. Users of the transmission system shall not be connected and shall not continue to remain connected to the transmission system unless they are equipped with the necessary relay protection installations that meet the relevant principles of safety, selectivity, speed, differentiation and sensitivity.
2. Users connected to the transmission system shall be protected by a relay protection system conforming to the relevant standards defined in Council of Ministers Decision no. 482 and 483 dt. 17/06/2020 and ERE Board decision no. 127, 128 and 129, dated 04.06.2018, so that the Transmission System does not suffer damage from any breakdown originating from the users.
3. The relay protection installed in the installations and equipment of the user of the transmission system must be coordinated, in cooperation with the relay protection installed in the transmission system. For this purpose, TSO and users of the transmission system cooperate at all times in the development of relay protection and the improvement of relay protection technology. Relay protection of transmission system user systems/facilities shall not be commissioned and put into operation without TSO approval.
4. TSO shall be responsible for relay protection in the entire transmission system. TSO approves the relay protection system and defines the tariffs on the elements of its system in coordination with the users of the transmission system.
5. The users of the transmission system are responsible for charging relay protection in their systems/facilities and shall coordinate the tariffs of relay protection in these installations and equipment, on the property boundary with the transmission system.
6. The Distribution System Operator shall prepare studies and plans for the modification of protection and automation systems, for the installation of frequency relays in cooperation with TSO.
7. TSO shall advise modifications and improvements of relay protection in the distribution system, in order to reduce the negative impacts on the transmission

system.

8. TSO shall conduct studies of the static and dynamic stability of the power system (stability against voltage collapse, angular stability, stability against frequency) as well as analysis of the performance of relay protection and primary switching devices installed in the transmission system, to determine the minimum critical times of disconnection of the fault (critical fault clearing time in the electrical system).

Article 85. Relay protection requirements for the transmission system

1. The 400 kV, 220 kV, 150 kV and 110 kV high voltage electrical lines shall have distance protection and back-up protection. All 400 kV, 220 kV lines shall have two main distance protection schemes with fast operation and a backup protection.
2. The main and backup protections shall be powered by different sources of voltage and current.
3. Based on specific analysis of relay protection performance, the transmission system may provide additional backup protection on individual power lines.
4. All compensating devices connected to the transmission system must be equipped with relay protection according to the relevant standard.
5. Other mandatory technical specifications for 400 kV, 220 kV, 150 kV and 110 kV power lines are:
 - a. Distance protection on 400 kV, 220 kV, 150 kV and 110 kV power lines can be static or numerical with at least 4 fast-acting zones;
 - b. The main protections 1 and 2 in the 400 kV, 220 kV electric lines have the same speed of action and different operating principles;
 - c. Time setting of zones should include switchers' action times
 - d. Action timing of the first zone (together with the switcher's action) is 80 mil.sec per 400 kV lines, 110 mil.sec per 220 kV lines and 120 mil.sec per 150 kV and 110 kV lines.
 - e. Timing of other zones is defined according to Transmission System covering zone and configuration calculated for any year. Protection 400 kV and 220 kV lines is equipped with the single-phase Auto Reclosing Device and triple-phase Auto Reclosing Device (AKP) for 150 kV and 110 kV lines, with the control of voltage lack and synchronization at both ends of the power line.
 - f. Subject to operational security analyzes of power system by TSO, the main relay protections 1 and 2 may have DC supply (operating direct current) from different accumulator batteries installations.

- g. Relay Protection requirements for Auto and Power Transformers in the power system includes Differential Protection and other protections (technological) from internal impairment (as gas Protection, Winding Temperature Protection, Oil Temperature Protection and Fire Protection).

Article 86. Relay protection requirements of busbars of electrical substations

1. Busbars of electrical substations of voltage level 400 kV, 220 kV, 150 kV, 110 kV are protected with longitudinal and transverse differential protection. The busbars are also equipped with protection against the rejection of the switch action of all relevant busbar tracts.

Article 87. Fire protection of electrical installations and equipment

1. The fire protection system for electrical installations and equipment and the rules for its implementation must be in accordance with the specifications, standards, regulations and legal provisions in force on fire protection.

Article 88. Data on relay protection of users of the transmission system

1. The relay protection data requested by TSO, from the users of the transmission system, are as follows:
 - a. Types, specifications and settings of all relays and relay protection systems installed to power generating units, generator-transformer block, step up substation transformers, Ancillary transformers, and main Ancillary equipment
 - b. Types, specifications and settings of all relay, installed in all power transformers substations of Distribution System and Clients of transmission network 220 / HV kV and 110 kV / MV.
 - c. Types, specifications and setting of relay protection installed on all busbars 110 kV, 150 kV, 220 kV, 400 kV and 35-400 kV lines owned by the transmission network users.
 - d. The data required for determining the short circuits currents, at any connection point regarding new or existing transmission network users, based on its planning-developing and its commuting equipment capabilities in technical ranges and ownership of their network with transmission System.

Article 89. Earthing

1. Earthing of the coils of the primary side of power transformers with 400/TM kV, 220/TM kV, 150/TM kV, 110/TM kV voltage and the earthing system shall be studied, analyzed and determined by TSO.
2. The earthing status and the size of the earthing resistance determined by the relevant

studies of TSO company is mandatory to be respected by all users of the transmission system in their systems/facilities.

PART IV – Requirements according to the technical rule for lines and installations above 1 kV

Article 90. Maintenance, periodic checks and inspections of installations and lines

1. TSO and the user of the transmission system are individually responsible for the maintenance of the equipment and components in their facility, according to the division of ownership.
2. TSO, the users and relevant contracted entities when maintenance is performed by a third party, must fulfill the requirements of Council of Ministers decision no. 482 and 483 dated 06/17/2020.
3. Components that are considered important for the safety of the plant, such as switches, batteries, power supplies of emergency systems and protection devices must be tested regularly according to a plan prepared by the user of the transmission system and approved by TSO every year.
4. The plan must be submitted at TSO within October of the previous year for the following year.
5. Inspections of installations and lines are carried out by approved subjects, every three years and the documentation must be kept for a period of 10 years.
6. If a danger to property and life is found, the results of the inspection are sent to the state inspectorate.

Article 91. Equipment and materials

1. The materials and equipment of the installations and lines of the user and TSO must be conform to the harmonized Albanian standards according to the provisions of Council of Ministers Decision no. 482 and 483, dt. 17/06/2020.
2. The materials and equipment are accompanied by the necessary technical documentation that evidences conformity with the harmonized Albanian standards.
3. Conformity of equipment and materials shall be considered in compliance with the standards if proven with appropriate documentation issued by an approved conformity assessment body.
4. Equipment and materials as well as their installation are subject to inspection by authorized bodies, regarding compliance with harmonized standards and conformity.

Article 92. Specifications for installations and transmission lines

1. Users of the transmission network shall fulfill the requirements according to ERE

- Board decision no. 127, 128, 129, dt. 04/06/2018 and Council of Ministers Decision 482 and 483, dt. 17/06/2020 as well as the specific requirements defined in this code.
2. The technical requirements are also applied to the users' transmission lines, owned by them and/or when their transfer to TSO is intended.
 3. The set of technical specifications that must be fulfilled by the users pursuant to this code are filed by TSO at the responsible state inspectorate.
 4. TSO shall verify the user's compliance with the requirements of this code according to the procedures defined in ERE Board decision no. 127, 128, 129, dt. 04/06/2018 and Council of Ministers decision no.482 and 483, dt. 17/06/2020.
 5. The verification shall be performed by specialists certified by an accredited certification body according to the SSH EN ISO/IEC 17024 standard or equivalent standards and/or technical specifications.
 6. Copies of the technical documentation of the user, the device certificate and the declaration of conformity are made available by TSO to the responsible state inspectorate when requested.

Article 93. Documentation and operation of installations and transmission lines

1. In addition to what is required in this code, users and TSOs are provided with the necessary administrative permits for the construction, expansion, modification and operation of electrical transmission installations.
2. TSO and the users keep complete technical documentation (project, conformity inspection report, declaration of conformity, etc.) for installations, equipment and lines owned by them or connected to the network owned by them in accordance with the legal framework in force.

Article 94. Documentation, commissioning and maintenance of lines

1. The use of electric lines installed by authorized companies in terms of Council of Ministers decision no. 483, dt. 17/06/2020, is carried out by applying the following requirements:
 - a. a project is presented in which the characteristics of the line are given;
 - b. verifications of the installed line are carried out if it is equipped with the appropriate authorizations and the work is carried out under appropriate supervision;
 - c. the initial inspection is carried out by an approved conformity assessment body;
 - d. the installation certificate and minutes are issued;

- e. an inspection certificate is issued, which must state that the line has been realized in accordance with the provisions of this technical regulation, identifying and justifying the changes that may have occurred in the implementation of the project;
- f. other verifications are carried out that TSO considers appropriate, regarding the line's compliance with the technical requirements;
- g. a relevant record is drafted if inconsistencies are found for the results of the controls, which must be signed by the line owner;
- h. a copy of the record is submitted to the responsible state inspectorate, which must determine the appropriate measures to be taken;
- i. an authorized line maintenance company is contracted and becomes responsible for maintaining the technical and operational condition of the line, unless the line owner has the status of an authorized line maintenance company;
- j. the line is registered with the responsible state inspectorate before putting it into use by presenting the documentation as defined in Council of Ministers decision no. 483, dt. 17/06/2020.

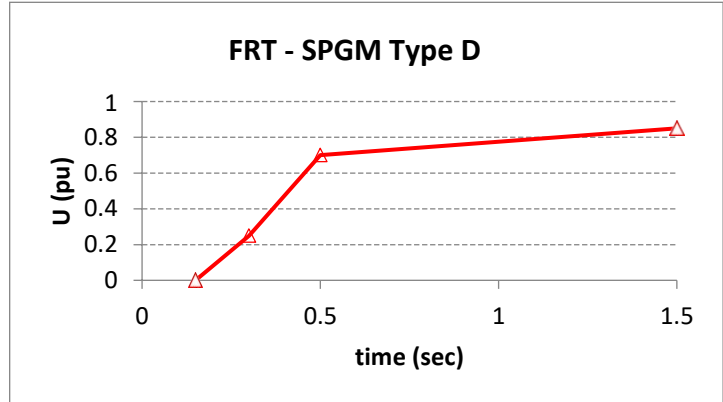
Article 95. Periodic inspections of installations and lines

1. Equipment and installations, including lines, are subject to periodic inspections at least every three years.
2. The owner of the equipment, installations or line is responsible for the inspections to be carried out according to the deadlines by conformity assessment bodies approved in accordance with the legislation in force.
3. In any case, a report/certificate of the performed inspections and verifications is drafted and a copy must be submitted to the owner or responsible person of the equipment, installation or line, as well as a copy is filed with the responsible state inspectorate, especially in cases where a risk to life and health of people and property is concluded.

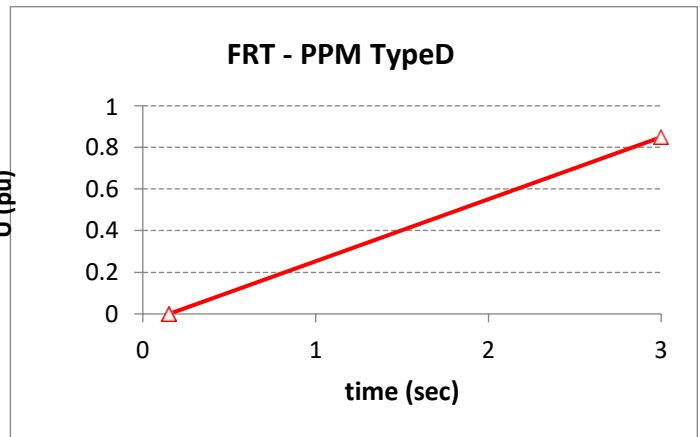
Annex 1 - Fault operation capabilities in cases of symmetric and asymmetric faults

Uret is the retained voltage at the connection point during a fault, tclear is the instant when the fault has been cleared. Urec1, Urec2, trec1, trec2 and trec3 specify certain points of lower limits of voltage recovery after fault clearance.

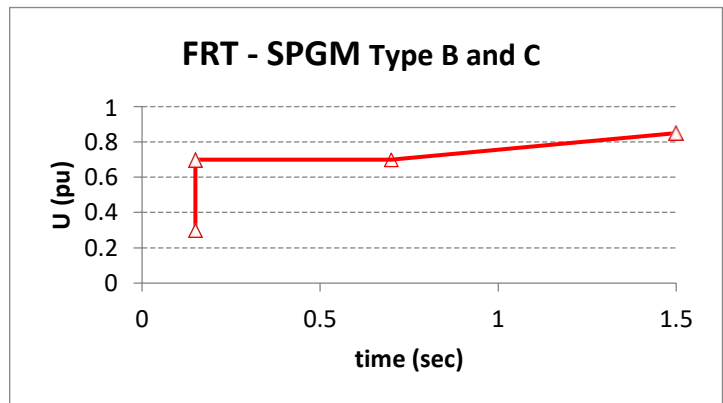
FRT - SPGM Type D			
	t		U
tclear:	0,15	Uret:	0
trec1:	0,3	Uclear:	0,25
trec2:	0,5	Urec1:	0,7
trec3:	1,5	Urec2:	0,85



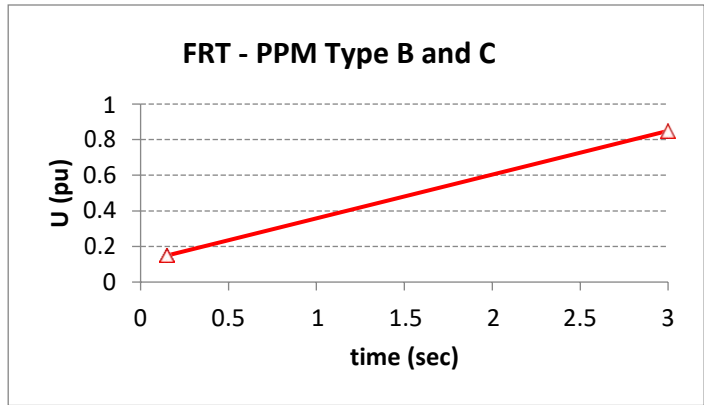
FRT - PPM Type D			
	t		U
tclear:	0,15	Uret:	0
trec1:	0,15	Uclear:	0
trec2:	0,15	Urec1:	0
trec3:	3	Urec2:	0,85



FRT - SPGM Type B and C			
	t		U
tclear:	0,15	Uret:	0,3
trec1:	0,15	Uclear:	0,7
trec2:	0,7	Urec1:	0,7
trec3:	1,5	Urec2:	0,85

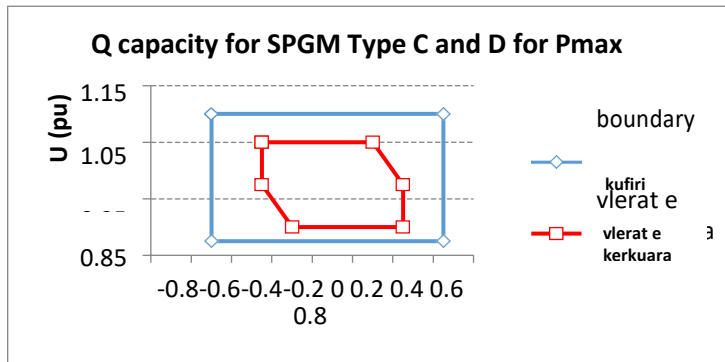


FRT - PPM Type B and C			
	t		U
tclear:	0,15	Uret:	0,15
trec1:	0,15	Uclear:	0,15
trec2:	0,15	Urec1:	0,15
trec3:	3	Urec2:	0,85

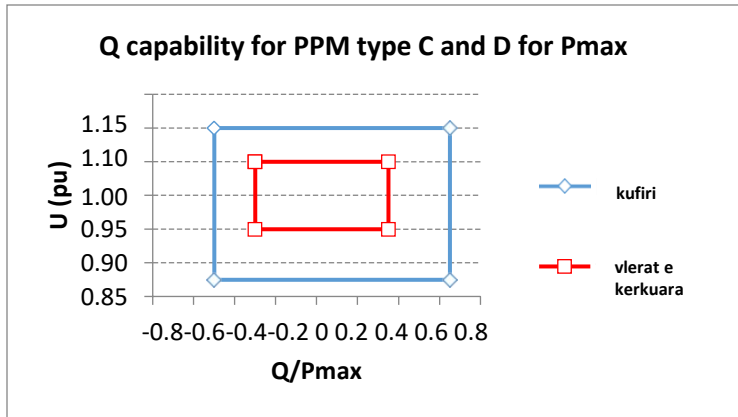


Annex 2 – Capability for reactive power

Q capability for SPGM type C and D for Pmax			
min& max limits			
Q/Pmax	U	Q/Pmax	U
-0,5	1,1	-0,2500	1,0500
0,65	1,1	0,3000	1,0500
0,65	0,875	0,4500	0,9750
-0,5	0,875	0,4500	0,9000
-0,5	1,1	-0,1000	0,9000
		-0,2500	0,9750
		-0,2500	1,0500

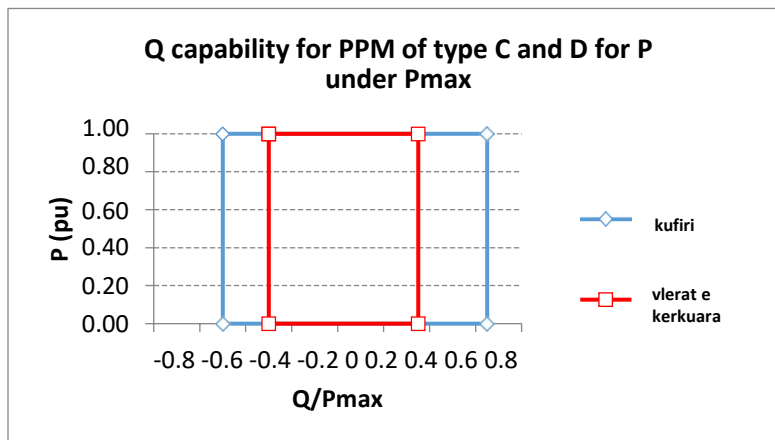


Q capability for PPM type C and D for Pmax			
min& max limits			
Q/Pmax	U	Q/Pmax	U
-0,5	1,1	-0,3	1,05
0,65	1,1	0,35	1,05
0,65	0,875	0,35	0,95
-0,5	0,875	-0,3	0,95
-0,5	1,1	-0,3	1,05



Q capability for PPM of type C and D for P under Pmax

min& max limits			
Q/Pmax	P	Q/Pmax	P
-0,5	1	-0,3000	1,0000
0,65	1	0,3500	1,0000
0,65	0	0,3500	0,0000
-0,5	0	-0,3000	0,0000
-0,5	1	-0,3000	1,0000



OPERATIONAL CODE

Part I – General provisions

Article 96. Object of the code

2. To maintain the security of operation, frequency quality and efficient utilization of the interconnected system and sources, this code shall define the detailed guidelines on:
 - a. the requirements and principles regarding the operational security;
 - b. the rules and responsibilities for the coordination and exchange of the data between the TSO, and the DSO, and between the TSO, or DSO and SGU, for operational planning and real time operation;
 - c. rules for the training and certification of the system operator employees;
 - d. requirements for the coordination of the interruptions;
 - e. requirements for the schedule between the TSO control areas; and
 - f. rules for establishing the regional framework for the power – frequency and reserves.

Article 97. Scope

1. The rules and requirements defined on this code shall be implemented by the SGU as follows:
 - a. the existing and new generation facilities classified according to type B, C and D in conformity with the criteria defined on Article 5 of the Code “On the requirements for the Connection with the Generator’s Network” approved with ERE Board Decision no. 129 dated 04.06.2018.
 - b. the existing and new load (consumption) facilities connected with the transmission system;
 - c. closed distribution systems, the existing and new ones, connected to the transmission system;
 - d. load facilities, closed distribution systems and the third parties, existing and new ones, if they provide a response (amendment) of the direct load with the TSO, in conformity with the criteria of Article 27 of the Code “On the requirements for the Network Connection of the Load Facilities” approved with ERE Board Decision no. 128 dated 04.06.2018;
 - e. re-dispatch provider of the energy generation facilities or the load facilities with the aggregation ones and the active reserve provider of energy, in conformity with Title 8 Part IV of this Code; and
 - f. HVDC systems, according to the criteria of Article 3(1) of the Connection Code (HVDC requirements).

Article 98. Annual report on operational security indicators

1. Within the first three months of each year the TSO shall send to ERE the annual report with the data for the previous year regarding the operational security of the transmission system.
2. The annual report shall contain at least the following operational security indicators relevant for the operational security:
 - a. number of disconnections for the transmission system elements;
 - b. number of disconnections for the energy generation facilities;
 - c. not-supplied energy for the year due to the unplanned disconnection of the load facilities;
 - d. duration and the number of cases for alarm and emergency situation;
 - e. duration and number of the events on which there is a lack of the reserves identified for the TSO;
 - f. duration and number of voltage deviations that exceed the range (limits) from Table 1 and 2, Annex II, for the TSO;
 - g. number of systems unbundling or the local blackout situations; and
 - h. number of blackout interruptions that include two or more TSO-s of the region.
3. Annual reports shall contain the explanations and the justifications for the operational security incidents 2 and 3 range according to the classification level for the incidents approved by ENTSO-E.

Part II – Operational security

Title 1 – Request for operational security

Chapter 1 – States of the system, remedial actions and the limits of operational security

Article 99. Classification of the system state

1. System transmission shall be in **normal** state, where all of the following conditions are completed:
 - a. the voltage and the energy flows are within the operational security limits defined according to Article 106;
 - b. the frequency shall complete the conditions as follows:
 - i. the steady-state frequency deviation is within the range of the frequency standard; or
 - ii. the absolute value of steady-state frequency deviation of the system is not larger than the steady state in maximum deviation and the frequency limits of the system defined in alarm state are not completed;
 - c. active and reactive reserve are sufficient to confront with the unexpectedness from

- the list of the contingencies defined in conformity with Article 20/106 without violating the operational security limits;
- d. operation of TSO control area is that shall remain within the operational security limits even after the occurrence of a contingency from the contingency list defined in conformity with Article 106, as well as after the activation of correction actions;
2. Transmission System shall be on alarm state when:
 - a. the voltage and the energy flows are within the operational security limits defined in conformity with article 106 and
 - b. reserve capacity of the TSO is reduced with more than 20% for more than 30 minutes and there are no means to compensate this reduction in the operation system on real time; or
 - c. the frequency shall comply with the following criteria:
 - i. the absolute value of steady-state frequency deviation is not more that the maximum frequency deviation in steady state; and
 - ii. absolute value of steady state frequency deviation exceeded 50% of the maximum frequency deviation in steady-state for a time-period of more than the delivery time of the alarm state, or the frequency standard interval for a time period of more that the time to reset frequency;
 - d. at least one contingency from the contigences list defined on Article 106, lead to the violation of the operational security limits of the TSO, and after the activation of the remedial actions;
 3. The transmission system in **emergency** status when complying at least one of the following conditions:
 - a. there is at leas one operational security limit of the TSO defined in conformity with Article 106;
 - b. the frequency does not comply with the criteria of the normal and alarm state defined in conformity with paragraphs 1 and 2;
 - c. at least the protection metering plan of the TSO is activated;
 - d. there is a failure to the operation of the equipments, the approaches and the objects defined in conformity with Article 105 (1), resulting to the non-equipment of these means and objects for more than 30 minutes.
 4. The transmission system shall be in disconnection (blackout) status, where at least is completed one of the following conditions:
 - a. The loss of more than 50% of charge in the TSO control area;
 - b. Total absence of the voltage for at least 3 minutes to the control area leading to the activation of the reset measures.

5. The transmission system shall be in the reset status when the TSO has been on emergency or blackout status and initiated to activate the reset metering plans.

Article 100. Monitoring and defining the TSO states of the system

1. In real time operation, the TSO shall define the status of the transmission system by monitoring the parameters as follows, according to the smart metering or the calculated values, having into consideration the structural data and real time in conformity with Article 123:
 - a. the active and reactive flow;
 - b. busbar voltages;
 - c. Frequency Restoration Control Error (FRCE, or Area Control Error ACE) for its LFC control area;
 - d. active and reactive reserves; and
 - e. production (generation) and load (consumption).
2. To define the state of the system, the TSO shall perform the contingency analysis for at least one time in every 15 minutes, the monitor of the parameters to the transmission system defined according to paragraph 1, to the operational security limits defined on Article 106 and the criteria for the system status defined in conformity with Article 99. TSO shall monitor the available reserves level, to the required reserve capacity. The analysis of the contingencies shall take into consideration the effect of improvement actions and the protection metering plans of the system.
3. If the transmission system is not in normal status, and if this status is qualified as a expansion area status, then the TSO shall:
 - a. shall inform all regional TSO-s regarding its transmission system status through the EAS of the ENTSO-E; and
 - b. shall ensure the additional information for its transmission system elements which are part of other TSO-s observability area, for those TSO-s.

Article 101. Remedial actions for the system operation

1. The TSO shall try to provide that the transmission system remains in normal status, being responsible for the management of the operational security violations. To reach this objective, the TSO shall design, prepare and activate the remedial actions having into consideration their availability, the time and necessary actions for their activation and the external conditions (effects) with the transmission system which are relevant for each remedial action.
2. The remedial actions used by the TSO for the system operation according to Paragraph 1, and Articles 102 - 104 of this code shall be according to the remedial actions considered for the calculation of the capacities according to Article 25 of the

(EU) Regulation no. 2015 / 1222¹.

Article 102. The applicable principles and criteria of the remedial actions

1. The TSO shall implement the following principles for the activation and coordination of the remedial actions, according to Article 4:
 - a. for the violation of operational security that do not need to be managed in a coordinated approach, the TSO shall design, prepare and activate the remedial actions from the categories defined on Article 103, to reset the system into normal status and to prevent the spread of alarm or emergency status out of its control area;
 - b. for the violation of operational security that shall be managed in a coordinated approach, the TSO shall design, prepare and activate the remedial actions in coordination with the adjacent TSO-s, following the methodology for preparing the remedial actions in a coordinated approach and considering the recommendation of the regional security coordinator according to Article 157 (4).
2. When selecting the appropriate remedial actions, the TSO shall implement the following criteria:
 - a. activate the most effective and economically efficient remedial actions;
 - b. activate the remedial actions as close to real time as possible having into consideration the expected activation time and the emergency status for the system operation that shall be settled;
 - c. shall take into consideration the failure risk implementing the remedial actions available and their influence to operational security such as:
 - i. the risk of failure or the short circuit, regarding the topology amendments;
 - ii. the risk of causing the disconnections related to the active and reactive power in the energy generation facilities or load facilities; and
 - iii. the risk for the non-operation regarding the behavior of the equipments;
 - d. shall give priority to the remedial actions which make available to the larger cross-border capacities for the capacity's allocation, completing all operational security limits.

¹ Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

Article 103. Categories for the remedial actions

1. The TSO shall prepare the following categories for the remedial actions:
 - a. shall amend the duration of a planned disconnection or shall return the service of the transmission system devices to reach the operational availability of these elements of the transmission system;
 - b. actively shall influence on the power flows by the:
 - i. positions switch power transformers;
 - ii. position switch of stage transformers;
 - iii. modification ne network topology;
 - c. voltage control and management of reactive power by the:
 - i. position switch of power transformers;
 - ii. the connection/disconnection change of capacitors and reactors;
 - iii. the voltage switch of regulators with electronic facilities, and the management equipments for reactive energy;
 - iv. shall instruct the DSO and the important users of the network to block the automatic voltage regulation and the control of rective power of transformers, or to activate at their facilities the remedial actions defined on points (i) to (iii) if the voltage deterioration endangers the operational security or leads to a voltage collapse to the transmission system;
 - v. shall require the switch of reactive power generation or the charge of the voltage amount of generation facilities synchronously connected with the transmission system;
 - vi. shall require the switch of reactive energy production from the convertors of the non - synchronous generation facilities connected in the transmission system;
 - d. shall re -calculate the cross-zonal capacities for the day ahead and the intraday, in conformity with the EU Regulation no. 2015/12222;
 - e. shall re – dispatch the users connected in transmission or distribution, in conformity with the applicable agreements;
 - f. counter-trades between two or more borders of the bidding areas, in conformity with the applicable agreements;
 - g. shall adjust the active power flows through the HVDC systems;

²Commission Regulation

(EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

- h. shall activate the frequency deviation management procedures;
 - i. shall, in conformity with Article 16 (2) of the Regulation no. 714/2009³, the cross – zonal capacity currently allocated, in an emergency situation, where by using this capacity endangers the operational security, in reconciliation with the adjacent TSO, when the re-dispatch and the counter-trading is not possible and;
 - j. when applicable, including the normal and alarm status, is manually controlled by the load limit.
2. When necessary and reasonable to maintain the operational security, the TSO may prepare and activate additional remedial actions, by reporting and arguing these cases to the regulatory authority.

Article 104. Preparation, activation and coordination of remedial actions

1. The TSO shall draft and activate the remedial actions in conformity with the criteria defined on Article 102 (2) to confront the deterioration of the system status, according to the following elements:
 - a. the monitoring and definition of the system status in conformity with Article 100;
 - b. contingency analysis for real time operation, in conformity with Article 115; and
 - c. contingency analysis in operational planning in conformity with Article 153.
2. During the draft and activation of the remedial action, including the re-dispatch or counter-trading according to Articles 25 and 35 of EU Regulation no. 2015/1222⁴ or the system protection plan procedure, which affects the other TSO-s, then the TSO, in coordination with the mentioned TSO-s, shall assess the effect of such an action within or outside of its control area, in conformity with Articles 156 (1), 157 (1), (2) and (4) and shall give to interested TSO-s the information regarding this influence.
3. During the draft and activation of remedial actions which influence on the DSO and SGU regarding transmission, the TSO if in normal or alarm status shall assess the influence of such remedial actions in coordination with the affected DSO and the SGU and shall select the remedial actions that contribute to the maintenance of the normal status and the safe operation of all included parties. The affected DSO-s and SGU-s shall provide to the TSO all of the necessary information for such coordination.
4. During the draft and activation of the remedial actions, if the transmission system is not in normal or alarm status, the TSO shall coordinate to the possible measure such remedial actions, with the affected DSO and SGU, to maintain the operational security and the integrity of the transmission system.

³Regulation (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

⁴Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

5. When the TSO activates a remedial action, each user connected to the transmission system shall execute the instructions issued by the TSO.
6. When there are local consequences from the congestions within the TSO local control area the violation of operational security is not necessary to be managed in coordination, the TSO is responsible for the management of the situation and may decide not to activate the remedial actions with the expenses for facilitating the congestions.

Article 105. Availability of the TSO means and equipments

1. The TSO shall provide the availability, reliability and the additional reserve of the following elements:
 - a. The means to monitor the status of the transmission system, including the applications to access the status and the means for load – frequency control;
 - b. The means to control the switch commutation, the busbar switch, the position switch of the transformers and the other equipments that serve to control the elements of the transmission system;
 - c. The means to communicate with the other TSO control centers and with the RSC;
 - d. Means for operational security analysis and
 - e. Communication means and equipments necessary for the TSO to facilitate the cross-border market operations.
2. When the means of the TSO, referred on paragraph 1 influence to the DSO or SGU connected to transmission, included on the supply of the balancing services, the ancillary services and the system protection, restoration or delivery of the real time operational data in conformity with Articles 125, 128, 131, 132 and 133, the TSO, DSO, and SGU shall cooperate and coordinate to specify and to provide the availability, reliability and the additional reserve of these means and objects.

Article 106. The limits of operational security

1. The TSO shall specify the operational security limits for each element of the transmission system, having into consideration at least the following physical characteristics:
 - a. the voltage limits in conformity with Article 108;
 - b. current limits of short circuit according to Article 111; and
 - c. the current limits in terms of thermal assessment including the permissible transient overloads.

2. During the definition of the operational security limits, the TSO shall consider the SGU capacities to prevent the voltage intervals and the frequency limits in normal and alarm status, that lead to their disconnection.
3. In case of change of one of the transmission system elements, the TSO shall verify and when necessary update the operational security limits.
4. For each interconnector, the TSO shall agree with adjacent TSO-s for the joint limits of operational security in conformity with Paragraph 1.

Article 107. Security plan for the critical infrastructure protection

1. The TSO shall specify, a confidential security plan that shall contain the risk assessment of the assets in the ownership or operated by the TSO, to cover the physical risk or cyber schenarios defined by respective Council of Minister Decisions.
2. The security plan shall considet the possible influences at the transmission European interrelated systems, and including the organizational and physical measures that aim the mitigation of identified risks.
3. The TSO shall regularly review the security plan to handle the changes of the schenarios for the risks and shall reflect these changes to the transmission system

Chapter 2 – Voltage control and the management of reactive power

Article 108. Obligations of the TSO regarding the voltage limits

1. In conformity with Article 99, the TSO shall attempt to provide that during the normal voltage status at the connection points with the transmission system shall remain in the steady state within the intervals specified on Tables 1 and 2 of Annex II.
2. The TSO shall define the base voltage in relative units (p.u.), for each voltage level.
3. The TSO shall attempt to provide that during the normal state and after the occurrence of a contingency, the voltage shall remain within extended intervals of voltage with the DSO and the SGU.
4. The TSO shall reconcile with the DSO and the SGU regarding the voltage range to the switching points under 110 kV if these voltage ranges are relevant to maintain the operational security limits. The TSO shall attempt to ensure that the voltage shall remain within the interval agreed during the normal state and after the occurrence of a contingency.

Article 109. Obligation of the SGU regarding the voltage control and the manage of reactive power for the system operation

1. Within three months from the entry into force of this code, all the important grid users that are generation facilities connected to the transmission are not object of Article 16 of ERE Board Decision no. 129, dated 04.06.2018 “The requirements for the

- Connection with the Generators Grid” or that are HVDC systems that are not subject to the requirements of Article 18 of ERE Board Decision no. 127, dated 04.06.2018 “the Requirements for Connection with the High Voltage Network Systems with Continuous Current and the Energy Module Parks connected with Continuous Current ”, shall inform the TSO regarding their capacity to compare the voltage requirements with Article 16 of ERE Decision no. 129 dated 04.06.2018 or Article 18 of ERE Board Decision no. 127, dated 04.06.2018, by declaring their capacity to control the voltage and the time that they may confront without being disconnected.
2. The important users of the grid, which are customers shall be subject to the requirements of Article 3 of ERE Board Decision no.128, dated 04.06.2018, shall not be disconnected due to the disturbance to the voltage range mentioned on Article 108.
 3. Within 3 months from the entry into force of this code, the SGU that are customer facilities connected to the transmission and are not object of Article 3 of ERE Board Decision no. 128, dated 04.06.2018 “Grid Code for the Charge Connection” shall inform the TSO regarding their capacity regarding the voltage requirements defined on Annex II of ERE Board Decision no.128, dated 04.06.2018, declaring their capacity for voltage and time control that they may confront without being disconnected.
 4. Any important network user connected to the transmission shall maintain the reactive power charges, the diapason of the power factor and the charges for the voltage control in the diapason agreed with the TSO in conformity with Article 108.

Article 110. Obligations of the TSO regarding the voltage control and the management of reactive power for the system operation

1. If the voltage to the connection point in the transmission system is out of the diapason defined on table 1 and 2 of Annex II of this Code, the TSO shall implement the remedial actions for the voltage control and the management of reactive power in conformity with Article 103(1) (c) of this code in order that to the connection point shall be reset the voltage within the diapason defined on Annex II and within the time-period defined on Article 16 of ERE Board Decision no. 129, dated 04.06.2018 of the Code “ the Requirements for the Connection with the Generator’s Grid ”.
2. The TSO shall take into consideration at the security analysis of operation the voltage levels which may be interrupted by the important network users that are connected to transmission and are not subject to the requirements of ERE Board Decision no. 129 dated 04.06.2018 or ERE Board Decision no. 128 dated 04.06.2018 “Network Code for the Load Connection”.
3. The TSO shall ensure reactive power reserves, on the appropriate quantity and time, to maintain the voltage within the control area and to the interconnectors within the diapason defined on Annex II.

