Unofficial translation

I approve (with the amendments[1]):

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Hungarian Energy Office

Methodology of the electricity system usage charge calculation for the period 2009-2012

According to Article 142, Section (5) of Act LXXXVI of 2007 on Electricity (hereinafter: **VET**):

> „In order to enforce the principle of least cost, the regulation of system usage charge has to be created in a way that the licensees affected by the regulation get incentives to maintain efficient operations and continuously improve the quality of their service. The detailed rules of this are issued by the Office in a methodological guide. During the preparation of this methodological guide the Office asks for the opinion of the affected licensees."

According to the above, the Hungarian Energy Office (hereinafter: **Office**) – after getting to know and considering the opinion of the affected consumer protection organizations and licensees - issues the below methodological guide regarding the regulation of the electricity system usage charges.

The purpose of this guide is to elaborate the principles, frameworks, methods which – as an addition to and building on the Methodological Guide (hereinafter: **M**) regarding the calculation of the justified costs of the licensees, issued in accordance with Article 142, Section (4) of VET, and also to be found on the homepage of the Office – help to make the preparations of the calculations of electricity system usage charges for 2009 and their mid-term regulation concept more transparent.

[1] [1] This methodology guide is the first amendment of the methodology guide issued – bearing the same title- on October 31, 2008 and is valid from the date of its publication on the website of the Hungarian Energy Office.
Compared to the earlier version the following bullet points were amended in the guide:

- III. D) 1. ($B_n^{ÁRI}$ and VÁ parameter) – clarification and amendment of contents
- III. D) 3. ($B^{E}i;n$ and VE parameter) clarification and amendment of contents accordant to the contents of (III. D) 1.)
- III. E) and III. C) 2. – securing harmony with the amendment of III. D) 1. and 3.
- End of Annex No. 1 – technical amendments (clarification of formulae)
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I. Basic concepts

The provision of article 8 of Act LXXXVII of 1990, according to which the administrative price has to be determined “in a way that it provides the efficiently operating entrepreneur with sources for the expenditures and for the profit necessary for operations taking into account the taxes and subsidies as well”, has set definitive requirements against the determination of the administrative prices. The fulfilment of these requirements led to the creation of a model in the middle 1990 years, according to which the price regulation is done in multiannual period. Before the start of the period, the assets and costs are reviewed in detail in order to set the “starting prices”, then the prices have to be adjusted on the basis of a predefined system of formulae until the end of the period.

Such a mechanism was in place for the administrative prices of electricity – with four year regulation periods – from 1 January 1997.

According to the experiences gathered so far, the four year period length can be considered adequate, as the untreatable “oscillations” did not occur, the item-by-item, time-consuming, annual review including all the cost types could be avoided, but at the same time the changing environment, the newly occurring problems could also be taken into consideration during the renewal of the price adjustment system occurring each four years.

According to the above, the price regulation period valid for the period 2005-2008 as defined by MoET decree No. 5/2005 (I.12.) on the mid-term regulation of the charges of distribution and transmission of electricity, system operation and ancillary services will be followed by another four-years **price regulation period valid for the period 2009-2012**.

The methods in connection with the calculation of the initial prices of the period in the year 2009 (“initial system usage charges”) are described in Chapter II of this guide – completing the provisions of M –, while the rules to be applied within the period are contained in chapter III.

II. Rules of calculating the starting system usage charges

A) General Part

1. For the calculation of the starting system usage charges of the new period, the following have to be taken into account:

   a) the justified costs (in 2009-level prices) determined by the Office on the basis of M. for 2009 (the starting year of the price regulation period) (hereinafter **base costs**, as well as **base value of costs**),
   b) the correction items spanning over from the a 2005-2008 price regulation period in connection with system operation and ancillary services (one-off items, i.e. not affecting the base),
   c) the level and structure of the system usage fees as developed by the end of the price regulation period ending on 31 December 2008,
   d) the tariff structure modification alternatives emerging in connection with the regulation problems in the 2005-2008 price regulation period,
   e) the actual 2007 annual, actual 2008 first half, and the expected 2008 annual quantity data, and the quantity trends forecasted for the years 2009-2012.

2. The question regarding the “justified costs” in accordance with point 1 a) are covered in chapter B).

3. The correction items according to point 1 b) are necessary for the closure of system of the annual frequency cost survey, the posterior analysis, and the consequent corrections of the transmission system operator in the price regulation period 2005-2008. [see also chapter B) points B1 and B2].

4. The basis of the transformation of the justified costs into tariffs is the tariff structure according to point 1 c), but this structure is separately analyzed and consequently modified in accordance with the aspects provided in point 1 d).

5. The quantity base configuration reflecting the given tariff structure is determined taking into account the quantities provided in point 1. e), which allows the transformation of the justified costs into tariffs.

B) Justified costs – cost justification

B1. For the calculation of the transmission–system operation charges (“árid”)

1. Operational costs

The calculation of the base value of operational costs is performed through the following consecutive steps:

a) Justification analysis of the *actual* 2007 annual cost and revenue data performed in accordance with M.
b) Analysis of the *actual* cost and revenue data from the first half of 2008.

c) Analysis of the *expected* 2008 annual cost and revenue data.
d) Analysis of the estimated costs of the new tasks valid from 2008 due to regulatory provisions.
e) Determination of the 2009 annual base cost using the results of the above analyses, taking into account the expected 2008 and 2009 annual inflation (and 2%/year expected efficiency improvement).

2. Depreciation

The calculation of the justified depreciation is based on the replacement cost – as approved by the Office - of the transmission assets within the assets registered on 31 December 2007, and the gross book value of the other (system operation) assets, as well on the effective lifetimes considered for each asset group. In addition to the depreciation calculated on the basis of the 2007 asset balance the effects in connection with changes of assets (investments, scrapping) and affecting depreciation in 2008 are taken into account. The depreciation of the assets not written down to 0 and not yet eliminated in 2008 is taken into consideration as a reducing item.

3. Cost of capital

Starting from the gross asset value referred to in point 2, the extent of wear and tear is taken into account when calculating the net asset value as the projection base of the cost of capital. The 2007 asset balance calculated in that way is adjusted with difference of the 2008 changes in assets (investments, scrapping) and the depreciation accounted for in 2008.

The determination of the yield factor of the cost of capital (hereinafter **THT**) is defined in Annex No. 1.

