

Pursuant to Article 16 of the Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 64/21), Secretary of the State Electricity Regulatory Commission determined the Second consolidated version of the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services.

The Second consolidated version includes the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 46/05), the Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 17/07), the Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 11/09), the Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 73/11), the Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 61/14), the Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 95/16) and the Decision on Amendments to the Tariff Pricing Methodology for services of electricity transmission, independent system operator and ancillary services (Official Gazette of BiH, 64/21) in which the respective dates of entry into force thereof are indicated.

TARIFF PRICING METHODOLOGY
FOR SERVICES OF ELECTRICITY TRANSMISSION, INDEPENDENT SYSTEM
OPERATOR AND ANCILLARY SERVICES
SECOND CONSOLIDATED VERSION

PART ONE – GENERAL PROVISIONS

Article 1
(Introductory Provision)

A tariff pricing methodology for services of electricity transmission (hereinafter: transmission fee), and a tariff pricing methodology for the system services of the Independent System Operator and the tariffs for ancillary services are determined in this document.

Article 2
(Definitions)

‘Balancing’ means all actions and processes, on all timelines, through which TSOs ensure, in a continuous way, the maintenance of system frequency within a predefined stability range and compliance with the amount of reserves needed with respect to the required quality.

‘Balancing energy’ means energy used by a system operator to perform balancing and provided by a balancing service provider.

‘Balancing service’ means balancing (reserve) capacity or balancing energy used for system balancing.

‘Balancing (reserve) capacity’ means a volume of reserve capacity that a balancing service provider has agreed to hold for the needs of the system operator and in respect to which

the balancing service provider has agreed to submit bids for a corresponding volume of balancing energy for the duration of the contract.

‘Balance responsible party’ means a market participant who has accepted financial responsibility for imbalances of a balancing group under a balance responsibility agreement and is registered as such with the ISO.

‘Balancing market’ means the central market for procurement and sale of electricity operated by the ISO with a view to maintaining the continuous balance of supply and demand in real time, as well as additional mechanisms applied by the ISO with a view to ensuring supply of the system services.

‘Imbalance price’ means the electricity price, be it positive, zero or negative, in each imbalance settlement period for an imbalance of balance responsible parties in each direction.

‘Imbalance’ means the difference between measured volumes of injected and withdrawn electricity and a program of a balance responsible party or a market participant considering engaged balancing energy as well.

‘SERC’ means the State Electricity Regulatory Commission.

‘ENTSO-E’ means the European Network of Transmission System Operators for Electricity.

‘System user’ means any natural or legal person supplying or being supplied via the transmission system.

‘Customer’ means licensed electric power entities (licensees for supply, distribution or generation of electricity) withdrawing electricity from the transmission system.

‘Merit order list’ means a list of balancing energy bids sorted in order of their bid prices, used for the optimal activation of those bids.

‘Grid Code’ means rules and procedures which govern, *inter alia*, the technical issues related to connection to the transmission system, ancillary services, metering and submission of daily schedules.

‘Non-transaction method’ means the method of charging the electricity transmission services where the price does not depend on the geographical location of the user, or on the number of transactions at the given time period.

‘Unplanned deviation’ means the difference between the realised and planned electricity exchange within an LFC area.

‘ISO’ means the “Independent System Operator in Bosnia and Herzegovina”, Sarajevo.

‘Distribution system operator’ means an entity performing the activity of electricity distribution and distribution system management that is responsible for operation, maintenance and development of the distribution system within a specific area, its connection with other systems and ensuring a long-term capacity of the system to meet the needs for electricity distribution.

‘Ancillary services’ means all services procured by the ISO from ancillary service providers with a view to providing system service, that is, maintaining safe and reliable operation of the BIH power system and continuous and quality supply of electricity.

‘Imbalance settlement’ means a financial settlement mechanism for charging or paying balance responsible parties for their imbalances.

- ‘Revenue requirement’** means the level of revenues required by a regulated company to provide the required level of services while achieving a reasonable return on assets.
- ‘Cross- border electricity flows’** means the flows for which a part of the transmission network providing a direct connection to networks of neighbouring countries is used, and referring to import, export and transit.
- ‘Transmission of electricity’** means the transport of electricity via high voltage interconnected system for delivery to end users, distribution companies and neighbouring electricity systems.
- ‘Transmission Company’** means “Elektroprenos Bosne i Hercegovine”, Joint Stock Company Banja Luka.
- ‘Generator’** means any legal person that owns an electricity generation license.
- ‘Balancing service provider’** means a market participant whose resources are registered with the ISO for the provision of balancing services.
- ‘Ancillary service provider’** means a market participant whose resources are registered with the ISO for the provision of ancillary services.
- ‘Exchange of balancing services’** means either or both exchange of balancing capacity and exchange of balancing energy.
- ‘Load Frequency Control Block’** or **‘LFC Block’** means a part of a synchronous area consisting of one or more LFC areas, physically demarcated by points of measurement at interconnectors to other LFC blocks, operated by one or more system operators fulfilling the obligations of load-frequency control.
- ‘Load Frequency Control Area’** or **‘LFC Area’** means a part of a synchronous area, physically demarcated by points of measurement at interconnectors to other LFC areas, operated by one system operators fulfilling the obligations of load-frequency control.
- ‘Regulatory asset base’** means the value of tangible and intangible assets required and used to provide services within the regulated activity.
- ‘Regulated company’** means a legal person whose activity, in accordance with the law, is regulated by SERC.
- ‘Frequency restoration reserves’** or **‘FRR’** means the active power reserves available to restore system frequency to the nominal frequency and to restore power balance to the scheduled value, and to control load.
- ‘Frequency containment reserves’** or **‘FCR’** means the active power reserves available to contain system frequency after the occurrence of an imbalance in the system.
- ‘System services’** means all services provided by the ISO in order to provide safe and efficient transport of electricity in the transmission system, resolve interruptions in transport of electricity and maintain and re-establish the energy balance in the transmission system.
- ‘Supplier’** means a market participant, a legal person holding an electricity supply licence.
- ‘Tariff’** means a price charged by the regulated company to users of its services.
- ‘Tariff period’** means the period in which the tariff approved by SERC remains unchanged and which usually lasts one calendar year, but may be longer or shorter.

