

Pursuant to Article 15, and in connection with article 36 of the Energy Law (*Official Gazette of the Republic of Serbia, No. 84/2004*) and article 12 of the Energy Agency of the Republic of Serbia Statute (*Official Gazette of the Republic of Serbia, No. 52/2005*),

The Council of the Energy Agency, at the 21<sup>st</sup> Council Session held on 21 July 2006, passed

## **D E C I S I O N**

### **ON DETERMINING METHODOLOGY FOR SETTING TARIFF ELEMENTS FOR CALCULATING PRICES FOR ACCESS TO AND USE OF SYSTEM FOR ELECTRICITY DISTRIBUTION**

1. Methodology for setting tariff elements for calculating prices for access to and use of system for electricity distribution has been determined and is attached to this decision.
2. This decision is to be published in the *Official Gazette of the Republic of Serbia*.

The Council of the Energy Agency of the Republic of Serbia

Ref No. 511/5  
Belgrade, 21 July 2006

President of the Council  
Ljubo Macic

## **M E T H O D O L O G Y**

### **FOR SETTING TARIFF ELEMENTS FOR CALCULATING PRICES FOR ACCESS TO AND USE OF SYSTEM FOR ELECTRICITY DISTRIBUTION**

#### **I. SUBJECT OF THE METHODOLOGY**

This Methodology determines ways of setting tariff elements for calculating prices for access to and use of system for electricity distribution (hereafter: use of system).

#### **II. METHODOLOGY APPROACH**

Methodology is based on the mechanism for use of electricity distribution system price control; that is, by application of the regulatory "cost plus" method which is used to set maximum allowed revenue in the regulatory period for energy entity for electricity distribution and operation, i.e. the price which enables a return on justified operating costs as well as a return on assets employed.

Maximum allowed revenue of energy entity is allocated to tariff elements based on:

- 1) Planned energy parameters, structure and values of energy facilities, and
- 2) Contribution of variable and fixed costs to the total costs of energy entity.

### III. TERMS AND DEFINITIONS

Terms used in the methodology have the following meaning:

Revenue allocation	Allocation of maximum allowed revenue on tariff elements
Maximum allowed revenue	Maximum revenue of energy entity that reimburses all justified costs incurred while carrying out regulated energy activities in the regulatory period and allows an adequate return on regulated assets.
Location of Cost	Physical or other location in energy entity at which a specific cost is incurred
Tariff elements	Parameters of tariff system that quantify the performance of regulated energy entities and calculate prices resulting from these levels of performance.

Other terms used in this Methodology have the same meaning as in the Energy Law.

### IV. SETTING MAXIMUM ALLOWED REVENUE

Maximum allowed revenue of an energy entity is calculated for every energy activity separately based on justified operating costs and an adequate return on assets employed for electricity distribution and distribution system operation.

If during the regulatory period, for objective reasons (change in Energy Balance of the Republic of Serbia or a significant change in electricity price for reimbursement of losses), the justified operating costs on which maximum allowed revenue of energy entity is set, are significantly different to costs reasonably incurred, correction of maximum allowed revenue can be made for that regulatory period.

#### IV.1. Common costs, assets and other revenues

Common costs are costs incurred while enabling operation of an entire energy entity consisting of two or more energy activities, or of an entity that besides energy activity carries out some other activity, and that cannot be directly linked to a specific cost location.

Common assets are energy entity assets that cannot be directly allocated to separate activities (e.g. land, facilities/buildings, vehicles, equipment etc.).

Other common revenues are revenues earned by employing energy entity assets that cannot be directly allocated to separate activities.

Common costs, assets and other revenues are allocated to the energy activity for which maximum allowed revenue is set, in accordance with this Methodology (electricity distribution i.e. operation) and to other energy and other activities, based on transparent rules (keys) set in accordance with accounting standards and objective criteria.

Part of the common costs, assets and other revenues allocated to the energy activity for which maximum allowed revenue is set in accordance with this Methodology, is included in calculating the maximum allowed revenue of the energy entity for carrying out the activity.

## IV.2. Electricity distribution

Calculating the maximum allowed revenue of the energy entity for distribution will be done by applying the following formula:

$$MOP_{\text{dist}} = OT_t + A_t + PPCK * RS_t - OP_T + KE_t$$

where:

t – regulatory period

$MOP_{\text{dist}}$  – maximum allowed revenue of the energy entity for distribution in period t (in dinars),

$OT_t$  – allowed operating costs in period t (in dinars),

$A_t$  – allowed depreciation costs in period t,

PPCK – rate of return on regulated assets calculated as weighted average cost of capital (in %),

$RS_t$  – regulated assets in period t (in dinars),

$OP_T$  – other revenues in period t (in dinars).