4. The TSO shall cooperate with adjacent TSO-s at the AC interconnection and shall specify the appropriate voltage control regime to implement the joint limits of operational security defined in conformity with Article 106 (4).
5. The TSO shall agree with the DSO regarding the reactive power charge, the diapason of the power factor and the voltage control charge at the connection point between the TSO and the DSO in conformity with Article 15 of ERE Board Decision no. 128 dated 04.06.2018 “Network Code for the Load Charge”.
6. To provide that these parameters are maintained shall be required its resources of reactive power and to have the right to issue instructions for the voltage control to the important users of the network, connected in distribution.
7. The TSO shall have the right to use all available capacities of reactive power interconnected to transmission within the control area for effective management of reactive power and the maintenance of voltage diapason to the values defined on Tables 1 and 2 Annex II of this Code.
8. The TSO shall directly or indirectly, in coordination with the DSO, when applicable shall operate reactive energy sources within the control area, including the automatic control block of reactive voltage/power of the transformers, the voltage reduction and the disconnection of the customer in low voltage, to maintain the security operation limits and prevent the collapse at the transmission system.
9. The TSO shall define the voltage control actions in coordination with the DSO, the important users of the network and the adjacent TSO-s.
10. When important for the voltage control and the management of reactive power of the transmission system, the TSO may require, in coordination with the DSO, to the important network user, connected to distribution, to follow the instructions of voltage control.

Chapter 3 – Management of short circuit currents

Article 111. Short circuit current

1. The TSO shall define:
 - a. The maximum short circuit current on which the nominal capacity of the switches and the other committing equipments is overcome; and
 - b. The minimum current of the short circuit for the appropriate operation of protection equipments.

Article 112. Calculation of short circuit current and the respective measures

1. The TSO shall perform the calculation of short circuit current to assess the influence of adjacent TSO-s, of important network users connected to transmission, the DSO including the closed distribution systems, over the short circuit current level in the

- transmission system. When the DSO, including the closed distribution systems, influences to the short circuit current level, it shall include to the calculations of short circuit current.
2. When performing the calculations for the short circuit current, the TSO shall:
 - a. use the data regarding the highest available accurateness and the quality;
 - b. take into consideration the international standards; and
 - c. shall consider as a basis the calculation of short circuit maximum current, the operation conditions that give the highest possible level of short circuit currents, including the short circuit current from the distribution network including the closed distribution systems.
 3. The TSO shall implement the operational measures or other measures to prevent the deviation from the maximum and minimum limits of the short circuit current referred to Article 111, at all time fragments and all protection equipments. If such a deviation occurs, the TSO shall activate the remedial actions or shall implement other measures to ensure that the limits mentioned on Article 111 shall be reset. The deviation from these limits is permitted only at the disconnection (commuting) sequences.

Chapter 4 – Energy flow management

Article 113. The power flow limits

1. The TSO shall maintain the flow movement within the operational security limits defined when the system is in normal state and after the occurrence of a contingency from the contingency list referred to in Article 114 (1).
2. The (N-1) situation, in normal state, the TSO shall maintain the power flows within the temporary over-loads permitted in Article 106 (1) (c), after drafting the remedial actions that shall be implemented and executed within the permitted duration for the temporary permitted over-loads.

Chapter 5 – Analysis and handling of contingencies

Article 114. List of contingencies

1. The TSO shall establish a list of contingencies, including internal and external contingencies of its observability area, accessing if any of these contingencies shall endanger the operational security of the TSO control area. The list of the contingencies shall include ordinary and extraordinary contingencies identified from the implementation of the methodology developed in conformity with Article 156.
2. To establish the list of contingencies, the TSO shall classify any contingency according to the fact if it is ordinary, extraordinary or outside the diapason, having into consideration the occurrence probability and the following principles:

- a. The TSO shall classify the contingencies for its control area;
 - b. When the operational or whether conditions significantly increase the probability of an extraordinary contingency, the TSO shall include that contingency to its contingency list; and
 - c. To calculate the extraordinary contingencies with great influence on its transmission system or that of the neighbours, the TSO shall include such extraordinary contingencies to its contingency list.
3. The DSO and the important network users connected to the transmission network which are generating facilities, shall issue all of the important information for the contingency analysis, as required by the TSO, including the provisions and the real time data, possibly collected according to Article 131 (2).
 4. The TSO shall coordinate the contingency analysis coherently with the contingency list with at least the observability area of the TSO, in conformity with Article 156.
 5. The TSO shall inform the TSO-s of the observability area for the external contingences included to the contingency list.
 6. The TSO shall sufficiently before, inform, the TSO-s included to its observability area, for any topology amendment aimed to the elements of its transmission system which are included to the external contingences of mentioned TSO-s lists.
 7. The TSO shall provide that the real time data are sufficiently accurate to permit the contingency of the calculations for the load flow which are performed at the contingency's analysis.

Article 115. Contingencies analysis

1. The TSO shall perform the contingency analysis on its observability area, to identify the contingency cases that endanger or may endanger the operational security of its control area and shall identify the correction actions that may be necessary to handle the contingencies cases, including the mitigation of extraordinary contingencies influence.
2. The TSO shall ensure that the possible deviations of the operational security limits at its control area, identified from the contingency analysis, do not endanger the operational security of the transmission system or the interconnected transmission systems.
3. The TSO shall perform contingency analysis based on the provision of the operational data and the real time operational data from its observability area. The initial point for the contingency analysis in N – situation shall be the respective topology of the transmission system, that shall include the planned interruptions in operational planning stage.

Article 116. Contingencies handling

1. The TSO shall access the risks regarding the contingencies after the simulation of each contingency from the list, and after the assessment if this may maintain the transmission system within the operational security limits in (N – 1) situation.
2. When the TSO shall access that the risks related with a contingency are very essential and it is not able to prepare and activate the remedial actions on the appropriate time to prevent the failure of applying (N-1) criteria, or there is the risk to spread the breakdown at the interconnected transmission system, the TSO shall prepare and activate the remedial actions to reach the compatibility to (N – 1) criteria as quick as possible.
3. In case of (n-1) situation caused by an incident, the TSO shall activate the remedial action to ensure that the transmission system shall be reset to the normal status as soon as possible and that (N-1) situation shall be the new (N) situation
4. Shall not be considered that the TSO shall be in conformity with (N-1) criteria at the following situations:
 - a. during the commuting (manoeuvres to the grid) sequences;
 - b. during the time-period necessary to prepare and activate the remedial actions.
5. The TSO may not be compatible with (N-1) criteria as long as it has not only local consequences within its control area.

Chapter 6 – Protection

Article 117. The general requirements for the protection

1. The TSO shall operate its transmission system with the protection equipments as well as the reserve protection equipments, to prevent the spread of the incidents that may endanger the operational security of its own transmission system and the interconnected system.
2. At least one time in 5 years, the TSO shall review the strategy and its protection concepts and shall update them where necessary to provide the correct operation of protection and maintenance equipments of operational security.
3. After the protection action that had an external influence out of the TSO control area, including the interconnectors, the TSO shall access if the protection equipments to its control area are performed according to the plan, and shall be undertaken the correction measures if necessary.
4. The TSO shall prepare the work points for the protection equipments of its transmission system that ensure the reliable, quick, selection cleaning of the defects including the reserve protection for the cleaning of the defects in case of non-operation of the primary protection measures.

5. Before the set into work of primary protection and reserve equipments or after any modification, the TSO shall coordinate with adjacent TSO-s to define the working points (charges) for the interconnectors and shall coordinate them before amending the charges.

Article 118. Specific protection schemes

1. In cases of specific protection scheme, the TSO shall:
 - a. ensure that any specific protection scheme acts selectively, reliably and effectively;
 - b. access, when designing a specific protection scheme, the consequences for the transmission system in case of not accurate operation, considering the influence of the affected TSO-s;
 - c. verify that the special protection scheme has a comparable reliability with the protection schemes used for primary protection of the transmission system elements of the transmission system;
 - d. operate the transmission system with the specific protection scheme within the operational security limits defined in conformity with Article 106; and
 - e. coordinate the operation of specific protection scheme, the activation principle and the charges with the affected adjacent TSO-s and the DSO including the closed distribution systems and the SGU-s connected with transmission.

Article 119. Monitoring and assessment of dynamic stability

1. The TSO shall monitor the dynamic stability of the transmission system from the offline performed studies and shall exchange the respective data to monitor the dynamic stability of the transmission system with other TSO-s of its synchronous area.
2. The TSO shall perform the studies for the Dynamic Stability Assessment at least once in a year, to identify the stability limits and the possible stability problems at the transmission system. The Dynamic Stability Assessment studies shall be coordinated between the TSO-s to the synchronous area and shall include all of the synchronous area.

Article 120. Dynamic Stability Management

1. When the dynamic stability assessment shows that there exists a breach of the stability limits, the TSO shall draft, prepare and activate the remedial actions to maintain the stability of the transmission system. The remedial actions may include even SGU.

2. The TSO shall ensure the cleaning time of the defects and the defects may lead to instability of the transmission system to the interconnection, are shorter than the critical time to clean the defects calculated from the TSO on its dynamic stability assessment performed in conformity with Article 119.

Title 2 – Exchange of the data

Chapter 1 – General conditions for the data exchange

Article 121. Organization, roles, responsibilities and the data exchange

1. Exchange and issue of the data and information implementing this title shall reflect, as much as possible the real and foreseen situation of the transmission system.
2. The TSO shall be responsible to ensure and provide the use of high-quality data and information.
3. The TSO shall collect the information as follows regarding its observability area and shall exchange the data with all other TSO-s on the measure necessary to perform the operational security of analysis, in conformity with Article 153:
 - a. generation;
 - b. consumption;
 - c. schedules;
 - d. balancing positions;
 - e. planned interruptions and the topology of the sub-stations; and
 - f. provisions.
4. The TSO shall submit the information referring to Paragraph (3) to the injections and withdrawals at any node of the individual network model of the TSO mentioned in Article 145.
5. In coordination with the DSO and SGU, the TSO shall define the implementation and the scope of data exchange based on the following categories:
 - a. structural data in conformity with Article 129;
 - b. schedule and the provision of the data in conformity with Article 130;
 - c. the real time data in conformity with Articles 125, 128 and 131; dhe
 - d. the provisions in conformity with Articles 132, 133 and 134.
6. The exchange of the data in conformity with this point of the code, the TSO realizes it according to the methodology prepared by all of the TSO-s member at ENTSO-E, on the Organizational Requirements, Roles and Responsibilities (KORP). The methodology on the “Organizational Requirements, Roles and Responsibilities (KORP) regarding the Data Exchange is approved with ERE Board Decision no. 159 dated 09.07.2018, as well as the amendments made to this methodology from Energy

Community Secretariat approved with Decision no. 251 dated 11.12.2018.

7. The TSO shall reconcile with the DSO regarding the operational agreement between them, for the effective, efficient and proportional processes, to ensure and manage the data exchange, including where required for the efficient operation of the system, the issue of the data for the SGU regarding the distribution system. The TSO and the DSO shall reconcile for the form of the data exchange.
8. The SGU-s connected with the transmission shall access to the data that deal with their installations to the connection point.

Chapter 2 – The data exchange between the TSO-s

Article 122. Structural and provided data exchange

1. The TSO shall exchange with adjacent TSO-s at least the structural information as follows regarding the observability area:
 - a. regular topology of the substations and other relevant data, according to the voltage level;
 - b. technical data on the transmission lines;
 - c. the technical data on the transformers that connect the DSO, SGU-s, which are load facilities and transformer's block of generators of the SGU that are generation facilities of energy;
 - d. maximum and minimum active and reactive load of the SGU which are energy generation facilities;
 - e. technical data for the stage shift transformers;
 - f. technical data for the HVDC systems;
 - g. technical data for the reactors, condensers and static compressors; and
 - h. operational security limits defined by the TSO according to Article 106.
2. To coordinate their transmission system protection, the adjacent TSO-s shall exchange the protection points (charges) of the connections for which the contingencies are included as external contingencies from their contingency list.
3. To coordinate the operational security analysis and to set the joint grid model, in conformity with articles 148, to 151, the TSO shall exchange with the regional TSO-s at least the following data:
 - a. topology of the transmission system to the 220-kV voltage and above, within its control area;
 - b. the model or an equivalent of the transmission system with voltage below 220 kV with important influence to its transmission system;

- c. the thermal limits of the transmission system elements; and
 - d. a realistic and accurate quantity provided for the injection and withdrawal, according to the primary energy source, at any node of the transmission system, for different time-frames.
4. To coordinate the dynamic stability assessments according to Article 119, and to perform them, the TSO shall exchange with other TSO-s of the region the data as follows:
- a. the data regarding the SGU which are energy generation facilities connected but not being limited to the:
 - b. electric parameters suitable for the dynamic stability assessment, including total inertia;
 - i. protection facilities;
 - ii. alternator and primary movement;
 - iii. description of the step-up transformer;
 - iv. minimal and maximum reactive power;
 - v. voltage models and the speed control models; and
 - vi. primary movement models and exciting system models suitable for big incidents;
 - c. the data for the type of regulation and the diapason of the voltage regulation, including under charge regulation, as well as the data for the type of regulation and the voltage diapason regulation regarding the step-up transformers of the system; and
 - d. the data regarding HVDC systems and FACTS equipments to the dynamic facilities of the system or the equipments and the respective suitable regulation for big incidents.

Article 123. Real time data exchange

- 1. In conformity with Articles 99 and 100, the TSO shall exchange with other TSO-s of the synchronous area the following data on the status of the transmission system using the IT means for the real time data exchange in Pan-european level ensured by the ENTSO-E:
 - a. frequency;
 - b. control error of frequency restoration (ACE);
 - c. active power exchange measured to LFC areas;
 - d. injection of aggregated generation;
 - e. status of the system in conformity with Article 99;
 - f. the set point of power-frequency control; and
 - g. power exchanged between virtual lines.

2. The TSO shall exchange with other TSO-s at its observability area, the data as follows for its transmission system using the real time data exchange between the observability control systems and the receipt of the data (SCADA) of the TSO-s and the energy management systems:
 - a. current topology of the sub-station;
 - b. active and reactive power at any exit of the connection, including the transmission, distribution and the connections connecting the SGU;
 - c. active and reactive power of the transformer, including the transmission, the distribution and the transformers connecting SGU-s;
 - d. active and reactive power of the energy generating facilities;
 - e. regulation of transformer positions, including the phase switch transformers;
 - f. the voltage metered to the busbars;
 - g. the reactive power of the reactor and the condenser or from the static condenser VAR; and
 - h. limitations to the capacity of active and reactive energy supply regarding the observability area.
3. Each TSO shall have the right to require from all TSO-s from its observability area that shall provide the real time snapshot of the accessed data, from this control area of the TSO, if this is important for the operational security of the transmission system with the applicant TSO.

Chapter 3 – Data exchange of the TSO and the DSO

Article 124. Exchange of structural data

1. The TSO shall define the observability area of the distribution system, which is necessary for the TSO to define the status of the system accurately and efficiently according to the methodology developed in conformity with Article 156.
2. If the TSO considers that the distribution system not directly connected to transmission has an important influence in terms of voltage, power flow or other parameters, to represent the behavior of the transmission system, this distribution system shall be defined by the TSO as part of the observability area in conformity with Article 156.
3. Structural information regarding the observability area mentioned on Paragraphs 1 and 2 provided by the DSO for the TSO shall at least include:
 - a. substations according to voltage;
 - b. the lines connecting the substations mentioned on point (a);
 - c. transformers from the substations mentioned on point (a);
 - d. SGU-s; and

- e. reactors and condensers connected with the substations mentioned on point (a).
- 4. The DSO shall ensure to the TSO an update of the structural information in conformity with Paragraph 3 at least every six months.
- 5. At least once in a year, the DSO shall ensure to the TSO, according to energy primary sources, the total generation capacity of generating facilities Type A subject to the requirements of the Code “the Requirements for Connection with the Generator’s Grid” approved with ERE Board Decision no. 129 dated 04.06.2018 and to the best possible the generation capacities assessment of the generation module Type A that are not subject or are exempted from the Code requirements “The Requirements for Connection with the Generator’s Grid” approved with ERE Board Decision no. 129 dated 04.06.2018, connected with its distribution system and the respective information regarding their frequency behavior.

Article 125. Real time data exchange

- 1. If not provided otherwise by the TSO, the DSO shall ensure on real time to the TSO the information regarding the observability area of the TSO as referred to Article 124 (1) and (2) including:
 - a. the current topology of the substations;
 - b. active and reactive power for each exit of the connection;
 - c. active and reactive power for the exit (connection) of the transformer;
 - d. injection to the active and reactive power to the exit (connection) of the energy generation facilities;
 - e. position switch of the transformers connected with the transmission system;
 - f. voltages of the busbars;
 - g. reactive power to the exit of the reactor and the condenser;
 - h. the best data available to the aggregated generation according to the primary source of energy at the DSO area; and
 - i. the best data available for the aggregated load at the DSO area.

Chapter 4 – Data exchange between the TSO, interconnector’s owners or other lines and generation facilities of energy regarding the transmission system

Article 126. Structural data exchange

- 1. Any SGU that owns a generation energy facility, of a generation module, Type D connected to the transmission system shall ensure to the TSO at least the data as follows:

- a. the general data of energy generation facility, including the installed capacity and the primary source of energy;
 - b. the data of the turbine and the generator, including the time for cold and warm start;
 - c. the data to calculate the short circuit current;
 - d. data of the step-up transformer;
 - e. FCR (primary regulation) data of the energy generation facilities that ensure or provide that service, in conformity with Article 223;
 - f. FRR (secondary regulation) data of the energy generation facilities that ensure or provide that service, in conformity with Article 227;
 - g. RR (terciary reserve) data of energy regulation facilities that ensure or provide that service in conformity with Article 230;
 - h. necessary data to re-set the transmission system;
 - i. necessary data and facilities to perform the dynamic simulation;
 - j. relay protection data;
 - k. necessary data to define the remedial action costs in conformity with Article 157 (1) (b);
 - l. the volgag and reactive power control ability.
2. Any SGU that owns an enegy generation facility type B or C shall ensure to the TSO at least the following data:
- a. general data of the energy generation module, including the installed capacity and the primary source of energy;
 - b. the data to calculate short circuit current;
 - c. FCR data according to the definition and the requests for energy generation modules that ensure or provide that service;
 - d. FRR data for the energy generation modules that ensure or provide that service;
 - e. RR data for the energy generation modules that ensure or provide that service;
 - f. relay protection data;
 - g. control capacity of reactive power;
 - h. necessary data to define the remedial actions costs in conformity with Article 157 (1) (b);
 - i. necessary data to perform the dynamic stability assessment according to Article 119.
3. The TSO may require to the owner of the energy generation facility of an energy generation module connected to the transmission system to provide the additional data where appropriate for the operational security analysis in conformity with Title 2 Part III.

4. Any HVDC system owner or the owner of the interconnection shall ensure to the TSO the following data regarding the HVDC system or interconnector:
 - a. installation target data;
 - b. transformers data;
 - c. data on filters and filter banks;
 - d. compensation data of reactive power;
 - e. control capacity of active power;
 - f. control capacity of the reactive power and voltage;
 - g. reaction abilities from frequency;
 - h. dynamic modules for dynamic simulation;
 - i. protection data; and
 - j. fault ride through capability (not disconnecting from the grid).

5. Any owner of AC interconnection shall ensure to the TSO at least the following data:
 - a. installation target data;
 - b. electric parameters;
 - c. associated protections.

Article 127. Scheduled data exchange

1. Any SGU that is the owner of an energy generation unit of a energy generation facility Type B, C or D connected to the transmission system shall ensure to the TSO at least the following data:
 - a. energy active power, active power reserves and availability, on hourly bases for the intra day and the day ahead;
 - b. without any delay, any scheduled non-availability or limit of active power;
 - c. any limitation foreseen for the capacity of reactive power control;

2. Any operator of HVDC system shall provide to the TSO at least the following data:
 - a. Schedule of active power and the availability on hourly basis for the intra day and the day ahead;
 - b. Without delay, the scheduled non-availability or the limitation of active power; and

- c. any limitation foreseen of the reactive power control capacity or the voltage.
3. Any operator of the interconnection or the AC line shall ensure its scheduled data or those of active power limitation at the TSO.

Article 128. Real time data exchange

1. If not provided otherwise by the TSO, any SGU that is the owner of the energy generation facility of the generation module Type B, C or D, shall ensure to the TSO on real time at least the following data:
 - a. status of the switches at the switching point or another interaction point agreed with the TSO
 - b. active and reactive power at the switching point or another point of interaction agreed with the TSO; and
 - c. in case of energy generation stability, with the consumption except of the personal needs, net active and reactive power.
2. If not provided otherwise by the TSO, any HVDC system or the owner of the AC interconnection shall provide to the TSO, on real time at least the following data regarding the switching point of HVDC system or the AC interconnector:
 - a. switches position;
 - b. operational status; and
 - c. active and reactive power.

Chapter 5 – Data exchange between the TSO, DSO and the energy generation facilities connected to distribution

Article 129. Exchange of structural data

1. If not provided otherwise by the TSO, any owner of the energy generation facility is SGU, in conformity with Article 97, connected to the distribution system shall at least provide the following data for the TSO and the DSO with which it has a connection point:
 - a. general data of the energy generation module, including the installed capacity and the energy primary source or the type of fuel;
 - b. FCR data according to the definition and the requirements for energy generation equipments that ensure or provide the FCR service;
 - c. FRR data for the energy generation equipments that ensure or provide the FRR service;
 - d. RR data for the energy generation modules that ensure or provide the RR service;
 - e. protection data;

- f. ability of reactive power control;
 - g. capacity of remote access to the switcher;
 - h. necessary data to perform the dynamic simulation according to the provisions of the “Code on the Requirements for Connection with the Generator’s Grid” approved with ERE Board decision no.129 dated 04.06.2018; and
 - i. voltage level and location of each energy generation module.
2. Each energy generator owner of an power generator module that is a SGU, in conformity with Article 97, shall inform the TSO and the DSO with which it has a connection point, within the defined time and not later than the first commissioning or any amendment to the existing installation, about any amendment to the scope and content of the data mentioned on Paragraph 1.

Article 130. Scheduled data exchange

1. If not provided otherwise by the TSO, any owner of energy generation of an energy generation module is a SGU, in conformity with Article 97, connected to the distribution system shall at least provide the following data for the TSO and the DSO with which it has a connection point:
 - a. its scheduled inability, scheduled limit of the active power and the provided production of active energy at the connection point;
 - b. any provided limitation of the reactive power control capability.

Article 131. Real time data exchange

1. If not provided otherwise by the TSO, any owner of energy generation of an energy generation module is a SGU, in conformity with Article 97, connected to the distribution system shall at least provide, at the real time, the following data for the TSO and the DSO with which it has a connection point:
 - a. the status of the commuting equipments and the switches at the connection point; and
 - b. flows of active and reactive power, current and voltage to the connection point.
2. The TSO shall define in coordination with the DSO, for the SGU-s that may be exempted from the issue of real time data mentioned on Paragraph 1, directly at the TSO. On such cases, the TSO and the DSO shall agree on the real time aggregated data of the questioned SGU-s that shall be submitted to the TSO.

Article 132. Data exchange between the TSO and the DSO regarding the important energy generation modules

1. Unless otherwise provided by the TSO, the DSO must provide the TSO the information specified in Articles 129, 130 and 131 with the frequency and level of details required by the TSO

2. The TSO shall set available to the DSO, at the system to which the SGU are connected the information specified on Articles 129, 130 and 131 as required by the DSO.
3. The TSO may require additional data from the energy producer, owner of an energy generation module that is a SGU in conformity with Article 97, connected to the distribution system, if necessary about the analysis of the operational security and for the assessment of the modules.

Chapter 6 – Data exchange between the TSO and the demand facilities

Article 133. Data exchange between the TSO and the demand facilities connected to transmission

1. If not provided otherwise by the TSO, any owner of the load facility connected to transmission shall ensure the structural data to the TSO:
 - a. electricity data of the transformers connected to the transmission system;
 - b. load characteristics for the load facility; and
 - c. characteristics of reactive power control.
2. If not provided otherwise by the TSO, any owner of the load facility connected to the transmission shall ensure the following data for the TSO:
 - a. active and reactive energy consumption scheduled on daily and within day basis, including any amendmet of these schedules or provisions;
 - b. any limit provided for the reactive power control capacity;
 - c. in case of participation, in response to the load, the hourly schedule of minimum and maximum structural load that shall be limited.
3. If not provided otherwise by the TSO, any owner pf the load facility connected to transmission shall ensure on real time the following data:
 - a. active and reactive power at the connection point; and
 - b. minimum and maximum load range that may be limited.
4. The owner of the load facility connected to transmission shall describe to the TSO its behavior at the voltage diapason refered to Article 108.

Article 134. Exchange of the data between the TSO-s and the load facilities connected to the distribution or the third parties participating to the response of the load

1. If not provided otherwise by the TSO, any SGU, which is not a structural load connected to the distribution and participates to the load response, except through a third party, shall provide the following scheduled and real time data, with the TSO and the DSO:

- a. minimum and maximum active power of the structure available to the response of the load and the minimal and maximal duration of any potential use of this power responding to the load;
 - b. a foresee of the unconditional active power available for the response of the load and for any scheduled response of the load;
 - c. real time active and reactive power for the connection point; and
 - d. a confirmation that there are applied the assessments of the actual values of the load response.
2. If not provided otherwise by the TSO, any SGU, which is not a third party that participates to the regulation of the load as defined on Article 27 of the Code, “the Requests for the Connection with the Grid of the Load Facilities” approved with ERE Board Decision no. 128 dated 04.06.2018; shall provide to the TSO and the DSO for the day ahead and near the real time, the following data:
- a. minimum and maximum active power of the structure available to the response of the load and the minimal and maximal duration of any potential activation to the load response for a specific geographical location of the area defined by the TSO and the DSO;
 - b. a foresee of the unconditional active power available for the response and for any scheduled level of the load response and for any scheduled level of the load response for a specific geographical area defined by the TSO and the DSO;
 - c. active and reactive real time power; and
 - d. the confirmation that there are applied assessments of actual values of the load response.

Title 3 – Adaptation

Chapter 1 – Roles and responsibilities

Article 135. SGU- s responsibilities

1. Any SGU shall inform the TSO or the DSO where it has a connection point for any scheduled modification of its technical capacities, which may influence to its adaption with the requirements of this Code, before the execution of the modification.
2. Any SGU shall inform the TSO or the DSO where there is a connection point for any operational incident at its facility, which may influence to the adaption of the requirements of this code, as soon as possible after the occurrence of the incident.
3. Any SGU shall inform the TSO or the DSO where there is the connection point for the scheduled testing and procedures that shall be followed for the compatibility verification of its facility with the requirements of this Code, at the appropriate time and before their initiation. The TSO and the DSO shall approve in priority and on the appropriate time the planned schedules and procedures of the testing and the approval shall not be deprived for unjustified reasons. When the SGU has a connection point with the DSO and interacts, in conformity with Paragraph 2, only with the

DSO, the TSO shall have the right to require from the DSO the compatibility testing results, which are relevant for the operational security of the transmission system.

4. According to the request of the TSO or the DSO, in conformity with Article 41 (2) of the Code the “Requests for the Connection with the Generator’s Grid” approved with ERE Board Decision no. 129 dated 04.06.2018 and Article 35 (2) of the Code“, the SGU shall perform compatibility tests and simulations in conformity with these regulations at any time during the lifetime of its facility and especially after any defect, modification or substitution of any equipment, which may not influence to the completion of this code requirements in conformity with the capacity of the object to reach the declared values, the applicable periodical requirements for those values and the availability or the provision of the contracted services of the ancilliary services. The third party shall ensure the response of the direct load with the TSO, the redispatch providers of the energy generation modules or the load facilities by the collection, and the other providers of energy active reserves shall ensure that the facilities on their portfolio shall be in conformity with the requirements of this Code.

Article 136. Obligations of the TSO regarding the system operation

1. The TSO is responsible for the operational security of its control area, and especially shall:
 - a. develop and implement the system operational means that are relevant for its control area and are connected with the real time operation and operational planning;
 - b. develops and sets the means and solutions to prevent and correct the incidents;
 - c. shall use the provided services from the third parties, through procurement when applicable, such as the re-dispatch or the counter-trading, the congestion management services, generation reserves and other ancilliary services;
 - d. comply with the classification level of the incidents approved by ENTSO-E in conformity with Article 8 (3) (a) of EU Regulation no 714/2009⁵ and shall deliver to ENTSO-E the required information to perform the duties for the emeting the classification level of the incidents; and
 - e. on annual basis monitors the compatibility of the operation means of the system defined in conformity with points (a) and (b) required to maintain the operational security. The TSO shall identify any appropriate improvement for those system operation means, having into consideration the annual reports prepared by the ENTSO-E based on the classification level of the incidents.

⁵ 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

Chapter 2 – Operational testing

Article 137. Purpose and responsibilities

1. The TSO, DSO and any SGU connected to transmission may perform the operational testing respectively of its transmission system devices and their facilities in simulated operational conditions and for limited time-periods. When acting like this, they shall inform on real time the and before the testing period and shall minimize the real time operation effect of the system. The operational testing aims to ensure:
 - a. compatibility certification with all technical operational and organizational provisions of this code for a new element of the transmission system with its first commencement into operation;
 - b. compatibility certification with all technical operational and organisational provisions of this code for a new structure of the SGU or the DSO with its first commencement to operation;
 - c. compatibility certification with all technical operational and organisational provisions of this code after any amendment of an element to the transmission system or an SGU structure or DSO, which is important for the operation of the system;
 - d. assessment of the possible negative elements of a failure, short connection or other unscheduled or unexpected incidents for the operation of the system, to the element of the transmission system or to the SGU or DSO facility.
2. The results of operational testing mentioned on Paragraph 1 shall be used by the TSO, DSO or a SGU, in a way that:
 - a. The TSO shall ensure correct operation of the transmission system elements;
 - b. The DSO and the SGU tp emsure correct operation of the distribution systems and SGU facilities;
 - c. The TSO, DSO or SGU to maintain the existing practices and to develop new operational practices;
 - d. The TSO to ensure the compatibility of the ancilliary services;
 - e. The TSO, DSO or SGU to get information regarding the performance of transmission system elements and SGU and DSO facilities under any condition and in conformity with the respective operational provisions of this Code, regarding:
 - i. frequency control or the voltage variations that aim at collection of information on the transmission system ad the behavior of the elements; and
 - ii. tests of operational practices on emergency and restoration status.

3. The TSO shall ensure that the operational testing do not risk the operational security of its transmission system. Each operational testing may be postponed or interrupted due to the unscheduled system conditions or due to the personnel security, the security of the people, of the plant or the device to be tested, or the elements of the transmission system or of the SGU or DSO facilities.
4. In case of degradation of the transmission system conditions to which it is performed the operational testing, the TSO has the right to interrupt the operational testing. If the performance of an evidence does not affect another TSO and the situation of its system is also degraded, the TSO or SGU or DSO shall perform the testing after being informed for the TSO in question, shall immediately interrupt the operational testing.
5. The TSO shall ensure that the results of respective operational testing performed together with the respective analysis are:
 - a. included to the training and certification process of the respective employees for the real time operation;
 - b. used as an input for the research and development process of ENTSO-E; and
 - c. used to improve the operational practices including those for the emergency and restoration status.

Article 138. Performance of the tests and operational analysis

1. The TSO or the DSO, with which the SGU has a connection point, shall have the right to test the compatibility of the SGU with the requirements of this code, the expected input or output of the SGU, the provision of the contracted ancillary services of the SGU, at any time during all of the lifecycle of the facility. The procedure for those operational tests shall be informed to the SGU by the TSO or the SGO on the appropriate time before the initiation of operational testing.
2. The TSO or the DSO with which the SGU has a connection point, shall publish the list of the information and documents that shall be provided, as well as the requests that shall be complied by the SGU for the compatibility operational testing. Such a list shall cover at least the following information:
 - a. all of the documents and certificates of the equipments that shall be provided by the SGU;
 - b. details of technical data of the SGU facility important for the operation of the system;
 - c. requirements for the dynamic stability assessment models; and
 - d. studies by the SGU that show the expected result of dynamic stability assessment, where applicable.
3. When applicable, the TSO or the DSO shall publish the responsibilities allocation for the SGU-s and for the TSO or the DSO for the compatibility operational testing.

Article 4 – Training

Article 139. Training program

1. The TSO shall develop and approve:
 - a. an initial training program for the certification and a periodic program for the continuous training of its employees responsible for the real time operation of the transmission system;
 - b. the training program for its employees responsible for operational planning. The TSO shall contribute to the development and approval of the training programs for the respective coordinators responsible for regional security;
 - c. the training program for its responsible employees for balancing.
2. TSO training programs including the recognition of transmission system elements, the operation of the transmission system, the usage of the systems and processes at the workplace, cross-systems operations, the market regulations (agreements), the recognition and response to extraordinary situations to the operation of the system, for the operational scheduling means and activities.
3. TSO employees, charged for the real time operation of the transmission system, as part of initial training, shall be subject to the training for interaction issues between the transmission systems based on operational experience and the reactions from the common training performed with adjacent TSO-s in conformity with Article 144. The training for inter-action issues includes the preparation and activation of improvement coordinated actions required to all the system situations.
4. The TSO shall include on its training program for the responsible employees for the real time operation of the transmission system, the frequency of the trainings and the following components:
 - a. description of the transmission system elements;
 - b. operation of the transmission system to all the situations of the system, including restoration;
 - c. the usage of the systems and processes at the workplace;
 - d. coordination of inter system operations and the market agreements;
 - e. the knowledge and reaction to extraordinary operational situations;
 - f. respective areas of electric engineering;
 - g. relevant aspects of electricity internal market of the region;

- h. relevant aspects of the network codes or instructions approved in conformity with Articles 6 and 18 of EC Regulation no. 714/2009⁶;
 - i. protection and security of the persons and the equipments for for transmission system operation;
 - j. cooperation and coordination between the TSO-s for real time operation and operational planning to the range of general control centers, that shall be issued to the English language, if not specified otherwise;
 - k. common training according to the case, with the DSO and the SGU connected to transmission;
 - l. behavioral skills with a specific focus on stress management, human interaction to critic situations, the motivation responsibility and capacity; and
 - m. operational planning practices and equipments, including those that are used with respective regional security coordinators for operational planning.
5. Training program for the employees responsible for operational planning shall include at least the aspects on points (c), (f), (g), (h), (j) and (m) Paragraph 4.
 6. The training program for the responsible persons for balancing shall at least include the aspects on points (c), (g) and (h) Paragraph 4.
 7. The TSO shall keep notes on the training programs of the employees for their employment term. On the request of the respective regulator authority, the TSO shall provide the scope and details of its training programs.
 8. The TSO shall review its training programs at least once in a year or after the important amendments of the system. The TSO shall update the training programs to reflect the amendments of operational circumstances, the market rules, configuration of the grid with the characteristics of the system, focusing on new technologies, the amendment of the generation and requirements modules and the market evolution.

