



Rule on Thermal Energy Pricing **/Amended/**

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Chapter I General Provisions

Article 1



Scope and Purpose

1. Thermal Energy Pricing Rule (further in the text “the Rule”), in accordance to the Articles 8(1), 14(2), 25(1) and 43 of the Law 05/L-084 on the Energy Regulator, sets forth the principles for calculation and approval of maximum allowed revenues and regulated tariffs, as well as procedures for submission of application, review, adjustment, and approval of the tariffs and prices of heat in the regulated thermal energy sector.
2. This Rule shall apply to enterprises having the license for heat production, distribution and supply.
3. This Rule sets:
 - a) The basic principles and the Methodology for the determination of maximum allowed revenues that may be earned by regulated thermal energy enterprises in order to allow them to recover the reasonable costs of operating, maintaining and investing in their generation and network facilities for the purposes of supply of heat to customers in accordance with the Law on the Energy Regulator;
 - b) The process by which applications for such maximum allowed revenues shall be submitted, reviewed and approved; and
 - c) The process and the Methodology used by which heat tariffs to recover the maximum allowed revenue are determined.
4. The principles and methodologies described in this Rule shall ensure:
 - a) the transparent and non-discriminatory performance of regulated thermal energy activities which are subject to public service obligations;
 - b) that the interests between customers and thermal energy enterprises are adequately balanced;
 - c) stable and predictable conditions for enterprise operation when performing regulated businesses;
 - d) that tariffs for regulated thermal energy activities are calculated in a reasonable, objective and clear manner;
 - e) security of supply of heat through maintenance and construction of necessary generation and distribution capacities;
 - f) protection of customers through promoting transparent and open access to information related to participation in public consultation and decision-making regarding pricing and tariffs.

Article 2

Definitions and Interpretations

The terms used in this Rule shall have the same meanings as in the Law on Energy, the Law on the Energy Regulator and the Law on Thermal Energy.



“Actual regulated revenues” means the revenue recovered by a regulated enterprise through tariffs for the provision of heat measured on an accruals basis.

“Adjustment mechanism” means the mechanism applied for regular adjustment of the maximum allowed revenue. The adjustment is undertaken after each year after each regulatory period respectively before next tariff review, as described in Article 111. The adjustment can be done also in extraordinary reviews which can be undertaken with a request by the company and approval by ERO.

“Allowed depreciation” has the meaning given in Article 88.

“Allowed operating and maintenance costs” have the meaning given in Article 77 and are comprised of a fixed part and variable part in accordance with the provisions of the same article.

“Allowed rate of the return on the regulatory asset base” is defined in Article 99 and equals to the Weighted Average of Cost of Capital - WACC.

“Annual review” is the process performed by the Energy Regulatory Office to review the data provided by the regulated enterprise and to establish the maximum allowed revenue.

“Bad debt” – a reasonable cost allowed by ERO for the decrease in revenues caused by the inability for collecting the payments from customers, which is further defined in Article 111, paragraph 5.

“Distribution network” means the thermal energy network for transporting thermal energy from the generation plants to customers.

“Asset lifetime” means the asset lives used to calculate allowed depreciation on the regulatory asset base.

“Fixed costs” are costs that do not vary with the heat volume supplied by the thermal energy system and are thus considered to be fixed.

“Forecasted revenue” is equal to the maximum allowed revenue determined prior each regulatory period that was planned to be recovered via tariffs assuming forecasted costs and heat supply.

“Heating season” is the period of thermal energy provision and ranges from October 15 of actual year to April 15 the forthcoming calendar year if not extended or shortened according to Article 6 of the Rule on General Conditions of Energy Supply issued by Energy Regulatory Office.

“Implementation Plan and Timetable” is an accompanying document to this Pricing Rule prepared and published by ERO in advance to the regulatory period.



“Maximum Allowed Revenues (MAR)” means the maximum amount that can be recovered during a regulatory period by the regulated thermal energy enterprise through its tariffs, the formulae given in Schedule 1 of this Rule.

“Metered” means metered quantity of thermal energy (**heat**) as measured by a meter installed for such a purpose.

“Pass-through costs” mean the costs established in accordance with 13.

“Rate-of-return” regulation is a method for establishing the maximum allowed revenue by adding a specific rate of return applied on the regulated asset base to the allowed costs of the regulated enterprise.