4. Transmission network loss (ÁHV)

The calculation of the base value of costs is performed in the following consecutive steps:

a) The base quantity is the arithmetic average of the *actual* (measured) 2007 and the expected 2008 quantity data (in GWh). The expected total quantity is calculated as the sum of the first 9 month actual data of 2008 and the “expected” value of the remaining 3 month – also taking into account the seasonal effects. The “expected” 3 months values are calculated as the arithmetic average of the identical period of the previous two years, i.e. 2006 and 2007.

b) The base cost is the product of the quantity defined in point a) and the unit price reflecting results of the ÁHV tender and the electricity exchange price.

5. Other items

A justification analysis of the areas [see point III. A) 3. ba)] belonging to the subsystem of annual line-by-line accounting, in accordance with the practice of the previous years and with the provisions of M.

B2. For the calculation of the ancillary service charge ("rszd")

1. The process of the calculation of the base value of the costs of *primary and defect* reserve allocation, the *black start* service and *voltage keeping* (reactive power drain) consists of the following consequent steps:

   a) Justification analysis of the cost data of the year 2007 in accordance with the provisions of M (taking into account decision Nr. 881/2008 of the Office as well).
   b) Analysis of the actual cost data of the firs half of 2008.
   c) Analysis of the expected cost data of 2008.
   d) Analysis of the results of the tender launched for 2009.
   e) Calculation of the base cost for the year 2009 after the above steps and taking into account their results and the expected 2009 annual rate of inflation.

2. Other items

A justification analysis (see point III A) 3 bb)) of the areas belonging to the subsystem of annual item-level accounting, in accordance with the practice of the previous years and with the provisions of M.

B3. For the calculation of distribution fees

1. Operational costs

The determination of the base value of the operational costs – in accordance with the provisions of M – consists of the following consequent steps:

   a) Static and dynamic justification analysis of the actual 2007 cost data.
   b) Benchmark-type analysis of the costs defined in point a), performed in accordance with Annex No. 2.
   c) Analysis of the estimated costs of the new tasks valid from 2008 on due to regulatory provisions.
   d) Determination of the 2009 annual base cost using the results of the above analyses, taking into account the expected 2008 and 2009 annual inflation (and 2%/year expected efficiency improvement).

2. Depreciation

Its calculation is based on the replacement cost of the assets owned by the distributors on 31 December 2007, and on the effective lifetimes considered for each asset group, and adjusted with the following:

a) If the booked depreciation is by more than 50% different to the depreciation calculated on the basis of effective lifetime, then the Office considers at most 50% difference compared to the booked depreciation.
b) The amount of investments to be taken into account in connection with 2008 is determined in accordance with the average of the actual activations in 2004-2007, and the relevant depreciation is calculated on the basis of the effective lifetimes.
c) The depreciation of the assets not written off to 0 and scrapped in 2008 is taken into consideration as a reducing item.
d) A non-recurring revenue (as a cost reduction item) equal to the amount of depreciation calculated for the assets realized till the end of 2008 from the connection fee, network development fee, or other sources received without compensation is taken into account.

3. Cost of capital

Its justified extent – in accordance with M – is product of the net replacement cost of the assets owned by the distributors on 31 December 2007 (reduced by the extent of wear and tear) and the THT (see Annex No. 1), which is adjusted as follows:

a) In accordance with section 144 (6) of VET, the net value of assets realized from the connection fee, network development fee, or other sources received without compensation and revaluated with indexation method is considered a reduction item during the calculation of the cost of capital.
b) The investments (activations) taken into account for the year 2008 are asset-value-increasing items, the 2008 scrappings and the booked depreciation in 2008 are asset-value-reducing items.

4. Distribution network loss(EHV)

The justified percentage proportion of the distribution network loss is determined as the sum of the percentage proportion of the justified technical loss and percentage proportion of the “non-technical” loss accepted as justified.

The percentage proportion of the justified technical loss taken into account in the 2009 starting price is calculation is calculated from

- The technical loss calculated for the year 2007, and
- The average technical loss decrease realized in the period 1999-2007 (8 years)

performing the below operation – for each distributor:

Extent of technical loss in 2007	**Required improvement in comparison to 2007**
Over the average of six distributors	Twice the average annual decrease of the 8 years period
Between the average of six distributors	1.6 times the average annual decrease

and 95% of the average	of the 8 years period
Below 95% of the average of six distributors	1.2 times the average annual decrease of the 8 years period

The above is justified by the fact that the decisive cause of the differences between the distributors is the different proportions of the different network voltage levels, in case of a higher proportion of high voltages (lower technical loss) it is more difficult to perform the same extent of (measured as percentage) reduction.

The percentage proportion of the “non-technical” loss taken into account the 2009 starting price is calculated from

- The “non-technical” loss calculated for the year 2007, and
- The average “non-technical” loss decrease realized in the period 1999-2007 (8 years)

performing the below operation:

Extent of “non-technical” loss in 2007	**Required improvement in comparison to 2007**
Below 50% of the average of six distributors	Disregarded
Between the average of six distributors and 50% of the average	The average annual decrease of the 8 years period
Between the average of six distributors and 150% of the average	Twice the average annual decrease of the 8 years period
Over 150% of the average of six distributors	Three times the average annual decrease of the 8 years period

The justified extents according to the above are considered by the Office to reflect the situation that has developed by 2007 and equally the differences by distributor (explainable and unexplainable) and the minimal expectations of the regulator (compared to 2007) with respect to the entire period.

The here determined percentage values (against the feeded into the network quantities) and the electricity quantities (taken out from the network) are used to calculate for each distributor the justified amount of network loss (in GWh) for the 2009-2012 period (EH_i, , where “I” stands for the *i*th distributor)..

The base cost of the distribution network loss for the *i*th distributor (EHV_i) is the product of

- the above amount (EH_i), and
- the price determined by taking into account for the transmission, or distribution network loss the prices justified for 2008, the results of the tender announced for the purchase of the 2009 loss, and the electricity exchange prices.

* * *

If the transmission-system operation charge and the ancillary services charge are set equally for the takeout from transmission and distribution networks, then in the calculation of the loss charges of the distribution network, in addition to the EHV_i base cost(s) the additional cost defined by the below formula (R_i) also has to be taken into account (see the abbreviations in the title of points B1. and B2 and in the previous part of this point):

$$R_i = EH_i \times (árid + rszd).$$

III. Mechanisms within the price regulation period

A) General pricing rules

1. The adjustment of the starting prices is ex officio initiated by the Office with the competent Minister – except for the case in accordance to point 2 – once each year, with entry into Force of 1 January, as an **annual price adjustment**, in accordance with Article 142, section (8) of VET.

2. An exceptional **price adjustment** – to be performed in addition to the annual price adjustment – is initiated by the Office if it is absolutely necessary because of the event in the electricity market or significant regulatory problems.