$KE_t$  – correction element in period t (in dinars),

Costs that are included in calculating maximum allowed revenue of energy entity for electricity distribution are set according to planned energy parameters from the Energy Balance of the Republic of /Serbia, i.e according to data used for approving the Balance.

### IV.2.1. Operating costs

Operating costs represent the justified costs of the energy entity for distribution and they comprise :

- 1) material costs
- 2) costs of salaries, benefits and other personal expenditures
- 3) production services costs,
- 4) non-material costs

These operating costs also include:

- use of transmission system costs
- environmental costs
- operating costs of assets acquired without capital contributions.

Whether the costs are justified is assessed according to the nature of a specific cost by carrying out analyses of justification, analyses of quantity and price and benchmarking of costs against costs incurred in the previous period and against costs of energy entities carrying out the same activity.

#### IV.2.2. Depreciation costs

Depreciation costs represent costs of depreciation for the assets that are used for carrying out the energy activity of electricity distribution, where the allowed costs of depreciation encompass the costs of depreciation of the assets acquired without capital contributions.

Allowed depreciation costs encompass the costs of depreciation of existing assets and depreciation costs of assets that will be activated in the monitored regulatory period.

The depreciation costs of the existing assets and assets that will be activated in the monitored regulatory period, are calculated by using a pro rata method in proportion to the estimated life time of the assets.

Depreciation costs of the regulated assets that will be activated in the monitored regulatory period are calculated as 50% of activated non-material investments, real estate, facilities and equipment in construction, work in progress as down payments for the procurement of such assets.

Allowed depreciation costs are calculated according to the following formula:

$$A_t = APS_t + AAS_t$$

where:

$A_t$  – Allowed depreciation costs in period t (in dinars),

$APS_t$  – Allowed depreciation costs of the existing assets in period t (in dinars),

$AAS_t$  – Allowed depreciation costs of the assets that will be activated in period t (in dinars).

#### IV.2.3. Regulated assets

Regulated assets represent the net value of non-material investments (except goodwill), real estates, facilities and the equipment which is used for carrying out the energy activity of electricity distribution, excluding:

- net value of the assets acquired without capital contributions, such as grants, participation of third parties in the construction of distribution system, assets acquired from connection charges etc.
- value of non-material investments, real estate, facilities and equipment in construction work in progress and down payments for the procurement, that are not activated in the regulated period, and which are not justified nor efficient.

Justification and efficiency of an investment are set according to:

- need for electricity distribution system development for meeting the increase of electricity demand, as well as for improvement of quality and security of supply,
- technical – technological, economic and other parameters and indicators of the justification and the efficiency of the investments and,
- harmonisation of the investments with five year development plans of the energy entity.

Regulated assets form the regulatory asset base which is used for the calculation of the rate of return on assets employed that the energy entity is allowed to obtain in the regulatory period.

The value of the regulated assets is calculated as the arithmetic mean of the opening and closing values of the regulated assets in the regulatory period according to the following formula:

$$RSt = (pRS_t + kRS_t)/2$$

where:

$RS_t$  – regulated assets in period t (in dinars),

$pRS_t$  – opening value of regulated assets in period t,

$kRS_t$  – closing value of regulated assets in period t ,

Opening value of regulated assets is calculated according to the following formula:

$$pRS_t = pNVS_t - pSBN_t - pNSUP_t,$$

where:

$pNVS_t$  – net value of non-material investments (except goodwill), real estate, facilities and equipment at the beginning of period t (in dinars),

$pSBN_t$  – net value of the assets obtained without capital contribution at the beginning of the regulatory period t (in dinars),

$pNSUP_t$  – value of non-material investments, real estate, facilities and equipment in construction work in progress and down payments for the procurement of those assets at the beginning of the regulated period that will not be activated in the monitored regulated period, or that are not justified and efficient, (in dinars).

The closing value of the regulated assets is calculated according to the following formula:

$$kRS_t = pRS_t - A_t + \Delta SUP_t - NOPS_t - \Delta SBN_t - \Delta NSUP_t$$

where:

$A_t$  – depreciation costs in period t calculated in a way that is consistent with this Methodology (in dinars),

$\Delta SUP_t$  – change of value of non-material investments, real estate, facilities and equipment in construction work in progress and down payments for the procurement of these in period t,

$NOPS_t$  – net value of assets that are disposed of in period t,

$\Delta SBN_t$  – change of value of assets acquired without capital contribution in period t (in dinars),

$\Delta NSUP_t$  – change of value of non-material investments (except goodwill), real estate, facilities and equipment in construction working progress and down payments for the procurement of these and that will not be activated in period t, or that are not justified and efficient (in dinars).