Article 140. Training conditions

1. Any training program of the TSO for the employees responsible for the real time work shall include workplace and offline training. The workplace training shall be performed under the surveillance of an experienced employee charged for real time operation. Offline training shall be performed at an environment simulating the control room and the details of the grid models at a suitable level for the duties for which it is done the training.
2. The TSO shall implement the trainings for the employees responsible for real time operation based on a comprehensive model of the grid data basis with the respective data from the other models, at least those of the observatory area, to a detailed level that is sufficient to repeat (imitate) the operational cross-system issues.

⁶Regulation (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

Training scenarios shall be based on real and simulated system conditions. Where it is important, the role of other TSO-s also of the DSO and the SGU shall be simulated if they may not be directly represented to common trainings.

3. The TSO shall coordinate the offline training of the employees responsible for real time operation with the DSO-s and SGU-s connected to transmission regarding to the influence of their facilities to real time operation of the transmission system, in a comprehensive and proportional way reflecting the latest topology of the grid and the characteristics of ancilliary equipments. When important for the TSO, DSO and SGU shall perform common simulations of offline training or training workshps.

Article 141. Training coordinators and trainers

1. Responsibilities of the training coordinator include the draft, monitoring and update of the training programs, and to define:
 - a. qualifications and the selection process for the TSO employees that shall be trained;
 - b. necessary trainings for the certification of the responsible employees of operational system for the real time operation;
 - c. the processes, including the respective documentation for initial programs and the cycle training programs;
 - d. the certification process of the responsible employees for the operational system responsible for real time operation; and
 - e. the process for the extension term of the training and the certification period for the operational system employees that are responsible for real time operation.
2. The TSO shall define the capacitz and the competence level of the trainers at the work-place. The trainers at the workplace shall have an appropriate level of operational experience after their certification.
3. The TSO shall have a register of the employees for the operational system that are responsible for real time operation, that perform the functions of the trainers at the workplace and review their capacities to provide practical trainings for the extension of their certification.

Article 142. Certification of the employees for the operation of the system charged for real time operation

1. One individual may become an employee of the operational system charged with real time operation, on the condition he/or she must be trained and then certified by the appointed representative from the TSO, for the respective reasons within the time period defined at the training program. The operational system employee, charged with real time operation shall not work without surveillance to the control room except when he/she is certified.

2. The TSO shall define and implement the process, by including the competence level for the certification of the operational system employees responsible for real time operation.
3. TSO employees charged with real time operation shall be certified after a formal successful assessment, that shall include oral or written test and/or a practical assessment with the pre-defined criteria of success.
4. The TSO shall maintain a copy of the issued certification and the results of formal assessment. Based on the request from the regulatory authority, the TSO shall ensure a copy of the notes of the certification exam.
5. The TSO shall register the certification validation period issued for any employee responsible for real time operation.
6. The TSO shall define the maximum certification term, which shall not exclude 5 years, but may be extended according to the conditions defined by the TSO and may take into consideration the participation of the employees responsible for real time operation into a continuous training program with sufficient practical experience

Article 143. The common language of communication between the employees and the operational system responsible for real time operation

1. If not agreed otherwise, the common language of contact between TSO employees and the adjacent TSO-s is the English language.
2. The TSO shall train its operational system employees to reach sufficient capacities on the common contact language agreed with adjacent TSO-s.

Article 144. Cooperation between the TSO-s for the training

1. The TSO shall organize regular training with adjacent TSO-s to improve the information characteristics of adjacent transmission systems, as well as the communication and coordination between adjacent TSO-s employees charged for the real time operation. The training between the TSO-s shall include detailed knowledge of coordinated actions required at any situation of the system.
2. The TSO shall define, in cooperation with at least one adjacent TSO the need and frequency of common training sessions, including the content and minimum scope of these sessions, considering the level of mutual affect and the needed operational cooperation. This inter-TSO training may include but not being limited to common training workshops and simultaneous sessions of common trainings.
3. The TSO shall participate at other TSO-s, at least once in a year, to training sessions for management of inter-TSO issues for the real time operation. The frequency shall be defined considering the level of mutual affect to the transmission systems and the type of DC/AC interconnection connection.

4. The TSO shall exchange the experiences for real time operations, including the visits and the exchange of experiences between the operational system employees that are responsible for real time operation with adjacent TSO-s and with responsible regional security coordinators.

Part III – Operational planning

Title 1 – Data on operational security analysis in operational planning

Article 145. General provisions regarding the individual and common grid models

1. To perform operational security analysis in conformity with Title 2 of this Part, the TSO shall prepare individual and common grid models in conformity with the defined methodologies implementing Article 17 of the EU Regulation 2015/1222⁷ and Article 18 of EU Regulation 2016/1719⁸ for each of the following terms, applying the form of the defined data:
 - a. year ahead, according to Articles 147, 148 and 149;
 - b. where relevant, week-ahead, according to Article 150;
 - c. day ahead, according to Article 151; and
 - d. intraday, where applicable according to Article 151.
2. Individual Grid Models include structural information and the data defined on Article 122.
3. The TSO shall construct individual grid models and the regional security coordinator shall contribute to the construction of common grid models that apply the agreed data format.

Article 146. Year-ahead scenarios

1. All TSO-s together shall establish a common list of the year-ahead scenarios to which they assess the operation of the interconnected system for the next year. These scenarios shall allow the identification and the assessment of the influence of the transmission system interconnected to operational security. These scenarios shall include the following variables:
 - a. Demand for electricity;
 - b. conditions related to the contribution of Renewable Energy Sources;

⁷ Commission Regulation (Eu) 2015/1222 Of 24 July 2015 Establishing A Guideline On Capacity Allocation And Congestion Management

⁸ Commission Regulation (Eu) 2016/1719 Of 26 September 2016 Establishing A Guideline On Forward Capacity Allocation

- c. defined import/export positions, including agreed reference values allowing the merge task (of the model);
 - d. generation model, with a fully available production park.
 - e. development of the year ahead grid.
2. During the development of common list scenarios, the TSO shall take into consideration the following elements:
 - a. typical cross-border exchange models for different levels of consumption and of Renewable Energy Sources and conventional Generation;
 - b. the probability of occurrence of the scenarios;
 - c. possible deviations from operational security limits for each scenario;
 - d. the amount of power generated and consumed by the power generating facilities and demand facilities connected to distribution networks.
 3. ENTSO-E shall publish every year, until 15 July, the common list of defined scenarios for the next year, including the description of those scenarios and the term during which these scenarios shall be used.

Article 147. Year ahead individual grid models

1. The TSO shall define the year ahead individual grid model for each of the scenarios defined in conformity with Article 146, using the best estimates for the variables defined in Article 146 (1). The TSO shall publish its year ahead individual grid models to the ENTSO-E operational planning data environment.
2. When developing the year ahead individual grid model the TSO shall:
 - a. comply with adjacent TSO-s for the estimated energy flow to HVDC systems that connect their control area;
 - b. balance for each scenario the amount of the:
 - c. net exchanges to the AC lines;
 - i. estimated flows of power to HVDC systems;
 - ii. the load, including the estimate of the losses; and
 - iii. generation.
3. The TSO shall include to its year ahead grid models the aggregated production of energy for the power generation facilities connected to the distribution system. These energy aggregated productions shall:
 - a. be consistent with the structural data provided pursuant to the requirements of Articles 122,124, 126 and 129,

- b. be consistent with the scenarios defined in Article 146; and
- c. differentiate according to the type of primary energy source.

Article 148. Year ahead common grid models

1. All ENTSO-E, TSO-s together, have drafted the methodology for the construction of the year ahead grid models from the individual grid models set in conformity with Article 147 (1) and their maintenance. This methodology is approved with ERE Board Decision no. 250 dated 11.12.2018.
2. Each TSO shall have the right to require from the other TSO the information on the modifications to the grid topology or operational arrangements, as well as the defined points protection (charges) or the protection schemes of the system, one stage diagrammes and the configuration of the substations or the additional models of the grid that are relevant to ensure the accurate representation of the transmission system to undertake operational security analysis.

Article 149. Updates of Year-Ahead Common Grid Models

1. When the TSO modifies or informs one modification of the best estimations of the variables used for the establishment of the year ahead individual grid model, defined in conformity with Article 147 (1), which is significant for the operational security, it shall update the year ahead grid model and shall publish it to the ENTSO-E operational planning data environment.
2. Whenever that the individual grid model is updated, the grid model for the year ahead shall be updated in conformity with the methodology defined in conformity with Article 149 (1).

Article 150. Week Ahead Common and individual grid models

1. When two or more TSOs consider it necessary, they shall define the schenarios with the representatives for coordinating operational security analysis, for the security of their transmission system for the week ahead period and shall develop the methodology for the merge of the individual grid models in conformity with the methodology for the construction of the grid model for the year ahead from the individual grid models of the year in continuation, in conformity with Article 148, (1).
2. The TSO shall establish or update its week ahead grid individual models in conformity with the schenarios defined according to Paragraph 1.
3. The TSO mentioned on Paragraph 1 or the third parties, to which it is delegated the duty refered to in paragraph 1, shall constitute the common grid models for the week ahead following the methodology developed in conformity with Paragraph 1 and using the individual grid models set in conformity with Paragraph 2.

Article 151. The methodology for the construction of the common grid models for the day ahead and intraday

1. All TSO-s and ENTSO-E together, have drafted the methodology for the construction of the day ahead or intraday grid models, from the individual models, and for their maintenance. This methodology is approved with ERE Board Decision no. 250 dated 11.12.2018
2. The TSO shall establish the individual grids for the day ahead and intraday in conformity with Paragraph 1 and transmits them to the regional security center RSC.

Article 152. Quality control for the grid models

1. When it is carried out the quality control, the TSO in cooperation with the RSC shall control at least:
 - a. the coherence of the interconnector's connection status;
 - b. the voltage values are within the current operational values for those elements of the system that have influenced on other control areas;
 - c. coherence of transitory overloads acceptable for the interconnectors; and
 - d. active and reactive power of the injections or the withdrawals that are in conformity with the current operational values.

Title 2 – Operational security analysis

Article 153. Operational security analysis on operational planning

1. The TSO shall perform coordinated operational security analysis for at least the following terms:
 - a. year ahead;
 - b. week ahead, when applicable in conformity with Article 150;
 - c. day ahead; and
 - d. intra-day.
2. During the performance of the coordinated operational security analysis, the TSO shall apply the approved methodology in conformity with Article 156.
3. To perform the operational security analysis, on N situation, the TSO shall simulate any contingency from its contingency list, defined in conformity with Article 114 and verifies the operational security limits of (N-1) defined in conformity with Article 106 not exceeding its control area.
4. The TSO in cooperation with the RSC shall perform operational security analysis by using the common grid models and shall take into consideration the planned interruptions during the performance of these analysis.
5. The TSO shall share the results of operational security analysis with at least the TSO-s

which elements are included at the TSO observation area and affect to that operational security analysis, in the way these TSO-s shall verify that the operational security limits are respected within their control areas.

Article 154. Operational security analysis for the year ahead, and including the week ahead

1. The TSO shall perform operational security analysis for the year ahead, and when applicable for the week ahead, to detect at least the limits as follows:
 - a. Power and voltage flow that exceed operational security limits;
 - b. Violations for the stability limits of the transmission system, identified in conformity with Article 119; and
 - c. Violations of the thresholds for short circuit to the transmission system.
2. When the TSO discovers a possible limitation, it shall design remedial actions in conformity with Articles 101 to 104. If the free of charge remedial actions are not available and the limitation is connected with the planned non-availability of some respective assets, then the limitation constitutes non-compatibility of interruptions planning, and the TSO shall initiate the coordination of the interruptions in conformity with Article 173 or 178 depending on the time of the year when this action is initiated.

Article 155. Day ahead, intraday and real time operational security analysis

1. The TSO shall perform day ahead, intraday and real time operational security analysis to detect the possible limitations and to prepare and activate the remedial actions with any other TSO, and if the case may be, with the affected DSO or SGU.
2. The TSO shall monitor the load and generation provisions. When these provisions show an important deviation to the load or generation, the TSO shall update operational security analysis.
3. During the performance of real time operational security analysis at the observatory area, the TSO shall use the operation of situation assessment, part of EMS/SCADA.

Article 156. The methodology for the coordination of operational security analysis

1. All of ENTSO-E TSO-S together, have drafted the methodology for operational security coordination analysis.
2. This methodology is approved with ERE Board Decision no. 32 dated 28.02.2019.

Article 157. Regional coordination of operational security

3. The TSO shall ensure to the regional security coordinator all the necessary information and data to perform the assessment of the coordinated regional operational security, including at least:

- a. the list of updated contingencies established according to the criteria defined on the methodology for the coordination of operational analysis approved in conformity with Article 156;
 - b. updated list of possible remedial actions, between the categories listed on Article 103 and their expected costs provided in conformity with Article 35 of the EU Regulation no. 2015/1222⁹ if the remedial action includes the redispatch or the counter-trading, that aims to contribute to the facilitation of any barrier identified on the region; and
 - c. operational security limits defined in conformity with Article 106.
4. When the TSO accepts from the respective regional security coordinator the results of the regional coordinated assessment of operational security with a proposal for remedial action, the TSO shall assess the recommended action for the elements included to that action set on its control area. The TSO shall decide whether it shall implement the recommended remedial action. When deciding not to implement the recommended remedial action, the TSO shall give a justification for this decision to the RSC. When the TSO decides to implement the recommended action, it shall implement this action to the elements set on its control area, ensuring that it shall be in conformity with the real time conditions.

Article 158. Regional coordination of the outages

1. The TSO shall ensure to the regional security coordinator the information needed to detect and the settlement of the scheduled in-conformities to the regional outages, including at least:
 - a. availability schedules of its relevant internal assets, maintained to the data environment for ENTSO-E operational planning;
 - b. the latest availability schedules for the non-relevant assets of its control area which are:
 - i. able to influence on the results of incompatibility analysis of planned outages;
 - ii. modeled to individual network models which are used for assessing the non-compatibility of the outages;

⁹ Commission Regulation (Eu) 2015/1222 Of 24 July 2015 Establishing A Guideline On Capacity allocation And Congestion Management

- c. the scenarios above which the scheduled compatibility of the outages shall be investigated and used to construct the respective common grid models deriving from the common grid models for the different time frameworks in conformity with Article 148.
2. RSC shall perform regional analysis of operational security according to the issued information from the respective TSO to detect any compatibility of outages planning.
3. The RSC shall ensure that all regional TSO-s of outages coordination with the incompatibility list of planned detected and settled outages proposes to settle those planned incompatibility outages.

Article 159. Assessment of regional suitability

1. The RSC shall perform regional suitability assessments for at least the week ahead period.
2. The TSO shall ensure to the regional security coordinator the information needed to perform regional suitability assessments referred to in Paragraph 1, including:
 - a. total expected load and the sources available for load management;
 - b. availability of the power production modules; and
 - c. operational security limits.

Title 3 – Coordination of the outages

Chapter 1 – Regions for the coordination of the outages, the relevant assets

Article 160. The object for the coordination of the outages

1. The TSO with the support of the regional security coordinator for the cases specified on this code, shall perform the coordination of the outages in conformity with the principles of this Title for monitoring the availability status of the respective assets and the coordination of availability plans to maintain the operational security of the transmission system.

Article 161. Regional cooperation

1. The TSO is part of the outage's coordination for the Southeast Europe region, and it implements the operational procedures of regional coordination approved by ENTSO-E;
2. The regional coordination procedure aims the set of operational aspects for the implementation of coordinated outages for any region, which includes:
 - a. the frequency, scope and type of coordination which shall take place at least for the year-ahead and week-ahead time period;

- b. the provisions regarding the usage of the assessments performed from the regional security coordinator in conformity with Article 158;
 - c. practical arrangements for the validity of the availability plans of the grid elements for the year ahead, as required on Article 176.
3. The TSO shall ensure to other TSO-s from the same region of outages coordination, all of important information on his availability for the infrastructure projects, connected to the transmission systems, distribution systems, generation modules of energy or the load facilities that may influence for the operation of the control area of another TSO within the region for the coordination of the outages.

Article 162. Methodology for assessing the importance of the assets for the outage coordination

1. OST shall implement the coordinated methodology of ENTSO - E, for the synchronous area for the assessment of the main generation modules, load facilities and grid elements located to the transmission or distribution system, for the outage coordination process;
2. The methodology referred to on the above point, shall include the procedure of defining the impact level to the availability status of the generating modules, load facilities and the grid elements to the responsibility area of the TSO-s participatin to the outage's coordination process. This procedure shall be based on:
 - a. Operational Security Analyses using defined common grid Models;
 - b. Sensitivity analyses of power flows through the interconnected Network; and
 - c. A threshold on the sensitivity of power flows, standardized for the European Synchronous Area.

Article 163. List of important power generating modules and customer facilities

1. Based on the methodology refered to on the above article, all regional TSO-s for the outage's coordination, shall assess together the importance of the generation modules and of the customer facilities for coordinating the outages and shall define for the outage's coordination region a sole list of these generation modules and the important customer facilities.
2. All regional TSO-s for the outage's coordination, together, shall set available for the data platform of ENTSO-E operational planning, the list of generation modules and the customer facilities import for region of outage coordination.
3. The TSO shall inform ERE for the list of the generating modules and the customer facilities important for the region for the outage coordination where it participates.
4. For any important internal asset, which is a generating module or customer facility,

the TSO shall:

- a. inform the owner of the important generation module or the important customer facility about their inclusion to the list;
- b. inform the DSO on the generation modules and important customer facilities connected to the distribution grid.
- c. Inform the OSMSH for the generation modules and the important customer facilities connected to the closed distribution system.

Article 164. Update of the generation modules and the important customer facilities.

1. Before 1 July of each calendar year, all regional TSO-s for outages coordination shall re-access together the importance of the generation modules and the customer facilities for the outage's coordination based on the methodology drafted in conformity with Article 162 (1)
2. When needed, before 1 August of each calendar year, all regional TSO-s of outages interruption, together shall decide to update the list of the important generation modules and important customer facilities, of the regional outage's coordination.
3. All regional TSO-s for outages coordination shall set available to the data platform of ENTSO-E operational planning, the updated list of the generation modules and important customer facilities of the region for outage's coordination.
4. The TSO shall inform the parties mentioned on Article 163 (4) for the content of the updated list.

Article 165. List of important grid elements

1. Based on the methodology referred to on Article 162 (1), all regional TSO-s for the outage's coordination, shall assess together the importance of grid elements to the transmission or distribution system, including the closed distribution system and shall draft the sole list of the important grid elements for regional outage coordination.
2. The list of important grid elements of the region for outages coordination shall include all elements of the transmission and distribution system, including closed distribution systems to the regional outages coordination, which are identified important from the implementation of the methodology drafted in conformity with Article 162 (1).
3. All regional TSO-s for outages coordination shall set available to the data platform the ENTSO-E operational planning, the updated list of important grid elements of regional outages coordination.
4. The TSO shall inform ERE for the list of important grid elements.
5. For any important asset, which is grid element the TSO shall:

- a. inform the owner of the important grid element for its involvement to the list;
- b. inform the DSO on the important grid elements connected to the distribution grid;
- c. inform OSMSH for the important grid elements connected to close distribution system.

Article 166. Update of important elements list of the grid

1. Before 1 July of each calendar year, all regional TSO-s for outages coordination shall re-access together, based on the methodology drafted in conformity with Article 162 (1), the importance for the coordination of the interruptions for the transmission or distribution system elements, including the closed distribution system.
2. When needed, before 1 August of each calendar year, all regional TSO-s of outages interruption, shall decide to update the list of the grid important elements for the regional outage's coordination.
3. All regional TSO-s for the outage's coordination shall set available to the ENTSO-E data platform of operational planning the updated list.
4. The TSO shall inform the parties mentioned on Article 163 (4) about the content of the updated list.

Article 167. Appointing Outage Planning Agents

1. The TSO shall act as an outage planning agent for the TSO that operates as an outage planning agent for any important element of the system that it operates.
2. For any other important asset, the owner shall appoint, or act as an outage planning agent for the respective important assets as well as to inform the TSO regarding this appointment.

Article 168. Treatment of important assets at the distribution network or closed distribution system

1. The TSO shall coordinate with the DSO the schedule of the interruptions of important internal assets connected to the distribution network.
2. The TSO shall coordinate with OSMSH the schedule of interruptions of important internal assets connected to closed distribution network.

Chapter 2 – The draft and update of the availability plans of important assets

Article 169. Amendments to the terms for annual outage's coordination

1. All TSO-s within the synchronous area may agree together to approve and implement a time-frame for the annual outage's coordination in advance that amends the deadline defined on Articles 172, 175 and 177, on the condition not to affect the coordination of the interruptions of other synchronous areas.

Article 170. General provisions on availability plans

1. The Availability Plans of a grid important element shall be one of the states as follows;
 - a. available: the Relevant Asset is capable of and ready for providing service, whether or not it is actually in operation;
 - b. unavailable: the Relevant Asset is not capable and ready for providing the service;
 - c. testing: the capability of the Relevant Asset for providing service is being tested.
2. The Availability Status “testing” shall only be used when there is a potential impact on the transmission system, and shall be limited to the time periods:
 - a. between first connection and final commissioning of the relevant asset; and
 - b. directly after the maintenance period of the Relevant Asset.
3. The availability plans shall contain at least the information as follows:
 - a. Justification for the “un-availability” status of the important asset;
 - b. Where identified these conditions, they shall be completed before implementing the “unavailability” status of a real time important asset;
 - c. The time needed to return the important asset in operation where necessary to maintain the operational security.
4. The availability status for any important asset on the time – horizon for the year ahead shall be ensured on daily basis.
5. For the time periods when the generation schedule and that of consumption are submitted to the TSO in conformity with Article 189, the availability plans shall be detailed on time and in conformity whti the generation and consumption schedules.

Article 171. Long-term indicative availability plans

1. Two years prior to the communication of the year ahead, each TSO shall assess the indicative availability plan for the internal relevant assets, ensured from the outage's planning agents in conformity with Articles 4, 7 and 15 of EU Regulation no.

- 543/2013¹⁰. From the TSO-s shall be issued prior comments including the incompatibility with the dictated outages, for all the outages planning agents influences from these incompatibilities.
2. The TSO shall perform the indicative assessment plan of availability for the internal assets mentioned on Paragraph 1, for each year, to the initiation of the outage's initiation process for the year ahead.

Article 172. Provision of Year-Ahead Availability Plan proposals.

1. Before 1 August of each calendar year, for every relevant asset, the respective agent shall propose to the TSO or to the DSO the availability plan of its relevant assets for the following calendar year.
2. Between 1 August and 1 December, all outage planning agents referred to the above point, shall have the right to initiate changes to their proposed availability plan by sending a change request to the TSO.
3. The TSO shall handle the change requests, after it is finalized the year-ahead coordination process, hereby:
 - a. respecting the order in which the change requests were received; and
 - b. following the procedure in conformity with Article 178.

Article 173. Year-Ahead coordination of the availability status of relevant assets for which the outage coordination agent is not a DSO or OSMSH that participates to outage coordination region.

1. The TSO shall assess, if for the year-ahead are shown the incompatibilities from the availability plans in conformity with Article 172.
2. In the event when there are detected outage incompatibilities, the TSO shall implement the above-mentioned process:
 - a. Shall inform every outage coordination agent for the conditions that shall be complied to facilitate the incompatibility of the detected interruptions;
 - b. The TSO may require that one or more outage interruption agents shall submit an alternative of the availability plan that complies with the conditions mentioned on point (a); and
 - c. The TSO shall repeat assessment in compliance with point (1) to define if there are still incomliances of the outages.

¹⁰ 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

3. In the event, that no alternative of availability plan relieving all outage incompatibilities is submitted following a request from the outage coordinating TSO shall define an alternative availability plan, which:
 - a. shall consider the impact reported by the outage planning agents, as well as the DSO or OSMSH when important;
 - b. shall limit the changes in the alternative availability plan to what is strictly necessary to facilitate the outage incompatibilities; and
 - c. shall inform ERE, DSO and OSMSH and the affected outage agents for the alternative availability plan, including the motivating reasons for drafting this plan, and the reported impact from the outage's planning agents.

Article 174. Coordination of the availability status of the relevant assets for the year ahead, for which the outage's planning agent is the DSO or the OSMSH that participates to the regional outage's coordination

1. The TSO shall coordinate the availability status of relevant grid elements, interconnecting different responsibility areas for which the TSO acts as an outage planning agent with the other outage coordinating TSOs of the same outage coordination region.
2. The TSO, DSO and OSMSH shall plan the availability status of the grid important elements for which they perform the duties of the outage planning agents and do not interconnect the different control areas, using as a basis the availability plans in conformity with Paragraph 1.
3. When defining the availability status of the important grid elements in conformity with Paragraph 1 and 2, the TSO, DSO or OSMSH shall perform:
 - a. minimizing the impact on the market while preserving operational security; and
 - b. use as a basis the proposed availability plans for relevant assets, defined in conformity with Article 172.
4. In case of outage incompatibilities to the planning of the outages, the TSO shall be entitled to propose a change to the availability plans of the important internal assets for which the outage planning agent is not the DSO or the OSMSH that participates to the outage coordination region, and shall find a solution for coordinating with the outage planning agents, the DSO and OSMSH, by using its available means. coordination with the OSHE for any case of incompatibility.
5. In the event when the un-availability of the availability status of an important frid element is not planned after considering the measures of Paragraph (4) and if the failure of planning the unavailability of this availability status shall threaten the operational security, the TSO shall:

- a. take such actions as it deems necessary to plan this unavailability of the availability status, considering the impact reported from the affected outage planning agents;
 - b. provide a notification of these actions to all affected Parties; and
 - c. inform the regulatory authority (ERE), DSO or OSMSH, and the affected outage planning agents of the actions taken, the situation that dictated to take these actions and the reasoning used for the selected actions.
6. The TSO shall make available to the data platform of ENTSO-E operational planning, all the available information for the grid conditions that shall be complied and the remedial actions that shall be undertaken and activated before the execution of the “unavailability” status or the “test” of grid important elements.

Article 175. Provision of preliminary year-ahead availability plan

1. Before 1 November of each calendar year, the TSO shall provide the preliminary year ahead availability plans for all relevant assets for the following calendar year, to all other outage coordinating TSOs via the published data of the ENTSO-E platform for the operational planning data.
2. Before 1 November of each calendar year, for every relevant asset located to the distribution grid, the TSO shall provide to the DSO the preliminary year ahead availability plan for any relevant asset connected to the grid.
3. Before 1 November of each calendar year, for any relevant internal asset located to the closed distribution grid, the TSO shall provide to the closed DSO the preliminary year ahead availability plan.

Article 176. Validation of year-ahead availability plans within outage coordination region

1. The TSO shall analyze whether there are arisen incompatibilities when outage planning, considering all preliminary year ahead availability plans.
2. In the absence of outage planning incompatibilities, all regional TSO-s of outage coordination together shall approve the year ahead availability plans for all regional outage coordination assets.
3. If the TSO detects an incompatibility in the outage planning, the involved TSO-s of the regional outage coordination together shall find a solution coordinating with the respective agents of outage’s planning, the DSO and OSMSH by using their availability means, and respecting as much as possible the availability plans submitted by the outage planning agents, that are not TSO neither DSO or OSMSH and have drafted in conformity with Articles 173 and 174. When a solution is found, all TSO-s of the regional outage coordination, shall update and approve the availability plans for the year ahead of all-important assets.

4. When there is not found a solution for the incompatibility on outage planning, if it is provided ERE approval, the TSO shall:
 - a. impose the “availability” status for all “unavailable” status or “on testing” for the important assets included on an incompatibility in planning the interruptions during the period in question; and
 - b. inform ERE, DSO or OSMSH if any, as well as the outage planning agents for the taken actions, including the justification for taking such actions and if important, the influence reported by outage planning agents, DSO or OSMSH.
5. All regional TSO-s for outage coordination shall update and approve the year ahead availability plan for all the important assets.

Article 177. Final year-ahead availability plans

1. Before 1 December of each calendar year, the TSO shall:
 - a. finalize the year-ahead coordination process of relevant internal assets and transmit those to the ENTSO-E data platform for operational planning
 - b. update the preliminary year-ahead availability plans for the relevant assets on the ENTSO-E data platform of operational planning.
2. Before 1 December of each calendar year, the TSO shall confirm to the outage planning agent, the year ahead availability plan, for each relevant internal asset.
3. Before 1 December of each calendar year, for every Relevant Asset that is located to the distribution grid, the TSO shall provide to the DSO the updated year-ahead availability plan.
4. Before 1 December of each calendar year, for any relevant asset located to the closed distribution grid, the TSO shall provide to the closed DSO, the preliminary year ahead availability plan.

Article 178. Updates for the final year-ahead availability plans

1. After the finalization of the coordination process and during the real time execution, the outage planning agents shall have the right to initiate the adoption of the year ahead coordinated availability planning.
2. The outage planning agent that do not participate to the regional outages coordination, may submit to the TSO the request for amending the availability plan for the year ahead of relevant assets, under its responsibility.
3. In case of a request for amendment in conformity with Paragraph 2, shall be implemented the following procedure:

- a. the TSO accepts the request and access as soon as possible if the amendment leads to incompatibilities in outage planning;
 - b. in case of detecting outage incompatibilities, the TSO in cooperation with the RSC shall find a solution in coordination with the outage planning agents in question and if important shall include the DSO and the OSMSH by using their available means.
 - c. When there is not observed any incompatibility in outage planning, the TSO shall accept the required amendment and update the year ahead availability plan to the ENTSO-E data platform of operational planning; and
 - d. If no solution is found for the incompatibility of outage planning, the TSO refuses the request for amendment.
4. When the amendment is required from an agent participating to the regional outage coordination, the TSO shall initiate the procedure as follows:
- a. shall prepare the proposal for the year ahead availability plan proposal, including the assessment if it led to incompatibility to operational planning and shall submit it to the RSC and all other TSO-s of the regional outage coordination;
 - b. in case of detecting incompatibilities of the interruptions, the involved TSO-s of regional outage coordination, together with the RSC shall find a solution in coordination with the outage coordination agents in question using their available means;
 - c. when no incompatibility is observed on outage planning, the respective TSO-s shall accept the required amendment and as consequence shall inform all affected parties and shall update the final year ahead availability plan to the ENTSO E data platform for operational planning; and
 - d. when a solution is not found for the incompatibility, the demanding TSO shall withdraw the amendment procedure.

Chapter 3 – Execution of availability plans

Article 179. Management of the “test” status of the important assets

1. The Outage Planning Agent of a Relevant Asset for which the “testing” availability status is declared shall provide to the TSO, and the involved DSO and OSMSH as soon as possible, and not later than one month before the start of the testing availability status with:
 - a. a detailed test plan;
 - b. a generation or consumption schedule depending of the relevant asset; and
 - c. changes to the transmission or distribution system topology if the concerned relevant asset is a relevant grid element.
2. The outage planning agent shall update the information mentioned on Paragraph 1 immediately after being subject of any amendment.

3. The TSO of a relevant asset for which it is declared the “testing” of the availability status, shall provide to all regional TSO of the outage coordination, with their request, the data and information required on Point (1).
4. In case that the relevant asset referred to in paragraph (1) is a relevant grid element that connects two responsibility areas, the respective TSO-s of two responsible areas shall coordinate shall coordinate to provide the information in conformity with Paragraph (1).

Article 180. Prozesse for handling forced outages

1. The TSO shall draft the procedure to handle the cases when a forced outage risks its operational security. The procedure shall permit the TSO to ensure that the availability status ‘available or not’ for the relevant or other assets at the responsibility area, may be respectively amended to “unavailable” or “available”.
2. The TSO shall follow the procedure mentioned on Paragraph 1 only when the agreement is not concluded, it shall follow the procedure mentioned in Paragraph 1 only when it is not concluded an agreement with the outage planning agents regarding the solutions for the forced outages. The TSO shall inform the regulator authority according to the circumstances.
3. When undertaking a procedure, the TSO may respect, to the possible level, the technical limits of respective assets.
4. The outage planning agent, shall inform the TSO for the forced outage of one ore more of its relevant assets and the DSO or OSMSH of the assets are connected to the distribution system or with a closed distribution system, as soon as possible, immediately after the forced outage.
5. gjenti i planifikimit të ndërprerjeve duhet të njoftojë OST-në për ndërprerjen e detyrueshme të një ose më shumë aseteve relevante të saj dhe OSSH ose OSMSH nëse asetet janë të lidhur me sistemin e shpërndarjes ose me një sistem të mbyllur të shpërndarjes sa më shpejt që të jetë e mundur, menjëherë pas ndërprerjes së detyruar.
6. When informing the forced outage, the outage planning agent shall issue the information as follows:
 - a. the reason for the forced outage;
 - b. the expected duration of the forced outage; and

- c. if applicable, the impact of the forced outage of the availability status of other relevant assets under its responsibility.
7. Whenever the TSO detects that one or several forced outages referred to in Paragraph 1, have the potential to lead the transmission system out of a normal state, the TSO shall inform the concerned outage planning agent of the possible maximum time, at which the operational security can be maintained without the disconnected asset and its return to the “availability” status. The Agent of the respective asset shall inform the TSO for the opportunity of respecting the issued time, or the inability and justification for the deviation from this time.
8. Following all updates to the availability plan due to the forced outages and in accordance with the timeframe established on Article 7, 10 and 15 of the EU Regulation no 543/2013, the TSO shall update the latest information to the ENTSO-E data platform of operational planning.

Article 181. Real-time execution of the availability plans

1. Each power generating unit owner shall ensure that the relevant generation units under its responsibility, which are declared “available” are ready to produce electricity pursuant to their declared technical capability when necessary to maintain operational security, except the cases of forced outages.
2. Each power generating module owner shall ensure that the relevant generation units under its responsibility, which are declared “unavailable” do not produce electricity.
3. Each load facility owner shall ensure that all load facilities under its responsibility that are declared “unavailable” do not consume electricity.
4. Each relevant grid element owner shall ensure that all relevant grid elements under its responsibility, that are declared “available”, are ready to transport electricity pursuant to their declared technical capabilities when necessary to maintain operational security, except in case of forced outages.
5. Each relevant grid element owner, shall ensure that all relevant grid elements under its responsibility that are declared “unavailable” do not transport electricity.
6. If specific grid-related conditions apply for the execution of an “unavailable” or “testing” status of a relevant grid element, in accordance with Article 174 (6), the TSO, DSO or OSMSH depending of the connection point, shall access if these conditions are fulfilled before the real-time execution of the element disconnection. If not, the disconnection of the element shall not be executed.
7. When the TSO identifies the execution of the “unavailability” status or ‘testing’ status of a respective asset leading or may lead the transmission system out of normal status, it shall guide the owner of the respective asset when he is connected to the transmission system, the DSO or OSMSH to postpone the execution of the

“unavailability” or the “testing” status of that respective asset according to its guidelines and on the possible measure, respecting the technical conditions and the security limits.

Title 4 – Adequacy

Article 182. Provision of adequacy analyses for the control area

1. The TSO set available to all other TSO-s the ENTSO-E data platform for operational data, any provision that shall be used for adequacy analysis of the control area, in conformity with Articles 183 and 185.

Article 183. Adequacy analyses of the control area

1. The TSO shall perform the adequacy analyses of the control area by assessing the possibility of generation sum within its control area and the cross-border import capacities to comply the total load within its control areas under different operational scenario, considering the required level of active power reserve defined on Articles 192 and 193.
2. When performing adequacy analysis of the control area in conformity with (1), the TSO company shall:
 - a. use the latest availability plans and the latest available data for:
 - i. capabilities of generating units in accordance with Article 124(5), Article 126 and Article 132
 - ii. cross border capacities;
 - iii. customer facilities that may participate to the load regulation according to Articles 133 and 134;
 - b. having into consideration the generation contribution from the renewable sources of energy; and the request for electricity;
 - c. shall assess the probability and expected duration of an absence of adequacy and unsupplied energy resulting from adequacy.
3. As soon as reasonably practicable, after the assessment for the lack of adequacy within its control area, the TSO shall inform the regulator authority, the affiliate authorities and when applicable, any affected party:
4. As soon as possible, after the analysis for the lack of adequacy within the control area, the TSO shall inform all TSO-s through the ENTSO-E data platform for operational planning.