3. The price adjustment (price regulation) is of complex by type, i.e.

   a) Basically an inflation based indexation ("price cap system") is used for the majority of the regulated fields in the form described below:

      aa) as a component of the transmission-system operation charge (in connection with the transmission-system operation activity), consisting of

         - operation costs (MK),
         - depreciation (ÉCS),
         - and cost of capital (TK),

      ab) as a component of ancillary services charge consisting of the costs of primary and emergency reserve allocation, the black start service and voltage control (reactive power drain) (these denoted altogether as TAK1);

      ac) as a component of the distribution charge(s) (in connection with the distribution activity), consisting of

         - operation costs (MK),
         - depreciation (ÉCS),
         - and cost of capital (TK),

         [please also see chapter B)].

   b) An annual item-level accounting has to be used (with follow-up adjustments)

      ba) as a component of the transmission-system operation charge, consisting of

         - the revenue of the adjacent country feed-in and the (net) balance of the ITC/CBT settlement (ITC),
         - the revenue of the border capacity auctions (from the year prior to the actual year) (HK),

bb) as a component of ancillary services consisting of

- the cost of secondary, tertiary reserve capacities (these denoted altogether: TAK2),
- the cost of regulation power (SZE),
- the revenue of balancing power (KE).

c) A separate rule is applied for

ca) the purchase cost of the transmission network loss as a component of the transmission-system operation charge,

cb) the purchase cost of the distribution network loss as a component of the distribution charge(s) (distribution loss charges).

4. For the price adjustments defined in points 1 and 2 the following are calculated in a consistent way:

a) The updated values of the individual – differently regulated – price components (base cost elements),
b) The summarized average prices, by distributor as well as by tariff categories (price level), and
c) The tariffs to be published in the decree (tariffs).

In the framework of this, the calculation of the tariffs for the period is done on the basis of the quantitative data and its weight proportions taken into account during the calculation of the starting prices (tariffs).

5. During the price adjustment, the deviation from the quantitative data taken into account for the calculation of the starting prices is only possible if

a) keeping the quantitative data and proportions taken into account for the determination of the starting prices would provide – in the given regulatory situation – an unacceptable level of advantages or disadvantages for the stakeholders;

b) the structure and the logic of the tariff systems is principally modified.

B) Consideration of the inflation during the annual price adjustments

1. With respect to the items listed in chapter A) point 3.a), the consideration of inflation is done with the use of the inflation adjustment factor „z" in the following way:

$$z_n = 1 + \frac{Y_n^{MNB} - X}{100}$$

where:

z_n: is the inflation adjustment factor to be considered for the given price regulation (*n*th) year;

Y_n^{MNB}:is the actual (last) consumer price index (CPI) forecast published by the Hungarian National Bank (MNB) for the given price regulation (*n*th) year [according to the publication „Report on the changes of inflation"];

X: inflation correction component (see point 2).

If for January-August period of the (*n-1st*) year, prior to the given (*n*th) year of the price regulation (*n*th) year the consumer price index published by the KSH (Central Statistical Office) (YR_{n-1}^{KSH}) is more than 1% point higher than the MNB inflation forecast (Y_{n-1}^{MNB}) taken into account for the price regulation year, then during the preparation of the prices relevant for the n^{th} year, in addition to the MNB forecast to be considered for that year, half of the difference of $YR_{n-1}^{KSH} - Y_{n-1}^{MNB}$ also hat to be added, i.e. the corrected inflation adjustment factor (z_n^K) has to be calculated by the below formula (first occurrence for the second year of the price regulation period):

$$z_n^K = 1 + \frac{\left(Y_n^{MNB} + \frac{YR_{n-1}^{KSH} - Y_{n-1}^{MNB}}{2} \right) - X}{100}$$

The adjustment of the inflation forecast for the last year of the period has to be taken into account during the preparation of the starting price of the next period.

2. The inflation adjustment component "X" used in point 1 is an element primarily used in order to encourage the improvement of efficiency. Its effect – taking into consideration that the inflation adjustment factor influences the base of the next year as well – is continued until the end of the price regulation period. Its particular value is set by the Office (during the annual price adjustment)

   - In the interval $1{,}3 \leq X \leq 1{,}7$ for the transmission system operator,
   - In the interval $0{,}7 \leq X \leq 2{,}3$ for the distributors involved in the service quality improvement.

   During this the Office takes into account the operation of the companies, the expected processes and the qualitative characteristics of the performed activities.

   The value of "X" can be equal for all companies, company groups, or activities, but the Office – with proper argumentation – can take into account different inflation adjustment components for the individual companies, company groups, or activities.

   The Office would also like to encourage the improvement of supply quality through "X". Consequently – with nationally equal distributor charges in accordance with the relevant provision of VET – the distributor significantly improving the quality of supply will be entitled to a sum greater, the

distributor significantly deteriorating the quality of supply to a sum lower than the sum calculated without this. To create the (resultant) surplus sum is possible by decreasing the value of "X" for the given distributor, while the (resultant) revenue decrease is provided by the increased "X" value for the given distributor. The above explained mechanism of the supply quality incentive system – with regard to its content and application period – completes the provisions of the ministerial decree on the system usage charges with this purpose. The detailed description of the operation of the system is described in Annex No. 3.

C) Other pricing rules

1. ÁHV cost

The determination of the justified cost of ÁHV for the *n*th year is done in the following steps (for the year after the 2009 base year):

a) The quantity of ÁHV to be taken into account for the *n*th year ($V_n^{ÁHV}$, measured in GWh) – similarly to the provisions of point II. B1. 4. a)– can be calculated in the following way:

$$V_n^{ÁHV} = \frac{\left(V_{n-2;t}^{ÁHV} + V_{n-1;v}^{ÁHV}\right)}{2},$$

where

$V_{n-2;t}^{ÁHV}$: is the actual (*n-2)*th quantity of ÁHV [GWh],

$V_{n-1;v}^{ÁHV}$: is the expected (n-1)th quantity of ÁVH [GWh], calculated in the same manner as in point II. B1. 4. a).

b) The justified purchase price to be taken into account for the *n*th year ($P_n^{ÁHV}$) is calculated by the formula:

$$P_n^{ÁHV} = P_{n-1}^{ÁHV} \times \frac{T_n}{T_{n-1}}$$

where:

$P_{n-1}^{ÁHV}$: is average purchase price of the transmission network loss justified for the (n-1)th year; [Ft/kWh],