‘Test year’ means the previous or the following calendar year which precedes or follows after the submission of an application for approval of tariffs and for which the regulated company provides information and data required for tariff setting.

‘Transfer of balancing capacity (reserve)’ means a transfer of balancing capacity (reserve) from the initially contracted balancing service provider to another balancing service provider.

‘Transit’ means the transport of electricity in order to meet contractual obligations relating to electricity trading, when neither of the contractual parties procures or generates that electricity in Bosnia and Herzegovina.

‘Market Rules’ means a commercial code containing rules and procedures of the balancing market as well as commercial conditions for connection, utilization and operation of the transmission system.

‘Market participant’ means a holder of a license pertaining to an electricity activity issued by the competent regulatory authority in Bosnia and Herzegovina.

‘Replacement reserves’ or **‘RR’** means the active power reserves available to restore or support the required level of FRR to be prepared for additional system imbalances, including generation reserves.

Article 3 **(Abbreviations)**

AD - value of accumulated depreciation of the fixed assets

C_{AS} - costs of ancillary service procurement

C_D - costs of depreciation

C_{GA} - value of granted assets

C_L - costs of procuring electricity to cover transmission system losses

C_{O&M} - costs of operation and maintenance

C_{PenSec} - costs of charges for non-provision of secondary control capacity

C_{PenTer} - costs of charges for non-provision of tertiary control capacity

C_{PrimCap} – costs of providing primary control capacity

C_{SecCap} - costs of providing secondary control capacity

C_{SysOTH} – other costs pertaining to the system service

C_{TerCap} - costs of providing tertiary control capacity

DI (%) - debt interest

DP - debt part, value of liabilities from the balance sheet

EP - equity part, value of capital from the balance sheet

GA - granted assets

k - ratio of revenue requirement of the energy component of the tariff and the total revenue requirement

k_{MaxTerEnDow} - price cap coefficient for balancing energy for downward tertiary control

k_{MaxTerEnUp} - price cap coefficient for balancing energy for upward tertiary control

$k_{PenSecCap}$ – compensation coefficient for non-provided secondary control capacity
 $k_{PenTerCap}$ - compensation coefficient for non-provided tertiary control capacity
 k_R – price coefficient for excessive withdrawal of reactive energy from the transmission system
 k_{RG} – compensation coefficient for a generator operating in capacitive mode
 k_{SecCap} – price coefficient for secondary control capacity
 k_{TerCap} - price coefficient for tertiary control capacity
 KM - convertible mark
 kvarh – measurement unit for reactive energy (1 kvarh = 1000 varh)
 kW - measurement unit for active power (1 kW = 1000 W)
 kWh - measurement unit for active energy
 $p_{BaseSecCap}$ – base price of secondary control capacity
 P_C - peak load measured at customers which is an annual summation of all monthly maximum capacities measured at customers
 P_{FalSec} - price of non-provided secondary control capacity
 p_G - transmission fee paid by generators
 p_{ISOG} - tariff for operation of an independent system operator paid by generators
 p_{ISOL} - tariff for operation of an independent system operator paid by customers
 p_L - price of electricity to cover transmission system losses
 p_{LC} - part of the transmission fee to be paid by customers pertaining to capacity
 p_{LE} - part of the transmission fee to be paid by customers pertaining to energy
 p_{MR} - reference price in the electricity market
 $p_{MaxSecCap}$ - price cap for secondary control capacity
 $p_{MaxSecCapMont}$ – monthly price cap for secondary control capacity
 $p_{MaxSecCapYear}$ – annual price cap for secondary control capacity
 $p_{MaxTerCapUp}$ - price cap for capacity for upward tertiary control
 $p_{MaxTerCapDow}$ - price cap for capacity for downward tertiary control
 $p_{MaxTerEnUp}$ - price cap for energy for upward tertiary control
 $p_{MaxTerEnDow}$ - price cap for energy for downward tertiary control
 $p_{PenSecCap}$ – price of compensation for non-provided secondary control capacity
 p_R – price of excessive withdrawal of reactive energy from the transmission system by customers
 p_{reakt} - price of excessive withdrawal of reactive energy from the transmission system by generators
 p_{SC} – price of secondary control energy
 $p_{SecEnDow}$ - price of energy for downward secondary control
 $p_{SecEnUp}$ - price of energy for upward secondary control

p_{Sys} - tariff for system services
 $p_{TercCap}$ - price of tertiary control capacity
 $p_{TerEnDow}$ - price of energy for downward tertiary control
 $p_{TerEnUp}$ - price of energy for upward tertiary control
 PV - purchase value of fixed assets
 RAB - regulatory asset base
 ROA - return on assets
 ROE (%) - return on equity
 RR_G - part of revenue requirement pertaining to network fees paid by generators
 RR_{ISO} – revenue requirement for performance of the regulated activity (services) by an ISO
 RR_{ISOG} - part of an independent system operator's revenue requirement pertaining to the tariff paid by generators
 RR_{ISOL} - part of an independent system operator's revenue requirement pertaining to the tariff paid by customers
 $R_{ISO OTH}$ – other revenues pertaining to operation of an independent system operator
 $R_{TR OTH}$ - other revenues referring to the electricity transmission services including the revenue from cross-border trading
 RR_L - revenue requirement referring to network fees paid by customers
 RR_{TR} - revenue requirement for performance of the regulated activity (service) of the Transmission Company
 S - difference in prices of energy for upward and downward secondary control
 T (%) - effective tax rate on profit, relevant for the tariff period
 TC - total capital from the balance sheet
 W_C - active electric energy withdrawn by customers
 W_G - active electric energy injected in the transmission network by generators connected to the transmission system
 $WACC$ - weighted average cost of capital
 WC - value of working capital.