Article 184. Adequacy of the control area on seasonal basis, including the week ahead

1. The TSO shall contribute to the annual assessment of adequacy generation for winter and summer in pan – European level and implementing the methodology approved by ENTSO – E mentioned on Article 8 (3) (f) of EC Regulation No. 714/2009.
2. Twice in a year, the TSO shall perform the adequacy analysis of the responsibility area for the following winter and summer, having into consideration the pan-European scenarios in conformity with the provisions of generation adequacy for the next winter and summer.
3. The TSO shall update the adequacy analysis of the responsibility area if detects any possible amendment to the availability status of the power generation modules, assessing the load, assessing the renewable energy sources or the cross- sector capacities that may significantly influence to the expected adequacy.

Article 185. Responsibility Area Adequacy D-1 and intraday

1. The TSO shall perform responsibility area adequacy analysis on a D-1 and intraday, based on:
 - a. Schedules according to article 189;
 - b. Provision of the load;
 - c. Provision of generation from renewable energy sources;
 - d. Active power reserve in compliance with the data ensured in conformity with Article 127(1)(a);
 - e. Import – export capacities in conformity with the cross-border capacities;
 - f. Capacities of the generation units in conformity with the data provided according to Articles 124 (4), 126, 132 and their statuses of availability; and
 - g. Capacities of the load units manageable in conformity with the data provided according to Articles 133 and 134 and their availability statuses.
2. The TSO shall access:
 - a. the minimum and maximum levels of import and export capacity compatible with its responsibility area adequacy;
 - b. the expected duration of a potential absence of adequacy; and
 - c. the expected energy not served in the absence of adequacy.
3. If adequacy is not fulfilled according to the analysis referred to point (1) of this article, the TSO shall inform ERE and other relevant authorities by submitting an analysis of the causes for the absence of adequacy as well as the proposed remedial actions.

Title 5 – Ancillary services

Article 186. Ancillary services

1. The TSO shall monitor the availability of the ancillary services.
2. Regarding the active and reactive energy services, and the coordination with another TSO-s, when appropriate, the TSO shall:
 - a. design and manage the procurement of ancillary services;
 - b. monitor, according to the data, in conformity with Title 2, Part II, if the level and location of ancillary services permits the fulfillment of operational security; and
 - c. use all the economical available means effective and possible to ensure the necessary level for the ancillary services.
3. The TSO shall publish the level of reserve capacity necessary to maintain operational security.
4. The TSO shall communicate the availability level of the active power reserves, to another TSO-s according to the request.

Article 187. Ancillary services of active power

1. The TSO shall assess in all operational planning timeframes, to its provisions whether the active power sources are sufficient to ensure the operational security of the transmission system.
2. In order to increase the efficiency in operation of its transmission system elements the TSO, shall monitor:
 - a. the available reactive power capacities of the generating facilities;
 - b. available reactive power load capacities connected to the transmission system;
 - c. available reactive power capacities of the DSO;
 - d. available equipments connected to transmission dedicated to provide reactive power; and
 - e. reporting active and reactive power to the interface between the transmission and distribution system.
3. When the level of ancillary services of the reactive power is not sufficient to maintain operational security, the TSO shall:
 - a. inform the adjacent TSO;
 - b. prepare and activate remedial actions in conformity with Article 104

Title 6 – Schedule

Article 188. Establishment of scheduling processes

1. When establishing the schedule process, the TSO shall consider when necessary the operational conditions of the generation data methodology and those of load drafted in conformity with Article 16 of the EU Regulation no. 2015/1222.
2. When a bidding area covers only the control area, the geographical scope of the scheduling area is the same with the bidding area. When one control area covers some bidding areas, the geographical scope of the schedule area is the same with any bidding area. When the bidding area covers only a set of control areas, the TSO within its bidding area may set together to operate for a common scheduling process, otherwise any control area within the bidding area is considered a specific schedule area.
3. For any generating facility and the request for which the requests shall be implemented for scheduling in conformity with the applicable regulatory legal framework, the respective owner/operator shall appoint or act as a schedule agent.
4. Any market participant or trading agent for which the request for schedule in compliance with the applicable legal regulatory framework, shall act as (or appoint one) scheduling agent.
5. The TSO shall perform necessary regulations to draft the schedules provided by the scheduling agents.
6. When a schedule area covers more than one control area, the responsible TSO-s for the control areas shall agree that each of the TSO shall operate the schedule area.

Article 189. Schedule notification within the scheduling area

1. Any scheduling agent within the scheduling area, except of the scheduling agents if the market coupling operator, shall submit to the TSO and if applicable even to the third parties, the following schedules:
 - a. Generation schedules;
 - b. Consumption schedules;
 - c. Internal trading transactions schedules; and
 - d. External trading transactions schedules.
2. Each scheduling agent of a market coupling operator or when applied a respective central party shall submit to the TSO that operates to the to the schedule area covered by the market coupling and where it is applied even for the third parties, the schedules for:

- a. External trading transactions schedules, like:
 - i. multilateral exchange between the scheduling area and another group of other scheduling area; or
 - ii. bilateral exchange between the scheduling area and another scheduling.
- b. Internal trading schedules between market coupling agents and the central party;
- c. Internal trading schedules between the market coupling agents and other market coupling agents.

Article 190. Coherence of schedules

1. The TSO shall control if the generation, consumption, external trading schedules and external schedules of the TSO on its area, are balanced.
2. For its external schedules, the TSO shall agree on the schedule values with the respective (adjacent) TSO-s. On the absence of the agreement (reconciliation), shall be implemented the lowest value.
3. For bilateral exchanges between two scheduling areas, each TSO shall agree on external commercial trading schedules with the respective TSO. On the absence of an agreement, regarding the commercial trading schedule values, shall be implemented the lowest value.
4. All TSO-s that operate at the scheduling areas, shall verify if the net aggregated external data, between all schedule data within the synchronous area are balanced. If it happens a non-compliance and the TSO-s do not comply with the values of the aggregated net external schedule, shall be implemented the lowest values.
5. Any schedule agent of the market coupling operator shall follow the process described above, and shall ensure to the involved TSO-s the schedule values of the external commercial trading for any schedule area included to the market coupling in the form of the net, aggregated external schedules.
6. Each interchange program accountant shall provide to the TSO-s, according to their request, the values of the scheduled interchanges regarding the scheduled areas included to the market coupling in the form of net, aggregated external schedule, including bilateral exchanges between the schedule areas.

Article 191. Provision of information to other TSOs

1. On the request of another TSO, the TSO to which is required to calculate and issue:
 - a. External net, aggregated schedules; and
 - b. Net position of the AC area, when the schedule area is interconnected with other schedule areas through AC transmission lines.

2. When required for the establishment of the common modules, according to Article 245 (1), any TSO, operating to a scheduling area shall issue to the requesting TSO the information regarding:
 - a. generation schedules; and
 - b. consumption schedules.

Part IV – Load - Frequency control and Reserves

Title I – Operational agreements

Article 192. Operational agreements of the synchronous area

1. The TSO is part of the TSO-s common proposal of the synchronous European areas for:
 - a. rules for FCR dimensioning according to Article 222;
 - b. additional quality of the FCR according to Article 223 (2);
 - c. respective parameters of the frequency quality and the frequency quality targeted parameters according to Article 199;
 - d. targeted parameters of the control error for frequency reset of each LFC block according to Article 200;
 - e. the methodology to assess the risk and evaluation risk of FCR exhaustion of the synchronous area in conformity with Article 203 (2);
 - f. monitoring the synchronous area;
 - g. calculation of the control program from the net AC grid position with a common ramping period for ACE calculation according to Article 206;
 - h. if applicable, limitations for the active power product of HVDC interconnectors through the synchronous areas;
 - i. LFC structure according to article 208;
 - j. if applicable the methodology to reduce the deviation of the electric time according to article 241;
 - k. specific allocation of responsibilities between the TSO-s according to Article 210;
 - l. operational procedures in case of FCR exhaustion in conformity with Article 221 (7);
 - m. operational procedures to reduce frequency deviation of the system to return the status of to system into normal and to reduce the risk of entering into emergency status according to Article 221 (10);
 - n. roles and responsibilities of the TSO-s for implementing the netting process of the imbalances, an FRR cross-border activation process or the RR-s cross-border activation process according to Article 218 (2);
 - o. the requirements regarding the availability, reliability and additional reserve of technical infrastructure according to Article 220 (2);

- p. common rules for the normal status and not normal status according to Article 221 (6) and the actions mentioned on Article 221 (15);
 - q. the minimum activation period ensured by the FCR provider according to Article 225 (10);
 - r. the assumptions and methodologies for a cost – benefit analysis according to Article 225 (11);
 - s. the roles and responsibilities of the TSO connected to the reserve, the TSO taking the reserve and the affected TSO, regarding FRR and RR exchange defined according to Article 234 (1);
 - t. the roles and responsibilities of the TSO providing controlling capabilities, the TSO taking the controlling capabilities and the affected TSO, for the allocation of the FRR and the RR defined according to Article 235 (1);
 - u. the roles and responsibilities of the TSO connected to the reserve, the TSO taking the reserve and the affected TSO, for the reserves exchange through the synchronous areas, and the TSO providing controlling capabilities, the TSO that takes controlling capabilities and the affected TSO, for the allocation of the reserves between the synchronous areas;
2. Regarding the above, the TSO is the signing part of the operational agreement of the synchronous area SAFA.

Article 193. LFC block operational agreement

1. All TSO-s of the LFC block shall develop joint proposals for:
- a. when the LFC block is composed of more than one LFC area, the target parameters of FRCE for each LFC area defined according to Article 200 (4);
 - b. monitoring LFC block according to Article 204 (1);
 - c. the restrictions regarding the ramping on active energy activation;
 - d. specific allocation of the responsibilities between the TSO-s within the LFC block according to Article 210 (9);
 - e. if applicable, the appointment of the responsible TSO for the obligations of Article 214 (6);
 - f. additional requirements for the availability, reliability and additional reserve of technical infrastructure defined according to Article 220 (3);
 - g. operational procedures in case of FRR or RR exhaustion according to Article 221 (8);
 - h. dimensioning rules of the FRR defined according to Article 226 (1);
 - i. dimensioning rules of the RR defined according to Article 229 (2);
 - j. specific allocation of the responsibilities defined according to Article 226 (3) and, if applicable, specific allocation of the responsibilities defined according to

Article 229 (6);

- k. escalated procedure defined according to Article 226 (4) and, if applicable, the escalation procedure defined according to Article 229 (7);
 - l. the FRR availability requests, the requests for the quality of control defined according to Article 227 (2) and if applicable, the RR availability requests and the requests for the quality of control defined according to Article 230 (2);
 - m. if applicable, any restriction to FCR exchange between the LFC areas of different LFC blocks within the European synchronous area and FRR or RR exchange between the LFC areas of a LFC block off a synchronous area composed of more than one LFC block defined according to Article 232 (2), Article 236 and Article 238 (2);
 - n. the roles and responsibilities of the TSO regarding the reserve, the TSO receiving the reserve and the affected TSO, for the exchange of FRR and/or RR with the TSO of the other LFC blocks defined according to Article 234 (6);
 - o. the roles and responsibilities of the TSO providing the controlling abilities, the TSO receiving the controlling abilities and the affected TSO, for the allocation of the FRR and RR defined according to Article 235 (7);
 - p. the coordinated actions aiming to reduce FRCE as defined on Article FRCE according to Article 221 (14); and
 - q. the measures to reduce FRCE requiring amendments in generation or consumption of active energy of the energy generation modules and the customer units according to Article 221 (16).
2. The TSO have signed the operational agreement of LFC block (AK) between the TSO and the KOSTT (Kosovë).

Article 194. Imbalance netting agreement

1. The TSO participating on the same imbalance netting process, shall sign a imbalance netting agreement that at least shall include the roles and responsibilities of the TSO according to Article 218 (3).

Article 195. Agreements for the activation of cross- border FRR

1. All TSO-s that participate on the same cross-border activation process FRR, shall establish a cross-border agreement of FRR activation that shall include at least the roles and responsibilities of the TSO-s according to Article 218 (3).

Article 196. Agreement for the activation of cross – border RR

1. All TSO-s that participate on the same cross-border activation process RR, shall establish a cross-border agreement of RR activation that shall include at least the roles and responsibilities of the TSO-s according to Article 218 (3).

Article 197. Agreement for the reserve allocation

1. All TSO-s that participate on the same allocation process of FCR, FRR or RR shall establish an allocation agreement that shall at least include, in case of FRR or RR allocation within a synchronous area, the roles and responsibilities of the TSO that takes the control ability, the TSO providing the control ability and affected TSO-s according to Article 234 (3).

Article 198. Agreement for the exchange of the reserve

1. All TSO-s that participate on the same exchange process of FCR, FRR or RR shall establish an exchange agreement that shall at least include, in case of FRR or RR exchange within a synchronous area, the roles and responsibilities of the TSO where the reserve is connected and the TSO that takes the reserve according to Article 234 (3).

Title 2 – Frequency quality

Article 199. Frequency quality target parameters

1. The Frequency Quality Defining Parameters for all synchronous areas shall be:
 - a. the nominal frequency;
 - b. the standard frequency range;
 - c. the maximum instantaneous frequency deviation;
 - d. the maximum steady-state frequency;
 - e. the time to restore frequency;
 - f. the alert state trigger time
2. The Nominal Frequency shall be 50Hz for all synchronous areas.
3. The predefined values of the frequency quality parameters mentioned on Paragraph 1, are submitted on Table 1, Annex III.
4. The frequency quality target parameter shall be the maximum number of minutes out of standard frequency range for each year for the synchronous area and predefined values for each synchronous area are submitted on Table 2, Annex III.
5. All TSO-s shall try to be compatible with the values for the frequency quality predefined parameters or the target parameter of frequency quality. All TSO-s shall verify the compliance of the target frequency quality parameter at least once in 5 years.

Article 200. Targeted parameters of Frequency Restoration Control Error (FRCE)

1. All TSO-s of the synchronous area shall specify at the operation agreement of the synchronous area, the range values of level 1 and level 2 of the FRCE for each LFC block, at least once in a year.
2. All TSO-s of the synchronous area shall ensure that the range values level 1 and level 2 of the FRCE for LFC blocks are in proportion with the square root of the sum of FCR initial obligations for the TSO-s composing the LFC blocks according to Article 222.
3. All TSO-s of the synchronous area shall try to fulfill the following targeted parameters of FRCE for each LFC block of the synchronous area:
 - a. the number of the time frames for each year out of FRCE level 1 within the time frame equal to the time for frequency reset, shall be lower than 30% of the annual time frames; and
 - b. the number of the time frames for each year out of FRCE level 2 within the time frame equal to the time for frequency reset shall be lower than 5% of the annual time frames.
4. All TSO-s of LFC block shall specify to the operation agreement of the LFC block the target parameters values of the FRCE for each LFC area.
5. All TSO-s shall verify, at least once in a year, that the targeted parameters of FRCE are complied.

Article 201. Criteria application process

1. The criteria application process shall comprise:
 - a. the collection of frequency quality evaluation data; and
 - b. the calculation of frequency quality evaluation criteria.

Article 202. The frequency quality evaluation data

1. The frequency quality evaluation criteria shall comprise:
 - a. for the synchronous area:
 - i. instantaneous frequency data; and
 - ii. data for the deviation of instantaneous frequency;
 - b. for each LFC block of the synchronous area, instantaneous FRCE data.
2. Metering accuracy of instantaneous frequency data and FRCE instantaneous data, when metered in Hz, shall be 1 mHz or more accurate.

Article 203. Evaluation criteria of frequency quality

1. Evaluation criteria of frequency quality shall comprise:
 - a. for each LFC block of the synchronous area, during normal status or emergency operation according to Article 99 (1) and (2), on monthly basis:
 - i. for one data group comprising the average values of FRCE, of the LFC block throughout time frames equal with the time to reset the frequency:
 - average value,
 - standard deviation,
 - the level in 1, 5, 10, 90, 95 and 99 percentages,
 - the number of the timeframes to which the FRCE average value is out of FRCE level 1 range, distinguishing between negative and positive FRCE; and
 - the number of the timeframes to which the FRCE average value is out of FRCE level 2 range, distinguishing between negative and positive FRCE;
 - ii. for a data group containing the FRCE average values of LFC block throughout the timeframes with a 1-minute length: the number of the events on monthly basis for which the FRCE exceeds 60% of the reserve capacity of the FRR and it is not returned to 15% of the FRR reserve capacity, within the time to reset the frequency, distinguishing a negative and positive FRCE;
2. The TSO is part of the joint methodology to evaluate the risk and the risk evolution of FCR exhaustion to the synchronous area. This evaluation shall be executed at least once in a year and shall be based on at least the historical data of instantaneous frequency of the system, but not less than 1 year. All TSO-s of the synchronous area shall ensure the required data for this evaluation.

Article 204. Monitoring LFC block

1. All TSO-s of an LFC block Të gjithë OST-të e një blloku LFC do të caktojnë një OST të atij blloku LFC në marrëveshjen e operimit të bllokut LFC si monitorues i bllokut LFC.
2. The observer of the LFC block shall collect the data for the evaluation of the quality of frequency for the LFC block according to the application process of the criteria mentioned on Article 201.

3. Each TSO, shall provide to the observer of the LFC block the meterings of the LFC area necessary to collect the data for the evaluation of the frequency quality for the LFC block.
4. The observer of the LFC block shall submit to the synchronous area observer, the data regarding the evaluation of frequency quality for the LFC block and its LFC areas every 3 months and within 2 months from the termination of the analysed procedure.

Article 205. Information on load and charge behavior

1. In accordance with Article 121, the TSO shall have the right to request information necessary from the significant grid users to monitor the load and generation behavior related to imbalances. This information may include:
 - a. the time-stamped charging (working point) active power for the real time and future operation; and
 - b. general active power production of active power with the time – stamped.

Article 206. Ramping period within the synchronous area

1. All TSO-s of the synchronous area have specified to the synchronous area operation agreement the joint ramping period of the schedules amount between the synchronous area of LFC. The calculation of the control program from net position of AC area for the calculation of ACE shall be carried out with the joint ramping period, that is 5 minutes before and after the amendment of the exchange program. The ramping period is 10 minutes and the function are linear.
2. The TSO-s of the LFC block shall have the right to define on the operational agreement of LFC block the measures as follows to support the compliance of the target parameter of FRCE of the LFC block and to facilitate the defining frequency deviations, having into consideration the technological restrictions of the generation modules and the customer units:
 - a. the obligations for the ramping periods and/or maximum ramping range for the generation modules and/or the customer units;
 - b. the obligations on the initiation time of individual ramping for the generation modules and/or customer units within the LFC block; and
 - c. ramping coordination between the generation modules, the customer units and the active energy consumption within the LFC block.

Article 207. Facilitation measures

1. When the calculated values for the calendar year period regarding the targeted parameters of frequency quality or the targeted parameters of FRCE are out of the objectives defined for the LFC block, the TSO -s of the respective LFC block shall:

- a. analyses if the targeted parameters of FRCE shall remain out of the objectives defined for the LFC area and in case of a justified risk, shall analyse the causes and develop the recommendations; and
- b. shall held facilitation measures to ensure that the objectives for the LFC block may be fulfilled in the future.

Title 3 – Structure of load – frequency control

Article 208. Basic structure

1. All TSOs of the European synchronous have specified the structure of load - frequency control on the synchronous area operational agreement. The TSO is responsible for implementing and operating according to the structure of load - frequency control.
2. The structure of load-frequency control at the synchronous area shall include:
 - a. the structure of process activation according to Article 209; and
 - b. the responsibility structure responsible of the process according to Article 210.

Article 209. Process activation structure

1. The process activation structure shall include:
 - a. the FCP according to Article 211;
 - b. the FCP according to Article 212; and
 - c. the time control process according to Article 241.
2. The process activation structure may include:
 - a. the RRP according to Article 213;
 - b. the imbalances netting process according to Article 215;
 - c. the cross-border activation process of FRR according to Article 216;
 - d. the cross-border activation process of RR according to Article 217.

Article 210. Process responsibility structure

1. When defining the process responsibility structure, the TSOs of a synchronous area shall consider at least the following criteria:
 - a. size and the total inertia including synthetic inertia of the synchronous area;
 - b. grid structure and/or network topology; and
 - c. load, generation and HVDC behavior.

2. The TSO of the synchronous area have developed a common proposal regarding the definition of the LFC blocks, which shall be according to the following requirements:
 - a. one monitoring area corresponds to one or it is the only part of the LFC area;
 - b. one LFC area corresponds or is part of only one LFC block;
 - c. one LFC block corresponds or is the only part of a synchronous area; and
 - d. each grid element is part of only one monitoring area, only one LFC area and only one LFC block.
3. The TSO -s of each monitoring area shall calculate and monitor on the real time the exchange of the active power at the monitoring area.
4. The TSO-s of each LFC area shall:
 - a. continuously monitor the FRCE area of LFC;
 - b. implement and operate one FRP for the LFC area;
 - c. try to comply with the target parameters of FRCE of LFC area as defined on article 200; and e
 - d. shall have the right to implement one or some of the processes mentioned on Article 209 (2).
5. The TSO of each LFC block shall:
 - a. try to fulfill the targeted parameters of FRCE for the LFC block as defined on Article 206; and
 - b. shall be compatible with the dimensioning rules of FRR according to Article 226 and the RR dimensioning rules according to Article 229.
6. The TSO of each LFC block shall specify the operation agreement of the LFC block allocation and the responsibilities between the TSO-s at LFC block to implement the obligations defined on Paragraph 5.
7. All TSO-s of two or more LFC areas connected from the interconnections shall have the right to form the LFC block if there are completed the requirement for the LFC block submitted on Paragraph 5.

Article 211. Frequency containment process (FCP)

1. The control target of FCP is to stabilize the system frequency by activation of FCR.
2. The overall characteristic for FCR activation in a synchronous area shall reflect a monotonically decrease of the FCR activation as a function of the frequency deviation.

Article 212. Frequency restoration process (FRP)

1. For the European synchronous area, the control target of FRP is:
 - a. to regulate FRCE to zero within the frequency restoration;
 - b. to progressively replace the activated FCR by activation of FRR according to Article 214.
2. FRCE is:
 - a. the Area Control Error (ACE) of a LFC Area where there are more than one LFC Area in a synchronous area; or
 - b. the frequency deviation where one LFC Area corresponds to the LFC Block and the synchronous area
3. ACE of a LFC area shall be calculated as the amount of K factor product of LFC area with an Δf frequency deviation, and the difference of:
 - a. total flow of active power of the interconnector and the virtual line; and
 - b. control program according to Article 206.
4. When the LFC area is composed of more than one monitoring area, all TSO-s of the LFC area shall appoint a TSO to the operation agreement of the LFC responsible for the implementation and operation of the frequency restoration process.

Article 213. Reserve replacement process

1. The control target of the RRP shall be to fulfil at least one of the following goals to activate RR:
 - a. to progressively restore FRR activation;
 - b. support the FRR activation;
2. RRP shall operate through the guidelines for the manual activation of RR to fulfill the control objective according to Paragraph 1.

Article 214. The process of automatic/manual frequency restoration

1. Any TSO of the LFC area shall implement the automatic frequency restoration process (aFRP) and the manual frequency restoration process (mFRP).
2. If the LFC area is composed of more than one monitoring area, all TSO-s of the LFC area shall define the process for the implementation of the aFRP and the mFRP on the operation agreement for the LFC area.

3. aFRP shall be operated with a closed circuit where FRCE is the input and the working point for the automatic activation of FRR is the output. The working point for the automatic activation of FRR shall be calculated from the only controller to restore the frequency
4. The working point for the automatic activation of FRR shall be calculated from the only controller to restore the frequency operated from the TSO within its LFC area. The observer to restore the frequency shall:
 - a. to be an automatic control equipment projected to reduce the FRCE into zero;
 - b. to have the proportional – integral behavior;
 - c. to have the control algorithm, which contains the proportional - integral observer term from the control error accumulation and the restore; and
 - d. to have the functions for the extraordinary operation, for the alarm and emergency status.
5. mFRP shall be operated through the guidelines for the manual activation of FRR to comply the control objective according to Article 212 (1).
6. Except of implementing the aFRP to LFC areas, all TSO-s of the LFC block comprising of more than one LFC shall have the right to appoint the operation agreement of the LFC block, the TSO of the LFC block for:
 - a. shall be calculated and monitored the FRCE of all the LFC block; and
 - b. to consider the FRCE of all LFC block for the calculation of the value defined for the aFRR activation according to Article 212 (3) except of the FRCE of its LFC area.

Article 215. Imbalance netting process

1. The control target of the imbalance netting process is to reduce the amount of simultaneous counteracting FRR activation of different participating LFC Areas by imbalance netting power interchange.
2. Each TSO shall have the right to implement the imbalance netting process for the LFC areas within the same LFC Block, between different LFC blocks or between different synchronous areas, connecting the imbalance netting process.
3. The TSO shall implement the imbalance netting process to not affect:
 - a. the stability of the FCP of synchronous areas, of the synchronous areas involved to the imbalance netting process;
 - b. the stability of FRP and RRP of each LFC area operated by the participant or affected TSO-s; and
 - c. operational security.

4. The TSO shall implement the power exchange for the imbalance netting between the LFC of the synchronous area with at least one of the following approaches:
 - a. defining the active power flow of a virtual line which shall be part of FRCE calculation;
 - b. regulating the active power flows of HVDC interconnectors.
5. The TSO shall implement the power exchange for imbalance netting of a LFC area to not exceed the current amount of FFR activation necessary for the regulation of FRCE of that LFC area into zero without exchanging the power for the imbalance netting.
6. All TSO-s that participate on the same imbalance netting process shall ensure that the amount of these power exchanges for the imbalance netting shall be zero.
7. The imbalance netting process shall include the reserve mechanism, which shall ensure that the power exchange for the imbalance netting of each LFC area shall be zero or shall be restricted to a value for which may be guaranteed the operational security.
8. When one LFC block is composed from more than one LFC area and the reserve capacity to FRR, as well as the reserve capacity to RR is calculated according to the imbalances of LFC block shall implement and exchange the maximum amount of the imbalance netting power defined according to paragraph 6 with the other LFC areas of the same LFC block.
9. When the imbalances netting process is implemented for the LFC areas which are not part of the same LFC block, all TSO-s of the involved LFC blocks shall comply the obligations on Article 210 (5) except of the power exchange for the imbalances netting.

Article 216. Cross-border FRR activation process

1. The control target of the cross-border activation process of FRR is to enable to the TSO-s to carry out the FRP by which the exchange power for the frequency restoration process between the LFC areas.
2. Each TSO shall have the right to implement the cross-border activation process of the FRR for the LFC areas within the same LFC block, between the different LFC blocks or between different synchronous areas, terminating the FRR cross border activation agreement.
3. The TSO-s shall implement the FRR cross-border activation process in a way that does not affect:
 - a. the stability of the FCP of synchronous areas, or of the synchronous areas involved to the FRR cross-border activation process;
 - b. stability of FRP and of RRP of each LFC area operated by the participant or

- affected TSO-s; and
 - c. operational security.
4. The TSO shall implement the power exchange to restore the frequency between LFC areas of the same synchronous area through the following actions:
 - a. defining active power flow of a virtual line which shall be part of FRCE calculation where the FRR activation is automatized;
 - b. the regulation of the control program or the definition of the active power flow on a virtual line between the LFC areas where the FRR activation is manual; or
 - c. regulation of active power flows of HVDC interconnectors.
 5. The TSO-s shall implement the energy exchange to restore the frequency between LFC areas of different synchronous areas and regulating the active power flows of HVDC interconnectors.
 6. All TSO-s that participate on the same process of cross – border activation of FRR shall ensure that the amount of all power exchanges to restore the frequency is equal to zero.
 7. The FRR cross-border activation process shall include the reserve mechanism that shall provide that the power exchange to restore the frequency of each LFC area shall be zero, or shall be restricted to an amount for which may be guaranteed the operational security.

Article 217. RR cross-border activation process

1. The control target of the cross-border activation process of RR shall target that the TSO to provide the RRP performance through the control program between LFC areas.
2. Any TSO shall have the right to implement the RR crossborder activation process for the LFC areas of the same block, between the different blocks of LFC or between different synchronous areas, terminating the RR cross-border activation agreement.
3. The TSO-s shall implement the RR cross-border activation process in a way that does not affect:
 - a. the stability of the FCP of synchronous areas, or synchronous areas involved to the RR cross-border activation process;
 - b. to the stability of FRP and RRP of each LFC area operated by the participant or affected TSO-s; and
 - c. operational security.
4. The TSO-s shall implement the control program between the LFC areas of the same synchronous area performing at least one of the following actions:

- a. defining active power flows to a virtual level which shall be part of FRCE calculation;
 - b. the regulation of the control program; or
 - c. the regulation of active power flows at HVDC interconnectors.
5. The TSO-s shall implement the control program between different LFC synchronous areas regulating active power flows at HVDC interconnectors.
 6. All TSO-s that participate on the same RR cross-border activation process shall ensure that the sum of the control program shall be zero.
 7. The RR cross-border activation process shall include the reserve mechanism, that shall ensure that the control program of the each LFC area shall be zero or shall be restricted to a value for which may be guaranteed the operational security.

Article 218. General requirements for the cross-border control process

1. All TSOs participating in an exchange or allocation of FRR / RR shall implement the FRR or RR cross-border activation process according to the case, in the suitable approach.
2. All TSO-s of a synchronous area shall specify at the operation agreement of the synchronous area the roles and responsibilities of the TSO-s implementing the imbalance netting process, the FRR cross-border activation process or the RR cross-border activation process between LFC areas of different LFC blocks or different synchronous areas.
3. All TSO-s participating on the same imbalance netting process, on the same FRR cross-border activation process or on the same RR cross-border activation process, shall specify the respective agreements, the roles and responsibilities of all TSO-s including:
 - a. the provision of all entry data necessary for:
 - i. power exchange calculation respecting the operational security restrictions; and
 - ii. the performance of the operational security analysis on real time from the participating and affected TSO-s;
 - b. the responsibilities of power exchange calculation; and
 - c. implementation of operational procedures to ensure the operational security.
4. Without prejudicing to Article 215 and as part of the Agreements mentioned on Articles 194, 195 and 196, all TSO-s that participate on the same imbalance netting process, of FRR cross-border activation and RR cross-border activation shall have the right to specify the methodology for the power exchange calculation. The

calculation of the power exchange shall permit any TSO-s group that operate to LFC areas or LFC blocks connected from the interconnectors to exchange the power for the netting process, frequency restoration or the replacement reserve between them before the calculation of an exchange with the other TSO-s.

Article 219. TSO Notification

1. The TSO-s willing to perform the right to implement the imbalances netting process, for the FRR cross-border activation, RR cross-border activation, the exchange of the reserves or the allocation of the reserves, three months in advance before exercising this right, shall inform the other TSO-s of the same synchronous area regarding:
 - a. involved TSO-s;
 - b. expected amount of power interchange due to the imbalance netting process, cross-border FRR activation process or cross-border RR activation process;
 - c. type of the reserve and the maximum amount of the exchange or the reserve allocation; and
 - d. time frame of reserves exchanges or allocation.
2. When the imbalance netting process, a cross-border FRR activation process or a cross-border RR activation process is implemented for LFC areas which are not part of the same LFC block, each TSO of the involved synchronous areas shall have the right to declare itself as an affected TSO for all the TSO-s of the synchronous area based on the operational security analysis and within one month after the notification according to Paragraph 1.
3. The affected TSO-s shall have the right:
 - a. to require the real time values security for the power exchange to net the imbalances, of power exchange to reset the frequency and the control program necessary for the real time operational security analysis; and
 - b. to require the implementation of an operational procedure enabling to the affected TSO, to define the restrictions for the power exchange of imbalance netting, for the power exchange to restore frequency as well as the control program between LFC areas based on a real time operational analysis.

Article 220. Infrastructure

1. All TSO-s shall evaluate the technical infrastructure necessary for the implementation and operation of the processes mentioned on Article 209 and that are considered critical according to the security planning mentioned on Article 107.
2. All TSO-s of a synchronous area shall specify, on the operational synchronous area agreement, the minimal requirements for the availability, reliability and the additional reserve of technical infrastructure mentioned on Paragraph 1 informing:
 - a. precision, resolution, availability and additional reserve of active power flow and

- virtual lines measurements;
 - b. the availability and additional reserve of digital control systems;
 - c. the availability and redundancy of communication infrastructure; and
 - d. communication protocols.
3. All TSO-s of a LFC block may define additional requirements for the availability, reliability, and the additional reserve of the technical infrastructure at the LFC block operational agreement.
 4. Each TSO of a LFC area shall:
 - a. ensure a sufficient quality and availability of the FRCE calculation;
 - b. perform real-time quality monitoring of the FRCE calculation;
 - c. act in case of FRCE miscalculation; and,
 - d. perform an ex-post quality monitoring of the FRCE calculation by comparing FRCE with the reference values at least on an annual basis, when FRCE is defined by ACE.

Title 4 – The operation of load-frequency control

Article 221. The status of the system regarding the system frequency

1. The TSO shall operate on its control area sufficient active power reserves for the increase and decrease, which may include the allocated and exchanged reserves to confront the imbalances between the demand and supply within its control area. The TSO shall control FRCE as defined on Article 118 to reach the required frequency quality within the synchronous area in cooperation with all TSO-s of the synchronous area.
2. The TSO shall monitor the real time generation and exchange schedules, the power flows, the injections and withdrawal to the joints as well as the other parameters within its control area, important for the risk provision of frequency deviation and in coordination with the other TSO-s of the synchronous area shall take the measures to limit their negative effects on the balance between generation and consumption.
3. All TSO-s of a synchronous area shall specify the real time data exchange according to Article 123 which shall include:
 - a. the situation of the transmission system according to Article 99; and
 - b. real time metering data of FRCE of the LFC blocks and LFC areas of the synchronous area.
4. The observer of the synchronous area shall ensure that all TSO-s shall be informed in case of frequency deviation of the system to comply with one of the criteria for the alarm situation mentioned on Article 99.

5. All TSO-s of the synchronous area shall define the operational agreement of the synchronous area the common rules for the operation of load – frequency control on normal and emergency status.
6. All TSO-s of the LFC block shall specify the operational procedures for the exterioration cases of FRR or RR to the LFC block operational agreement. On these operational procedures, the TSO-s of a LFC block shall have the right to require amendments to active energy consumption or production of the generation modules and the customer units.
7. The TSO-s of the LFC block shall try to avoid the FRCE that take longer than the frequency restoration.
8. If the situation of the system is on emergency/alarm status due to insufficient reserves of active power according to Article 99, the TSO-s of the respective LFC blocks, in close cooperation with other TSO-s of the synchronous area, shall act to reset and replace the necessary levels of active power reserves. For this purpose, the TSO-s of a LFC area shall have the right to require amendments to the active power consumption or production of generation modules or customer units within its control area to reduce or remove violations (failure to comply) of the requirements regarding the active power reserve.
9. The observer of the LFC block is responsible for the identification of any violation of FRCE limits, and:
 - a. Shall inform the other TSO-s of the LFC block; and
 - b. Shall implement, together with the TSO-s of the LFC block, the coordinated actions for reduced FRCE, which shall be specified on the operational agreement of LFC block.