T_n: is the average Ft/kWh price of the baseload product (Phelix Baseload Year Futures) transactions made in the first 8 months of the (*n-1)*th year for the *n*th year in European Energy Exchange (EEX). In the calculation of the average price of the transactions made in the period referred to are converted into HUF at the official MNB mean HUF/EUR rate valid on the day of the transaction, and weighted by the quantities of the transactions made. (The definition of T_{n-1} is fully analogous, shifted by one year in all respects.)

c) The justified cost of ÁHV for the *n*th year (measured in million HUF) is generally the product of the values defined in points a) and b), which is adjusted by the component $C_n^{ÁHV}$ calculated in compliance with the rules

defined in point d) and using the annual quantity in accordance with point a).

d) If the purchase price of ÁHV justified for year (n-1) and the actual purchase price of the first 8 months of the year (n-1) are different by
   - 0-2 %, then the value of $C_n^{ÁHV}$ is zero,
   - 2-5 %, then the calculation of $C_n^{ÁHV}$ is done on the basis of 60% of the part of the above difference falling above 2%,
   - 5-10 %, then the calculation of $C_n^{ÁHV}$ - in addition to the above – is also incorporating 70% of the part of the above difference falling above 5%,
   - 10-20 %, then the calculation of $C_n^{ÁHV}$ – in addition to the above – is also containing 80% of the part of the above difference falling above 10 %,
   - more than 10-20 %, then the calculation of $C_n^{ÁHV}$ – in addition to the above – is also containing 90% of the part of the above difference falling above 20 %.

e) The entire formula defining the measured cost in million HUF of the transmission network loss for the *n*th year is – according to point a), b), and c) above – :

$$ÁHV_n = \frac{ÁH_{n-1} + ÁH_{n-2}}{2} \times P_{n-1}^{ÁHV} \times \frac{T_n}{T_{n-1}} + C_n^{ÁHV}$$

2. EHV cost

The justified cost of EHV for year n is performed in the following steps (for the year after the base year 2009):

a) The justified purchase price to be taken into account for year n (P_n^{EHV}) is determined by the below formula:

$$P_n^{EHV} = P_{n-1}^{EHV} \times \frac{T_n}{T_{n-1}},$$

where:

P_{n-1}^{EHV} : is average purchase price of the distribution network loss justified for the (n-1)th year; [Ft/kWh],

T_n: is the average Ft/kWh price of the baseload product (Phelix Baseload Year Futures) transactions made in the first 8 months of the *(n-1)*th year for the *n*th year in European Energy Exchange (EEX). During the calculation of the average price the transactions made in the period referred to are converted into HUF at the official MNB mean HUF/EUR rate valid on the day of the transaction, and weighted by the quantities of the transactions made. (the definition of T_{n-1} is fully analogous, shifted by one year in all respects.)

b) [2]The justified cost of EHV for the *i*th distributor and *n*th year is generally defined by the product of the amount of network loss (EH_i) calculated from the percental value of justified network loss according to point II. B3. 4. (calculated with feed-in electricity) and the quantity applied at tariff calculations (calculated with feed-off electricity), and the price according point a) (adjusting the price defined by point a) by the component $c_{i;n}^{EHV}$ calculated on the basis of point c)). In formula:
$EHV_{i;n} = EH_i \times \left(P_n^{EHV} + c_{i;n}^{EHV}\right)$.

c) If the difference between the purchase price of EHV justified for the year n-1 (P_{n-1}^{EHV}) and the specific purchase cost (balancing power) of the first 8 months of the year (n-1) was

- Between 0-2 %, then the value of $c_{i;n}^{EHV}$ is zero,
- Between 2-5 % then $c_{i;n}^{EHV}$ is 60% of the part of the difference falling above 2% ,
- Between 5-10 % then $c_{i;n}^{EHV}$ is – in addition to the above – 70% of the part of the difference falling above 5% ,
- Between 10-20 % then $c_{i;n}^{EHV}$ is – in addition to the above – 80% of the part of the difference falling above 10%,
- Above 20 % then $c_{i;n}^{EHV}$ is – in addition to the above – 90% of the part of the difference falling above 20%,

* * *

If the transmission-system operation charge and the ancillary services charge is set identically for the take-out from a transmission or a distribution network, then in addition to the $EHV_{i;n}$ cost(s) the additional cost defined by the below formula ($R_{i;n}$) also has to be taken into account for the calculation of the loss charges:
$R_{i;n} = EH_i \times \left(árid_n + rszd_n\right)$.

3. Transfer between distributors

The transfer mechanism serves the balancing of the difference between the justified cost and the revenue calculated for the distributor with the nationally standardized distribution charges. The transfer is realized through the balancing fund operated by the transmission system operator. Each distributor is obliged to pay to the "fund" in accordance with MoET decree No. 119/2007. (XII. 29.) on electricity system usage charges (hereinafter: **Decree RHD**, then the sum paid to the "fund" is entirely redistributed to the distributors in accordance with predefined proportions (set in Decree RHD) The distributor for whom the revenue calculated from the distribution charges exceeds the justified costs is a net payer in the balancing "fund" (pay more in than is redistributed for him from the "fund"), while the distributor for which the justified costs exceed the

[2] See foot note No. 4.

calculated revenue is the net beneficiary of the balancing “fund” (pays less than is redistributed to him).

D) Summary price formulae

During the price adjustments following the determination of the starting prices, the calculation of the system usage charges is done as follows:

1. Transmission-system operation charges

The charge for electricity **transmission-system operation** for the *n*th year is ($árid_n$), [Ft/kWh]:

$$árid_n = \frac{ÁST_{n-1} \times z_n + ÁHV_n - (ITC_n + HK_{n-1}) + C_{n-2}^{RI} + K_{n-2}^{ÁRI} + B_n^{ÁRI}}{VÁ}$$

where:

$ÁST_{n-1}$: the sum of the price creating components – to be regulated according to the price cap model – for year (n-1), i.e. (MK_{n-1}+ $ÉCS_{n-1}$+TK_{n-1}), [M HUF];

z_n: the inflation correction factor to be considered for the *n*th regulation year as defined in point III.B) 1;

$ÁHV_n$: the justified cost of the justified transmission network loss, to be considered for the *n*th year (see point III. C. 1.);

ITC_n: the net result for the year of the ITC/CBT settlement of the year n together with the revenue of the adjacent country feed-in planned for year n, [M HUF];

HK_{n-1}: (expected) revenue of the border capacity auctions relevant to year (n-1) [M HUF];

C_{n-2}^{RI} : the ”fact” - “planned” correction of the previous partial system operation activity coming over from the years before the period 2009-2012 (from 2007, and from 2008), with a two years delay (RI), [M HUF];