Article 4 **(Goals and Principles)**

- (1) When determining tariffs, the following goals and principles shall be taken into account:
- a) impartiality, transparency, and prevention of discrimination;
 - b) incentive for efficiency of the regulated entities and transmission network users;
 - c) incentive for mechanisms for the increase of the energy efficiency;
 - d) establishment of stable relationships on the electricity market and stable conditions for investors into the energy sector;

- e) incentive for transmission network development in order to continuously maintain or increase the quality of supply.
- (2) In order to achieve goals and principles referred to in the previous paragraph, tariffs shall be established on justified costs of business, operation, maintenance, replacement, construction or reconstruction of facilities and equipment, including a reasonable amount of return on investment, depreciation and taxes and taking into consideration the environmental protection.

Article 5
(Types of Tariffs)

Tariffs issued by SERC shall be the transmission network fee, the tariff for operation of an independent system operator, the tariff for system service and tariffs for ancillary services.

Article 6
(Voltage Levels)

Tariffs shall be charged to the customers who are connected to the voltage levels of 400 kV, 220 kV and 110 kV.

Article 7
(Tariff Elements)

- (1) Tariffs shall include the following elements:
- a) peak capacity;
 - b) active power injected in the transmission network by generators connected to the transmission network;
 - c) active power withdrawn;
 - d) excessive withdrawal of reactive power.
- (2) Measuring of peak load and active power, and, excessive withdrawal of reactive power shall be defined by the Grid Code, and, the Grid Code and Article 32 of this Methodology respectively.
- (3) When calculating monthly capacity and electric power withdrawn, kilowatts (kW), kilowatt-hours (kWh), and kilovarhours (kvarh) shall be rounded to whole numbers.
- (4) Until the completion of metering at all metering points at which customers withdraw electricity, SERC may approve the tariff calculated on the basis of the revenue requirement and active power withdrawn.

Article 8
(Differentiation of Tariffs)

- (1) Tariffs may be differentiated by the following criteria:
- a) Seasonal tariff rates;
 - b) Daily tariff rates;
 - c) Tariff rates depending on the duration of the peak load;
 - d) Tariff rates depending on the consumption level (block tariff).

- (2) During the first few tariff periods, SERC may approve one-part tariffs, which shall be effective until the conditions for possibility of introduction of differentiated tariff rates are provided.

Article 9
(Regulation of Prices (Tariffs))

Regulation of tariffs shall ensure:

- a) Long-term operation of companies engaged in the regulated activities, with coverage of justified costs and appropriate return on assets;
- b) Improvement of operational productivity within the regulated activities with reasonable and efficient investments;
- c) Justified development of the transmission network and operation of transmission network with the purpose of ensuring safe and quality supply of users.

PART TWO – ELECTRICITY BALANCE

Article 10
(Annual Balance in the Transmission Network)

- (1) The Independent System Operator shall develop an annual balance of electricity in the transmission network comprising detailed data on the quantities for the following year.
- (2) The balance referred to in the previous paragraph shall be submitted to SERC no later than October 31st of the current year.
- (3) This balance shall, inter alia, serve as the basis for planning of the realization of regulated companies.

Article 11
(Balance Elements in the Transmission Network)

The Independent System Operator, in cooperation with the distribution system operators and generators, shall be obliged to develop the annual balance for the following year, with each individual month of the year comprising of the following:

- a) Quantities of the transmitted electricity and capacity for the eligible customers which are connected to the transmission network;
- b) Quantities of transmitted energy and capacity for tariff customers connected to the transmission network;
- c) Quantities of transmitted energy and capacity withdrawn by eligible customers connected to the distribution network;
- d) Quantities of transmitted electricity and capacity withdrawn by tariff customers connected to the distribution network;
- e) Quantity of active electric energy injected in the transmission network by generators connected to the transmission network
- f) Quantity of required ancillary services.

PART THREE – TRANSMISSION FEE

Article 12

(Funding of the Transmission Company)

- (1) The Transmission Company shall be funded by providing services to customers and generators, which it shall charge and bill in accordance with approved tariffs, by allocating the right to use cross-border transmission capacities and by a net amount (revenue-expenditure) realized through the mechanism for compensation between transmission system operators (ITC mechanism).
- (2) The Transmission Company shall be funded by other sources as well, such as connection fees for connection to the transmission network.

Article 13

(Method of the Postage Stamp)

The non-transaction method of postage stamp shall be used to determine the transmission fee. The method shall be applied to all voltage levels and all types of users with single tariff rates on the territory of the entire Bosnia and Herzegovina.

Article 14

(Transmission Fee)

- (1) The transmission fee shall be allocated for covering operational costs of the Transmission Company.
- (2) The transmission fee shall be paid to the Transmission Company on a monthly basis.
- (3) The transmission fee shall be paid by customers and generators.
- (4) The transmission fee shall not include the connection charge.

Article 15

(Determination of Transmission Fee)

- (1) The transmission fee shall comprise the transmission fee paid by customers and the transmission fee paid by generators.
- (2) The transmission fee paid by customers shall comprise two components:
 - a) Part of the transmission fee pertaining to energy p_{LE} which represents the ratio of the revenue requirement of the component for energy $k \cdot RR_L$ and energy withdrawn by customers W_C :

$$p_{LE} = k \cdot RR_L / W_C$$

where:

RR_L – part of the revenue requirement pertaining to network fees paid by customers

W_C – active electric energy withdrawn by customers

k – the ratio of the revenue requirement of the component for energy and total revenue requirement pertaining to customers.

- b) Part of the transmission fee pertaining to capacity p_{LC} which represents the ratio of the revenue requirement of the component for capacity $(1-k) \cdot RR_L$ and peak load P_C measured at customers:

$$p_{LC} = (1-k) \cdot RR_L / P_C$$

where:

P_C – peak load measured at customers which represents an annual summation of all monthly maximum capacities measured at customers.