Title 5 – Frequency maintenance reserves

Article 222. FCR dimensioning

1. All TSOs of the synchronous area shall determine at least once in a year the FCR reserve capacity required for the synchronous area and the initial obligation of the FCR for each TSO according to Paragraph 2.
2. All TSOs of a synchronous area shall specify the dimensioning rules of the synchronous area operational agreement according to the following criteria:
 - a. the FCR reserve capacity required for the synchronous area shall at least cover the reference incident even for the European synchronous area, the results of of the propabilistic dimensioning approach for the FCR performed according to point c;
 - b. for the European synchronous area, the referring incident shall be 3 000 MW to the positive direction and 3 000 MW to the negative direction;

- c. all TSO-s of the synchronous area shall have the right to determine the probabilistic dimensioning approach of the FCR having into consideration the load, generation and inertia model, including synthetic inertia, as well as the available means to set the real time minimal inertia according to the methodology mentioned on Article 120, to reduce the insufficient probability of FCR once in 20 years; and
- d. the shares of FCR reserve capacity required for each TSO as an initial obligation of the FCR shall be based on the sum of net generation and consumption of the synchronous area over 1-year period.

Article 223. Minimum technical requirements of FCR

1. Any TSO where it is connected the reserve shall ensure that the FCR meets the features mentioned for the synchronous area on the table Annex V.
2. All TSO-s of the synchronous area shall have the right to specify on the synchronous area operational agreement, the common additional features of FCR required to guarantee the synchronous area operational security, by a set of technical parameters and within the ranges on Article 15(2) (d) of the Code on the “Requirements for the Connection with the Generator’s Grid” approved with ERE Board Decision no. 129 dated 04.06.2018 and Articles 27 and 28 of the “Network Code for the Load Connection” approved with ERE Board Decision no.128, dated 04.06.2018.
3. The TSO, where it is connected the reserve, shall have the right to define additional requirements for the FCR providing groups within the range of Article 15(2)(d) of the EU Regulation 2016/631 and Articles 27 and 28 of the “Network Code for the Load Connection” approved with ERE Board Decision no.128, dated 04.06.2018 to ensure the operational security. These additional requirements shall be based on the technical reasons as geographic distribution of generation modules or customer units corresponding to the FCR providing group. The FCR provider shall ensure that it is possible to monitor the FCR activation of the FCR providing units within the providing group of the reserve.
4. The TSO where it is connected the reserve shall have the right to exclude the providing groups of FCR to ensure the operational security. This exclusion shall be based on technical reasons such as geographical distribution of the generation modules or the customer units belonging to the FCR providing group.
5. Any FCR providing unit and any FCR providing group shall have only the TSO-s where the reserve is connected.
6. Any providing unit of the FCR and any providing group shall meet the features required for the FCR on the table of Annex V and with any additional feature or requirement specified according to Paragraphs 2 and 3 as well as shall activate the FCR agreed by any proportional regulator reacting to the frequency deviations or

- alternatively based on a monotonous linear characteristic of power – frequency in case of FCR activation. The shall be able to activate the FCR within the frequency range defined on Article 13 (1) of the Code “On the Requirements for the Connection with the Generator’s Network” approved with ERE Board Decision no. 129, dated 04.06.2018.
7. Any TSO of the synchronous area shall ensure that the reaction of the combined FCR of a LFC area shall be according to the following requirements:
 - a. FCR activation shall not be artificially delayed and shall continue as soon as possible after a frequency deviation;
 - b. in case of a frequency deviation equal or higher than 200 mHz, at least 50% of FCR full capacity shall be activated not later than 15 seconds;
 - c. in case of frequency deviation equal or higher than 200 mHz, 100% of FCR full capacity shall be activated not later than 30 seconds;
 - d. in case of frequency deviation equal or higher than 200 mHz, the FCR full capacity activation shall be increased at least linear from 15 to 30 seconds; and
 - e. in any case the frequency deviation of less than 200 mHz, the respective capacity of activated FCR shall be in proportion with the same time behavior mentioned on points (a) to (d).
 8. Any TSO where the reserve is connected shall monitor its contribution to FCP and the activation of FCR respecting its obligation for the FCR, including the providing units of the FCR and the providing groups of the FCR. Any FCR provider shall set available to the TSO where the reserve is connected, for FCR providing units and groups, at least the following information:
 - a. time-stamped status indicating if FCR is on or off;
 - b. time-stamped active power data, needed to verify FCR activation;
 - c. the droop of the regulator for the generation modules type C and D as defined on Article 5, of the Code “for the Requirements for Connection to the Network of the Generators approved with ERE Board Decision no. 129 dated 04.06.2018 that acts as a FCR providing unit, or its equivalent parameter for the FCR providing groups composing from the generation modules type A and/or B as defined on Article 5 of the Code “the Requirements for the Connection of the with the Generator’s Grid” approved with ERE Board Decision no. 129 dated 04.06.2018 and/or the customer units regarding active power control for the response to the load as defined on Article 28 of the Code “Network Code for the Load Connection” approved with ERE Board Decision no.128, dated 04.06.2018.
 9. The FCR provider shall have the right to collect the respective data for more than one FCR providing unit if the maximum power of the aggregated units is under 1,5 MW and it is possible the clear verification of FCR activation.

10. On the request of the TSO where it is connected the reserve, the FCR provider shall set available on the real time the information mentioned on Paragraph 9, with a time solution of at least 10 seconds.
11. On the request of the TSO where the reserve is connected and where necessary for the verification of FCR activation, the FCR provider shall set available the data listed on paragraph 9 regarding the technical installations that are part of the same FCR unit.

Article 224. Pre-qualification process of FCR

1. The TSO shall hold a prequalification process of the FCR and shall publish the details of the FCR qualification process.
2. A FCR possible provider shall present to the TSO where the reserve is connected, if it complies with the technical and additional requirements defined on Article 223 successfully complying with the prequalification process of the FCR providing units or the FCR providing groups, described on Paragraphs 3 to 6 of this Article.
3. The possible FCR provider shall submit the formal application to the TSO where it is connected the reserve together with the required information of the possible FCR providing units or FCR providing groups. Within 8 weeks from taking the application, the TSO shall confirm if the application is complete. When the TSO considers that the application is not complete, the possible FCR provider shall deliver the required detailed information within 4 weeks from receiving the request for the additional information. When the FCR possible provider does not deliver the required information within this term, the application shall be considered withdrawn.
4. Within 3 months from the confirmation that the application is complete, the TSO shall evaluate the provided information and shall decide if the possible FCR providing units or the FCR providing groups met the criteria for a FCR prequalification. The TSO shall inform its decision for the possible FCR provider.
5. When the compliance with the defined requirements of this code is verified from the TSO, the prequalification shall be considered recognized.
6. The qualification of the FCR providing units or the FCR providing groups shall be re-assessed:
 - a. at least once in 5 years;
 - b. if there is a change of the technical conditions, the availability or the equipments; and
 - c. in case of equipments modernization those connected to FCR activation.

Article 225. FCR provisions

1. The TSO shall ensure the availability of at least its FCR obligation agreed between the TSO-s of the synchronous area according to Articles 222 and 232.
2. The TSOs of a synchronous area shall determine at least on an annual basis the size

of the K- Factor synchronous area taking into account the following factors:

- a. the FCR reserve capacity divided by the maximum steady-state frequency deviation;
 - b. the auto-control of generation;
 - c. the self regulation of the load, considering the contribution according to Articles 27 and 28 of the “Network Code for the Load Connection” approved with ERE Board Decision no. 128, dated 04.06.2018;
 - d. the response of HVDC interconnector’s frequency; and
 - e. LFSM and FSM activation according to Articles 13 and 15 of the Code for the “Requirements on the Connection of Grid Generators” approved with ERE miratuar me vendimin ERE Nr. 129 Datë 04.06.2018.
3. The TSO -s of the synchronous area, on the operational agreement of the synchronous area, shall define the allocation of K factor for each LFC area, that shall be based on at least:
- a. FCR initial obligations;
 - b. generation auto-control;
 - c. the self – regulation of load;
 - d. the frequency connection between HVDC synchronous areas;
 - e. FCR exchange.
4. The FCR provider shall guarantee the continuous availability of FCR, except of a forced outage of a FCR providing unit during the time period in which it is obliged to provide FCR.
5. Each FCR provider shall inform the TSO where the reserve is connected, as soon as possible regarding the amendments of actual total or partial availability of its FCR providing unit and/or its FCR providing group that are important for the pre-qualification results.
6. The TSO shall require from its FCR providers to ensure that the loss of a FCR providing unit does not endanger the system security by:
- a. limiting the share of the FCR provided for each FCR providing unit to 5 % of the FCR reserve capacity required for all synchronous area;
 - b. replacing the FCR which is made unavailable due to the forced or unavailable outage as soon as technically possible and according to the conditions that shall be defined by TSO where the reserve is connected.

7. The FCR providing unit or the FCR providing group with an energy reservoir that limits its capability to provide FCR shall activate its FCR for the time the frequency deviation continues.
8. The FCR providing unit or the FRC providing group with an energy reservoir that limits its FCR providing capability to provide FCR shall activate its FCR for the time period the frequency deviation continues, except if its power reservoir is exteriorated to positive or negative direction.
9. The FCR provider shall specify the energy reservoir limitations for its FCR providing units or the FCR providing groups to the pre-qualification process according to Article 224.
10. The FCR provider that uses the FCR providing unit or the FCR providing group with an energy reservoir limiting their capability to provide FCR shall ensure the restoration of the energy reservoirs to both directions (positive and negative) as soon as possible, within 2 hours from the termination of the emergency status.

Title 6 – The reserve to reset the frequency

Article 226. FRR Dimensioning

1. All TSO-s of a LFC block shall define the FRR dimensioning rules to the LFC block operation agreement.
2. The FRR dimensioning rules shall comprise at least the following requirements:
 - a. The block TSO-s shall define the required FRR reserve capacity of the LFC block based on consecutive historical data including at least the imbalance historical values of LFC block. The receive of these historical data shall cover at least the time to restore frequency. The time period reviewed for these data shall be the representative and shall include at least the full time period terminating not earlier than 6 months prior to the calculated date;
 - b. The block TSO-s shall determine the required FRR reserve capacity of the LFC block sufficient to respect the actual targeted parameters of FRCE on Article 200 for the time period mentioned on point (a) based at least on the probability methodology. Using this probability methodology, the TSO shall take into consideration the use of this probability methodology, the TSO shall take into consideration the limits defined on the agreement for the reserves allocation or exchange due to the possible violations of operational security and the FRR availability requirements. All TSO-s of the LFC block shall take into consideration any important expected amendment to the distribution of the imbalances of the LFC block or shall take into consideration the other affecting factors that are important regarding the reviewed time period;
 - c. The TSO-s of the LFC block shall define the automatic FRR level, the manual FRR, full automatic FRR activation time and the full manual FRR activation time to be compatible with the requirements of paragraph (b). For this purpose, the full

automatic activation time of the FRR of a LFC block and the full manual activation time of the FRR of a LFC block shall not be higher than the time to restore frequency;

- d. The TSO of the LFC block shall define the size of the dimensioning incident which shall be the largest imbalance that may result from one immediate change of active power of the only generation module, the only customer object or the only HVDC interconnector or from the disconnection of the AC line within the LFC block;
- e. The TSO of a LFC block shall define the FRR positive reserve capacity, which shall be lower than the positive incident of LFC block dimensioning;
- f. The TSO of the LFC block shall define the FRR negative reserve capacity, which shall not be lower than the negative incident of the LFC block dimensioning;
- g. The TSO of the LFC block shall define the FRR reserve capacity of a LFC block, any possible geographical limitation for its distribution within the LFC block and any possible geographical limitation for any reserve exchange or reserve allocation with the other LFC blocks to be compatible with the security of operation limits;
- h. The TSO of the LFC block shall ensure that the positive FRR reserve capacity or the combination of FRR / RR reserve capacity is sufficient to cover the positive imbalances of the LFC block for at least 99% of the time, based on the historical data mentioned on point (a);
- i. The TSO of the LFC block shall ensure that the negative FRR reserve capacity or the combination of the FRR and the RR reserve capacity is sufficient to cover the negative imbalances of the LFC block for at least 99 % of the time based on the historical data mentioned on Point (a);
- j. The TSO of the LFC block may reduce the FRR positive reserve capacity of the LFC block, resulting from the FRR dimensioning process by signing an agreement for the FRR allocation with the other LFC areas according to the provisions of Title 8. At the allocation agreement the reduction of the positive FRR reserve capacity of a LFC block shall be limited to the difference, if positive, between the size of the positive dimensioning incident and the reserve capacity of the FRR that is required to cover the positive imbalances of the LFC block during 99% of the time, based on the historical data mentioned on point (a). The reduction of the positive reserve capacity shall not exceed 30% of the size for the positive dimensioning incident;
- k. The TSO of the LFC block may reduce the FRR negative reserve capacity of the LFC block, resulting from the FRR dimensioning process by terminating the FRR allocation agreement with the other LFC blocks according to the provisions of Title 8. On the termination agreement the reduction of the negative FRR reserve capacity of a LFC block shall be limited to the difference, if positive, between the size of the negative dimensioning incident and the reserve capacity of the FRR that is required to cover the negative imbalances of the LFC block during 99% of the time, based on the historical data mentioned on point (a).

3. The TSO of the LFC block shall define on the LFC block operational agreement the specific allocation of the responsibilities between the TSO-s of the LFC areas for the implementation of the obligations defined on Paragraph 2.
4. The TSO of the LFC block shall have the FRR reserve capacity sufficient at any time according to the FRR dimensioning rules and shall specify to the operational agreement of the LFC block the escalated procedure for the cases of insufficient risk of the FRR reserve capacity at the LFC block.

Article 227. FRR Technical minimum requirements

The minimum requirements of the FRR are:

- a. each FRR providing unit and each FRR providing group shall be connected to only one TSO where the reserve is connected;
- b. a FRR providing unit shall activate FRR according to the setpoint received from the reserve instructing TSO;
- c. the reserve instructing TSO shall be the reserve connecting TSO or the TSO that shall be defined by the reserve connecting TSO in an FRR Exchange Agreement according to the provisions of Article 234 (3);
- d. the FRR providing unit or the FRR providing group of the automatic FRR shall have an automatic FRR activation delay that does not exceed 30 seconds;
- e. the FRR provider shall ensure that it may be monitored the FRR activation of any FRR providing units. For this purpose, the FRR provider shall be able to supply the reserve connecting TSO and the reserve instructing TSO the real-time measurements of the connection point agreed with the reserve connecting TSO of:
 - i. scheduled active power production;
 - ii. the real time active power for:
 - any FRR providing unit,
 - any FRR providing group, and
 - any generation module or customer unit of a FRR providing group with a maximum active power higher or equal to 1,5 MW;
- f. a FRR providing unit, or the FRR providing group for automatic FRR shall be able to activate its complete FRR reserve capacity of the automatic FRR within complete activation time of automatic FRR;
- g. the FRR providing unit or the FRR providing group for manual FRR shall be able to activate its complete reserve capacity of manual FRR within the complete manual activation time of the FRR
- h. the FRR provider shall comply the availability requests of the FRR; and

- i. the providing unit of the FRR or the FRR providing group shall comply the requirements of the ramping range of LFC block.
2. The TSO-s of the LFC block shall specify the availability requirements of FRR and the requirements for the quality of control of the FRR providing units and the FRR providing groups for their LFC block at the operational agreement of LFC block according to Article 213.
3. The TSO where the reserve is connected shall approve the technical requirements for the connection of the providing units of the FRR and the FRR providing groups to ensure the safe distribution of the FRR.
4. Any FRR provider shall:
 - a. ensure that the FRR providing units and FRR providing groups fulfil the FRR technical minimum requirements, the FRR availability requirements and the ramping range requirements on Paragraphs 1 to 3; and
 - b. inform the TSO that ordered the reserve for a reduction of the actual availability of its FRR providing unit or its FRR providing group without undue delay.
5. Any TSO that ordered the reserve shall ensure the compatibility monitoring with the FRR minimum technical requirements on Paragraph 1, the FRR availability requirements on Paragraph 2, the ramping level requirements on paragraph 1 and the requirements for connection paragraph 3 of its FRR providing unit and its FRR providing groups.

Article 228. Pre-qualification process of FRR

1. After the entry into force of this Code the TSO shall hold a prequalification process of the FRR and shall explain and publish its details.
2. A FRR possible provider shall present to the TSO where the reserve is connected, or the defined TSO from the TSO where the reserve is connected on the FRR exchange agreement that it complies with the minimum technical FRR requirements defined on Article 227 (1), the availability requirements of FRR defined on Article 227 (2), the ramping level requirements defined on Article 227 (1) and the connection requirements defined on Article 227 (3), successfully fulfilling the prequalification process of the FRR providing units or the FRR providing groups, defined on Paragraphs 3 to 6 of this Article.
3. The possible FRR provider shall submit the formal application to the TSO where it is connected or together with the guide TSO the required information of the possible FCR providing units or FCR providing groups. Within 8 weeks from taking the application, the TSO where the reserve is connected or the defined TSO considers that the application is not complete, they shall require additional information and the possible FRR provider shall deliver the additional required information within 4 weeks from receiving the request. When the FRR possible provider shall not deliver

the required information within this term, the application shall be considered withdrawn.

4. Within 3 months after the TSO where the reserve is connected or the defined TSO confirms that the application is complete, the TSO where the reserve is connected or the defined TSO shall evaluate the provided information and shall decide if the possible FRR providing units or the FRR providing groups met the criteria for a FRR prequalification. The TSO shall inform its decision for the possible FRR provider.
5. The FRR providing unit qualification or the FRR providing groups from the TSO where the reserve is connected or the defined TSO shall be valid for all LFC block.
6. The qualification of the FRR providing units or FRR providing groups shall be re-evaluated:
 - a. at least once in 5 years; and
 - b. where the technical or availability requirements or the equipments are changed.
7. To guarantee the operational security, the TSO where the reserve is connected shall have the right to exempt the FRR providing groups from the FRR provision based on the technical arguments such as the geographical distribution of the generation modules or the customer units belonging to the FRR providing group.

Title 7 – Replacement reserves

Article 229. RR Dimensioning

1. The TSO-s of a LFC block shall have the right to implement the replacement process of the reserve.
2. To be compatible with the targeted parameters of FRCE mentioned on Article 200, the TSO-s of the LFC block with one RRP, shall perform the combined process of FRR and RR dimensioning to comply with the requirements of Article 226 (2), by defining the dimensioning rules of RR at the LFC block operational agreement.
3. The RR dimensioning rules shall comprise at least the following requirements:
 - a. shall have sufficient positive reserve capacity to restore the FRR required positive amount;
 - b. shall have sufficient negative reserve capacity of RR to restore the required negative FRR amount;
 - c. shall have sufficient RR reserve capacity, when this is considered for FRR reserve capacity dimensioning, to respect the objective of FRCE quality for the questioned time period; and
 - d. the compatibility with the operational security of the LFC block to define the RR reserve capacity.

4. The TSO-s of the LFC block may reduce the RR positive reserve capacity of the LFC block, resulting from the RR dimensioning process, holding an agreement for the RR allocation for that RR positive reserve capacity with the other LFC blocks according to the provisions of Title 8 of IV Part. The TSO taking the control capacity shall limit the reduction of RR positive reserve capacity to:
 - a. guarantee that it can still fulfill the targeted parameters of FRCE defined on Article 200;
 - b. guarantee that the security of operation is not endangered; and
 - c. ensure that the reduction of the RR positive reserve capacity reduction shall not exceed the RR remaining positive reserve capacity of the LFC block.
5. The TSO-s of the LFC block may reduce the RR negative reserve capacity of the LFC block, resulting from the RR dimensioning process, holding an agreement for RR allocation for that RR negative reserve capacity with other LFC blocks according to the provisions of Title 8, Part IV. The TSO that takes the control capacity shall limit the reduction of the RR negative reserve capacity to:
 - a. guarantee that it still may fulfill the FRCE targeted parameters defined on Article 200;
 - b. guarantee that the operational security is not endangered; and
 - c. ensure that the reduction of the RR negative reserve capacity does not exceed the RR remaining negative reserve capacity of the LFC block.
6. The TSO-s of the LFC block shall specify on the LFC block operational agreement the allocation of the responsibilities between the TSO-s of different LFC areas to implement the dimensioning rules defined on Paragraph 3.
7. Any TSO shall have the RR sufficient reserve capacity according to RR dimensioning rules at any time. The TSO-s of the LFC block shall specify on the operation agreement of the LFC block the escalated procedure for the insufficiency risk cases of RR reserve capacity at the LFC block.

Article 230. RR Technical minimum requirements

1. The RR providing unit and the RR providing groups shall comply the following technical requirements:
 - a. connection to only one TSO where the reserve is connected;
 - b. RR activation according to the respective point received from the ordering TSO of the reserve;
 - c. the TSO, ordering the reserve shall be the TSO where the reserve is connected or the TSO defined from the TSO where the reserve is connected on the RR exchange agreement according to Article 234 (3);

- d. activation of the full RR reserve capacity within the activation time defined from the TSO ordering the reserve;
 - e. deactivation of RR according to the points provided from the TSO ordering the reserve;
 - f. RR provider shall ensure that it may be monitored the RR activation of the RR providing units within the reserve providing group. For this purpose, the RR provider shall be able to supply the TSO where the reserve is connected and the TSO ordering the reserve the real time measures of the connection point or another interaction point agreed with the TSO where the reserve is connected regarding:
 - i. scheduled generation of active power, for any RR providing unit or group and for any generation module or customer unit of a RR providing group with a maximum generation of active power higher or equal to 1,5 MW;
 - ii. the generation of instantaneous active power, for each RR providing unit or group with a maximum active power generation higher or equal to 1,5 MW;
 - g. compliance of RR availability requirements.
2. The TSO-s of the LFC block shall specify the RR availability requirements for the quality of control of the RR providing units or groups on the operational agreement of LFC block.
 3. The TSO where the reserve is connected shall approve the technical rules for the RR providing unit or the RR providing group connection to ensure the safe delivery of RR on the description of the pre-qualification process.
 4. Any RR provider shall:
 - a. ensure that the RR providing unit or the RR providing groups shall comply with the RR minimum technical requirements and the RR availability requirements mentioned on Paragraphs 1 to 3; and
 - b. inform the TSO ordering the reserve for a reduction of actual availability or the forced outage of its RR providing unit or RR providing group or part of RR providing group as soon as possible.
 5. Any TSO ordering the reserve shall ensure the compatibility with the RR technical requirements, the RR availability requirements and the connection requirements mentioned on this Article regarding the RR providing unit or the RR providing group.

Article 231. Pre-qualification process of RR

1. Each TSO of the LFC area has implemented the RRP and shall held a RR pre-qualification process after the entry into force of this code and shall explain and publish its details.
2. A FRR possible provider shall present to the TSO where the reserve is connected, or the defined TSO from the TSO where the reserve is connected on the RR exchange agreement that it complies with the minimum technical RR requirements, the availability RR requirements and the connection requirements mentioned on Article 230 successfully completing the pre-qualification RR providing units or the RR providing groups, mentioned on Paragraphs 3 to 6.
3. The possible RR provider shall submit the formal application to the TSO where the reserve is connected or to the defined TSO together with the information required of the possible RR providing units or RR providing groups. Within 8 weeks from taking the application, the TSO where the reserve is connected or the defined TSO shall confirm if the application is complete. When the TSO where the reserve is connected or the defined TSO considers that the application is not complete, they shall require additional information and the possible RR provider shall deliver the additional required information within 4 weeks from receiving the request. When the possible RR provider shall not issue the required information within this term, the application shall be considered withdrawn.
4. Within 3 months after the TSO where the reserve is connected or the defined TSO confirms that the application is complete, the TSO where the reserve is connected or the defined TSO shall evaluate the provided information and shall decide if the possible RR providing units or the RR providing groups met the criteria for a RR pre-qualification. The TSO where the reserve is connected or the defined TSO shall inform their decision for the possible RR provider.
5. The qualification of the RR providing units or the RR providing groups shall be re-assessed to:
 - a. at least once in 5 years; and
 - b. when the technical, availability requirements or the equipments are changed.
6. To guarantee the operational security, the TSO where the reserve is connected shall have the right to exempt the RR providing groups from the RR provision based on the technical arguments such as the geographical distribution of the generation modules or the customer units belonging to the RR providing group.

Title 8 – The exchange and allocation of the reserve

Chapter 1 – Exchange and allocation of the reserves within one synchronous area

Article 232. Exchange of FCR within the synchronous area

1. All TSO-s including the FCR exchange within the synchronous area shall be

- compatible with the requirements defined on paragraphs 2 to 9. The exchange of the FCR shall mean the transferring of the FCR obligation from the TSO that receives the reserve where the reserve is connected for the reserve capacity corresponding to the FCR.
2. All TSO-s included to the FCR exchange within the synchronous area shall respect the limits and requirements for the FCR exchange within the synchronous area specified on the Table of Annex VI.
 3. In case of FCR exchange, the TSO where the reserve is connected and the TSO receiving the reserve shall inform this exchange according to Article 219.
 4. Any TSO where the reserve is connected that takes the reserve or the affected TSO included to the exchange of FCR may refuse the exchange of FCR if resulting that the power flows endanger the limits of operational security when activating the FCR reserve capacity, subject to FCR exchange.
 5. Each affected OST shall verify that its reliability margin, set according to Article 22 of the EU 2015/1222 Regulation, is sufficient to accommodate the power flows resulting from the activation of the FCR reserve capacity, subject to FCR exchange.
 6. All TSO-s of a LFC area shall regulate their calculation parameters of FRCE for the FCR exchange.
 7. The TSO where the reserve is connected shall be responsible for the requirements mentioned on Articles 223 and 225 regarding the FCR reserve capacity, subject to FCR exchange.
 8. FCR unit or group shall be responsible to the TSO where the reserve is connected for the FCR activation.
 9. The respective TSO-s shall ensure that the FCR exchange shall not impede any TSO to comply with the requirements of the reserve on Article 225.

Article 233. FCR allocation within a synchronous area

1. It is prohibited for a TSO to share the FCR with the other TSO-s of the synchronous area to comply with its obligation of FCR and to reduce the total amount of FCR of the synchronous area according to Article 222.

Article 234. General requirements for the FRR and RR exchange within the synchronous area

1. All TSO -s of a synchronous area shall define at the synchronous area operational agreement the roles and the responsibilities of the TSO where the reserve is connected, the TSO receiving the reserve and the affected TSO for the exchange of FRR and/or RR.
2. In case of FRR/RR exchange, the TSO where the reserve is connected and the TSO receiving the reserve shall inform this exchange according to the requirements of

Article 219.

3. The TSO where the reserve is connected and the TSO receiving/taking the reserve that participate to the FRR/RR exchange shall specify to the FRR/RR exchange agreement their roles and responsibilities, including:
 - a. the responsibility of the TSO ordering the reserve for the FRR/RR reserve capacity subject to the exchange of FRR/RR;
 - b. the amount of the FRR/RR reserve capacity, subject to the exchange of FRR/RR;
 - c. the implementation of the Cross-Border FRR/RR Activation Process according to Article 159 and Article 160;
 - d. FRR/RR technical minimum requirements related to the cross-border FRR/RR activation process where the TSO connecting the reserve is not the TSO ordering the reserve;
 - e. the implementation of the FRR/RR prequalification for the FRR/RR reserve capacity subject to the exchange of FRR/RR according to Articles 228 and 231;
 - f. the responsibility to monitor the compliance of the FRR/RR technical requirements and FRR/RR availability requirements for the FRR/RR reserve capacity subject to the exchange of FRR/RR according to Articles 227 (5) and 230 (5); and
 - g. procedures to ensure that the Exchange of FRR/RR does not lead to power flows in violation to the operational security limits.
4. Any TSO connecting the reserve, the TSO receiving the reserve or the affected TSO, included to the FRR or RR exchange may refuse the exchange mentioned on Paragraph 2, if resulting in power flows that violate the operational security limits when activating the FRR and RR reserve capacity, subject to FRR/RR exchange.
5. The respective TSO-s shall ensure that the FRR/RR exchange shall not impede any TSO to comply with the requirements of the reserve defined on FRR or RR dimensioning rules in Articles 226 and 229.
6. All TSO-s of the LFC block shall specify at the operation agreement of the LFC block the roles and responsibilities of the TSO where the reserve is connected, the TSO receiving the reserve or the affected TSO for the FRR and or RR exchange with the TSO of other LFC areas.

Article 235. General requirements for the allocation of FRR and RR within the synchronous area

1. All TSOs of a synchronous area shall specify at the synchronous area of the operational agreement the roles and responsibilities of the control capability providing TSO, the control capability receiving TSO and the affected TSO for the FRR/RR allocation.
2. In case of the FRR/RR allocation, the control capability providing TSO and control capability receiving TSO shall perform a notification process according to Article

- 219.
3. The control capability receiving TSO and the control capability providing TSO included to FRR/RR allocation shall specify the FRR/ RR allocation agreement their roles and responsibilities including:
 - a. the amount of FRR/RR reserve capacity, subject to FRR/RR allocation;
 - b. the implementation of the cross-border FRR/RR activation process according to Articles 216 and 217;
 - c. procedures to ensure that the activation of the FRR/RR reserve capacity subject to the FRR/RR allocation does not lead to power flows violating the operational security limits.
 4. Any TSO providing the controlling capability and the TSO that takes the controlling capability or the affected TSO involved to FRR/RR allocation may refuse the FRR/RR allocation if resulting power flows that violate the operational security limits when activating the FRR and RR reserve capacity, FRR/RR allocation object.
 5. In case of FRR/RR allocation, the TSO providing the control capability shall make available part of its own FRR/RR capacity required to fulfil its reserve requirements for FRR and RR resulting from the FRR/RR dimensioning rules of Articles 226 and 229. The TSO providing the control capability can be either:
 - a. the TSO ordering the reserve for the FRR/RR reserve capacity, subject of FRR/RR allocation, or
 - b. the TSO having access to its FRR/RR reserve capacity subject to FRR/RR allocation through an implemented cross-border FRR/RR activation process, as part of an FRR/RR exchange agreement.
 6. Any TSO receiving the control capability shall be responsible to cope with incidents and imbalances in case the FRR/RR reserve capacity subject to FRR/RR allocation that is unavailable due to:
 - a. constraints for frequency restoration or control program regulation related to operational security; and
 - b. partial or full usage of the FRR/RR reserve capacity of the TSO providing the control capability.
 7. The TSO of a LFC Block shall define at the LFC block operational agreement their roles and the responsibilities of the TSO providing the control capability, the TSO that takes the control capability and the affected TSO for the FRR and RR allocation with the other TSOs of the LFC Blocks.

Article 236. The exchange of FRR within the synchronous area

1. All TSO-s of a synchronous area composed of more than one LFC block included to the FRR exchange within the synchronous area shall be according to the requirements and restrictions for the exchange of FRR submitted on Table of Annex VII.

Article 237. FRR allocation within the synchronous area

1. Any TSO of a LFC block shall have the right to allocate FRR with other LFC blocks of the synchronous area within the restrictions defined on the dimensioning rules of the FRR, Article 226 (1) and according to Article 235.

Article 238. The exchange of RR within the synchronous area

1. All TSO-s of a synchronous area composed of one or more LFC block, included to the RR exchange within the synchronous area shall be according to the requirements and restrictions of RR exchange submitted on the Table of Annex VIII.

Article 239. RR allocation within the synchronous area

1. Each TSO of the LFC block shall have the right to allocate RR with other LFC blocks of the synchronous area within the restrictions defined on the dimensioning rules of RR in Article 229 (4) and (5) and according to Article 235.

Chapter 2 – Cross-border FRR/RR activation process

Article 240. Cross-border FRR/RR activation process

1. All TSO-s included to the FRR and RR crossborder activation process at the same or different synchronous areas shall comply the requirements according to Articles 216 and 217.

Title 9 – Time control process

Article 241. Time control process

1. The purpose of electric duration control is to control the average value of system frequency compared to the nominal frequency.
2. The synchronous area TSO-s shall define on the synchronous area of the operation agreement the methodology for correcting the deviation of electric duration, which shall include:
 - a. durations within which the TSO-s shall try to maintain the electric duration deviation;
 - b. frequency regulations to return the electric duration deviation into zero; and
 - c. the actions to increase or decrease the average frequency of the system through the active power reserves.
3. The observer of the synchronous area shall:

- a. monitor the electric duration deviation;
- b. calculate the size of frequency regulation and
- c. coordinate the actions of time control process.

Title 10 – Collaboration with the DSO

Article 242. The groups or the bidding units of the reserve connected to the DSO grid

1. The TSO and DSO shall collaborate to facilitate and enable the delivery of active power reserves by reserve providing groups or reserve providing units at the distribution network.
2. For the pre-qualified processes purpose for the FCR in Article 224, the FRR in Article 228 and the RR in Article 231, the TSO shall develop and specify, in an agreement with the DSO the conditions for the exchange of information required for these pre-qualification processes for the bidding reserve units or groups on the distribution system and for the distribution of active power reserves. The pre-qualification purposes shall specify the information that shall be ensured from the possible bidding reserve units or groups which include:
 - a. voltage levels and connection points of the reserve bidding units or groups;
 - b. the type of Active Power Reserves;
 - c. the maximum reserve capacity provided by the reserve bidding units or groups at each connection point; and
 - d. the maximum rate of active power change for the reserve providing units or groups.
3. The pre-qualification process is supported to the agreed time-frames and the rules regarding the exchange of information and the distribution of active power reserves between the TSO and the DSO. The prequalification process shall have a maximum duration of 3 months from the delivery of the full formal application from the bidding reserve unit or group.
4. During the pre-qualification of a reserve bidding unit or group that is connected to the distribution system the DSO, in cooperation with the TSO, the DSO has the right to define the restrictions or to exclude the delivery of the active power reserves to the distribution system, based on the technical reasons such as the geographic location of the bidding reserve units or groups.
5. The DSO shall have the right in cooperation with the TSO, before the activation of the reserves, to set temporary restrictions for the distribution reserves of active power to the distribution system. The TSO and the DSO shall agree for the procedures that shall be applied.

Title 11 – Transparency of information

Article 243. General requirements of transparency

1. The TSO shall ensure that the information mentioned on this Title shall be published on the same time and on the same form and not create actual or possible competition advantage/disadvantage for any party or category and having into consideration the commercial sensitive information.
2. The TSO shall use the available acknowledgements and the means to exceed the technical restrictions and to ensure the availability and accurateness of information set available to ENTSO – E according to Article 245 (3).
3. The TSO shall ensure the availability and accurateness of information set available to ENTSO-E according to articles 244 to 250.
4. All the materials for publication mentioned on Articles 244 to 256 shall be set available to ENTSO-E which shall publish this material on the transparency information platform established according to Article 3 of EU Regulation no. 543/2013¹¹.

Article 244. Information on the operational agreements

1. OST shall send the content of the synchronous area operational agreement to ERE not later than 1 month before its entry in force.
2. All TSO-s of each synchronous area shall send the content of the synchronous area operational agreement to ENTSO-E for publication not later than 1 week before its entry into force.
3. The TSO shall send the content of the operational agreement for the LFC Block at ERE

Article 245. Information on frequency quality

1. When the TSOs of the synchronous area decide to modify the values for the defining parameters of the frequency quality, or the targeted parameter of frequency quality according to Article 199, shall send the modified values to ENTSO – E for publication at least 1 month before the entry into force of the synchronous area operational agreement.
2. The TSO-s of the synchronous area shall send the values of the targeted parameters of FRCE for each LFC block and for each LFC area to ENTSO – E for publication at least 1 month before their application.
3. The TSO -s of the synchronous area shall send the ramping period specified according to Article 206 to ENTSO-E for publication at least 3 months before the entry into force.