$K_{n-2}^{ÁRI}$: the correction of the combined net balance of the ITC-balance and the adjacent country revenue balance coming from the actual-plan differences, furthermore the correction coming from the error of estimation of the expected revenue the border capacity auctions relevant to the year (n-1) [M HUF], (its value is logically 0 until n=2010);

$B_n^{ÁRI}$: the increase of the depreciation and the cost of capital justified for year n, (its value cannot be negative) [M HUF]. In formula:

$B_n^{ÁRI} = \Delta ÉCS_n + \Delta TK_n$,

where

$\Delta ÉCS_n = \frac{\Delta E_n}{35}$, the increase in depreciation justified for year n *(ΔÉCS$_n$)* is equal to the justified increase in assets in year n *(ΔE$_n$)* divided by the average lifetime of 35 years,

$\Delta E_n = AE_{n-1} - HFH_{n-1} - ÉCS_{n-1}$, that is the justified increase in assets in year n *(ΔE$_n$)* is equal to the difference between the activated physical asset value (in relation of licence-bound activities) in year (n-1) (AE_{n-1}), the connection fee collected in year (n-1) (HFH_{n-1}) and the depreciation justified in year (n-1) *(ΔE$_n$≥0)*,

$\Delta TK_n = \Delta E_n \times THT$, the justified increase in the cost of capital in year n *(ΔTK$_n$)* is equal to the justified increase in assets in year n multiplied by THT.

The increment (activations, connection fees and other new acquirements without any compensation) shall be proved with authentic documentations in advance and by October 30 of the given year the latest. The real value of the increment is audited by the Office subsequently in possession of factual data and in case the increment based on the factual data is less than the justified increment, the Office will carry out corrections the following year and will not consider any further increments related to investments within the cycle.
The justified increment for year n shall be justified according to the price cap model from year n+1, that is at the calculations of árid$_{n+1}$:

$$ÁST_n = \left(MK_n + ÉCS_n + TK_n\right) = (MK_n + ÉCS_{n-1} \times z_n + \Delta ÉCS_n + TK_{n-1} \times z_n + \Delta TK_n)$$

VÁ: the electricity quantity taken into account during the calculation of the 2009 starting prices, [GWh]:

$$VÁ = VÁ_{2007}^{tény} \times \frac{VÁ_{2008.I.félév}^{tény}}{VÁ_{2007.I.félév}^{tény}} \times 1{,}015$$, where

pl. $VÁ_{2007}^{tény}$ is the electricity actually taken out by the consumers in 2007.

When calculating prices for further years the quantity considered, [GWh][3]:

$$V\acute{A} = V\acute{A}_{2008}^{tény}$$

2. Ancillary services charge

The charge for the electricity **ancillary services** in year n ($rszd_n$):

$$rszd_n = \frac{TAK1_{n-1} \times z_n + \left(TAK2_n + SZE_n - KE_n\right) + C_{n-2}^{RSZ} + K_{n-2}^{RSZ}}{V\acute{A}}$$

where the new variable are:

$TAK1_{n-1}$: justified cost of the *primary and emergency* reserve capacities, the *black start* service and the *voltage control* (reactive power drain) for year (n-1), [M HUF];

$TAK2_n$: the cost of secondary and tertiary reserve capacities planned for year n, [M HUF];

SZE_n: planned cost of the regulation power for year n, [M HUF];

KE_n: planned revenue of the balancing power for year n, [M HUF];

C_{n-2}^{RSZ}: the ”fact”-“planned” correction of the ancillary services – price regulated with annual item-level accounting – coming over from the years before the period 2009-2012 (from 2007-ből, and from 2008), with a two years delay (RSZ), [M HUF], (from n=2011 its value is logically zero);

K_{n-2}^{RSZ}: the two-year-delayed correction coming from the “planned”-“fact” difference of the cost of secondary and tertiary reserve capacity allocations, and of the balancing and the regulation power revenues [M HUF], (until n=2010 its value is logically 0);

3. Distribution charges

The annual average charge for electricity distribution in year n (ed_n):

$$ed_n = \frac{\sum_{i=1}^{6}\left[\acute{A}SE_{i;n-1} \times z_{i;n} + B_{i;n}^{E} + EHV_{i;n} + EH_i \times \left(árid_n + rszd_n\right)\right]}{VE}$$

[3] The modification reflects the partial medium term effects of the financial-economic crisis commenced in the second half of 2008 (which were not to be assessed properly as far as the duration and depth of the crisis cannot be concerned) on electricity turnover. (In the light of the processes in 2010 the quantity of electricity for 2011 can be revised.)

where:

$ÁSE_{i;n-1}$: the sum of the price setting elements to be regulated according to the price cap model, justified for year (n-1) for distributor i, [M HUF], (in accordance with point III. A) 3. ac));

$z_{i;n}$: the inflation correction factor to be taken into account for the price regulation year n and defined in point III. B)1., valid for distributor i;

$B^E_{i;n}$: the increase of the depreciation and cost of capital justified for year n and distributor i (its value cannot be negative)[M HUF]. In formula:

$$B^E_{i;n} = \Delta ÉCS_{i;n} + \Delta TK_{i;n},$$

where

$\Delta ÉCS_{i;n} = \frac{\Delta E_{i;n}}{35}$, i.e. the increase in depreciation justified for distributor i in year n *($\Delta ÉCS_{i;n}$)* is equal to the justified increase in assets in year n *($\Delta E_{i;n}$)* divided by a 35 year average lifetime,

$\Delta E_{i;n} = AE_{i;n-1} - HFH_{i;n-1} - ÉCS_{i;n-1}$, i.e. the justified increase in assets *($\Delta E_{i;n}$)* is equal to the difference between the activated physical asset value (related to licence-bound activities) in year (n-1) ($AE_{i;n-1}$), the connection fee collected in year (n-1) (HFH_{n-1}), and the depreciation justified in year (n-1) *($\Delta E_{i;n} \geq 0$),*

$\Delta TK_{i;n} = \Delta E_{i;n} \times THT$, i.e. the justified increase in the cost of capital for distributor i in year n *($\Delta TK_{i;n}$)* is equal to the justified increase in assets in year n multiplied by THT.