- (3) The ratio of the energy component and the capacity component shall be determined on the basis of a share of constant energy in an annual load diagram for the previous year. As an initial value, the share of capacity shall be determined in the amount of 35%.
- (4) The transmission fee paid by generators shall be:

$$p_G = RR_G / W_G$$

where:

RR_G – part of revenue requirement pertaining to network fees paid by generators

W_G – active electric energy injected in the transmission network by generators connected to the transmission network.

- (5) Part of the revenue requirement pertaining to network fees paid by generators can range from 0 to 10% of the revenue requirement for performance of the regulated activity of the Transmission Company RR_{TR} .

Article 16

(Determination of the Revenue Requirement)

- (1) The revenue requirement for performance of the transmission activity shall be formed on the basis of:
- a) operational and maintenance costs;
 - b) depreciation costs;
 - c) expenditures as determined by law;
 - d) return on assets.
- (2) Costs which relate to the performance of unregulated activities shall not be subject to regulation and shall be excluded from the regulated revenues. All costs and revenues pertaining to unregulated activities shall undergo accounting unbundling and be kept separately from those pertaining to the regulated activity.
- (3) The revenue requirement for performance of the regulated activity shall be calculated based on the following expression:

$$RR_{TR} = C_{O\&M} + C_D + (RAB \times WACC) - R_{TR\ OTH}$$

where:

$C_{O\&M}$ - costs of operation and maintenance

C_D - depreciation costs

RAB - regulatory asset base

WACC - weighted average cost of capital

R_{TR OTH} - other revenues referring to the electricity transmission services including the revenue from cross-border trading.

- (4) In case of a deviation from the planned scope of services, an adjustment of the revenue requirement for the next tariff period shall be made.

Article 17

(Costs of Operation and Maintenance)

- (1) Costs of operation and maintenance $C_{O\&M}$ shall be justified costs incurred due to operation (exploitation) and maintenance of the transmission network in accordance with the technical standards used in Bosnia and Herzegovina, applicable legal regulations and internal documents of the regulated company. These costs shall, inter alia, include the regulatory fee.
- (2) SERC shall recognize justified costs which may also be determined on the basis of benchmarking, taking into account specific characteristics of the regulated company.
- (3) SERC shall differentiate the portion of operation and maintenance costs which may be influenced by the regulated company during its operation, and which may be planned and controlled accordingly, from those costs which may not be controlled or planned.
- (4) Controlled costs of operation and maintenance shall be planned based on the business realization of the previous year. Uncontrolled cost shall be subject to a SERC assessment and may be taken into account when determining the revenue requirement, depending on the assessment.
- (5) The amount of the regulatory fee, which a regulated company includes in its costs of operation and maintenance, shall be determined by SERC in its financial plan under the terms and conditions prescribed by law.

Article 18

(Depreciation)

Calculation of depreciation shall be performed in accordance with adopted accounting policies defined in the Rules of Accounting or another internal document which is harmonized with the legal regulations and applicable international accounting standards. The depreciation cost calculated in this manner shall be recognized when calculating the revenue requirement.

Article 19

(Return on Assets)

- (1) Return on assets shall be calculated based on the regulatory asset base and the weighted average cost of capital:

$$ROA = RAB \times WACC$$

where:

ROA - return on assets

RAB - regulatory asset base

WACC - weighted average cost of capital

- (2) Return on assets shall be calculated based on the value of the regulatory asset base taking into consideration the weighted average cost of capital. When calculating WACC, the ratio of capital and liabilities from the balance sheet shall be taken into consideration.
- (3) The regulatory asset base (RAB), as the basis for calculation of return on assets, shall comprise the fixed assets and the required amount of fixed working assets (current assets).
- (4) The regulatory asset base shall include the purchase value of fixed assets, less accumulated depreciation. Granted assets, i.e. assets gained free of charge, shall not be included in the regulatory asset base.
- (5) The amount of working assets which shall be included in the regulatory base (working or circulating capital), shall be equal to net working capital and shall be calculated as the difference between total working or current assets and total liabilities falling due within one year.
- (6) The regulatory asset base with a view to calculating the revenue requirement shall be determined in the following manner:

$$RAB = PV - AD - GA + WC$$

Where:

PV - purchase value of fixed assets,

AD - value of accumulated depreciation of fixed assets,

WC - value of working (circulating) capital,

GA - granted assets.

- (7) The regulatory asset base may include only those assets which are used for the performance of regulated activities within the competence of SERC.
- (8) Investments in the fixed assets shall be estimated and recognized based on the maintenance of the required scope and standard quality of services in the regulated activity.
- (9) With a view to determining justification of every single investment in the fixed assets, which is performed within the regulated activity, SERC shall:
 - a) Examine justification of an investment from the aspect of improvement of the quality and safety of supply, in accordance with the projected increase of demand;
 - b) Examine harmonization of investments with the existing development programs (plans).
- (10) SERC may determine to perform an audit of the regulatory asset base. For the purpose of establishing as realistic transmission fee as possible, the audit of the regulatory asset base may be initiated in any tariff period.
- (11) Weighted average cost of capital shall be used for the calculation of the rate of return according to the following formula:

$$WACC(\%) = \frac{EP}{TC} \times \frac{ROE}{1 - \frac{T}{100}} + \frac{DP}{TC} \times DI$$

where:

EP – value of equity (value of capital from the balance sheet),

DP – value of liabilities (debt) (value of liabilities from the balance sheet),

TC – value of total capital from the balance sheet,

ROE (%) – return on equity,

DI (%) – costs of debt,

T (%) – effective tax rate on return, valid for the regulatory period.

- (12) WACC shall be calculated on the basis of the ratio between capital and liabilities during the test year. SERC may determine the planned (projected) ratio between the capital and liabilities which shall be used for calculation of weighted average cost of capital.
- (13) SERC shall approve the rate of return on capital for each tariff period.
- (14) Costs of debt shall be recognized on the basis of real obligations of the Transmission Company. For the future debts, the costs of debt shall be approved by SERC, taking into account the level of interest rate on the capital market.