¹¹ 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

Article 246. Information on the load-frequency control structure

1. All TSOs of synchronous area shall send to ENTSO – E for publication at least 3 months before the applicability of the operational agreement of the synchronous area:
 - a. information on the process activation structure of the synchronous area, including at least the information on the monitoring areas, LFC areas and LFC blocks and their TSOs; and
 - b. information on the process responsibility structure of the synchronous area, including at least information on the developed processes according to Article 209 (1) and (2).
2. All TSOs implementing the imbalance netting process shall publish information regarding this process, which shall at least include the list of the participating TSOs and the starting date of the imbalance netting process.

Article 247. Information on FCR

1. TSO-s of the synchronous area shall send the dimensioning method for the FCR according to Article 222 (2) to the ENTSO - E for publication at least 1 month before its applicability.
2. TSO-s of the synchronous area shall send the total amount of the FCR reserve capacity and the FCR reserve capacity allocation required for each TSO specified according to Article 222 (1) as a FCR initial capacity to ENTSO -E for publication at least 1 month before their applicability.
3. The TSO-s of the synchronous shall send the qualities of the FCR defined according to Article 223 (2) and the additional requirements for the bidding groups of the FCR according to Article 223 (3) to ENTSO -E for publication at least three months before their applicability.

Article 248. Information on FRR

1. The Tso of the LFC Block shall send the availability requests of the FRR and the requirements for the quality of control specified in conformity with Article 227 (2) as well as the technical requirements for the connection specified according to Article 227 (3) for their LFC block to ENTISOE for publication, at least before 3 months prior to their application.
2. The TSO of the LFC Block shall send the FRR dimensioning rules specified for their LFC block according to Article 226 (1) to ENTSO-E for publication at least before 3 months before the entry into force of the LFC block operational agreement.
3. The TSO-s of the synchronous area shall send, until on 30 November of each year, a foresee of the FRR reserve capacities for each LFC block for the next year to ENTISO-E for publication.

4. The TSO-s of the synchronous area shall send, within 30 days with the termination of the quarter, the current FRR reserve capacities of each LFC block the latest quarters to ENTSO- E for publication.

Article 249. Information on RR

1. TSO-s as a LFC Block operating the reserve replacement process shall send the RR availability requirements defined in accordance to Article 230 (2) and the technical requirements for the connection specified in conformity with Article 230 (3) for their LFC block for publication to ENTSOE, within 3 months before their implementation.
2. All TSOs of each Synchronous Area shall send until 30 Novemer of each year, the provision of the RR reserve capacity for each LFC block for the next year to ENTSO-E for publication.
3. The TSO-s of the synchronous area shall send, within 30 from the termination of the quarter, the current reserve capacity of the RR of each LFC block of the latest quarter to ENTSO-E for publication.

Article 250. Information on sharing and exchange

1. TSO-s of the synchronous area shall send annual compilations of the agreement for the FRR allocation and for the RR allocation for each FCR block within the synchronous area to the ENTSO – E for publication in conformity with Articles 248 (3) and 249 (2). These compilations shall include the information as follows:
 - a. the identity of the LFC blocks when there is an agreement for the allocation of the FRR or RR; and
 - b. The FRR and RR part that is reduced due to any agreement for the allocation of the FRR or RR.
2. All TSO-s of each synchronous area shall send the information for the allocation of the FCR between the ENTSO-E synchronous areas for publication in conformity with Article 247 (1).

This information shall contain:

 - a. the amount of the FCR reserve capacity allocated between the TSO-s that have signed the agreement for the FCR allocation; and
 - b. the effects of FCR allocation to the FCR reserve capacity of the involved TSO-s.
3. Where applicable, all TSO-s shall publish the information for the FCR, FRR and RR exchange.

Annex I

Voltage levels mentioned on Article 108:

Table 1. Voltage ranges to the connection point between 110 kV and 300 kV

Synchronous area	Voltage level
Continental Europe	0,90 pu-1,118 pu

Table 2. Voltage ranges at the connection point between 300 kV and 400 kV

Synchronous area	Voltage level
Continental Europe	0,90 pu-1,05 pu

Annex II

Defining parameters of the frequency quality mentioned on Article 199:

Table 1. The parameters to define the frequency quality of the synchronous area

	Continental Europe
Standard frequency range	± 50 mHz
Maximum instantaneous frequency deviation	800 mHz
Maximum stable status frequency deviation	200 mHz
Time to reset the frequency	15 minutes
Activation time of the emergency situation	5 minutes

Targeted parameters of frequency quality mentioned on Article 199:

Table 2. The targeted parameters of frequency quality

	Continental Europe
Maximum number of minutes out of standard frequency range	15 000

Annex III

Minimal technical requirements of the FCR, mentioned on Article 223:

FCR Characteristics

Minimum accuracy of frequency measurement	10 mHz or the industrial standard if better
Maximum combined effect of inherent Frequency Response Insensitivity and possible minimum level of frequency response of the FCR providing units or the FCR bidding groups.	10 mHz

FCR full activation time	30 s
Full deviation of FCR frequency activation.	± 200 mHz

Annex IV

The restrictions and requirements of FCR exchange mentioned on Article 232:

The restrictions and requirements for the FCR exchange

FCR exchange is permitted between:	Restrictions for the FCR exchange
Block TSO-s Adjacent LFC	<ul style="list-style-type: none"> ○ The TSOs of a LFC Block shall ensure that at least 30 % of their total obligations of the initial combinations of the FCR physically provided within their LFC block; and ○ the amount of FCR reserve capacity, physically set to a LFC Block as result of FCR exchange with the other LFC blocks, shall be maximally bordered of: <ul style="list-style-type: none"> ▪ 30% of total obligations of the initial FCR combinations of the LFC block TSO-s at which the reserve capacity of the FCR is physically connected; and ▪ 100 MW reserve capacity of the FCR.
TSO-s of LFC areas of the same LFC block	<ul style="list-style-type: none"> ○ The TSOs of the LFC areas constituting a LFC block shall have the right to specify to the operational agreement of LFC Block the internal limitations for the FCR exchange between the LFC areas of the same LFC Block to: <ul style="list-style-type: none"> ▪ avoid internal congestions due to the activation of the FCR; ▪ ensure an equal distribution of the reserve capacity FCR for the network allocation; and ▪ avoid the stability damage of the FCP or the operational security is affected.

Annex V

The restrictions and requirements of FRR exchange within the synchronous area mentioned on Article 236:

The restrictions and requirements for the FRR exchange

RR exchange is permitted	The restrictions for the FRR exchange

between	
TSO blocks of different LFC	<ul style="list-style-type: none"> ○ The TSOs of the LFC Areas constituting a LFC Block shall ensure that at least 50 % of their total reserve capacity combined of the FRR resulting from the FRR dimensioning rules in Article 226 (1) and before any reduction due to the FRR allocation in conformity with Article 226 (2) shall remain within their LFC block
OST of LFC areas of the same LFC block	<ul style="list-style-type: none"> ○ The TSOs of the LFC Areas constituting a LFC block shall have the right, if required, to define internal restrictions for the FRR exchange between LFC areas of the LFC block in the LFC block operational agreement as to: <ul style="list-style-type: none"> ▪ avoid internal congestions due to the activation of FRR reserve capacity subject to the FRR exchange; ▪ ensure an equal distribution of the FRR at all synchronous area and the LFC blocks in the case of network allocation; ▪ avoid that the stability of the FRP or that of operational security is affected.

Annex VI

The requirements and restrictions of RR exchange within the synchronous area mentioned on Article 238:

The requirements and restrictions for RR exchange

RR exchange is permitted between	Restrictions for the RR exchange
TSO blocks of different LFC	<ul style="list-style-type: none"> ○ TSO-s of the LFC areas composing a LFC block shall ensure that at least 50% of their total combined reserve capacity of RR resulting from RR dimensioning rules according to Article 229 (3) before each reduction of RR reserve capacity as the result of the RR allocation according to Article 229 (4) and Article 229 (5), shall remain within their LFC block.
The TSO-s of LFC area of the same LFC block	<ul style="list-style-type: none"> ○ The TSO-s of the LFC areas composing a LFC block shall have the right, if required, to define internal restrictions for the RR exchange between the LFC areas of the LFC block at the LFC block operation agreement to: <ul style="list-style-type: none"> ▪ prevent the internal congestions due to the activation of RR reserve capacity, subject of RR exchange; ▪ ensure an equal RR distribution to all synchronous area in case of network allocation; and ▪ avoid the FRP stability damage or the operational security

EMERGENCY AND RESTORATION CODE

Part I – General provisions

Article 251. Object

1. In order to maintain operational security and prevent the spread of a large-scale incident and the complete collapse of the system, as well as to allow the rapid and efficient return to the normal state of the system from the state of alarm or black-out, the following articles shall define the requirements on:
 - a) management by TSO of the state of emergency, black-out and restoration;
 - b) coordination of the operation system in the synchronous area in the states of emergency, black-out and restoration;
 - c) the simulations and tests necessary to guarantee the reliable and rapid restoration of the system to the normal state;
 - d) the means and equipment necessary to guarantee the restoration to normal state from the state of emergency or black-out.

Article 252. Scope

1. The following provisions apply to: TSO, DSO, Significant Grid Users (SGU), protection service providers, restoration service providers, responsible balancing parties, balancing service providers, designated Nominated Electricity Market Operator (NEMO) and other subjects designated to perform market functions in accordance with Commission Regulation (EU) 2015/1222¹² and the EU Commission Regulation 2016/1719¹³.

Article 253. Regional coordination

1. During the drafting/revision of the protection and restoration plan, TSO ensures that the measures of its protection and restoration plan are consistent with the measures and plans of adjacent TSOs at least for:
 - a. assistance and coordination in the state of emergency with the adjacent TSOs, in accordance with Article 257;
 - b. frequency management procedure, excluding target frequency setting, in the case of a bottom-up re-energization strategy before any re-synchronization in the interconnected transmission system in accordance with Article 261 and Article 271;

¹² Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

(OJ L 197, 25.7.2015, p. 24).

¹³ Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline forward capacity allocation (OJ L 259, 27.9.2016, p. 42)

- c. support for the active power procedure, according to Article 264;
 - d. the top-down re-energization strategy, according to Article 270.
2. The assessment of the robustness of the system protection and restoration plan in accordance with paragraph 1 shall include the following tasks:
- a) the exchange of information and data related to the measures mentioned in paragraph 1 between the TSOs in question;
 - b) identifying the incompatibility of the measures mentioned in paragraph 1, in the plans of the TSOs involved;
 - c) identification of possible violations of operational security in the region of capacity calculation. These violations include, among others, breakdowns of the common regional regime with significant impact on the transmission systems of the TSOs involved;
 - d) consultations with RSCs to analyze the consistency of the measures referred to in paragraph 1 within the entire relevant synchronous area;

Part II – Protection planning

Title 1 – Design, implementation and activation

Article 254. Design of the system protection plan, technical and organizational measures and principles for the implementation of the measures

- 1. TSO, in consultation with DSO and Significant Grid Users, shall design the system protection plan.
- 2. When designing the system defense plan, TSO shall take into account the following elements:
 - a. operational security limits determined in accordance with Article 10 of the code;
 - b. behavior and capabilities of load and generation;
 - c. specific needs of high priority Significant Grid Users
 - d. transmission and distribution system characteristics.
- 3. The System Defense Plan shall at least include the following principles:
 - a) the conditions under which the System Defense Plan is activated, according to Article 256
 - b) protection plan instructions issued by TSO;
 - c) measures to be taken, subject to real-time consultation or coordination with the identified parties.
- 4. The system protection plan also includes the following elements:

- a) the list of measures to be implemented by TSO in its installations;
 - b) the list of measures to be implemented by DSO, responsible for the implementation of these measures in its installations;
 - c) the list of Significant Grid Users for the implementation in their installations of the measures as a result of the mandatory requirements defined in the connection codes approved by ERE or national legislation;
 - d) the list of important high-priority grid users, with the terms and conditions for their disconnection; and
 - e. implementation time for each measure listed in the system defense plan.
5. The system defense plan must include at least the following technical and organizational measures:
- a. system defense schemes including:
 - i. the automatic under-frequency control scheme, in accordance with Article 258;
 - ii. the automatic over-frequency control scheme, in accordance with Article 259;
 - b. the automatic control scheme against voltage collapse, in accordance with article 260.
 - c. System Defense plan procedures, including:
 - i. Frequency Deviation management procedure, in accordance with article 261;
 - ii. Voltage Deviation management procedure, in accordance with article 262;
 - iii. Power flows management procedure, in accordance with article 263;
 - iv. assistance for Active Power procedure, in accordance with article 264;
 - v. manual Demand disconnection procedure, in accordance with article 265.
6. The drafting of the measures to be implemented in the defense plan is done according to the following principles
- i. their impact on the users of the system shall be minimal;
 - ii. they must be economically efficient;
 - iii. only necessary measures are activated;
 - iv. the implementation of the measures does not lead TSO or the adjacent TSOs to an emergency or black-out state.

Article 255. Implementation of the defence plan

- 1. TSO notifies DSO on the deadlines for implementation, which shall apply to:
 - a. Significant Grid Users installations connected to the distribution system; or
 - a. DSO installations;
 - b. Significant Grid Users installations connected to the distribution system; or installations of defense service providers connected in DSO

(if any).

1. TSO notifies the Significant Grid Users directly connected to the transmission or the defense service providers connected directly to the transmission about the measures and deadlines that must be applied in their installations.
2. DSO, Significant Grid Users or defense service provider must:
 - a. implement the measures notified for implementation no later than 12 months from
 - b. the date of notification;

to maintain the measures implemented on its installations;
 - c. to confirm the implementation of the measures to the network operator.
3. TSO shall maintain the implemented measures.

Article 256. Activation of the System Defense Plan

1. TSO shall activate the system defense plan procedures in accordance with point (b) of Article 254 (5) in coordination with DSO and the identified Significant Grid Users according to Article 254 (4) and defense service providers.
2. In addition to automatically activated system defense plan schemes, in accordance with point (a) of Article 254 (5), TSO shall activate the system defense plan procedure if:
 - a. the system is in an emergency state in accordance with the criteria defined in article 99 of the code and there are no corrective actions available to restore the system to normal state; or
 - b. based on the operational security analysis, the security of the transmission system requires the activation of a defense plan measure in accordance with Article 254 (5), in addition to the available corrective actions.
3. DSO and Significant Grid Users identified under Article 254 (4), as well as any provider of defense services must implement without undue delay the instructions of the system defense plan issued by TSO in accordance with point (c) of Article 254 (3), in accordance with the system defense plan procedures provided for in point (b) of Article 254 (5).
4. TSO shall activate the system defense plan procedures mentioned in point (b) of Article 254 (5) that have a significant cross-border impact in coordination with the affected TSOs

Article 257. Assistance and coordination in the state of emergency with adjacent TSOs

1. TSO shall provide through the interconnectors any possible assistance to the adjacent TSO that is in an emergency state, if this assistance does not cause the entry into an emergency state or black-out of the TSO itself.
2. TSO proceeds with the manual disconnection of any element of the transmission system that has significant cross-border impact, including an interconnector, after:

- a. Coordinates with adjacent TSOs; and
 - b. It is ensured that the action does not lead the remaining transmission system to an emergency or black-out state.
3. In exceptional circumstances implying violation of operational safety limits, prevention of risk and safety of personnel or damage to equipment, TSO may manually disconnect without coordination any element of the transmission system that has significant cross-border impact, including an interconnector. Within 30 days of the incident, TSO shall prepare a report with a detailed explanation of the reasons, implementation and impact of this action and submits it to ERE, adjacent TSOs and significantly affected system users.

Title 2 – Measures of the System defense plan

Article 258. Automatic under-frequency control scheme

1. The automatic under-frequency control scheme of the system defense plan must include a scheme for automatic demand disconnection and limited frequency charges in the Limited frequency sensitive mode at underfrequency (LFSM-U), in the Load-Frequency Control Area (LFC Area) of the TSO.
2. In the design of the system defense plan, TSO must ensure the activation in the LFSM-U mode, before the activation of the automatic low-frequency demand disconnection scheme, provided that the frequency change gradient allows it.
3. Before activating the automatic low-frequency demand disconnection scheme, TSO and DSO must ensure that the power reserve units acting as load connected to its system:
 - a. automatically switches to generation mode within the time limit and at the set point of active power defined by TSO in the system defense plan; or
 - b. when the power reserve unit is unable to disconnect within the time limit defined by TSO in the system defense plan, the power reserve unit acting as a load is automatically disconnected.
4. TSO must determine in its defense plan the frequency thresholds at which the automatic switching on or off of the power reserve units shall occur. These frequency thresholds must be lower or equal to the system frequency limit defined for the state of emergency in article 99 (3) of the code and higher than the frequency limit for demand disconnection starting from the mandatory level defined in Annex I.
5. TSO shall design the automatic low-frequency demand disconnection in accordance with the parameters for real-time load shedding defined in Annex I. The scheme must include the demand disconnection at different frequencies, from the "initial mandatory level" to a "final mandatory level", within an implementation range, respecting a minimum number and maximum size of steps. The range of application shall determine the maximum permissible deviation of the net load disconnected from

- the target net load to be disconnected for a given frequency, calculated through a linear interpolation between the initial and final mandatory levels.
6. TSO or DSO must install the necessary relays for disconnecting the load at low frequency, taking into account at least the behavior of the load and the generation connected to the distribution.
 7. During the implementation of the scheme for automatic disconnection of the load for low frequency in accordance with Article 6 (2), TSO or DSO must:
 - a. avoid setting intentional time delays other than the operating time of relays and switches;
 - b. minimize disconnection of power generating modules, especially those that provide inertia;
 - c. to limit the risk that the scheme leads to power flow deviations and voltage deviations outside the operational safety limits.
 8. If DSO cannot fulfill the requirements under points (b) and (c), it must notify TSO and propose which requirement shall be implemented. TSO, in consultation with DSO, shall determine the applicable requirements based on a joint cost-benefit analysis.
 9. The scheme of the system defense plan for automatic low-frequency demand disconnection can provide net load disconnection based on the 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 caused by the reference incident;
 - ii. until the frequency reaches the frequency load disconnection starting from the mandatory level;
 - b. is in accordance with Annex I; and
 - c. is necessary and justified to effectively maintain operational security.
 10. TSO may include in the scheme of the defense plan for automatic under-frequency load disconnection, additional steps for net load disconnection, below the mandatory final level of load disconnection defined in Annex I.
 11. TSO shall have the right to implement additional system defense schemes that are triggered by a frequency less than or equal to the frequency of the final mandatory level of load shedding and that aim at a faster restoration process. TSO shall ensure that such additional schemes do not further deteriorate the frequency.

Article 259. Automatic over-frequency control scheme

1. The automatic over-frequency control scheme of the system defense plan should lead to an automatic reduction of the total active power injected into the LFC control area.
2. In consultation with other TSOs of the synchronous area, TSO shall determine the following parameters of its scheme for automatic over-frequency control:
 - a. frequency thresholds for its activation;
 - b. active power injection reduction report.
3. TSO shall determine its automatic frequency control scheme taking into account the capabilities of the mode-related power generation modules in the LFSM-O and of the power reserve units in its LFC area. If the modality in LFSM-O does not exist or is not sufficient to meet the requirements set out in points (a) and (b) of paragraph 2, TSO may perform linear stepwise disconnection of generation in its LFC area. TSO shall determine the maximum step size for the disconnection of power generating modules and/or HVDC systems in consultation with other TSOs of the synchronous area.

Article 260. Automatic scheme against voltage collapse

1. The automatic scheme against voltage collapse of the system defense plan may include one or more of the following schemes depending on the results of TSO system security assessment:
 - a. The low-voltage load disconnection scheme in accordance with Article 19(2) of the code "Requirements for Grid Connection of Load Facilities" approved with ERE Board Decision No. 128 Dated 04.06.2018; and
 - b. The automatic blocking scheme of the load voltage regulator in accordance with Article 19 (3) of the Code "Requirements for Grid Connection of Load Facilities" approved with ERE Board Decision No. 128 Dated 04.06.2018;
 - c. System defense schemes for voltage management.
2. Unless, in accordance with paragraph 1, the assessment demonstrates that the implementation of the automatic blocking scheme of the branch regulator is not necessary to prevent a voltage collapse, TSO shall determine the conditions under which the automatic regulator shall block the branches in accordance with Article 13 (3) of the Code "Requirements for Grid Connection of Load Facilities" approved with ERE Board Decision No. 128 Dated 04.06.2018; and including at least:
 - a. blocking method (local or remote from the control room);
 - b. voltage level threshold at the connection point;
 - c. direction of reactive power flows;
 - d. maximum time delay between threshold detection and blocking.

Article 261. Frequency deviation management procedure

1. The procedure for managing frequency deviations of the system defense plan must contain a set of measures to manage the frequency deviation outside the frequency limits defined for the alarm condition in Article 99 (2) of the code. The frequency deviation management procedure must be in accordance with the procedures established for remedial actions which must be managed in a coordinated manner in accordance with Article 157 (2) of the code and must meet at least the following requirements:
 - a. the generation reduction must be smaller than the load reduction during under-frequency events;
 - b. generation reduction must be greater than load reduction during over-frequency events.
2. TSO shall adapt the mode of operation of its LFC to prevent interference with manual activation or deactivation of active power as defined in paragraphs 3 and 5.
3. TSO has the right to determine an active power set-point that each SGU identified under point (c) of Article 254 (4) must maintain, provided that the set-point meets the technical limitations of the Significant Grid User. TSO has the right to determine an active power set-point that each protection service provider must maintain, provided that this measure is applied to them according to contractual terms and conditions and its set-point respects the technical limitations of the defense service provider. SGUs and defense service providers shall implement without undue delay the instructions provided by TSO directly or indirectly through DSO and shall remain so until further instructions are issued. When instructions are given directly, TSO shall inform DSO without undue delay.
4. TSO has the right to disconnect SGUs and defense service providers, directly or indirectly through DSO. SGUs and defense service providers shall remain disconnected until further instructions are issued. When SGUs are disconnected directly, TSO shall inform DSO without undue delay. Within 30 days of the incident, TSO shall prepare a report including a detailed explanation of the justification, implementation and impact of this action and submit it at ERE in accordance with Article 37 of Directive 2009/72/EC, as and make it available to users of the significantly affected system.
5. Before activating the automatic under-frequency load disconnection scheme defined in Article 258 and provided that the gradient of the frequency change allows it, TSO directly or indirectly through DSO, shall activate the request response from the respective defense service providers and:
 - a. switch the power reserve units that act as a load in the generating mode to a set-point of active power determined by TSO in the system defense plan; or

- b. when the power reserve unit is not able to engage quickly enough to stabilize the frequency, manually disconnect the power reserve unit.

Article 262. Voltage deviation management procedure

1. The voltage deviation management procedure of the system protection plan shall contain a set of measures to manage the voltage outside the operational safety limits defined in article 106 of the code.
2. TSO has the right to determine the reactive power range or the voltage range and instruct DSO and the significant network users identified for this measure in accordance with Article 254 (4) to maintain it, in accordance with Article 109 and 110 of the code.
3. On the request of the adjacent TSO in an emergency state, TSO shall make available all reactive power capabilities that do not lead the system to an emergency state or black-out.

Article 263. Power flow management procedure

1. The system defense plan procedure for managing power flows must include a set of measures to manage power flows outside the operational security limits defined in Article 106 of the code.
2. TSO has the right to determine a set-point of active power that each SGU identified under point (c) of Article 254 (4) must maintain, provided that the determined set-point respects the technical limitations of the SGUs. The Significant Grid Users (SGU) and defense service providers shall implement without undue delay the instructions given by TSO directly or indirectly through DSO and shall remain so until further instructions are issued. When instructions are given directly, TSO shall inform the DSO without undue delay.
3. TSO has the right to disconnect SGUs and defense service providers, directly or indirectly through DSO. SGUs and defense service providers shall remain disconnected until further instructions are issued. When SGUs are disconnected directly, TSO shall inform DSO without undue delay. Within 30 days of the incident, TSO shall prepare a report containing a detailed explanation of the justification, implementation and impact of this action and submit it to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC.

Article 264. Procedure for active power support

1. In case of lack of sufficiency of the control area for the time period of the day in advance or intraday, identified according to paragraphs 1 and 2 of article 185 of the code and before any possible suspension of market activities in accordance with article 278, TSO shall have the right to request support for active power from:
 - a. any balancing service provider which, upon the request of TSO, shall change its availability status in order to make available all of its active power, with condition

- that it is not yet activated in the balancing market and in accordance with its technical limitations;
- b. any Significant Grid User connected in the LFC area which does not already provide balancing service to TSO and which, at the request of TSO, shall make available all its active power, in accordance with its technical limitations; and
 - c. other TSOs that are in normal or alert status.
2. TSO may activate support for active power from a balancing service provider or a SGU, according to points (a) and (b) of paragraph 1, only if it has activated all available balancing energy offers, taking into account the cross-zonal capacity available at the moment of the lack of sufficiency of the control area.
 3. Any TSO that has been subject to a request for active power support under paragraph 1 (c) shall:
 - a. make available its undistributed offers;
 - b. have the right to activate the available balancing energy, in order to provide the corresponding power of TSO that requires it; and
 - c. shall have the right to request active power assistance from balancing service providers and from any connected SGU in its LFC area that does not provide balancing service to TSO, in order to provide the relevant assistance for active power to TSO that requires it.
 4. When activating the active power required under paragraph 1 (c), the requesting and receiving TSOs shall be entitled to use:
 - d. the cross-zonal capacity available in case the activation takes place before the closing time of the inter-zonal gate during the day and if the provision of the cross-zonal capacities in question has not been suspended according to article 278;
 - e. additional capacity that may be available due to the real-time status of the system, in which case requested TSOs and TSOs that request it shall coordinate with other sensitively affected TSOs in accordance with Article 253 (5).
 5. Once the requesting and requested TSOs have agreed on the conditions for providing active power support, the agreed amount of active power and the duration of provision must be stable, unless the transmission system of TSO that provides support enters in a case of emergency or black-out.

Article 265. Manual demand disconnection procedure

1. In addition to the measures defined in articles 261 to 264, TSO may determine a quantity of net demand to be disconnected manually, directly by TSO or indirectly through DSO, when it is considered necessary to prevent the spread or deterioration of state of emergency. When the load needs to be disconnected directly, TSO shall inform DSO without delay.

2. TSO shall activate the manual disconnection of the net demand referred to in paragraph 1 to:
 - a. resolve overloads or under-voltage situations; or
 - b. resolve situations in which support for active power has been requested according to Article 264, but which is not sufficient to maintain sufficiency for the time periods of the day in advance or intraday in its control area, in accordance with Article 185 of the code, leading to the risk of frequency degradation in the synchronous zone.
3. TSO shall notify DSO on the amount of net demand determined to be disconnected in the distribution system according to paragraph 1. DSO shall disconnect the notified amount of net demand, without undue delay.
4. Within 30 days from the incident, TSO shall prepare a report containing a detailed explanation of the justification, implementation and impact of this action and submit it to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC.

Part III – The restoration plan

Title 1 – Drafting, implementation and activation

Article 266. Drafting the restoration plan

1. TSO drafts/reviews the restoration plan in consultation with DSO, SGUs, and coordinates with adjacent TSOs.
2. In the restoration plan, TSO takes into account:
 - a. load and generation behavior and capability;
 - b. the specific needs of the high-priority SGUs listed in accordance with paragraph 4; and
 - c. characteristics of the transmission network and DSO network.
3. The restoration plan must contain at least the following provisions:
 - a. the conditions under which the restoration plan is activated, as provided for in
 - b. Article 268;
restoration plan instructions to be issued by TSO; and
 - c. measures subject to real-time consultation or coordination with identified parties.
4. In particular, the restoration plan must include the following elements:
 - a. a list of measures to be implemented by TSO in its installations;
 - b. a list of measures to be implemented by DSO in its installations;

- c. a list of SGUs that are responsible for the implementation in their installations of the measures resulting from the mandatory requirements defined in the Regulation approved by ERE through decisions 128 "On approving the Network Code for the Load" and 129 "On approving the Network Code on the requirements for connection with the generator network" dated 04/06/2018 or from the national legislation and the list of measures that shall be implemented by these SGU;
 - d. the list of high-priority network users and the terms and conditions for disconnecting and re-energizing them;
 - e. a list of substations which are essential for the restoration plan procedures;
 - f. the number of power sources in the TSO's control area required to re-energize its system with the bottom-up strategy with black-start capability, fast re-synchronization capability (via hous-load operation) and island operation capability; and
 - g. implementation deadlines for each measure listed.
5. The restoration plan includes the following technical and organizational
- a. measures: re-energization procedure;
 - b. frequency management procedure
 - c. re-synchronization procedure;
6. The measures of the restoration plan must be in accordance with the following principles:
- a. the impact on system users should be minimal;
 - b. measures to be economically efficient;
 - c. to activate only the necessary measures; and
 - d. they must not lead the interconnected transmission system to an emergency or black-out state.

Article 267. Implementation of the restoration plan

1. TSO shall notify DSO on the measures that shall be implemented, including the deadlines for the implementation, for:
 - a. DSO installations according to Article 266 (4);
 - b. SGU installations identified in accordance with Article 266 (4) and connected to the distribution system; and
 - c. installations of restoration service providers connected to the distribution system
2. TSO shall notify the Significant Grid Users identified in accordance with Article 266 (4) and the restoration service providers directly connected to the transmission system on the measures to be applied to their installations, including the deadlines for implementation according to point (g) of Article 266 (4).
3. DSO and each SGU or restoration service provider notified by TSO must:
 - a.

implement the notified measures no later than 3 months from the date of notification;

- b. to confirm the implementation of the measures at TSO;
- c. maintain the measures implemented in its installations.

Article 268. Activation of the restoration plan

1. TSO shall activate the procedures of its restoration plan in coordination with DSO and SGUs identified in accordance with Article 266 (4) as well as with restoration service providers as follows
 - a. when the system is in an emergency state in accordance with the criteria of article 99 (3) of the code, immediately after the stabilization of the system after the activation of the measures of the defense plan; or
 - b. when the system is in a black-out state in accordance with the criteria of Article 99 (4) of the code
2. During system restoration, TSO shall identify and monitor:
 - a. the extent and boundaries of the synchronized region to which the control area belongs;
 - b. TSOs with which it shares a synchronous region; and
 - c. available reserves of active energy in its control area.
3. DSO and SGU identified under Article 266 (4), as well as any restoration service provider must implement without undue delay the instructions of the restoration plan issued by TSO, in accordance with point (b) of the article 266 (3) in accordance with the procedures of the restoration plan.

Title 2 – Re-energization

Article 269. Re-energization procedure

4. The re-energization procedure of the restoration plan must contain a series of measures that allow TSO to implement:
 - a. a top-down re-energisation strategy; and
 - b. bottom-up re-energization strategy.
5. Regarding the bottom-up re-energization strategy, the re-energization procedure should contain at least measures for:
 - a. voltage and frequency deviations management due to re-energisation
 - b. monitoring and management of operation in the island; and
 - c. re-synchronization of operating areas on the island.

Article 270. Activation of the re-energization procedure

1. When activating the re-energization procedure, TSO shall determine the strategy it shall implement taking into account:
 - a. the availability of energy sources in its control area that are able to re-energize;
 - b. the expected duration and potential risk of re-energization strategies;
 - c. conditions of energy systems;
 - d. the conditions of the directly connected systems, including at least the status of the interconnectors;
 - e. SGU with high priority listed according to Article 266 (4); and
 - f. the possibility to combine top-down and bottom-up energization strategies.
2. When a top-down re-energization strategy is implemented, TSO shall manage the load and generation connection in order to adjust the frequency towards the nominal frequency with a maximum tolerance of the maximum steady-state frequency deviation. TSO shall apply the conditions for the connection of load and generation determined by the frequency leader, when appointed in accordance with Article 272.
3. When a bottom-up re-energization strategy is implemented, TSO shall manage the connection of load and generation with the aim of adjusting the frequency towards the target frequency determined in accordance with point (c) of Article 271 (3).
4. During the re-energization, TSO, after consultation with DSO, must determine and notify the amount of the net demand to be reconnected to the distribution network. DSO shall reconnect the notified amount of net demand, respecting block load and taking into account the automatic connection of load and generation in its network.
5. TSO shall inform adjacent TSOs of its capability to support a top-down re-energization strategy.
6. To activate a top-down re-energization strategy, TSO shall ask adjacent TSOs to support the re-energization. This support may consist of active power support, in accordance with paragraphs 3 to 5 of Article 264.

Title 3 – Frequency management

Article 271. Frequency management procedure

1. The frequency management procedure of the restoration plan must contain a set of measures aimed at restoring the system frequency to the nominal frequency.
2. TSO shall activate its frequency management procedure:

- a. in the preparation of the re-synchronization procedure, when a synchronous area is divided into several synchronized regions;
 - b. in case of frequency deviation in the synchronous area; or
 - c. in case of re-energization
3. The frequency management procedure must include at least:
- a. a list of actions related to the parameters of the load-frequency regulator before setting the frequency leaders;
 - b. appointment of frequency leaders;
 - c. determining the target frequency in cases of bottom-up re-energization strategy;
 - d. frequency management after frequency deviation; and
 - e. frequency management after dividing the synchronous area;
 - f. determining the amount of load and generation to be re-connected, taking into account active power reserves within the synchronous region in order to avoid large frequency deviations.

Article 272. Appointment of the frequency leader

- 1. During system restoring, when the synchronous area is divided into several synchronous regions, the TSOs of each synchronous region must assign a frequency leader in accordance with paragraph 3.
- 2. During system restoration, when the synchronous area is not divided, but the system frequency exceeds the frequency limits for the alarm condition, as defined in Article 99 (2) of the code, all TSOs of the synchronous area shall designate a frequency leader, in accordance with paragraph 3.
- 3. TSO with the highest real-time estimated K-factor shall be designated as the frequency leader, unless the TSOs of the synchronous region agree to designate another TSO as the frequency leader. In this case, the TSOs of the synchronous region shall consider the following criteria:
 - a. the amount of active reserves available and in particular the frequency restoration reserves;
 - b. the available capacities available in the interconnectors;
 - c. the availability of frequency measurements of TSOs of the synchronous region;
 - d. the availability of measurements on critical elements within the synchronous region;
- 4. Where the size of the synchronous area in question and the real-time situation

permit, notwithstanding paragraph 3, TSOs of the synchronous area may define a default frequency leader.

5. The TSO appointed as frequency leader in accordance with paragraphs 1 and 2 shall without delay inform the other TSOs of the synchronous area on its appointment.
6. The appointed frequency leader acts as such until:
 - a. the assignment of another frequency leader for its synchronous region;
 - b. a new frequency leader is assigned as a result of the re-synchronization of its synchronous region with another synchronous region; or
 - c. the synchronous area is fully re-synchronized, the system frequency is within the range of standard frequencies and the LFC operated by each TSO of the synchronous area is re-returned to its normal mode of operation, in accordance with Article 99 (1) of the code.

Article 273. Frequency management after frequency deviation

1. During system restoration, when a frequency leader has been designated in accordance with Article 272 (3), TSOs of the synchronous area, except for the frequency leader, shall, as a first measure, suspend the manual activation of frequency restoration reserves and replacement reserves.
2. After consultation with the other TSOs of the synchronous area, the frequency leader shall determine the mode of operation to be applied to the LFC operated by each TSO of the synchronous area.
3. The frequency leader shall manage the manual activation of the frequency restoration reserves and replacement reserves within the synchronous zone aiming at the adjustment of the frequency of the synchronous zone towards the nominal frequency and taking into account the operational safety limits established in accordance with article 261 of the code . TSOs of the synchronous area shall, upon request, support the frequency leader.