The increment (activations, connection fees and other new acquirements without any compensation) shall be proved with authentic documentations by the licensee in advance and by October 30 of the given year the latest. The real value of the increment is audited by the Office subsequently in possession of factual data and in case the increment based on the factual data is less than the justified increment, the Office will carry out corrections the following year and will not consider any further increments related to investments within the cycle.
The justified increment for year n shall be justified according to the price cap model from year n+1, that is at the calculations of ed_{n+1}:

$$ÁSE_{i;n} = \left(MK_{i;n} + ÉCS_{i;n} + TK_{i;n}\right) =$$
$$= \left(MK_{i;n} + ÉCS_{i;n-1} \times z_{i;n} + \Delta ÉCS_{i;n} + TK_{i;n-1} \times z_{i,n} + \Delta TK_{i;n}\right)$$

$EHV_{i;n}$: is the cost of distribution network loss taken into account for the price setting in year n for distributor i, [M HUF];

EH_i: justified distribution network loss for the i^{th} distributor [GWh]; its value for each distributor is calculated on the basis of the

percental values of justified distribution network loss according to point II. B3. 4. (calculated with feed-in electricity) and the quantity applied at tariff calculations (calculated with feed-off electricity) ;[4]

árid$_n$: see point III. D) 1.;

rszd$_n$: see point III. D) 2.;

VE: the electricity quantity taken into account during the calculation of the starting 2009 prices, [GWh];

$$VE = VE_{2007}^{tény} \times \frac{VE_{2008.I.félév}^{tény}}{VE_{2007.I.félév}^{tény}} \times 1{,}015$$, where

e.g. $VE_{2007}^{tény}$ is the electricity actually taken out from the distribution network by the consumers taking out from there in 2007. (Also for the other parameters this same category is taken into consideration.)

When calculating prices for further years the quantity considered, [GWh][5]

$$VE = VE_{2008}^{tény}$$

E) Definitions and explanations

Accounting profit – cost of capital

The accounting profit is a different notion (and has different value) from the price regulation cost of capital.

The accounting profit means the profit of the licensee “remaining” after the costs recorded in accounting, which is defined by his costs, revenues and his own accounting policy. The value of this can be lower and higher than the cost of capital calculated for the company.

The price regulation cost of capital is the price of financing sources from the side of the companies, which (together with the depreciation) is aimed at the return of the capital necessary for the assets. In a theoretic approach the cost of capital in the case of creditors is the interest, in the case of owners is the expected (justified, modelled) return on equity.

The price regulation cost of capital is the product of the asset value justified by the office and the yield factor also finalized by the Office.

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[4] The amendment related to the change in *VE* parameter was necessary for securing consistency in tariff calculations (see also III. C) 2).

[5] The modification reflects the partial medium term effects of financial-economic crisis commenced in the second half of 2008 (which were not to be assessed properly as far as the duration and depth of the crisis cannot be concerned) on electricity turnover. (In the light of the processes in 2010 the quantity of electricity for 2011 can be revised.)

The price regulation cost of capital is a calculation item representing one of the types of justified costs, and together with other justified cost types (depreciation, operational cost, etc.) it serves as a basis for the calculation of tariffs. Its value can be equal to the accounting profit (increased with interests) in one case, if

- the costs recorded in accounting are identical with the justified costs,
- the quantities of electricity serving as the basis of the actual revenues are equal to the quantities used for the calculation of tariffs.

Interpretation of the cost base – quantitative effect

The determination of base costs (base value of costs, see point II. A) 1. a)) is done in accordance with the provisions of M. and as described in chapter II.
For the years of the price regulation period the costs taken into account in each year and for each company are determined through the indexation of the starting costs defined by licensees, the annual justifications of costs, and the application of corrections.

In default of any other regulations[6] by dividing these costs by the electricity quantities used during the calculation of the 2009 starting prices we get the tariffs for the given year. The electricity quantities appearing in (the denominators of the) the charge formulae in subsections 1-3 of point III. D) – used during the calculation of starting prices of 2009 – are constant[7] for the entire price regulation period.

In the consequent years of the price regulation period the actual electricity quantities are expected to be higher than the quantities considered in the starting prices, therefore – due to the charges collected on the basis of the actual turnover – the companies will realize a surplus in revenues. This is the so-called quantitative effect.

The quantitative effect means that in addition to the justified costs and corrections (taken into account annually and indexed) the companies potentially get further sources. The profit part of those – due to the high proportion of the fixed costs – is generally higher than average, therefore they can serve as additional source of the investments.

Budapest, 31 October 2008[8]

[6] See also point III. D) 1. and 3. as well as footnotes No. 2 and 3.
[7] Those described in this and the following two paragraphs bear only principal importance in case of decrease in electricity consumption related to financial-economic crisis (see footnotes No. 2 and 3.).
[8] Original date of issuance of the methodology guide prepared under VET (Date of amendment is October 22, 2009.)

Annex No 1.

Calculation of the yield factor of the cost of capital

The cost of capital to be justified in the starting price is calculated using the so-called weighted average cost of capital method (WACC).

The WACC formula

During the calculation of the yield factor, we have two take into account two sources of investments, the foreign and the equity capital, and their proportion in the entire financing. The general formula of WACC (after taking into account the corporate taxes) is the weighted average of the two sources:

$$WACC_{before-tax} = \frac{D}{D+E} \cdot r_d + \frac{E}{D+E} \cdot r_e / (1-t)$$

$$WACC_{after-tax} = \frac{D}{D+E} \cdot r_d (1-t) + \frac{E}{D+E} \cdot r_e$$

Where "*D*" is the amount of foreign capital used, "*E*" is the amount of the equity capital used, "r_d" is the cost of foreign capital in %, "r_e" is the cost of the equity capital in %, "*t*" is the corporate tax rate (in decimal number format).

The cost of foreign capital can be expressed on the basis of the risk-free yield and the credit premium, while for the calculation of the cost of the equity capital we need the risk-free yield, the company-specific (or rather industry specific) so-called beta factor, and the market risk premium.

Considering that the inflation is taken into account through the annual indexation in the price regulation period, the WACC value is justified to be calculated in real terms.

Risk-free yield and credit risk premium

Under risk-free yield we denote the expected return of an investment which has no risk of bankruptcy. The literature generally calculates the risk-free yield on the basis of a state security yield that has a required level of liquidity. Considering that the Hungarian state security market did not meet the above criteria, the Office took into account the period from January 2008 to September 2008.

In the international regulation practice usually the five year state bond yields are used as a reference.

The calculation basis of the real yield of state securities is the implied forward real interest rate.

On the basis of this you can calculate the next 4 years of

- nominal annual forward interest rate,
- the real interest rates with the help of the inflation forecasts,
- and the average of the above.

Taking into account that the MNB publishes a derived forward interest rate curve for the 3 months state securities, therefore the yield curve of the 5 years state securities can only be calculated using the relation between the 3 months and 5 years state security yields.