PART FOUR – TARIFF FOR OPERATION OF AN INDEPENDENT SYSTEM OPERATOR AND TARIFFS FOR ANCILLARY SERVICES

Article 20

(Funding of the Independent System Operator)

- (1) The Independent System Operator shall be funded from the provision of system services, which are charged in accordance with tariffs approved by SERC and billed on a monthly basis.
- (2) Until the market mechanism becomes fully operational and objective conditions for more precise tariff pricing are created, SERC may approve ISO tariffs in accordance with the concrete circumstances which exist at the moment of filing an application for approval of tariffs.

Article 21

(Tariff for Operation of an Independent System Operator)

The tariff for operation of an independent system operator shall be designed to cover ISO operational costs, which are incurred by the performance of activities as prescribed by Article 2 and Article 7 of the Law Establishing the Independent System Operator for Transmission System in Bosnia and Herzegovina (Official Gazette of BiH no. 35/04).

Article 22

(Determining Tariff for ISO Operation)

- (1) The tariff for operation of an independent system operator shall comprise the tariff for operation of an independent system operator paid by customers and the tariff for operation of an independent system operator paid by generators.
- (2) The tariff for operation of the Independent System Operator paid by customers shall be:

$$P_{ISO L} = RR_{ISO L} / W_C$$

where:

$RR_{ISO L}$ – part of the revenue requirement of an independent system operator pertaining to the tariff paid by customers

W_C – active electric power withdrawn by customers.

- (3) The tariff for operation of an independent system operator paid by generators shall be:

$$P_{ISO G} = RR_{ISO G} / W_G$$

where:

$RR_{ISO G}$ – part of the revenue requirement of an independent system operator pertaining to the tariff paid by generators

W_G – active electric power injected in the transmission network by generators connected to the transmission network.

- (4) Part of the revenue requirement of the Independent System Operator pertaining to the tariff paid by generators $RR_{ISO G}$ can range from 0 to 10% of the revenue requirement for performance of the regulated activity of the Independent System Operator RR_{ISO} ”.

Article 23

(Determining Revenue Requirement)

- (1) The revenue requirement for performance of the ISO activities shall be determined on the basis of:
- a) costs of operation and maintenance;
 - b) costs of depreciation;
 - c) expenditures as determined by law.
- (2) The revenue requirement for performance of the regulated activity shall be calculated on the basis of the following expression:

$$RR_{ISO} = C_{O\&M} + C_D - R_{ISO\ OTH}$$

Where:

$C_{O\&M}$ - costs of operation and maintenance,

C_D - costs of depreciation,

$R_{ISO\ OTH}$ - other revenues pertaining to operation of an independent system operator.

- (3) In case of a deviation of realized scope of services from the planned scope, an adjustment of the revenue requirement for the next tariff period shall be made.

Article 24

(Costs of Operation and Maintenance)

- (1) Costs of operation and maintenance $C_{O\&M}$ shall be justified costs incurred during operation and maintenance of the ISO assets in accordance with technical standards applied in Bosnia and Herzegovina, applicable legal regulations and internal documents of the regulated company. These costs shall include costs of debt on loans and the regulatory fee.
- (2) SERC shall recognize justified costs which may be determined on the basis of benchmarking, taking into account specific characteristics of the regulated company.
- (3) Investments in fixed assets shall be estimated and recognized in accordance with the objective of maintaining the required scope and standard quality of services in the regulated activity.
- (4) In order to determine justification of every single investment in the fixed assets, which is performed within the regulated activity, SERC shall:

- a) Examine justification of an investment from the aspect of improvement of the quality and security of supply, in accordance with the projected increase of demand;
- b) Examine harmonization of investments with the existing development programs (plans).

Article 25
(Depreciation)

Calculation of depreciation shall be performed in accordance with adopted accounting policies defined in the Rules of Accounting or another internal document which is harmonized with the legal regulations and applicable international accounting standards. The depreciation cost calculated in this manner shall be recognized when the calculating revenue requirement.

Article 26
(Tariffs for Ancillary and System Services)

- (1) Tariffs for ancillary and system services shall be designed to cover costs of procuring ancillary services. The ISO shall procure ancillary services through public bidding.
- (2) Ancillary services may be delivered by all entities in the power sector that have the capacity for the provision of these services. The ISO shall carry out the procurement of ancillary services through transactions with providers of these services while the delivery of system services shall be performed with the aim of ensuring optimal operation of the transmission system. The ISO shall be obligated to estimate the required scope of all ancillary and system services on an annual basis and determine a financial amount of each service separately on an annual basis as well as a total financial amount of all required ancillary and the amount of the tariff for system service.
- (3) Ancillary services are as follows:
 - a) control of frequency and active power;
 - b) control of voltage and reactive power;
 - c) black start;
 - d) covering of electricity losses in the transmission system;
 - e) eliminating imbalances (deviations).
- (4) The ancillary services pertaining to control of frequency and active power are called balancing services and they include:
 - a) frequency containment reserve (FCR) (primary control);
 - b) frequency restoration reserve (FRR) which may be:
 - 1) automatic frequency restoration reserve (aFRR) (secondary control);
 - 2) manual frequency restoration reserve (mFRR) (tertiary control);
 - c) replacement reserve (RR).
- (5) The ISO shall keep records and calculate all costs related to the procurement of ancillary services and revenues from the provision of the system service separately from costs which are recognised within the tariff for the ISO operation.
- (6) Exceptionally, in case of impossibility to procure ancillary services through public bidding, the missing share of ancillary services shall be procured in a regulated manner. In that case, the ISO shall determine the missing scope and entities to provide the service with related volumes for each ancillary service. The price of providing the missing

volumes shall be equal to weighted average prices of offers accepted in public procurement procedures for the stated services. The information on procurement of ancillary services for each month shall be submitted to SERC.