#### IV.2.4. Rate of return on regulated assets

Rate of return on regulated assets is set as the weighted average cost of capital of distribution energy entity.

Weighted average cost of capital is weighted average of rate of return on equity and average rate of return on debt and is calculated prior to taxation according to the following formula:

$$PPCK = (SK * CSK) / (1 - SP) + PK * CPK,$$

where  $SK + PK = 1$

where:

$PPCK$  – rate of return on regulated assets calculated as weighted average cost of capital (in %),

$SK$  – share of equity in financing regulated assets (in %),

$CSK$  – actual price of equity prior to taxation (in %),

$SP$  – rate of tax on profits according to the current legislation (in %),

$PK$  – share of debt in financing regulated assets,

CPK – weighted average price of debt.

Share of debt in financing regulated assets should be as high as possible in accordance with best international practice so as to produce a lower average price of equity.

Reasonable price of equity prior to taxation should reflect the specific risk of the company, risk of the country and prevailing terms of acquiring equity on financial markets in regulatory period.

Debt represents the sum of long-term liabilities and short-term financial liabilities.

The cost of debt is calculated as average weighted interest rate on borrowed assets, where the weights are given by the ratio of borrowed assets to total borrowed assets. The price of debt cannot be higher than the price of carefully and reasonably borrowed assets.

#### IV.2.5. Other revenues

Other revenues, besides revenues earned through carrying out the energy activity of electricity distribution, are revenues earned by employing regulated assets for carrying out activities such as: revenue from selling side products and services, revenues earned through improving own performance, revenue earned through selling assets, revenue from capital contribution (grants) and other revenues.

#### IV.2.6. Correction element

Correction element is the amount that corrects the maximum allowed revenue for the following regulatory period, for deviation between actual revenue and revenue calculated in accordance with this Methodology and is based on actual energy parameters and the value of justified costs and revenues earned in the previous regulatory period.

When calculating the maximum allowed revenue for the first regulatory period the correction element equals 0.

### **IV.3. Distribution system operation**

Setting the maximum allowed revenue for distribution system operation is done by using the following formula:

$$MOP_{udst} = OT_t + A_t + PPCK * RS_t + G_t - OP_T + KE_t$$

where:

t – regulatory period

$MOP_{udst}$  – max allowed revenue for carrying out energy activity of electricity distribution system operation in period t (in dinars),

$OT_t$  – operating costs in period t (in dinars),

$A_t$  – depreciation costs in period t,

PPCK – rate of return on regulated assets calculated as weighted average cost of capital (in %),

$RS_t$  – regulated assets in period t (in dinars),

$G_t$  – costs of compensating losses in electricity distribution system in period t (in dinars),

$OP_T$  – other revenues in period t (in dinars),

$KE_t$  – correction element in period t (in dinars).

#### IV.3.1. Costs of ancillary services

Costs of ancillary services are calculated in accordance with the Methodology for setting the tariff elements for calculating electricity prices for tariff customers.

#### IV.3.2. Costs of reimbursing losses

The costs of reimbursing losses in the distribution system are set according to the following formula:

$$G_t = K_t * SG_t * CG_t$$

where:

$K_t$  – quantity of electricity distributed in period t (u kWh),

$SG_t$  – electricity losses in distribution system calculated as quantity of electricity distributed increased for transit in period t (in %),

$CG_t$  – electricity price for reimbursing losses in period t (in dinars /kWh).

The quantity of energy distributed is the sum of electricity taken from the energy entity for transmission and transmission system operation and energy taken from the generation units connected to the distribution network.

Electricity losses in the distribution system are based on: the actual losses rate in previous three years, benchmarking of losses rates of energy entities from neighbouring countries carrying out the same energy activity and the plan for cutting losses and measures for its implementation.

The electricity price for covering losses is the price of electricity as set by the total electricity costs of purchasing electricity from the energy entity for electricity trading for supply of tariff customers and the costs of that energy entity calculated in accordance with the Methodology for setting tariff elements for calculating electricity prices for tariff customers.

#### IV.3.3. Meaning of other elements of the formula

The meaning of other elements of the formula for calculating maximum allowed revenue of the energy entity for distribution system operation is identical to the meaning set in this Methodology for calculating maximum allowed revenue of the energy entity for electricity distribution, except that in this calculation parameters for distribution system operation are used.

Maximum allowed revenue of the energy entity for distribution system operation is set according to parameters used for calculating maximum allowed revenue of the energy entity for electricity distribution.