Consequently, in that framework we can analyse how the 5 years yields depend on the 3 years state security yield and the level of annual inflation (on the basis of the 2001-2008 data). The estimation of the nominal yields is done on the basis of the average values of the data in the period January 2008 – September 2008.[9]

After that we can calculate the estimate of the 5 year yields from the 3 months index.

The forecast of the nominal annual forward indices, inflation rates and the accordingly calculated risk-free real yield is demonstrated in the below table:

Year	Nominal yield	Inflation rate	Real yield
	%		
2009	8.7	4.1	4.4
2010	8.3	3	5.1
2011	8.0	3	4.9
2012	7.2	3	4.1
Average			**4.6**

The risk-free real yield is therefore 4.6%.

The calculation method: $r = \sqrt[4]{\frac{\prod_{i=1}^{4}(1+i_n)}{\prod_{i=1}^{4}(1+\pi_n)}}$

where i_n is the nominal yield,
π_n is the estimate of inflation rate.

The estimation of the inflation rate was based on the most up-to-date available inflation forecast of MNB.

For the estimation of the credit risk two methods can be applied.

The first one has analysed the standard deviation of the real yield of the 5-year state securities from 2001 to 2008, the second looked at the standard deviation of the real value of the long term credit interest rates from 2003 to 2008. The standard deviation – as the generally accepted indicator of risk – measures the average difference to the average yield.

[9] Since this is a time series regression estimation, a strong residual autocorrelation occurs, that can be countered with a delayed residual error component (in our case with an iteration procedure, the Cochrane-Orcutt algorithm). The model provides a 0.8 multiple correlation coefficient and an almost perfect 1.95 value of Durbin–Watson test in the end.
5 year yield % = 2.167 + 0.714 × 3 month yield - - 0,053 × annual inflation rate.

$$\sigma = \sqrt{\frac{\left(h_i - \bar{h}\right)^2}{n}}$$

where

σ is the value of standard deviation, risk
h_i is the yield of the ith period,
$\bar{h}$ is the level of average yield,
n is the number of periods taken into account.

Both analyses yielded practically the same result. (1.8%, and 1.78%). Therefore the **value of credit risk premium is 1.8%**

Consequently, the real yield of foreign capital is: r_d = 4.6 + 1.8 = 6.4%

Yield of the equity capital

For the calculation of the yield of equity capital first we need an estimate of the stock market risk. For this purpose we can use the daily data of the BUX Index available from 1993.

If the geometric average of the daily yield is projected to the entire year, then we calculate the average level of the individual years, and then deflate this by the consumer price index, then the real **yield occurs to be 10.5% annually**. This means that by investing in the BUX basket we could have reached such a daily yield in the given period. (We get the same number if rounded to one decimal, if we use the 2001 to 2008 yields and inflation.)
Therefore the **value of risk premium is 10.5 - 4,6 = 5.9%**[10]

The next step is the estimation of the beta parameter measuring industry specific risk.

The beta coefficient measures the correlation between a given stock yield and the entire stock market yield, i.e. we explain the change of the price of a stock by the relative movement of the stock exchange index measuring the return of the entire stock market. It is estimated in practice with a linear regression. Therefore the interpretation of beta is: 1% market yield change causes on average “beta %” change in the yield of the given stock.

For a long time DÉMÁSZ was the only “A” category stock in the exchange. Between 1999 and 2004 the beta calculated for DÉMÁSZ was 0.34.[11]

Among the electricity market companies currently two are listed on the stock exchange, ELMÜ and ÉMÁSZ.

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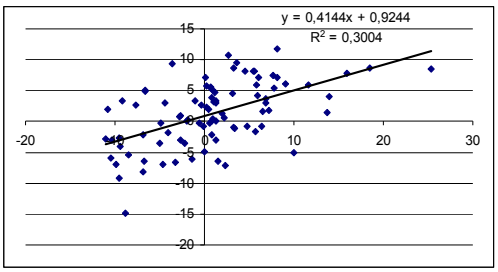
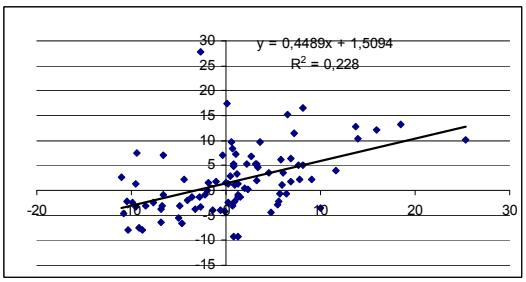
[10] We must notice that although this is historical data, as it captures the yield for more decades, it can be used as a projected value. Of course the history of the Hungarian stock exchange goes back only for 17 years, but the stability of yield estimation, i.e. the fact that the average annual real yield is the same for the periods 1993-2008 and 2001-2008, shows that the indicator is well applicable.
[11] Calculation of L. Kevin and Thorn.

The two diagrams below show the connection between the BUX and the yield of the two above electricity suppliers.

Relation between the yield of ELMÜ and BUX, 2001- 2008



Relation between the yield of ÉMÁSZ and BUX, 2001- 2008



Source: Calculation of the expert commissioned by the Office

On the basis of the analysis of the data of ELMÜ and ÉMÁSZ the average beta value of ELMÜ and ÉMÁSZ **(0,43) can be taken as a realistic approximation of the beta value.**

As there was no available empirical data for the transmission (transmission system operation), and the international practice is not uniform in terms which is more risky from the transmission and distribution activities[12], therefore there is no conclusive evidence which could support that a different beta is applied for the transmission system operator.

The real yield of equity capital is therefore (before taxation[13]):
$r_e = 4,6 + 0,43 \cdot (10,5 - 4,6) \cdot (1 - 0,2) = 8,9\%$[14]

Proportion of the equity and foreign capitals

The determination of the equity and foreign capital was done on the basis of the proportion of own capital – foreign capital characteristic for the entire electricity industry using a benchmark method. The proportion of equity capital – foreign capital for the regulated companies cannot be taken as a starting point, as it can be easily influenced by the own decisions of the company management, a good example for this is the effect of the decisions made in connection with the separation of the activities on the equity capital. The capital structure of the industrial branch is characterized by a decreasing ratio of equity capital: while in 2001 there was a 63% proportion of equity capital, currently this is 55%. The further decrease of equity capital cannot be expected in the current economic environment, therefore the 55% proportion of equity capital is considered as justified.