Article 27

(Frequency Containment Reserve – FCR (Primary Control))

- (1) The ISO shall provide the required reserve in the market through public bidding. The procurement process is defined in the Procedures for Ancillary Services developed by the ISO.
- (2) The procedure for procurement of the frequency containment reserve is implemented on an annual basis. In case of impossibility to procure the required scope of the reserve on an annual basis the procurement is organised on a monthly basis.
- (3) If the required reserve is not provided through the procurement procedure in the market, the ISO shall allocate the required scope of frequency containment reserve to the balancing service providers that have the facilities for the provision of the service, taking into account the availability of generation units throughout the whole period for which the provision of service is required.
- (4) If the frequency containment reserve is activated each service provided is entitled to receive financial compensation for energy. Compensation for energy is proportional to the activated energy and the price of energy for maintaining the frequency at the level of the Continental Europe synchronous areas pursuant to the Synchronous Area Framework Agreement (SAFA) for the Regional Group Continental Europe.
- (5) The ISO shall define a methodology for determining the activated energy and the price of activated energy, calculation as well as all technical details pertaining to the provision of this service in the Procedures for Ancillary Services.

Article 28

(Secondary Control – Capacity)

- (1) The ISO shall determine the scope of required secondary reserve (capacity) in the BiH control area for each calendar month of a year, for peak and off-peak periods separately.
- (2) The peak period shall be in the period from 6:00 to 24:00 hrs while the off-peak period shall be from 0:00 to 6:00 hrs every day.
- (3) The ISO shall provide secondary control by purchasing this service in the market through public bidding. The ISO shall be obligated to conclude contracts with service providers specifying the scope of services with detailed energy and financial values and other necessary data.
- (4) The procedure to purchase secondary control reserve capacity shall be carried out on an annual and monthly basis.
- (5) A monthly purchase of secondary control reserve capacity shall be organised to purchase the missing quantities of secondary control reserve capacity. In those months for which the required secondary control reserve capacity has been fully purchased through an annual purchase, a monthly purchase shall not be organised.
- (6) The ISO shall rank submitted bids by the bid price of secondary control reserve capacity and make selection of the most favourable bids to the level of the required quantity of secondary control reserve capacity. Secondary control capacity shall be paid at the bid price.

- (7) If the required scope of secondary control capacity has not been purchased through an annual or monthly procedure for a certain month, the ISO shall re-allocate the missing quantities per individual service providers, taking into consideration the quantities purchased through market procedures and providers from which those quantities were purchased. The price of this capacity shall equal to the weighted average cost of capital provided by accepting the most favourable bids referred to in Paragraph (5) of this Article.
- (8) The price cap for secondary control reserve capacity shall be defined with the aim of protecting market participants, primarily the customers under the conditions of insufficiently developed competition. The price cap for secondary control reserve capacity shall equal to the product of the secondary control reserve capacity base price and predefined coefficient k_{SecCap} which ensures sufficient incentives to suppliers to provide secondary control reserve capacity:

$$p_{MaxSecCap} = k_{SecCap} \times p_{BaseSecCap}; \quad 1.1 \leq k_{SecCap} \leq 1.5.$$

- (9) The secondary control reserve capacity base price shall equal to the higher value between the fixed costs of the most expensive generating unit providing the secondary control service and the market value of capacity which is used to provide the ancillary service of automatic secondary control.

$$p_{BaseSecCap} = \max(\text{capital costs}, \text{market value}).$$

- (10) The market value of secondary control reserve capacity shall be calculated in a different manner depending on the type of market bidding procedure, i.e. whether it is annual or monthly, based on annual and monthly *forward* prices in the electricity exchange. The market value is limited within the following range:

$$10 \text{ €/MW/h} \leq \text{market value} \leq 40 \text{ €/MW/h}$$

- (11) The price cap and input parameters for its setting shall be published by SERC, at least 10 days before the beginning of the market procedure for purchasing secondary control reserve capacity.
- (12) The price of charge for failing to meet the obligation to provide the allocated quantities of secondary control reserve capacity shall be in the function of the price cap for secondary control reserve capacity. The price cap for secondary control reserve capacity depends on whether it is the result of an annual $p_{MaxSecCapYear}$ or monthly purchase $p_{MaxSecCapMont}$, while the price of charge is defined as the function of the higher value between these two prices.
- (13) The price cap for secondary control reserve capacity (€/MW/h) shall be determined for each calendar month. If the provider cannot provide the allocated compulsory quantity of secondary control reserve capacity or the provider which contracted the provision of reserve capacity does not nominate that reserve to the ISO on day D-1, the price of charge shall amount:

$$p_{PenSecCap} = (k_{PenSecCap} - 1) \times \max(p_{MaxSecCapYear}, p_{MaxSecCapMont}); \quad 1.1 \leq k_{PenSecCap} \leq 1.25.$$

- (14) Total financial value of the charge for non-provision of allocated quantities of secondary control reserve capacity shall equal to the product of the non-provided reserve P_{FalSec} and the price of charge $p_{PenSecCap}$ for non-provided reserve:

$$C_{PenSec} = P_{FalSec} \times p_{PenSecCap}.$$

Article 29

(Automatic Frequency Restoration Reserve aFRR (Secondary Control) – Energy)

- (1) All providers contracted for the provision of the automatic frequency restoration reserve aFRR are obligated to submit their balancing energy bids in accordance with contracted capacity.
- (2) The balancing energy bids for secondary control shall be submitted in accordance with the Rulebook on the Balancing Market Operation developed by the ISO.
- (3) Additional restrictions may be introduced for the submission of the aFRR energy bids in terms of the symmetric scope of regulation, number of bids by one individual balancing service provider and the price difference for positive and negative aFRR, which shall be defined in the Rulebook on the Daily Balancing Market Operations developed by the ISO. Automatic or manual activation of bids shall be done in accordance with a merit order list (MOL) with the activation of the most favourable bids. A more favourable bid in case of the positive balancing energy shall be a bid with a lower price while a more favourable bid in case of the negative balancing energy shall be a bid with a higher price.
- (4) Until the technical preconditions for the activation and calculation of aFRR in accordance with the MOL have been fulfilled, the activation of aFRR may be done proportionally to the aFRR scope by individual balancing service providers.
- (5) With an appropriate explanation, the ISO may deviate from the MOL activation in situations when the security of the power system is endangered. The secondary energy shall be activated proportionally to the contracted capacity. The secondary control energy shall be paid to the providers at the offered prices.
- (6) The difference between the bid price of upward secondary control energy $p_{SecEnUp}$ and price of downward secondary control energy $p_{SecEnDow}$ in a specific hour shall be within the regulated scope, that is, lower than or equal to maximum value of this difference S (€/MWh):

$$p_{SecEnUp} - p_{SecEnDow} \leq S.$$
- (7) The value of S shall be determined by SERC.