Article 274. Frequency management after the division of the synchronous area

1. During system restoration, when a frequency leader has been designated according to Article 272 (3), the TSOs of each synchronous region, except for the frequency leader, shall, as a first measure, suspend the manual activation of the frequency restoration reserves and replacement reserves.
2. The frequency leader must determine the mode of operation that shall be applied to the LFC operated by each TSO of the synchronous region, after consultation with the other TSOs of the synchronous region.
3. The frequency leader shall manage the manual activation of frequency restoration reserves and replacement reserves within the synchronized region, aiming to adjust the frequency of the

synchronous region towards the target frequency determined by the re-synchronization leader, if any, according to point (a) of article 277 (1) and taking into account the limits of operational safety determined in accordance with article 106 of the code. If no re-synchronization leader is assigned for the synchronized region, the frequency leader shall aim to adjust the frequency towards the nominal frequency.

Upon request, each TSO of the synchronous region shall support the frequency leader.

Title 4 – Re-synchronization

Article 275. Re-synchronization procedure

1. The re-synchronization procedure of the restoration plan must include at least:
 - a. the assignment of the re-synchronization leader;
 - b. measures allowing the TSO to implement the re-synchronization strategy;
 - c. maximum limits for phase angle, frequency and voltage differences for connection lines

Article 276. Appointment of the re-synchronization leader

1. During system restoration, when two synchronized regions can be synchronized without jeopardizing the operational security of the transmission systems, the frequency leaders of these synchronized regions shall appoint a synchronization leader in consultation with at least the TSO(s) identified as the potential re-synchronization leader and in accordance with the paragraph. 2. Each frequency leader shall without delay inform the TSOs from its synchronous region about the designated re-synchronization leader.
2. For each pair of synchronous regions to be synchronized, the re-synchronization leader shall be the TSO that:
 - a. has in operation at least one substation equipped with parallel switching equipment at the border between the two synchronous regions to be resynchronized;
 - b. has access to frequency measurements for both synchronous regions;
 - c. has access to voltage measurements in the substations between which the potential points of re-synchronization are located; and
 - d. is able to control the voltage of the potential re-synchronization points.
3. When more than one TSO fulfills the criteria under paragraph 2, the TSO with the largest number of potential re-synchronization points between two synchronous regions shall be designated as the re-synchronization leader, unless the frequency leaders of the two synchronous regions agree to designate another TSO as the re-synchronization leader.
4. The re-synchronization leader shall act as such until:

- a. the appointment of another resynchronization leader to the two synchronous regions; or
- b. both resynchronous regions have been resynchronized and all steps in article 277 have been fulfilled.

Article 277. Re-synchronization strategy

1. Before re-synchronization, the re-synchronization leader shall:
 - a. determine in accordance with the maximum limits mentioned in article 275:
 - i. target frequency value for re-synchronization;
 - ii. the maximum frequency difference between two synchronous regions;
 - iii. maximum exchange of active and reactive power;
 - iv. the mode of operation that shall be implemented in the LFC.
 - b. to choose the point of re-synchronization, taking into account the limits of operational security in the synchronous regions;
 - c. determine and prepare all necessary actions for re-synchronization of the two synchronous regions at the re-synchronization point;
 - d. define and prepare the set of follow-up actions to create additional connections between synchronous regions;
 - e. to assess the readiness of the synchronous regions for re-synchronization, taking into account the conditions defined in point (a).
2. When performing the tasks listed in paragraph 1, the re-synchronization leader must consult with the frequency leaders of the synchronous regions involved and, for the tasks listed in points (b) to (e), must also consult with the TSOs operating the substations used for re-synchronization.
3. Each frequency leader shall inform the TSOs within its synchronous region of the planned re-synchronization without undue delay.
4. When all the conditions specified in paragraph 1(a) are met, the re-synchronization leader shall execute the re-synchronization by activating the actions specified in accordance with paragraphs 1(c) and (d).

Part IV – Market interactions

Article 278. Procedure for the suspension of market activities

1. TSO may temporarily suspend one or more market activities defined in paragraph 2 if:
 - a. TSO transmission system is in black-out state; or
 - b. TSO has exhausted all opportunities offered by the market and the continuation of market activities during the state of emergency would worsen one or more of the conditions mentioned in Article 99 (3) of the code; or

- c. the continuation of market activity significantly reduces the effectiveness of the process of restoring to the normal state or alarm state; or
 - d. the communication tools and equipment necessary for TSOs to facilitate market activity are not available.
2. Market activities that can be suspended are:
- a. provision of cross-zonal capacity for the allocation of capacity at corresponding bidding zone borders for each market time unit, if it is expected that the transmission system does not return to the normal state or the alarm state;
 - b. submission of offers of balancing capacity and balancing energy from a balancing service provider;
 - c. the provision by a responsible balancing party of a balanced position at the end of the day ahead period if required by the terms and conditions related to balancing;
 - d. modification of the position of responsible balancing parties;
 - e. notification of external schedules within the scheduling area;
and
 - f. other market activities, the suspension of which is considered necessary to maintain and/or restore the system.
3. In case of suspension of the market activity according to paragraph 1, if it is technically possible, each Significant Grid User must operate at the set-point of the active power determined by TSO according to the issued instruction and their capabilities.
4. If the market activities listed in paragraph 1 are suspended, TSO may fully or partially suspend the operation of its processes affected by this suspension.
5. In case of suspension of market activity in accordance with paragraph 1, TSO coordinates with:
- a. TSOs of the capacity calculation region where TSO is a member;
 - b. TSOs with which TSO has an agreement for balance coordination;
 - c. Nominated Electricity Market Operators NEMO (the power exchange) and other subjects designated or delegated to perform market functions in accordance with Regulation (EU) 2015/122214 within its area of control;
 - d. TSOs of the LFC block where TSO is a member; and
 - e. The calculator of the coordinated capacity of the region where TSO is a member.
6. In case of suspension of the market activity, TSO must initiate the communication procedure for the restoration of the market activity in accordance with Article 281.

Article 279. Rules for the suspension and restoration of market activities

1. TSO must draft a proposal for the rules regarding the suspension and restoration of market activities.

¹⁴ Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

(OJ L 197, 25.7.2015, p. 24).

2. TSO must publish these on its website after their approval by ERE in accordance with Article 37 of Directive 2009/72/EC.
3. The rules for the suspension and restoration of market activities must be compatible to the extent possible with:
 - a. the rules on cross-zonal capacity provision within the capacity calculation region;
 - b. the rules for the submission by balancing service providers of offers for balancing capacity and balancing energy from agreements with other TSOs for balance coordination;
 - c. the rules for ensuring by the responsible balancing party a balanced position at the end of the day ahead period if required by the terms and conditions related to balancing;
 - d. the rules for guaranteeing modifications of the position of responsible balancing parties; and
 - e. the rules for securing the schedules mentioned in article 189(1) and (2) of the code.
4. When drafting the rules for the suspension and restoration of market activities, TSO must convert the circumstances mentioned in Article 278 (1) into objectively defined parameters taking into consideration the following factors:
 - a. the percentage of load disconnection in the LFC area of TSO corresponding to:
 - i. inability of a significant part of responsible balancing parties to maintain their balance; or
 - ii. the need of TSO to not follow the usual balancing processes to perform an efficient re-energization;
 - b. the percentage of generation disconnection in the LFC area of TSO corresponding to the inability of a significant part of the responsible balancing parties to maintain their balance;
 - c. geographical distribution of unavailable elements of the transmission system corresponding to:
 - i. desynchronization of a significant part of the LFC area making the usual balancing processes unproductive; or
 - ii. the reduction to zero of the cross-zonal capacity at the bidding zone borders;
 - d. the inability of the following affected subjects, in the execution of their market activities for reasons beyond their control:
 - i. balancing responsible parties,
 - ii. balancing service providers,

- ii. NEMO and other subjects designated or delegated to perform market functions in accordance with Regulation (EU) 2015/1222¹⁵,
 - iii. DSO.
- e. lack of proper functioning of communication tools and equipment, necessary to carry out:
- i. market unification in DA and ID or any explicit capacity allocation mechanism; or
 - ii. frequency restoration process; or
 - iii. frequency replacement process; or
 - iv. ensuring by the responsible balancing party a balanced position on the day ahead and ensuring the change of its position; or
 - v. providing the schedules mentioned in article 95(1) and (2) of the Operation Code.
5. The rules for the suspension and restoration of market activities must determine a delay time to be respected by any parameter established in accordance with paragraph 4, before initiating the procedure for the suspension of market activities.
6. TSO must evaluate in real time the parameters determined in accordance with paragraph 4, based on the information that is made available to it.

Article 280. Procedure for restoring market activities

1. TSO in coordination with the active NEMO in its control area and with adjacent TSOs, must initiate the procedure for restoring suspended market activities in accordance with Article 278 (1) when:
 - a. the situation that caused the suspension has ended and there is no other situation mentioned in Article 278(1); and
 - b. the subjects referred to in Article 281(2) have been informed in time in accordance with Article 281.
2. TSO, in coordination with the adjacent TSOs, must initiate the restoration of the TSO processes affected by the suspension of market activities when the conditions of paragraph 1 are met or earlier, if necessary for the restoration of market activities.
3. The respective NEMO(s), in coordination with the TSOs and subjects referred to in Article 278(5), must initiate the restoration of the market unification processes for DA and/or ID as soon as the TSO notifies that the processes of TSOs have been restored.

¹⁵ Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

(OJ L 197, 25.7.2015, p. 24).

4. When cross-zonal capacity provision is suspended and then restored, each TSO concerned shall update cross-zonal capacities for capacity allocation using the most feasible and efficient option for each market time unit as follows:
 - a. using the latest available cross-zonal capacities calculated by the coordinated capacity calculator;
 - b. starting the processes of calculating the applicable regional capacity in accordance with Article 29 and 30 of Regulation (EU) 2015/1222¹⁶; or
 - c. determining, in coordination with the TSOs of the capacity calculation region, the cross-zonal capacities based on the current physical conditions of the network.
5. When part of the total unified area has returned to the normal state or alarm state, where the market activities were suspended, the NEMO(s) of this area shall have the right to carry out a market megger in part of the total area united, in consultation with the TSOs and subjects referred to in Article 278(5), provided that TSO has restored the capacity calculation process.
6. No later than 30 days after the restoration of market activities, TSO, if they have suspended and reestablished market activities, must prepare a report containing a detailed explanation of the justification, implementation and impact of the market suspension and a reference to compliance with the rules for the suspension and restoration of market activities and must submit it at ERE in accordance with Article 281(2).

Article 281. Communication procedure

1. Rules for the suspension and restoration of market activities drafted in accordance with Article 30 shall also contain a communication procedure detailing the duties and actions expected from each party in its various roles during the suspension and restoration of market activities.
2. The communication procedure must ensure that the information is sent, simultaneously, to the following subjects:
 - a. the parties mentioned in Article 278 (5)
 - b. responsible balancing parties;
 - c. balancing service providers;
 - d. DSO;
 - e. ERE, in accordance with Article 37 of Directive 2009/72/EC.

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

¹⁶ Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

(OJ L 197, 25.7.2015, p.24).

- a. notification by TSO that market activities have been suspended in accordance with Article 278;
 - b. notification by TSO on the best estimated time and date for the restoration of the transmission system;
 - c. notification by NEMO and other subjects designated to perform market functions in accordance with Regulation (EU) 2015/1222¹⁷ and Regulation (EU) 2016/1719 on the suspension of their activities, if any;
 - d. updates from TSOs on the transmission system restoration process;
 - e. notification by the subjects mentioned in points (a) to (d) of paragraph 2, that their market communication tools and systems are in operation;
 - f. the notification from TSO that the transmission system has returned to normal state or alarm state;
 - g. notification by NEMO and other subjects designated or delegated to perform market functions in accordance with Regulation (EU) 2015/1222 on the best estimate of the time and date when market activities shall be restored; and
 - h. confirmation by NEMO and other subjects designated or delegated to perform market functions in accordance with Regulation (EU) 2015/1222 that market activities have been restored.
4. All notifications and updates from TSO, NEMO and other subjects designated or delegated to perform market functions mentioned in paragraph 3, must be published on the website of these subjects. When the notification or updating on the website is not possible, the subject of the obligation to notify must notify via email or through any other available means, at least those parties that participate directly in the suspended market activities.
 5. The notification in accordance with paragraph 3 point (e), the notification must be made through e-mail or through any other means available to TSO.

Article 282. Rules for repayments in case of suspension of market activities

1. TSO shall draft and publish the rules for imbalance settlement, balancing capacity and balancing energy which shall apply for the period of imbalance settlement during which market activities were suspended. TSO may propose the same rules that apply to normal operation.

¹⁷ Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

(OJ L 197, 25.7.2015, p. 24).

2. The rules drafted in accordance with paragraph 1 must:
 - a. ensure the financial neutrality of TSO;
 - b. avoid distortion of incentives or counterproductive incentives for responsible balancing parties, balancing service providers and TSO;
 - c. encourage responsible balancing parties to be balanced or help the system restore its balance;
 - d. avoid any financial penalties imposed on responsible balancing parties and balancing service providers due to the performance of actions required by TSO;
 - e. discourage TSOs from suspending market activities, if not necessary, and stimulate TSOs to restore market activities as soon as possible; and
 - f. stimulate balancing service providers to provide services to TSO that help restore the system to normal state.

Part V – Exchange of information and communication, tools and equipment

Article 283. Exchange of information

1. In addition to the provisions of articles 121 to 134 of the code, TSO, during the state of emergency, black-out or restoration, has the right to collect the following information:
 - a. from DSO, the necessary information for at least:
 - i. the part of their network that operates as an island;
 - ii. the ability to synchronize the parts of their network that operate as an island;
 - iii. the ability to launch island operation.
 - b. from Significant Grid Users identified in accordance with Article 266 (4) and restoration service providers, information on at least the following conditions:
 - i. the current state of the installation;
 - ii. operational limits;
 - iii. the time of full activation and the time for generation increase
2. During the state of emergency, black-out or restoration, TSO must provide at the appropriate time and when available to TSO, for the purposes of system protection plan procedures and restoration plan procedures, the following information,
 - a. to adjacent TSOs, information on at least:
 - i. the extent and boundaries of the synchronized region to which its area of control belongs;
 - ii. restrictions on the operation of the synchronized region;

- iii. the maximum duration and amount of active and reactive power that can be supplied through interconnectors; and
 - iv. any other technical or organizational limitation;
 - b. to the frequency leader of its synchronized region, information on at least:
 - i. limitation to maintain island operation;
 - ii. available additional load and generation; and
 - iii. the availability of operational reserves.
 - c. to DSO, the information on at least:
 - i. the condition of its transmission system;
 - ii. limits of active and reactive power, the load in the block, the position of the branch and the switch at the connection points;
 - iii. information on the current and planned status of the energy generating modules connected to DSO; and
 - iv. all necessary information leading to further coordination with parties connected in distribution
 - d. to protection service providers, information on at least:
 - i. the condition of its transmission system; and
 - ii. planned measures requiring the participation of protection service providers.
 - e. to the SGUs identified in accordance with Article 266 (4) and the restoration service provider, information on at least:
 - i. the condition of its transmission system;
 - ii. ability and plans to re-energize junctions (disconnectors);
 - iii. planned measures that require their participation.
- 3. TSOs in the state of emergency, black-out or restoration must exchange information among themselves regarding at least:
 - a. the circumstances that led to the current state of its transmission system, to the extent that they are known; and
 - b. potential problems requiring the need for active power assistance.
- 4. TSO in the state of emergency, black-out or restoration must provide, in a timely manner, information on the state of its transmission system and, if available, additional information explaining the situation on the transmission system:
 - a. to NEMO, who must make this information available to their market participants as provided for in Article 281;

- b. to ERE in accordance with Article 37 of Directive 2009/72/EC;
- c. and
to any other relevant party, as the case may be.

- 5. TSOs must inform each affected party about the test plan drafted in accordance with Article 286 (2) and (3).

Article 284. Communication systems

- 1. DSO and SGU identified in accordance with points (b) and (c) of Article 266 (4), each restoration service provider and TSO must have a voice communication system with sufficient additional equipment and backup sources for power supply, to allow the exchange of information necessary for the restoration plan for at least 24 hours, in the event of a total lack of external power supply or in the event of failure of any individual device of the voice communication system.
- 2. TSO must draft, in consultation with DSO and the SGUs identified in accordance with Article 266 (4) and with the restoration service providers, the technical requirements that must be met by their voice communication systems as well as by the system of TSO itself in order to allow their interaction and to guarantee that the incoming call by TSO is identified by the other party and answered immediately.
- 3. TSO must draft, in consultation with its adjacent TSOs and other TSOs of the synchronous area, the technical requirements to be met by their voice communication systems simultaneously and by TSO's own voice communication system in such a way to allow their interaction and guarantee that the incoming TSO call is identified by the other party and answered immediately.
- 4. Notwithstanding paragraph 1, those SGUs identified in accordance with Article 266 (4) that are generating modules of type B and those restoration service providers that are generating modules of type A or B shall be able to have only one data communication system, instead of voice communication system, if agreed with TSO. This data communication system must meet the requirements set out in paragraph 1 and 2.
- 5. TSO may request that, in addition to the voice communication system, a complementary communication system is used to support the restoration plan; in this case, the additional communication system must include the requirements set out in paragraph 1.

Article 285. Tools and equipment

- 1. TSO must make available the critical tools and equipment referred to in article 105 of the code for at least 24 hours, in case of loss of primary energy supply.
- 2. DSO and SGUs identified in accordance with Article 266 (4) as well as the restoration service providers must make available the critical tools and equipment

- mentioned in Article 105 of the code and used in the restoration plan for at least 24 hours, in case of loss of primary energy supply.
3. TSO must have at least one geographically separated back-up control room. The spare control room must include at least the critical tools and equipment mentioned in article 105 of the code. TSO must designate a backup power supply for the backup control room for at least 24 hours, in case of loss of the primary power supply.
 4. TSO must prepare a transfer procedure for the movement functions from the main control room to the backup control room as soon as possible and in any case within a maximum time of 3 hours. The procedure should include system operation during the transfer.
 5. Substations identified as essential for restoration plan procedures in accordance with Article 266 (4) must be in operation in case of loss of primary energy supply for at least 24 hours.

Part VI – The compliance and review

Title 1 – Testing the compliance of the skills of TSO, DSO and SGUs

Article 286. General principles

1. TSO shall periodically assess the proper functioning of all equipment and capabilities taken into account in the system protection and restoration plan. For this purpose, TSO shall periodically verify such compliance of equipment and capabilities, in accordance with paragraph 2 and with article 41 (2) of the Code "Requirements for grid connection of generators " approved with ERE Board Decision No. 129 Dated 04.06.2018, Article 35 (2) of the Code "Requirements for Grid Connection of Load Facilities" approved with ERE Board Decision No. 128 Dated 04.06.2018 and Article 69 (1) and (2) of the Code "On the requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (HVDC) " approved with ERE Board Decision No. 127, dated 04.06.2018.
2. TSO shall determine a test plan in consultation with DSO, SGUs identified in accordance with Articles 254 (4) and 266 (4), protection service providers and restoration service providers. The test plan shall identify the equipment and the respective capabilities to be tested for the system protection plan and its restoration plan.
3. The test plan must include the periodicity and conditions of the tests, following the minimum requirements described in articles 287 to 290. The test plan must follow the methodology defined in the code " Requirements for grid connection of generators ", the code "Requirements for Grid Connection of Load Facilities " and the code "Requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (HVDC)" for the relevant tested ability. For SGUs not subject to the three connection codes, the test plan shall follow the provisions of the national legislation.

4. During the testing, TSO, DSO, SGU, protection service provider and restoration service provider must not endanger the operational security of the transmission system and the interconnected system. The test should be performed in a way that minimizes the impact on the users of the system.
5. The test shall be considered successful when it meets the conditions defined by the respective system operator in accordance with paragraph 3. As long as a test does not meet these criteria, TSO, DSO, SGU, the protection service provider and the restoration service provider shall repeat the test.

Article 287. Testing the compliance of the capabilities of power generating modules

1. Each restoration service provider, which is a power generating module that provides black-start service, must perform the black-start capability test, at least every three years, according to the methodology defined in Article 45 (5) of the Code " Requirements for grid connection of generators ".
2. Each restoration service provider that is a power generating module that provides fast resynchronization service shall perform the test of disconnection from the grid and transition to the self-load state after any equipment change affecting the its ability to operate at full load or after two consecutive unsuccessful switches in real operation, according to the methodology defined in Article 45 (6) of the Code " Requirements for grid connection of generators".

Article 288. Compliance testing of demand facilities that provide load response

1. Each protection service provider providing load response shall execute the load modification test, after two consecutive unsuccessful real-time operation responses or at least each year, according to the methodology defined in Article 41, point 1, of the code " Requirements for Grid Connection of Load Facilities ".
2. Each protection service provider that provides a response to the request for load disconnection by low frequency, must perform the test of demand disconnection by low frequency according to the methodology defined in Article 286 (4) of the Code " Requirements for Grid Connection of Load Facilities " for demand facilities connected in transmission or according to a similar methodology determined by the relevant system operator for other load facilities.

Article 289. Compliance testing of HVDC capabilities

1. Each restoration service provider, which is an HVDC system providing black-start service, must execute the black-start capability test at least every three years, according to the methodology defined in Article 70 (11) of of the code " Requirements for grid connection of high voltage direct current systems and direct current-connected power park modules (HVDC)

Article 290. Testing for the compliance of load disconnection relays at low frequency

1. DSO and TSO shall perform testing on load disconnection relays at low frequency, implemented in their installations within a period of three years and according to the methodology defined in Article 37 (6) and Article 39 (5) of the Code " Requirements for Grid Connection of Load Facilities".

Article 291. Testing of communication systems

1. DSO and SGUs identified in accordance with Article 266 (4), TSO and each restoration service provider shall test the communication systems defined in Article 284, at least every year.
2. DSO and SGUs identified in accordance with Article 266 (4), TSO and each restoration service provider shall test the back-up power supply of their communication systems at least every five years.
3. TSO, in consultation with other TSOs, shall define a test plan for testing inter-TSO communication.

Article 292. Testing of tools and equipment

1. TSO shall test the ability of the main and reserve energy sources to supply the main and reserve control centers, provided for in Article 285, at least every year.
2. TSO shall test the functionality of the critical tools and equipment referred to in Article 118 of the code, at least every three years, covering the main and spare tools and equipment. Where these tools and equipment include DSO or SGUs, these parties shall participate in this test.
3. TSO shall test the ability of the reserve energy sources to supply the main services of the substations identified as main for the restoration plan procedures according to Article 266 (4), at least every five years. When these substations are in the distribution system, the test must be executed by DSO.
4. TSO shall test the transfer procedure for the movement from the main control center to the backup control center, provided for in Article 285 (4), at least every year.

Title 2 – Compliance test and review of system protection and restoration plans

Article 293. Compliance test and periodic review of the system protection plan

1. DSO involved in the implementation of low-frequency demand disconnection in its installations, once a year updates the communication of the notification of the system operator provided for in point (b) of article 255 (6). This communication shall include the frequency charges at which begins the net demand disconnection and the percentage of net demand disconnection for each value of this set-point.

2. TSO shall monitor the proper implementation of low frequency demand disconnection on the basis of the annual written communication referred to in paragraph 1 and on the basis of implementation details in TSO installations when applicable.
3. TSO shall review, at least every five years, its full system protection plans to assess its effectiveness. TSO in this review should take into account at least:
 - a. the development and evolution of its network since the last review;
 - b. capabilities of new equipment installed in transmission and distribution systems since the last review;
 - c. SGUs commissioned since the last review, their capabilities and respective services provided;
 - d. performed tests and analysis of system incidents in accordance with article 137 (5) of the code; and
 - e. operational data collected during normal operation and after a system incident.
4. TSO shall review the relevant measures of the system protection plan in accordance with paragraph 3 before any substantial change in the network configuration.
5. When TSO identifies the need to adapt the system protection plan, it changes the system protection plan and implements these changes in accordance with articles 255 and 256.

Article 294. Compliance test and periodic review of the restoration plan

1. TSO shall review the measures of the restoration plan using computer simulation tests, using data from DSO according to Article 266 (4) and restoration service providers, at least every five years. TSO shall define these simulation tests in a dedicated test procedure covering at least:
 - a. energization path of restoration by restoration service providers with black-start capability or island operation;
 - b. supplying the main personal needs of generating modules; load
 - c. reconnection process; and
 - d. the process of re-synchronization of the networks in island operation
2. In addition, when deemed necessary by TSO for the effectiveness of the restoration plan, TSO shall conduct operational test of parts of the restoration plan, in coordination with DSO and restoration service providers.
3. At least every five years, each TSO shall review its restoration plan to assess its effectiveness.

4. TSO shall review the relevant measures of its restoration plan in accordance with paragraph 1 and shall review their effectiveness before any substantial change in the network configuration.
5. When TSO identifies the need to adapt the restoration plan, it amends the resettlement plan and implements these amendments in accordance with Articles 266 and 267.

Anex I

Characteristics of the automatic low-frequency demand disconnection scheme for the synchronous area of Continental Europe:

Parameter	Value	Unit
Initial level of mandatory disconnection: Frequency	49	Hz
Initiation mandatory disconnection level: Disconnection demand	5	% of the total load at national level
Final mandatory disconnection level: Frequency	48	Hz
Final mandatory disconnection level: Cumulative demand to be disconnected Frequency	45	% of the total load at national level
Implementation range	± 7	% of total load at national level for a given frequency
Minimum number of steps to reach the mandatory final level	6	Number of steps
Maximum Disconnection Demand for each step	10	% of the total load at national level for a given step

MARKET OPERATION AND THE METERING RULES

Part I – Electricity Market Operation

Article 295. Object and purpose

1. This code shall contain the general rules on the issues regarding the operation of the Market Operator, the market operation and the relations between the Market Operator, and the TSO, the DSO and the transmission system users.
2. The provisions of this code shall be interpreted in coordination with the Albanian Electricity Market Rules or the Market Balancing Rules.
3. The provisions of this code regarding the metering rules (include the metering, the metering system and the metering activity) shall define the rights and obligations of the TSO, for the transmission system users as well as the market participants.

Article 296. The Market Operator and its operation

1. The market operator shall be the responsible structure for the organized market management and administration through market platform, according to the day ahead (D- 1) and intraday (D), as well as the related activities, including the clearing activities between the market participants, according to the market rules and market model.
2. The market operator shall be the Albanian Power Exchange.
3. The market operator shall operate according to the power market rules and the provisions of Law No.43/2015 "On Power Sector", as amended.
4. At the market model approved with Council of Minister's Decision no. 519, dated 13.07.2016 "the Electricity Market Model", there are defined:
 - a. the cooperation approaches between the electricity market participants;
 - b. the necessary contractual agreements;
 - c. the information and exchange of the main data, required between the market participants.

Article 297. The Market Operator and the Balancing Market

1. The balancing market is the management, based on the market, of the power system balancing operations, from the Transmission System Operator.
2. The electricity market participants may regulate the balancing responsibilities, through an agreement with the TSO receiving the BRP (Balancing Responsible Party) status or signing a contract to transfer the balancing responsibilities to another

- balancing responsible party, participating to a balancing group, according to the balancing market rules.
3. The Market Operator is responsible for the preparation of the financial statements for the settlement of the mutual obligations for the imbalances caused by the market participants.

Article 298. The roles of the MO, TSO, DSO and transmission system users according to the Market Model

1. The TSO except of other operations, shall perform the balancing market operation through:
 - a. the foresee and purchase of the ancillary services in the market allocated into balancing energy and reserve capacity, by all the balancing service providers (BSP), on weekly time-period, for the day ahead and on real time.
 - b. performing the necessary actions for the system balancing, by activating the decrease or increase of the secondary regulation by the balancing reserves and / or additional balancing reserves, provided in the market for the electricity balancing.
 - c. the electricity purchase to cover the transmission system losses, in the day ahead organized market. For the transitional period before the entry into operation of the energy market, the TSO shall permit the energy procurement procedures according to the rules approved by ERE;
 - d. its compensation for the balancing services, ensuring the financial settlement on a monthly basis, through the compensation of imbalances, based on the imbalance settlement mechanism and the Balancing Market Rules
 - e. management of the required metering data to perform an efficient management of energy imbalances and their financial settlement;
 - f. the price of the electricity imbalances that shall be paid by the BRP-s, will be defined according to the real costs for the TSO, to balance the system for the respective period, covering the balancing and energy reserves.
2. The DSO carries out the purchase of the technical and non-technical losses to the organized day ahead market. For the transitory period before the entry into operation of the energy market to the DSO are permitted the energy procurement procedures according to the rules approved by ERE.
3. “The balancing responsible party” is an electricity market participant or his selected representative, responsible to the Transmission System Operation for the imbalances established during its operation.
4. “The electricity market participant” is a legal person, registered as an electricity market participant, including the producers, traders, suppliers, customers, the Transmission System Operator, the Distribution System Operator, closed distribution

- system and the market operator. The Transmission System Operator and the Distribution System Operator are electricity market representatives only to ensure the necessary electricity to cover the losses to the grid, the balancing and the ancillary services.
5. The terms and conditions to become a Balancing Responsible Party (BRP) are defined by the TSO and regulated with an agreement between them based on the Balancing Market Rules.
 6. All BRP are responsible for the foresee of production and consumption as well as for the imbalance calculation. The BRP may take the responsibilities of the other BRP-s or the production or consumption units under the approved capacity.
 7. The Balancing Service Provider (BSP) is a BRP providing the balancing services for the TSO. The conditions and criteria to become a BSO (Balancing Service Operator) shall be defined by the TSO and are regulated with an agreement between the BSO and the TSO.
 8. The Albanian Power Exchange (APEX) is operated by the MO and performs these operations:
 - a. ensures all the systems and the necessary interactions for the day ahead and intraday market operation;
 - b. accepts the applications and offers to purchase and sell electricity from the market participants;
 - c. receives and processes the interconnection capacities by the TSO, as well as other relevant information;
 - d. carries out the necessary auctions and trade operations, according to the approved rules, by utilizing for this purpose the european market coupling algorithms;
 - e. shall send to the market participants and the TSO, according to the defined deadlines, the commercial confirmations, including the allocated quantities and prices;
 - f. shall publish the distributed amounts and the respective prices, according to the defined terms;
 - g. shall send to the market participants and the TSO, according to the agreed term, the credit notifications and the financial accounts;
 - h. shall execute the coercion means and the payments for the respective BRP's, according to the defined rules and deadlines;
 - i. shall respect the requirements for transparency and shall execute the competences for the market inspection;

Article 299. The Market Operator and the relations between the TSO, DSO, and the system users

1. The Transmission System Operator and the Distribution System Operator shall be the electricity market participants only for one purpose to ensure the electricity necessary to cover the losses in the grid, the balancing and the ancilliary services.
2. The Market Operator shall set available to the TSO and the DSO any information, necessary to perform the operations of the respective management systems.
3. The TSO and the DSO shall set available to the Market Operator any necessary information for the effective electricity market operation.
4. The mutual information issued according to points 2 and 3 of this Article is confidential and, in any case, shall contain commercial sensitive information.
5. According to the Market Model, the Market Rules and the codes, except of the obligations defined at the respective licenses and/or other rules any other market participant is obliged to submit for the TSO/DSO and the Market Operator the information required according to this code and the effective Market Rules.

Article 300. The Nominated Electricity Market Operator (NEMO)

1. The Nominated Electricity Market Operator (NEMO) is referred to a legal entity defined by ERE to perform the duties regarding the day ahead and intra day market coupling;
2. NEMO shall act as the market operator in Albania to perform, in cooperation with the TSO, the day ahead and intraday market coupling.
3. The respective duties are defined on the regulation approved with ERE Board Decision no. 40, dated 06.03.2020. Above all according to this regulation the TSO shall:
 - a. shall cooperate with the other TSO-s to ensure the operation of price coupling algorithms and according to the continuing marketing for all the aspects regarding the simultaneous cross-border capacity allocation. With the establishment of a reliable algorithm to comply with the requirements and bids of the appropriate back-up processes, there may be situations where the the price coupling process is not capable to produce results. As a result, it is necessary to be provided the solutions for the results in national and regional level to ensure that the capacity may not be allocated;
 - b. shall perform, in coordination with the other TSO-s, the net calculation of net transmission capacity in D-2 to support the market coupling;
 - c. shall calculate, confirm with the other TSO-s and shall send the cross-sectional capacities and the respective NEMO allocation limits not later than 1 hour before the closure of the gate for the day ahead market.
 - d. if it is not capable to provide the data of point (c), shall inform the respective

NEMO and shall provide the entry data not later than 30 minutes from the closure of the gate for the day ahead market;

- e. shall verify the results for the market coupling only for the day ahead according to the cross-sectional capacities and the evaluation of allocation limits;
- f. shall draft and operate the fallback procedures according to the capacity allocation;

Part II – Metering rules

Article 301. The responsibilities of the parties

1. The rules for electricity metering shall define the rights and obligations of the TSO, the transmission system users and the electricity market participants, regarding:
 - a. metering of entry/exit electricity inflows in the grid,
 - b. the meter readings, and the receive of the data from the electricity meters;
 - c. the processing of the data and the distribution for power market processes.
2. The rules shall define the technical requirements for the transformers, the electricity meters and the ancillary services at all of the connection points of the transmission system or interconnectors, as well as shall define all necessary data at a metering point.
3. The Transmission System Operator is responsible for the metering activity and the network reading metering service according to ownership unbundling of the Transmission System Operator as defined by the law.
4. The provisions of this rules are implemented at the metering points at all places that provide electricity at the TSO transmission facilities or the facilities of the users connected to the transmission system.
5. The provisions of these rules are implemented at the 400/220 kV, 400/110 kV metering points and the 220/110 kV transformers tracks, by the side of medium voltage within the transmission network.
6. The electricity introduced to the grid or supplied for the end use customers is metered through the metering equipments, according to the provisions of the effective legislation for metrology.
7. The TSO shall take the measures that the meter and /or the metering system shall be according to the requirements of Law no. 43/2015 “On Power Sector”, Article 76, point 3 regarding the seal, the sealing and the accuracy class.
8. The TSO and the users shall implement the conditions of using the metering point as defined on this code, respecting the transparency and non-discrimination principles.

9. The TSO and the users shall respect the technical conditions for the safe and reliable operation of the metering system guaranteeing the quality of service according to the responsibilities and the competences of the TSO and the users.
10. The TSO shall publish the technical characteristics and the technologies of the equipments and the metering system which shall comply at any metering point of the users connected to the transmission system.

Article 302. The metering point and the electricity issue/receive points

1. The metering point shall represent the physical location at the system where it is registered and metered the electricity quantity.
2. The metering point may be decided on the environment or part of the environments on the ownership of the:
 - a. TSO,
 - b. the generating users,
 - c. the Distribution System Operator, or
 - d. the load Users.
3. The electricity issue/receive point is the point on which the generating units, the customers and the distribution system are connected to the transmission system on which the TSO issue/receive electricity from/to the transmission system users.
4. The metering point and the issue/receive points are defined on the study of the connection point and the agreement between the parties for the connection with the transmission system.
5. If for specific circumstances, not contradicting the effective framework, the study does not exist or not handle the metering point and the issue/receive electricity point, the TSO shall define the location of the metering point, the connection point with the system as well as the location of the control meter and the general meter of the user.