[12] In the European regulation practice – with a relatively high deviation – the beta values of the transmission system operation are 8% lower than that of the distribution.
[13] The currently effective (from January 2009) corporate tax rate (16%+4%=20%) is reflected by the 0.2 value in the denomination.
[14] The formula was clarified, but the original calculations were made on the basis of the „right" formula.

Unofficial translation

Summary of the result of WACC calculation:

- **Real yield of the foreign capital: $r_d = 4.6 + 1.8 = 6.4\%$**
- **Real yield of the equity capital before tax: $r_e = 4.6 + 0.43 \cdot (10.5 - 4.6) \cdot (1 - 0.2) = 8.9\%$**
- **WACC = $0.55\ r_e + 0.45\ r_d$**

Benchmarking method for the calculation of the operational costs of the distributors

In the framework of the analysis, the well-delimited partial activities of the distributors are compared on the basis of specific indicators. The application of a comparative analysis is also justified by the fact that the distributors outsourced their activities to a significant extent to external (associated) companies. The 11 partial activities analysed:

- management of operation the network
- Operation and maintenance of the network (by voltage levels; 7 in total)
- metering, reading
- customer service
- consultancy and supportive activities (HR, accounting, finance, informatics)

As the level of the latter is highly dependent on the organizational model of the individual distributors, therefore only a smaller part of this cost was used for comparative analysis, while the other (bigger) part of it – in proportion of the nationally discovered costs – was distributed to the other 10 highlighted partial activities. The part to be distributed was calculated on the basis of the 10 above partial activities.

After that the specific costs for all highlighted partial activities of each individual distributor and the national average was calculated.

The costs not exceeding the national average were always considered as justified.

In order to be able to consider the different capacities of the distributors, we have separately analyzed the deviation of the specific costs. In case of costs showing high (higher than 50%) deviation half of the cost exceeding the national average, in case of costs showing medium (25-50%) deviation three quarters of the cost exceeding the national average was considered as not justified. In case of low (lower than 25%) standard deviation, the entire cost exceeding the national average was qualified unjustified.

With respect to the operation and maintenance of the network (7 categories), the supply quality was also taken into account as an additional aspect. The higher supply quality was taken into account as a reductive (deduction-reducing) item for the occasionally applied corrections.

Annex No. 3.

Supply quality incentives for the distributors of electricity through the price regulation mechanism

If we add up the justified costs calculated for each distributor and divide it by the annual electricity quantities (kWh) taken into account for the entire price regulation period (2009-2012), we get the average starting distribution prices (Ft/kWh), valid for the whole country.

The justified cost for each distributor for the year 2010 can be calculated by indexing the those costs from the justified costs of 2009 which belong to the price cap system by the factor „z_n" which contains the component "X" (inflation correction) (which can be different for each distributor – partially due to the development of the supply quality indicators –, then we add the costs not belonging to the price cap system.

The quality deterioration of the distributor happening in 2008, possibly to be sanctioned [i.e. the average annual values of the quality indicator(s) for the period 2006-2008. falling below the minimum value by a defined extent] is established by the HEO analysis at the end of Spring 2009, therefore it can be taken into account during the preparation of the 2010 charges.

If for this distributor the "X" value is selected to be higher than "generally" in order to impose a "punishment", then the „z_{2010}" inflation correction factor will be less for him than for the other distributors, i.e. his justified (justified) cost will increase to a lesser extent than for the other distributors.

The total 2010 justified distributor costs – therefore the level of (nationally equal, average) distribution charges for 2010 – will be lower, than if there was no quality deterioration to be sanctioned. (The distribution cost justified for 2010 is the basis of the cost for 2011, i.e. the deterioration of the supply quality affects the remaining years of the price regulation period through X.)

By the modification of the percentage proportions of the income transfer mechanism[15] it can be assured, that in the actual year (in 2010 in the example)

- the distributor with bad performance only gets coverage for the justified costs relevant to him – which are reduced by the "underindexation",
- other distributors in turn get the coverage of their own justified (not "underindexed") costs (which he would not get without the modification of the income transfer extent, due the lower price level resulting from the "underindexation").

The case, where one distributor is entitled to additional revenue on the basis of his quality indicators as well as the case where both incentives (penalty, reward) are applied in the given year, are to be treated similarly, but with the opposite sign.

[15] This is part of Annex 4 of the RHD decree.

The change of factor "X" on the basis of the supply quality indicators

In the supply quality incentive system – in accordance with the indicators expected to be applied in the RHD decree – the following 3 indicators have to be taken into account:

- 1: the average frequency of the non-planned, more than 3-minutes-long interruptions of electricity supply calculated from the last 3 years preceding the actual year (i.e. from the years 2006-2008 in the example) (moving average);
- 2: the average length of the non-planned, more than 3 minutes long interruptions of electricity supply calculated from the last 3 years preceding the actual year (moving average);
- 3: outage indicator (3 years moving average calculated similarly to the above).

For the above detailed quality indicators the HEO also determines "minimal quality requirements" for the individual licensees.

Let **b** denote the supply **quality correction factor** calculated on the basis of the supply quality, the value of which is:

(1) $$-0.6\% \le b \le +0.6\%$$

Components of the correction factor "b":

(2) $$b = b1 + b2 + b3$$

where:

b1 - a correction factor connected to the change of average frequency of the non-planned interruptions of the electricity supply, which can have the values *0 or ±0.1 % or ±0.2 %.*

b2 - a correction factor connected to the change of average length of the non-planned interruptions of the electricity supply, which can have the values *0 or ±0.1 % or ±0.2 %.*

b3 - a correction factor connected to the change of the outage indicator, which can have the values *0 or ±0.1 % or ±0,2 %.*

The determination of the values of the correction factor of any distribution licensees is based on the comparison to the "minimal quality requirement" values of the quality indicators.

Direction of difference	***Extent of difference***	***Correction factors b1. b2. b3***
Better than the expectation	Above 10%	-0.2 %
	Between 5% and 10%	-0.1 %
„Keeping the level”	Between 0% and ± 5%	0
Worse than the expectation	Between 5% and 10%	+0.1 %
	Above 10%	+0.2 %

According to this the sign of the correction factors is **negative**, if the supply quality is **better** by an observable extent than the minimal quality requirement, and **positive**, if the supply quality is **worse** by an observable extent than the minimal l quality requirement.

The **resultant correction factor b** of any distributor has to be calculated using equation (2).

Starting from the basic formula valid also for distributors: $1.3\% \le X \le 1.7\%$, then applying supply quality correction factor „b” to that formula, the factor valid for the distributors as well as the resultant factor „X” can be in the range $0.7\% \le X \le 2.3\%$ depending on the values given by equation (1).