Article 30

(Manual Frequency Restoration Reserve mFRR (Tertiary Control) – Capacity)

- (1) The ISO shall determine the scope of required manual frequency restoration reserve mFRR in the BiH LFC area, for each calendar month of a year taking into consideration the existing arrangements for the joint reserve in the LFC block Slovenia – Croatia – Bosna and Herzegovina and other arrangements at the ENTSO-E level.
- (2) The ISO shall determine separately the scopes of required upward mFRR reserve and required scope of downward mFRR reserve.
- (3) The ISO shall provide the reserve by procuring this service in the market through public bidding. The ISO shall be obligated to conclude contracts with service providers specifying the scope of services with detailed energy and financial values and other necessary data.
- (4) The procedure for procuring mFRR reserve shall be carried out on an annual and monthly basis.
- (5) If it is impossible to procure the total required scope of reserve on an annual basis, the procurement of the missing volumes of reserve shall be organised on a monthly level.
- (6) The ISO shall rank all submitted bids by price and select the most favourable bids of reserve (or all offered quantities if the offered quantities are lower than the required ones).

(7) The price of manual frequency restoration reserve p_{TerCap} shall equal to the bid price of reserve which was selected in the procurement process.

(8) With the aim of protecting the competition mechanism, the price cap for upward manual frequency restoration reserve shall be defined as:

$$p_{MaxTerCapUp} = k_{TerCap} \times p_{TerCap}; \quad 1.1 \leq k_{TerCap} \leq 1.5$$

and the price cap for downward manual frequency restoration reserve as:

$$p_{MaxTerCapDow} = 0.25 \times k_{TerCap} \times p_{TerCap}; \quad 1.1 \leq k_{TerCap} \leq 1.5.$$

(9) The price caps referred to in paragraph (8) of this Article and basic input parameters for their setting shall be established by SERC.

Article 31

(Manual Frequency Restoration Reserve mFRR (Tertiary Control) – Energy)

(1) Using the daily balancing energy market the ISO shall procure required balancing energy in order to be able to correct deviations of balancing capacities and reference values of frequency in the real time in the BiH LFC area.

(2) The ISO shall be responsible for organising and administering the daily balancing energy market while SERC shall monitor the operation of this market.

(3) In the daily balancing energy market, balancing energy bids are collected separately for positive balancing energy (upward balancing energy) and for negative balancing energy (downward balancing energy).)

(4) The submission of mFRR energy bids shall be done pursuant to the provisions of the Rulebook on the Daily Balancing Market Operations.

(5) The price of balancing energy for upward mFRR $p_{TerEnUp}$ and balancing energy for downward mFRR $p_{TerEnDow}$ shall be limited with the aim of protecting the market competition. The price cap for balancing energy for upward mFRR shall equal to the product of the value of the electricity reference price in the market p_{MR} and coefficient $k_{MaxTerEnUp}$:

$$p_{MaxTerEnUp} = k_{MaxTerEnUp} \times p_{MR}.$$

(6) The price cap for balancing energy for downward mFRR $p_{MaxTerEnDow}$ shall equal to the negative product of the value of the electricity reference price in the market p_{MR} and coefficient $k_{MaxTerEnDow}$:

$$p_{MaxTerEnDow} = -k_{MaxTerEnDow} \times p_{MR}.$$

(7) The price caps for the balancing energy for mFRR and the values of coefficient $k_{MaxTerEnUp}$ and $k_{MaxTerEnDow}$ shall be determined by SERC.

Article 32

(Tariff for System Service)

(1) The tariff for system service p_{Sys} shall serve to cover costs of procuring frequency containment reserve $C_{PrimCap}$, automatic frequency restoration reserve C_{SecCap} , manual frequency restoration reserve C_{TerCap} , replacement reserve C_{RR} , and the costs of procuring electricity to cover losses in the transmission system C_L and other costs pertaining to the system service C_{SysOTH} .

(2) The tariff for system service shall amount to:

$$p_{Sys} = (C_{PrimCap} + C_{SecCap} + C_{TerCap} + C_{RR} + C_L + C_{SysOTH}) / W_C$$

where:

W_C - active energy withdrawn by customers (kWh).

- (3) The ISO shall bill the tariff for system service to all licensed entities which withdraw electricity from the transmission system.
- (4) Costs of procuring frequency containment reserve, automatic frequency restoration reserve, manual frequency restoration reserve, replacement reserve, and the costs of procuring electricity to cover losses in the transmission system and other costs pertaining to the system service shall be determined by the ISO on an annual basis after the procedure for procurement of these services has been completed. In case of an incomplete procurement, for the purpose of setting the tariff for system service an estimate of total annual costs may be used.
- (5) SERC shall determine the tariff for system service on an annual basis and adjust it on a needs basis.