Article 303. Location of the metering point

1. The metering point is the electricity issue/receive point from the adjacent systems (the metering points of the interconnections) which are located at the 400/x kV, 220/x kV, 154/x kV substations or 110/x kV substation on TSO ownership.
2. The TSO is responsible for the installation, maintenance and periodic control according to the effective framework of the metering system, the main meter and the control one. The metering system, the main meter and the control meter are installed

- on the same metering point. The technical characteristics shall be identical, according to the technical requirements required from the Metering Code.
3. The electricity metering of the interconnector for the issue/ receive is regulated from the respective contracts/ agreements of the interconnector with the
 4. Matja e energjisë së interkoneksionit në dhënie/marrje rregullohet nga kontratat/marrëveshjet përkatëse të interkonjeksionit me operatorët fqinjë.
 5. For the generating users, the metering point is the electricity issue point from the generation facility to the transmission system and is defined from the study for the connection with the transmission system.
 6. The user (the generation facility) may install and maintain additional control metering equipments on his ownership, for the issue/receive electricity to the connection lines at the substation, as a reserve for the control and main meters of the TSO.
 7. The TSO may install and maintain the additional control metering equipments, on TSO ownership, for the issue/receive electricity metering to the connection lines of the substation, as a reserve for the control and main meters.
 8. The metering point is the issue/receive point of electricity from the TSO to the DSO according to the definitions of the connection studies with the transmission system.
 9. The DSO is obliged to install, periodically control according to the effective framework and maintain the additional control equipments for the issue/receive electricity metering. These equipments shall be installed at the low voltage side of the transformer.
 10. The metering point and the electricity issue/receive connection point from the TSO to the loading user connected to the transmission system shall be defined to the study of the connection with the transmission network.
 11. The DSO is responsible for the installation, maintenance, periodic control of the main and control system.
 12. The customers directly connected to the transmission system are obliged to install and maintain the additional control meters on their ownership to meter the issue/received electricity.
 13. The customers directly connected to the transmission system are responsible for the installation, maintenance, periodic control according to the effective framework of the control metering system.
 14. The TSO may install and maintain additional control meters to meter electricity to the lines that are connected with its substations as a reserve of the main (general) meters.

Article 304. Installation of a metering point, the seal and the correction factor

1. If there are complied all the technical conditions the metering point is decided on the same voltage level as the connection point.
2. After the installation and the set into operation, of the metering system (the metering equipments, the box of connecting the meter, and the other equipments that may influence the accuracy of the meter and the energy invoice) shall be co-seal from the system operator and the DPM. The seal shall be set on a position defined for the seal of the metering system.
3. The seal shall be identified with the logo of the entity that composes the seal and is composed of materials and the installation approach that does not affect to the main meter or the control of the metered values.
4. The seal of the metering system shall be according to the legal definitions and implementing the rules as follows:
 - a. The metering equipments and the respective communication equipments shall be set on a dedicated and safe cabinet in an easily, accessible area, free from the obstacles and well lightened as required and with artificial lightening from the user that requires to be connected with the transmission system.
 - b. The cabinet shall be according to the recommendations of the metering producer for the environmental conditions and its projection shall at least include the protection from humidity and moist and from physical damage, including vibration and shall provide the appropriate temperature control.
 - c. The cabinet shall be switched and with a transparent and sealed cover. The TSO shall control the time to time seal according to practical respective procedures. The seal may be broken/open only from or with the approval of the entities that perform the seal.
5. Where the delivery/receive point and the metering point are not of the same voltage level, or where they are of the same voltage level but on a distance from each other such that the energy losses between them cannot be neglected, a correction factor applied to the measurement data must be determined for the value of energy losses from the point of delivery to the point of measurement (transferred to the point of delivery). The use of the correction factor is carried out during the repayment process and is an integral part of it.
6. The correction factor where necessary shall be used and be part of the connection agreement between the parties before the lines are set into operation.
7. The correction factor is defined by the TSO based on the technical specification of the

equipment, the calculation of the losses on the middle of the delivery point and the metering point under the operational average conditions. The correction factor shall be defined at:

- a. The connection agreement of the end user or the generator;
 - b. The contract for the interconnection to the transmission/distribution system;
 - c. Operation agreement for the end user or generator facilities, where the correction factor is amended during the operation of the facility;
8. Any amendment of the technical conditions over which it is performed the correction coefficient shall be reflected with the verification, re-calculation and if needed the amendment of the correction coefficient as well as the amendment of the respective documents and the reflection of the respective procedures where this coefficient is used.

Article 305. The metering equipments

1. At any metering point, the metering system equipments shall include:
 - a. Metering transformers;
 - b. Electricity meters (main meter and the control meter);
 - c. The secondary electric circuits of metering and ancilliary services;
 - d. Communication equipments
 - e. The secondary equipments (the measurement terminal box and the metering cabinet for the connection of the meters, fuses, metering equipments, the electricity supply equipments etc.);
 - f. Signaling and surveillance equipments;
2. At any main metering point and the electricity voltage metering control transformers and the current metering transformers are installed and comply the standards according to Council of Minister Decision no. 482, dated 17.06.2020 “On approving the technical regulation “On the technical conditions and guaranteeing the safety of electric lines of high voltage over 1 kV” and Council of Minister Decision no.483, dated 17.05.2020 “On approving the technical regulation “On the technical conditions and guarantee the safety of high voltage electric installations, over 1 kV”.
3. The metering tranformers shall be accompanied by the factory test protocol from the producer as well as the seal from the authorized entities or the respective institution.
4. The accuracy level of metering transformers is defined on the following table:

	Fuqia e Kërkuar	CMT	VMT
Interconnection line	Unlimited value	0,2 S + 0,2 S*	0,2 + 0,2*
The generator, DSO, user of the transmission system	1÷10 MW	0,5S	0,5
	10÷50 MW	0.2S	0.5
	>50MW	0.2S	0.2
Scheme for the supply of the secondary equipments		≤0,5	≤0,5

(*) two metering cores

Article 306. Current metering transformers

1. The permitted primary current of the metering transformers is defined according to the permitted current of another track equipment where the current transformer is located.
2. The TSO shall define the coefficient of the primary side of the transformers used to the metering system. The user is obliged to implement the TSO requirements which shall be submitted with an official notification or which are defined on the study for the connection with the transmission system.
3. On the metering core of the current transformers are connected only the electricity meters.
4. At the metering points of the interconnectors and at the metering points of the generation users, the current transformers shall be equipped with two cores with identical technical characteristics. On the first core it is connected only the first meter while on the second core it is connected the control meter.
5. The total load of any metering core of the current transformer including the secondary electric circuits shall be 25 – 100 % of the permitted load of the metering core.
6. The section of the conductors of the secondary metering circuits from the transformer terminal of the current on the box of the connection, shall be at least 2.5 mm² for the conductor with a length 100 m/phase, and 4 mm² for the conductor with a length of more than 100 m/phase.
7. The electricity circuits of the meter shall have suitable protection from the mechanical and electricity disturbances. The type of the conductors for the secondary circuits shall be NYCY.
8. The detailed technical characteristics of the current metering transformers shall be defined on the study of the connection to the transmission system.
9. If there is not a study for the connection to the transmission system, the characteristics of the current metering transformer shall be defined by the TSO with an official notification.

10. The TSO shall have the right to require the compliance of the conditions for the current metering transformers according to the transmission system conditions.

Article 307. The transformers for voltage metering

1. As a rule, at the core of metering the voltage transformers (VMT) there are connected only the energy meters.
2. On specific conditions and with the permission of the TSO, at the metering core may be connected even the other equipments only if the total load on the core does not exceed its permitted power.
3. The secondary terminals of the Voltage Metering Transformers (VMT) shall be equipped with automatic specific systems, with signaling contact. The automatic equipments shall be set as closer as possible with the secondary terminals of the VMT (control panes on the track where VMT is connected).
4. The voltage decrease from the VMT at the energy meter (ΔU) shall be $\leq 0,05\%$ of the secondary permitted voltage of the VMT if this supplies the meter with 0.2s accuracy level, and $\Delta U \leq 0,1\%$ if supplies the metter with 0.5s accuracy level. The session of the conductors of the voltage meter circuits shall be defined according to the permitted decreases of the voltage.
5. The total load of the VMT secondary core, including the connection conductors, shall be 25% - 100% of the permitted load of the core.
6. The voltage meter circuits shall be realized with the suitable protection from the mechanical and electric disturbances. The type of the conductors for the secondary circuits shall be NYCY.
7. The details of the VMT technical characteristics shall be defined on the study for the transmission system connection.
8. If there is not a study for the transmission system connection, the characteristics of the voltage metering transformers shall be defined with official notification of the TSO.
9. The TSO shall have the right to require the completion of the conditions for the voltage metering transformers according to the conditions of the transmission system.

Article 308. Metters

1. The metering equipments (meters) shall register the active and reactive energy and it shall be according to the legal framework for the metering as well as Council of Ministers Decision no. 482, dated 17.6.2020 “On approving the technical rules for the technical conditions and the guarantee of electric lines security on over 1 kV high voltage” and Council of Minister Decision no. 483, dated 17.6.2020 “On approving the technical conditions, “For the technical conditions and the guarantee of electricity safety installations in over 1 kV high voltage”.

2. The meter shall be static, three-phase, both directions, four conductors, with four tariffs for the power metering and active, reactive energy and with the ability of distance data exchange.
3. The meters shall locally and on distance display the readings of kW, kWh, kVAr, kVArh as well as the total consumption, the register of the events and the seal of the time of the event.
4. The metering equipments shall include metering registers for any metering size.
5. The meter shall at least have two specific seals. One from the respective state structure the DPM and the other seal from the TSO. The user may perform the seal with its own seal in coordination with the TSO and the state institution. At the cover of the metering terminals and on the reset, button shall be set the TSO, DPM seal and the users if this is required from this last one mentioned.
6. The metering box shall be closed and sealed to prevent the unauthorized access.
7. For the metering equipments shall be ensured the reserve supply with energy from an external source.
8. At the metering points of the interconnector and the metering points of the generators except of the main meter shall be installed the control meter with the same technical characteristics and accuracy level as those of the general meter. For the purpose of reconciliations and the invoice shall be used the metering data that are taken from the general meter.
9. In case of failure or malfunctioning of the general meter or one part of the metering system, for the purpose of reconciliations and the invoice shall be used the metering data taken from the control meter.
10. Accuracy class/level of the meter

	Required power	Accuracy level	
		Active energy	Reactive energy
Interconnection lines	Pa limit vlere	0,2 S + 0.2S* (C class)	$\leq 1 + \leq 1^*$
Generators, DSO, user of the transmission system	1÷10 MW	0,5 S + 0.5S* (C Class)	$\leq 1 + \leq 1^*$
	10÷50 MW	0,5 S + 0.5S* (C Class)	$\leq 1 + \leq 1^*$
	>50MW	0,2 S + 0.2S* (C Class)	$\leq 1 + \leq 1^*$
Supply scheme for the ancilliary services		$\leq 0,5$	$\leq 1 + \leq 1^*$

(*) obligatory installation of the general and the control meter

11. The details of the technical characteristics of the meter shall be defined on the study for the connection of the transmission system.
12. Any metering equipment shall be appointed with a unique identification number.
13. The identification number together with the technical characteristics and the specifications shall be registered from the TSO on the metering register and the metering database.

Article 309. Signaling and surveillance

1. The users shall ensure the surveillance and the signalization of the events as follows on a suitable location on its facility:
 - a. The lack of voltage at the metering equipments;
 - b. The interruption of the ancilliary supply;
 - c. Unauthorized intervention to the metering equipment;
 - d. Failure of normal operation to the metering equipments;
2. All of the above alarms shall be registered with the time seal on a register of events of the meter.
3. If it is registered the display of any alarm from the current or voltage circuits or the violation of the meter (unauthorized access to the terminals of the meter connection, the lack of voltage or current, the failure of the connection with the system, etc.), this information shall be available from the TSO on real time.

Article 310. Communication, protocol of communication and interface

1. All of the metered quantities and all of the data registered with the meter shall be read locally and on distance according to the internacional standards and the protocols as follows:
 - a. IEC 62056-42 / 46/53/61/62 (DLMS) – metering device (IR port, electrical port RS 485, serial port RS 232);
 - b. IEC 61107 – metering device
2. The communication interface (physical level of communication with the metering equipment) shall have the standards as follows:
 - a. IEC 62056-21 – IR port/metering device;
 - b. ISO 8482 – RS 485 port/metering device;

Article 311. Communication channels

1. For all of the metered quantities which shall be registered from the metering

equipments and shall be read on distance, shall be ensured one of the communications means as follows:

- a. GSM/GPRS/3G/4G/LTE/5G network;
- b. Ethernet
- c. FTTH/ADSL/VDSL/L2L/ to the public network

Article 312. The procurement, installation, set into operation, the take-down of the metering equipments of the system

1. The procurement, installation and the set into operation of the system metering equipments shall be according to the respective provisions on this code that regulate the issues of the new connections.
2. The user, owner or the legal representative for the connection point are responsible for the procurement of the metering system equipments. The installation and the set into operation is performed under the supervision and the presence of the TSO.
3. The above provisions shall be applied for:
 - a. the metering transformers;
 - b. the cable systems between the meter and the secondary terminals of the metering transformers;
 - c. the electricity supply and the protection equipments;
 - d. the meters;
 - e. communication devices;
 - f. devices for the signaling and surveillance;
 - g. the interface with the user and the integrity of the metering equipments with the TSO systems.
4. If the user establishes a general metering point, shall inform the TSO in the written form regarding the commissioning of the metering point. The user shall be obliged to submit to the TSO all the testing protocols, the configuration data of the metering equipments and the tests of acceptance to the facility. The TSO shall be present to the procedures for the installation, the acceptance tests and the commissioning of the metering equipments.
5. According to the submitted technical documentation and on the presence of the acceptance tests to the facility and of the commissioning, the TSO shall notify in the written form the user if the metering system is in conformity and acceptable for the TSO or not by explaining the position and the gaps that need to be complied. The user is obliged to act according to TSO guidelines.

6. The transferring of the connection point ownership or the ownership transferring of only the metering point is performed after:
 - a. the control of all testing protocols from the seller and the installer/implementator of the works;
 - b. the administration and control of all documents;
 - c. the configuration control of all the metering equipments;
 - d. the control of the secondary circuits of current and voltage;
 - e. the control of communication operation and the communication channels;
 - f. the control of the interface and distance communication of the metering equipment with the TSO systems;
 - g. control of validity of all the seals of the metering equipments;
 - h. registration of the equipments and the metering point to the unique register of TSO metering.

7. After the commissioning any intervention or amendment to the metering devices is not permitted to be performed without the written permission of the TSO. Any intervention or unauthorized amendment shall be accompanied with a repletion of the control process of the metering equipments according to the above provisions and the costs shall be covered from the party that caused the unauthorized intervention / amendment including the respective penalties according to the effective legislation.

Article 313. The parameter of the metering devices

1. The parameter of the metering devices shall be for:
 - a. defining the coefficient of the metering transformer/transformers at the metering point;
 - b. defining the meter that shall be installed to the metering system;
2. The characteristics of the metering transformers and the coefficients of the transformers shall be defined by the TSO according to the permitted voltages and the transmission capacity of the equipments.
3. The parameter shall take into consideration the internal characteristics of the meter which shall be compatible with the technical characteristics of the metering system.
4. The parameter of the metering devices shall be performed on the primary and secondary side depending on the sizes that shall be metered.
5. The basic parameters of the metering equipments such as the transforming

- coefficients of the current and voltage transformers, the correction transformers etc, shall be kept on a unique register of the TSO for the metering points.
6. The parameter of the metering equipments shall be performed for any metering point.
 7. The TSO shall be the only authorized entity to amend the configuration of the metering equipment parameters.
 8. The TSO is responsible for the update and maintenance of the metering equipments parameter.
 9. The TSO shall inform the user if there are carried out amendments for the parameter of the metering equipments.
 10. As a parameter rule shall be performed by the TSO on the primary side of the metering equipments. If the metering equipment is parametered on the secondary side, then the correction coefficient for electricity and power shall be introduced on the invoicing algorithm clearly and explicitly. Their amendment is possible only with the written notification by the TSO.
 11. The TSO evidences and archives to the parameter documentation all the data of the metering equipment and the correction coefficient for energy and power.

Article 314. Inspection and control of the metering equipments

1. To ensure the accuracy and reliability of the operation of the metering equipments, their control is necessary. Their inspection and control of the metering equipments shall be carried out by the TSO, the authorized institutions and the user.
2. If the TSO and/or the user doubt if the accuracy of the metering equipments is not within the defined limits, shall be carried out an out - of - order inspection of the metering equipments.
3. If the inspection confirms that the inspected metering equipment is not on the suitable class of accuracy, all of the costs for the inspection shall be covered by the owner of the connection point. The owner of the assets for the metering track is obliged to replace the inspected meter with another one with the respective technical characteristics.
4. If the inspection confirms that the inspected meter is on the accurate suitable level, all of the costs for the inspection shall be covered from the party that requires this inspection.
5. If the inspections are performed on site by the sample equipment, the inspections shall be performed on the presence of the authorized staff from the DPM, TSO or the user.

Article 315. The inspection of the metering equipments shall be performed by the TSO

1. The TSO shall perform the inspections to verify the metering equipments on any general meter according to a graph defined before.
2. The TSO may perform successive inspections in a shorter time than one year based on the data regarding the operation of the metering system shall access if it is necessary the verification of the meter accuracy.
3. The control meter may be inspected also if assessed necessary from the TSO.
4. The inspection of the metering equipments shall include:
 - a. the verification and testing of the physical status of all seals, targets and appointments of the metering devices;
 - b. the testing of the transforming coefficients of current and voltage transformers;
 - c. the testing of all secondary circuits of the cable from the metering device to the metering transformers;
 - d. the test of the screen/display of the meters;
 - e. the testing of metering equipment parameter;
 - f. the test of local and distance communication;
 - g. the test of accuracy level of the meter.
 - h. the analysis of the three-phase metered values
 - i. the signaling control and alarm as well as the analysis of the registered signals and alarm registered on the events register;
 - j. the analysis of the diagramme of the voltage and current phase
 - k. comparison of the registrations between the general and control meter. The deviation shall be within the limits defined by the accuracy level of the metter;
5. If observing failures of the metering equipment / system, shall document the finding and require to take the measures for replacing the equipment with a new one regarding the technical appropriate characteristics within a period not later than 30 calendar days.
6. If the TSO or the user doubts on the accuracy of the metering equipment, the TSO shall organize within 30 days an out - of - order on site inspection of the metering equipment.
7. All of the costs for out-of-order inspection shall be covered from the user if the inspection verifies the failure of the metter. If the failure is not confirmed, the costs

shall be covered from the entity that requires the inspection.

8. All of the actions shall be performed during the inspection including its results and shall be documented on the written form.

Article 316. The inspection of the metering equipments from the authorized institution

1. The authorized institution, shall carry out periodic inspections and verifications of the metering equipments on the certified laboratories, on time-frames defined from the legal framework, operating to the type of the metering equipment and the declared level of accuracy.
2. The TSO is obliged that all the main metering and control equipments shall be verified and sealed from the authorized institution.

Article 317. Access to the metering system

1. The TSO is obliged, that on the request of the user, to ensure access on its environments for the visual reading of the main and control meters, as well as the inspection of the metering equipments. The common presence of the TSO and the user is obligatory.
2. The user is obliged that, on the request of the TSO to ensure the access on its environment for the local reading of the main and control meter as well as the inspection of the metering system. The common presence of the TSO and the user is obligatory.
3. The metering access and the access to the internal metering equipments, the circuits and the connected equipments of communication shall be only with TSO approval according to the guidelines defined by the TSO.
4. The user shall permit the TSO or its representatives, regarding the entry, passing and the location rights on any part of the users ownership on the appropriate measure to perform the operations according to the Transmission Code. The user shall make all of the reasonable regulations and shall provide all of the necessary facilities for the TSO or its representatives in performing these rights.
5. The rights according to the point above shall include even the right to use the vehicles, plants, maintenance machineries or other materials that may be required in a reasonable way by the TSO to perform its functions regarding the metering in the framework of the code.
6. All of the testing results, the maintenance programs and the seal data shall be maintained during all period that the equipments are into operation and for five years after they are out of operation from the inventory of the assets. The data of the equipments and the testing data shall be set available to the interested parties according to the confidentiality criteria.

7. After any intervention to the metering system due to the planned maintenance or in case of defect, as well as periodically, according to the need shall be performed the verification of the meter according to the provisions of Law no. 43/2015 “On Power Sector”, as amended, article 77.

Article 318. Preventive maintenance of the metering system

1. The TSO is obliged to perform efficient controls and surveillance of the metering point on each metering point through the activities as follows:
 - a. the control of three-stage metering system;
 - b. the identification / finding of the incompliances at the metering;
 - c. the physical control of the metering point;
 - d. control and confirmation of accuracy of the metering data;
 - e. the archive and maintenance of documentation for the main metering points.
2. The TSO and the user shall be obliged to ensure the maintenance of the metering systems to guarantee the accuracy and reliability of operation.
3. If one or more parts of the metering system are the technical characteristics that do not correspond with those approved on the connection point, the user is obliged to as soon as possible and not later than 30 days to replace the equipment that is not compatible.
4. Any amendment, regular or out of order control or intervention for any part of the metering system shall be only on the presence of the authorized staff of the TSO and the user. These processes shall be documented on each case with the respective minutes signed from the parties.
5. The TSO is obliged that with its costs shall maintain the metering equipments on its ownership.
6. The TSO shall maintain the metering system according to the law, the technical rules and the codes.
7. On the cases where the metering points and the equipments of the metering system (VMT, CMT, secondary circuits, etc.) are on the ownership of the user, the user is responsible for the maintenance costs and the metering equipments and their status. The metering equipments on the connection point shall be maintained by the TSO on the presence of the user. On this case the TSO shall repair the metering system as practically as possible if the metering system is not in operation or requires maintenance. The TSO shall invoice as suitable the provided services.

8. Any intervention or failure of repairing the equipment is reported on the written form by the user for the TSO issuing all of the necessary details.
9. If the user amends a defined part of the metering point on its ownership, is obliged to inform the TSO within 30 days in the written form.
10. The written notification consists on:
 - a. the replacement reason;
 - b. the type of the equipment that shall be replaced and of the equipment in operation;
 - c. the testing protocols from the producer for the accuracy level and the testing protocols from the performed inspections of the equipments from the authorized entities;
 - d. the testing protocols for the set into operation of the equipments.

Article 319. The repairs of the metering system

1. If the TSO shall define the failure or is informed for the failure on each point of the metering system, the TSO shall:
 - a. inform the user for what is observed;
 - b. if necessary to perform the receive of the metering data in a local way;
 - c. the finding and the repair of the problem on the part of the system on its ownership part.
2. If there are observed the failures to the main metering system, or for each other part of the metering system, caused from the user, the TSO shall inform the user in the written form. The user is obliged to take the measures for the costs of the repair of the damage as soon as possible but not later than 30 days, on the part of the system on its ownership.
3. If the user shall observe the damage of the metering system on the metering point on its ownership, the TSO shall inform within 48 hours for observation.
4. The user is obliged to cover the repair costs of the damage as soon as possible but not later than 30 days, as part of the system on its ownership.
5. If the failure is observed on the three-phase metering system, there is a lack of the metering/display of a quantity, registration of the metering quantities in a non-correct approach etc, the user is obliged to inform the TSO within 48 hours and to cover the repair costs of the damage as soon as possible but not later than 30 calendar days, on the part of the system on its ownership.

6. The metering system shall be repaired and shall be returned to the normal operational conditions within 15 days if the damage / observed damage influences on the invoicing process and the accuracy of the invoice.
7. The return to the normal conditions of operation after performing the necessary repairs to the metering system is confirmed and permitted in the written form by the TSO.

Article 320. Metering data

1. For any metering point shall be performed and displayed the meters of the sizes as follows:
 - a. delivery of the active energy (A-);
 - b. the consumption of active energy (A+);
 - c. delivery of reactive energy (Q-);
 - d. consumption of reactive energy (Q+);
2. Direction of delivery (-) and consumption (+) of electricity are defined in the reports with the TSO.
3. On each metering point the diagramme of the load is registered as an average of 15 minutes of active and reactive power for each invoicing period.
4. The daily period begins on 00:00 h CET for the interconnection metering point and terminates on 24:00. For all the other metering points the daily period starts on 00:00 according to the local hour and terminates on 24:00 according to the local hour.
5. The invoicing period for the interconnection metering points coincides with the calendar month with the reading of the general meter on the first day of the month hour 00:00 and the last day of the month hour 24:00 CET. For all the other metering points the period initiates with the first day of the month reading hour 00:00 h and terminates on the last day of the month 24:00 hour with the local time.
6. Any metering data / information is accompanied with the time seal (minutes, hour, day, year). These data shall be maintained on the metering equipment for the distance of reading needs.
7. The data received for delivered / consumed energy from the registers on the metering equipment for the invoicing period and the data on 15 minutes diagrammes of power shall compose the basic metering data.
8. Any metering equipment shall enable the reading of the following data which shall be displayed on the metering equipment:
 - a. the actual cumulative status of the metering equipment register for active energy

- (kWh) and reactive energy (kVArh) for any configured direction;
- b. the maximum 15 minutes average of the active (kW) and reactive (kVAr) for each configured direction for the actual invoicing period and for the previous invoicing period;
 - c. the active and reactive power direction quadrant;
 - d. the presence of metering voltage;
 - e. the actual time and date of the metering equipment;
 - f. the actual active tariff.

Article 321. The use of the metering data

1. The metering data shall be used on the processes and activities as follows respecting the confidentiality, transparency principles for what is provided from the effective framework, non-discrimination and guaranteeing their accuracy:
 - a. the power balance for the entry and exit of the flows to the transmission system for a defined invoicing period. The balance may be detailed for each metering point, voltage level and for the interconnections according to the limit quantities;
 - b. the power diagramme and the energy for the entries to the transmission system for a defined invoicing period, calculated as the sum of the power diagramme (the average 15-minutes values) for all the entries to the transmission system. This diagramme may be generated for the generators, interconnections etc;
 - c. the diagrammes of power and energy for the exits from the transmission system for a defined invoicing period, calculated as the sum of the power diagramme (the average 15 minutes values) for all the exits of the transmission system. This diagramme may be generated for the generators, interconnections, etc;
 - d. the diagramme of the energy losses to the transmission system for a defined invoicing period;
 - e. reports for the energy exchanges to the TSO;
 - f. the data for the total energy losses to the transmission system for the defined invoicing period which are necessary to define the procured quantities to cover these losses;
 - g. the invoicing for the access and the use of the transmission system for each user;
 - h. the preparation of the financial statements for the electricity exchange and the invoicing for the adjacent operators included to the exchange;
 - i. all of the deliveries/withdrawals through the TSO and between the electricity

market users /participants.

Article 322. The data base and the processing of the metering data

1. The TSO manages the database of the metering data and the meters of the quantities received from the metering equipments at all the metering points provided on this Code.
2. The database shall contain at least the information /fields which consist on:
 - a. the title /appointment of the transmission system user;
 - b. location of the facility connected to the transmission system;
 - c. the connection / feeder of the user;
 - d. the typf of the metering equipment;
 - e. the communication channel;
 - f. the protocol of the communication;
 - g. the format of the register / database.
3. The TSO shall process the data received from the metering equipments, according to the needs and according to the needs of the transmission system users.
4. The information on the origin of the metering data shall be available on any moment.
5. The databasis shall contain the distance or local collected data from the metering equipments as well as the correction of the data according to the respective coefficients of the correction in the operation of the losses in transformation and transmission according to the case.
6. The metering databasis and the data shall enable:
 - a. identification of the metering equipment and the metering system;
 - b. defining the metered size (kW, kWh, kVAr, kVArh);
 - c. unique and clear identification of the metered values;
 - d. connection between the metered value and the corrected value and the performed correction;
 - e. the time stamp of the metered value for the time when the meter is performed.
7. The TSO shall set available to the users according to a defined protocol, the metered data and the invoice from the database, suitable according to their needs.

8. The user may access the metering data and the invoicing from the web server which shall ensure that all of the collected data through distance reading of the metering equipments as well as the invoicing data of the user. The user shall have access to the reading and the discharge only for the data related to it.
9. The user may access the metering and invoicing data from the web server which provide all the collected data from distance reading of the metering equipments and the invoicing data for the user. The user shall have access to the reading and the discharge of the data related to it.
10. The permitted time between the date to set into operation of a metering equipment or any amendment/replacement of the metering system and the update date of the respective data on a database is not greater than 15 days.
11. The database shall contain operational data regarding the operation of the metering system equipments for the latest 12 months and the archived data from the set into operation of the metering system and up to a year ago.

Article 323. The receive of the metering data

1. The metering data shall include:
 - a. the real time metered values of active and reactive electricity from the metering points;
 - b. calculations of the TSO based on the metered values;
 - c. estimated data, amended or replaced if the lost or inaccurate data, which are then used for the invoicing.
2. The TSO is obliged to collect the data from the metering points using the standard protocols for the transmission of the data. The TSO shall confirm, process and charge the collected data to the database maintaining and protection them for the calculation of the payments, market transactions and the tariffs for the use of the system.
3. The user shall ensure secure operation of the communication channel / connection of the data for the distance transmission of the data from the metering equipment to the metering database of the TSO.
4. If for a specific reason the distance reading is impossible (or the receive of the data) the TSO and the user shall ensure the local receive of the data.
5. If the data due to the circumstances are locally received, the TSO shall immediately transmit to the database within such a period that permit all of the necessary metering data to be available for other processes regarding the market and the invoicing.

Article 324. The validity of the data

1. The TSO shall perform suitable controls and shall confirm the reliability of the collected metering data as well as shall confirm the validity of these data before they are charged on the database.
2. The purpose of the control and the confirmation for the validity of the metering data is as follows:
 - a. the verification if there is a lack of the data or they are incomplete after the reading of the metering equipment;
 - a. verification if during the reading there are interventions to the metering system equipments, repairs etc;
 - b. definition if there are local time deviations of the metering equipments regarding the reference time during the invoicing period;
 - c. the definition if there are signals to the supervision systems for the lack of supply from the ancilliary services, the absence of the display, registration of any parameter etc;
 - d. the definition if the metering data are reliable and in conformity with the loads at the metering points;
3. During the confirmation of the validity, the metering data received from the control and main metering equipments shall be compared as received energy from the difference between the status on the register with the energy calculated from the integration of the load diagrammes. The data shall be compared with the data from the previous invoicing period and with the data for the same invoicing period of the previous/last year.
4. If there are submitted the differences between the registered values from the control and main metering equipments they shall be on the limits defined from the accuracy level of the metering equipment.
5. The difference between the value of received energy as the sum of the registered values and the energy value calculated from the diagrammes of the load for a defined invoicing period, on the conditions of a synchronized period, shall not be more than 0.1%.

Article 325. Replacement of the data

1. In case of invalidity of the data or the failure of validity confirmation, the TSO shall replace the metering data as well as the missing data.
2. The TSO shall make the replacement of the metering data as invalid according to the definitions as follows:
 - a. with the data received from the control meter if there is any and which is part of

- the metering system on the condition that its control shall be performed earlier;
- b. with the data received from the meter of the user with is connected with the general meter of the metering point considering the average losses in the transformer and on the line;
 - c. with the data received from the invoicing algorithms of the TSO according to the valid meters or the calculation of the energy sizes;
 - d. with the data received from SCADA system, if there are for the metering point;
3. The TSO shall document the replacement of the metering data for the archive, control and review of invoicing at any time.
 4. If during the inspection or periodic control or out of order control of the metering system it is observed that the meter has inaccuracies, then the metering data on the database shall be replaced according to the rules for the replacement of the metering data described above for the period:
 - a. from the day of defect occurrence if it may be defined;
 - b. described based on the available data;
 5. If the replacement of the metering data is performed after the termination of the invoice, then it is necessary to perform the necessary corrections on the invoice and the data shall be send to the user.

Article 326. Access to the metering data

1. The direct and unlimited access to the collected metering data from the metering equipments through the local or distance communication is permitted only for the authorized persons of the TSO according to the internal procedures of the TSO, which are responsible for the configuration, maintenance, receive, validity confirmation and the replacement of the metering data. The users do not have direct access on the metering data except on the necessary reasoned cases and with the specific authorization from the TSO.
2. The access to the metering data from the general meter locally or from distance shall be ensured with the defined rights and attributes for:
 - a. the receive of the metering data;
 - b. amendment /update of the date and hour;
 - c. the parameter and configuration, the set of the tariffs and the other operations;
 - d. the communication protocols and the communication parameters.
3. The users of the metering data are:

- a. the users of the transmission system or their representatives;
 - b. the market operator or any other structure for the operation of the energy market;
 - c. the suppliers of the users;
 - d. the respective balancing responsible parties;
 - e. other authorized entities for the energy market operation according to the effective legal framework.
4. The TSO is responsible for the organization and the issue of access to the metering data, the issue of the licenses suitable for the access and for defining the rights of the users access, having into consideration the security of the local data to the facility and on the metering database according to the respective policies of the TSO for cybersecurity and information.
 5. The TSO shall delegate the access right for the distance access of the metering data by defining the list of the authorized users of the metering data to prevent the conflicts between the authorized parties. The TSO shall distribute the range/time space for the approaches on which the metering data shall consider the needs to receive the data from the TSO and the other users of the metering data according to non-discrimination principles.
 6. The failure to respect the provisions that regulate the allocated time space for the access to the metering data shall result to the cancellation of the rights for access on them.
 7. The TSO shall define to the users of the metering data the right to read through the access saved with a password as well as the time interval on which the user may perform the reading.
 8. It is the obligation of the user of the metering data to use the software of the licensee, the distance communication applications and the data transferring, as well as to use the exclusive passwords for the self-reading provided from the TSO.
 9. The TSO shall have permanent and guaranteed access to the data of the metering system of the users of the transmission system.
 10. The TSO is obliged to guarantee the security of information to the metering database. All of the metering data within the metering system shall be protected from local and distance access electronically with the hardware and software systems as well as the suitable procedures and policies for cybersecurity and information.
 11. The TSO is not authorized to amend the on-site registered data of the meters, except during the testing period of the meters and the installation control (only for the

- duration period of the testing). For any on-site intervention to the electricity meters it is prepared a report which shall contain the electricity data that are not registered or are incorrectly recorded.
12. In case, to the access of the metering data and tele-metering shall be respected the requests as follows:
 - a. The official metering data shall be available from the TSO for the authorized user as defined on the code or the regulator on a suitable format.
 - b. The TSO shall publish all of the forms on which may be ensured the data for the user. The TSO shall maintain all the data of the customers according to the central data ensuring that the databasis is continuously maintained and updated.
 - c. The TSO shall ensure that the metering data shall be according to the request of the interested parties in a non-standard form to the respective costs that are covered from the interested party.
 - d. The TSO shall administer the time schedules of the meter access databasis and the specifications of the security requests.
 - e. The metering data for the use to traded energy and the invoice shall compose confidential information.
 13. The TSO shall implement the procedure as follows regarding the metering reconciliation:
 - a. The TSO shall make the necessary regulations for distance reading of the cumulative energy values for each month for control purposes.
 - b. If the cumulative value of energy are not available or shall not be received from distance, the TSO shall issue the readings gradually for each month for the above mentioned reasons.
 - c. Within three weeks of the manual reading of the meters, the TSO shall prepare a reconciliation declaration of the meter on which it shall register the differentiation between two consecutive manual meter readings and shall compare them with the registered total energy for the same time period.
 - d. If there is reviewed any amendment between the manual and the electronically registered reading of more than 0.1% this information shall be underlined and referred for further control.
 - e. If as the result of the above control, it is confirmed the non-compliance, then the TSO shall inform the respective user and shall take the appropriate measures to handle the situation according to the respective legal and regulatory provisions.

- f. The unavailable or unreached metering data for more than one month, shall be replaced with the referring values, according to the respective methodology approved from the Energy Regulator Authority, applicable for a period not longer than three months.