### V. ALLOCATION OF MAXIMUM ALLOWED REVENUE TO TARIFF ELEMENTS

Maximum allowed revenue of the energy entity ( $MOP_t$ ), defined as the sum of maximum allowed revenue for electricity distribution and distribution system operation ( $MOP_t = MOP_{dis_t} + MOP_{uds_t}$ ), is allocated to tariff elements as follows:

- active energy in kWh,
- reactive energy in kvarh and
- power in kW,

definitions are given in order of calculation.

#### Reactive energy

The tariff element “reactive energy” is total reactive energy delivered annually to distribution system users who have reactive energy measured.

Part of the maximum allowed revenue is allocated to the tariff element “reactive energy” based on the structure analyses and network assets value, energy balances and other objective technical parameters, as part of system services costs.

Part of the maximum allowed revenue reimbursed from the tariff element “reactive energy” is calculated according to the following formula:

$$RE_t = G_t * u_{reg} + TRO_t + (MOP_{pdis_t} - TRO_t) * u_{rem}$$

where:

$RE_t$  – part of maximum allowed revenue reimbursed from the tariff element “reactive energy” in period t (in dinars),

$u_{reg}$  – that part of transmission system losses that is the result of reactive power flows (in %),

$u_{rem}$  – share of the tariff element “reactive energy” in earning part of maximum allowed revenue (in %),

$TRO_t$  – costs of regulation equipment in period t (in dinars), calculated according to the following formula:

$$TRO_t = (ODro_t + Aro_t + PPCK * NVro_t) * u_{onp}$$

where:

ODro<sub>t</sub> – costs of maintaining regulation tools and equipment in the network that provide voltage regulation in distribution system in period t (in dinars),

Aro<sub>t</sub> – costs of depreciation of regulation tools and equipment in the network that provide voltage regulation in distribution system in period t (in dinars),

NVro<sub>t</sub> – net value of regulation tools and equipment in the network that provide voltage regulation in distribution system at the beginning of period t (in dinars),

u<sub>onp</sub> – ratio of net value of regulation tools and equipment in the network that provide voltage regulation in distribution system (disparity in value of ordinary and regulation transformers, value of the equipment for compensating reactive power) and net value of non-material investments (except goodwill), real estate facilities and equipment at the beginning of period t (given in Item IV.2.3.).

Part of losses in the transmission system that is the result of reactive power flows, u<sub>reg</sub>, is set according to the contribution of reactive energy in increasing system losses and is set at 16%.

Part of reactive energy in earning part of maximum allowed revenue, u<sub>rem</sub>, relates to the relative increase in transmission system capacity due to reactive power flows and is 7,5%.

### Power and active energy

The tariff element “power“ is defined as the annual sum of maximum power of all distribution system users. Monthly maximum power is set for each plant, by summation of the metering of the same users at each voltage level, as the highest sum of average simultaneous 15 minutes power. For the users that are supplied from more plants at the same location, the metering is the sum of all metering from plants that are at the same voltage level and the monthly maximum power is set for each voltage level.

The tariff element “active energy“ is the active energy that is delivered to distribution system users annually.

Part of the maximum allowed revenue reimbursed from the tariff elements “power“ and active energy” (MOPse<sub>t</sub>) is the difference between the maximum allowed revenue for electricity distribution and distribution system operation (MOP<sub>t</sub>) and part of the maximum allowed revenue is the reimbursed from element reactive energy (RE<sub>t</sub>), according to the formula:

$$MOPse_t = MOP_t - RE_t ,$$

where:

MOPse<sub>t</sub> – part of maximum allowed revenue reimbursed from the tariff elements “power“ and “active energy“ in period t (in dinars).

Revenue allocation to tariff elements “power” and “active energy” is made according to the following criteria:

- share of variable and fixed costs in total costs and
- part of maximum and minimum hourly load of transmission system realised during the regulatory period, i.e. forecast for the forthcoming regulatory period.

Based on these criteria for setting the share of element “power” in realising part of the maximum allowed revenue reimbursed from the tariff elements “power” and “active energy” from  $u = 40\%$

Part of the maximum allowed revenue reimbursed from the tariff element “power” is calculated according to the following formula:

$$S_t = MOPse_t * u,$$

And the part that is reimbursed from the tariff element “active energy”:

$$AE_t = MOPse_t * (1 - u)$$

where:

$S_t$  – part of maximum allowed revenue reimbursed from tariff element “power” in period  $t$  (in dinars),

$u$  – part of tariff element “power” in earning maximum allowed revenue reimbursed from the tariff elements “power” and “active energy” (in %),

$AE_t$  – part of maximum allowed revenue reimbursed from the tariff element “active energy” in period  $t$  (in dinars),.

## **VI. REGULATORY PERIOD**

The first regulatory period begins on 1 January 2007.

The duration of the regulatory period is set at one year.