Article 33

(Control of Voltage and Reactive Power)

- (1) Generating units connected to the transmission network shall maintain the voltage within prescribed limits at their own expense in accordance with the Grid Code and their operational charts.
- (2) Notwithstanding paragraph (1) of this Article, in a situation with increased voltage levels in the transmission system, SERC may prescribe a compensation to be paid to generating units for operation in the capacitive regime, when generators withdraw reactive power from the transmission system thus reducing the existing surplus of reactive capacity and power.
- (3) The compensation referred to in paragraph (2) of this Article shall be prescribed based on an analysis of transmission system operation which is carried out by the ISO at its own initiative or at SERC request and the indicators showing that such regime of operation of generating units substantially contributes to keeping the voltage levels at 400 kV and 220 kV nodes within the limits prescribed by the Grid Code.
- (4) The compensation for operation of generators in the capacitive regime shall be proportional to the quantity of withdrawn reactive power and the price for withdrawn reactive power from the transmission system p_{reakt} (KM/Mvarh) which is the product of the coefficient k_{RG} and the referent price in the electricity market p_{MR} :

$$p_{reakt} = k_{RG} \times p_{MR}; \quad k_{RG} \geq 0$$

where k_{RG} is the compensation coefficient for operation of generators in the capacitive regime.

- (5) The compensation referred to in paragraph (4) of this Article and input parameters for its determination shall be defined by SERC.

Article 34
(Black-start)

Generating units with a black-start capability shall provide this service at their own expense.

Article 35
(Costs of Losses in the Transmission System)

- (1) Calculation of justified costs incurred due to electricity losses in the transmission system shall be based on annual quantities of transferred energy pursuant to Article 10 of this Methodology.
- (2) The ISO shall provide energy to cover losses in the transmission system by the procurement in the market through public bidding. The ISO shall be obligated to conclude contracts with the service providers.
- (3) The ISO shall procure energy to cover losses on a monthly basis but depending on an assessment of the situation in the electricity market with aim of optimising the procurement in terms of prices and quantities, it shall opt for annual, semi-annual or monthly procurement procedures, taking into consideration best practices.
- (4) An average electricity price obtained through the annual procurement of electricity to cover losses in the transmission system shall be the electricity reference price in the market p_{MR} . This price may be used as the reference price for the purpose of setting other prices which are prescribed by this Methodology.

Article 36
(Excessive Withdrawal of Reactive Power)

- (1) Excessive withdrawal of reactive power shall be a positive difference between the measured reactive power and reactive power which corresponds to the power factor $\cos \varphi=0.95$ inductivity, i.e., it is the reactive power exceeding 33% of withdrawn active power.
- (2) The ISO shall calculate excessive withdrawal of reactive power from the transmission network on the basis of quantities measured on a monthly basis at the customers connected to the transmission network and prepare a monthly report.
- (3) SECR shall determine the price for excessive withdrawal of reactive power from the transmission system taking into consideration the voltage stability in the electric power system.
- (4) The price of excessive withdrawal of reactive power from the transmission network p_R shall equal to the product of value of the reference electricity price in the market p_{MR} and the coefficient k_R :
$$p_R = k_R \times p_{MR}; \quad k_R \geq 0.$$
- (5) The price referred to in paragraph (4) of this Article and input parameters for its determination shall be defined by SERC.

Article 37
(Deviation of Balance Responsible Parties from Daily Schedule and Deviation of BiH LFC Area)

- (1) The ISO shall calculate deviations both in energy and financial terms pursuant to the Market Rules.

- (2) The balance responsible party, to which the market participant belongs, with which the ISO concluded a contract on procuring energy to cover losses in the transmissions system, is obligated to pay charges for deviations pursuant to the provisions referred to in Paragraph (1) of this Article.
- (3) The balance responsible party, to which the market participant belongs, with which the distribution system operator concluded a contract on procuring energy to cover losses in the distribution system, shall be obligated to pay charges for deviations pursuant to the provisions referred to in Paragraph (1) of this Article.
- (4) Calculation and settlement of deviations of the BIH LFC area shall be done by the ISO with other transmission system operators in the Regional Group Continental Europe pursuant to Article 3 of to the Synchronous Area Framework Agreement (SAFA) for the Regional Group Continental Europe, which pertains to calculation and settlement.

Article 38

(Calculation and Invoicing of Ancillary and System Services)

- (1) Invoicing and payment of ancillary and system services shall be done on the basis of calculation of ancillary and system services which is made by the ISO.
- (2) This calculation shall be delivered to balance responsible parties, customers connected to the transmission system, the electricity distribution company of Brcko District BiH and SERC. The calculation specifies financial and energy standings of the ISO and balance responsible parties. Furthermore, energy standings of market participants in relation to the balance responsible party to which they belong shall be presented.
- (3) With the aim of producing an accurate calculation, distribution system operators (DOS) shall be obligated to submit all required data and information to the transmission system operator (ISO BiH).

PART FIVE – OTHER PROVISIONS

Article 39

(Payment)

- (1) The Transmission Company and ISO cannot arrange with transmission network users a deadline for payment of transmission fee and system services which is longer than 15 days from the day of delivery of an invoice, nor can they charge a higher default rate for untimely payments than stipulated by law for the area where the debtor's seat is located.
- (2) The provisions referred to in the previous paragraph shall also be applied by suppliers of ancillary services. Exceptionally, upon ISO's proposal, SERC may approve other conditions for payment of invoices for ancillary services.

Article 40

(Monitoring)

SERC shall implement monitoring activities over the process of collecting public bids. With the aim of preventing non-allowed behaviour of market participants, SERC shall undertake the relevant measures in line with its competences.

Article 41

(Obligations of the Independent System Operator)

The Independent System Operator shall develop procedures for all obligations specified in this Methodology with the aim of ensuring unhindered and timely performance of activities under its competence. These procedures pertain to calculation of the required scope of ancillary services in the BIH control area, procurement of ancillary services in the market, verification of correctness of technical capacities of providers, balancing market functioning, defining the quality of provided services, appropriate sanctions for non-provision of services, calculation and reporting.

Article 42
(Interpretation)

- (1) SERC shall provide interpretation of this document.
- (2) If an issue is not covered by this document, SERC shall resolve it on a case by case basis or issue separate guidelines for the application of individual provisions of this Methodology.

Article 43
(Publication of the Methodology)

The Second consolidated version of the Methodology shall be published in the Official Gazette of BiH.

Number: 04-02-2-291-1/21
3 November 2021
Tuzla

Secretary
Edin Zametica, MSc