“Regulatory asset base” is a regulatory value of the thermal energy enterprises fixed assets considered to be used and useful in the provision of thermal energy and determined as prescribed by Schedule 2.

“Regulatory period” will include the heating season in line with the definition given in Article 3.

“Transportation network” includes the pipelines specifically build to connect a co-generation or other plant to the thermal energy distribution network.

“Variable costs” are costs that vary with the heat volume produced and supplied by the thermal energy system and are thus considered to be variable.

“ERO” - Energy Regulatory Office.

“Multi-unit Building” - For the purpose of the Methodology in the Schedule ‘8’, the ‘Multi-unit Building’ has the meaning of: i) a collective residential building with 2 and more apartments, each owned by an individual (person) which at the same time is district heating customer; and/or ii) a building with multiple commercial premises each owned by an individual (person) which at the same time is district heating customer; and/or iii) the combination of both – so-called ‘multipurpose building’ – that is composed of multiple apartments and commercial premises. Analogically the ‘unit’ has the meaning of an apartment and/or commercial premise.

“Substation-level metering” – means measuring of the heat consumption by the adequate metering device installed and functional at the substation of a building connected to the thermal energy (district heating) system.

“Unit-level metering” – means measuring of the heat consumption of a Multi-unit building’s unit (apartment or commercial premise), by means of adequate metering device (allocator or individual heat meter).



Chapter II Regulation of Revenues and Tariffs

Article 3 General Principles

1. The maximum allowed revenues of the regulated thermal energy enterprise as well as consumer tariffs shall be set through the process of annual tariff review as described in this Rule.
2. Each annual tariff review shall start on October 15 of the present year and shall end on October 14 of the forthcoming year, which shall include a heating season from October 15 of the actual year to April 15 of the forthcoming calendar year.
3. Before each annual tariff review, ERO may decide to apply multi-year tariffs, and through the public consultation process, ERO determines the length of the regulatory period. In case ERO does not determine regulatory period, then the regulatory period is the same as the annual review period.
4. The formulae for calculating maximum allowed revenue are given in Schedule 1 whereas the principles for determining consumer tariffs are in Chapter IV.
5. For any changes in the prices of production, distribution and supply of thermal energy, ERO shall conduct public consultation in line with article 27 of the Law on Energy Regulator

Article 4 Procedure for Applying for Approval of Maximum Allowed Revenues and Tariffs

1. By the deadline set forth in the Implementation Plan and Timetable as prepared and published by ERO in advance to the start annual tariff review, a thermal energy enterprise shall submit to the ERO a written application for approval of maximum allowed revenue and associated heat tariffs for the upcoming regulatory period.
2. The application shall include a proposal for the maximum allowed revenue and tariffs for the heat delivered to the final customers as well as the associated documents as defined in Schedule 4.
3. The ERO shall verify and examine all data listed in the application and perform an annual review according to the process defined in Schedule 5.
4. After receipt of application of thermal energy enterprise for maximum allowed revenues and tariffs, ERO shall publish all relevant documents whether issued by ERO or those of the concerned energy enterprises (excluding confidential information), and shall publish any other draft Rule, draft individual act, or draft decision. Also, ERO should meet with



licensed energy enterprises to discuss submissions and responses and hold a public consultation.

5. Based on its verification and examination of the application, and after a consultation period set forth in the Implementation Plan and Timetable, ERO shall:
 - a) Either approve the maximum allowed revenue and tariffs as proposed by thermal energy enterprise if these are in conformity with the principles of maximum allowed revenue and tariff calculation as stipulated in this Rule; or
 - b) Refuse to approve the maximum allowed revenue and tariffs as proposed by thermal energy enterprise, and instead calculate and determine the allowed revenues and the tariffs for the regulatory period, according to the principles defined in this Rule.
6. The ERO shall refuse to approve the proposed tariffs, if they are not in conformity with the principles of tariff calculation as stipulated in Chapter IV of this Rule. The refusal shall be justified in a written form and shall be objective, non-discriminatory and duly substantiated.
7. The ERO will communicate in written form to thermal energy enterprise the value of its allowed revenues and tariffs for each year, within a specified timeframe set forth in the Implementation Plan and Timetable. Determination of allowed revenues will be accompanied by an annex – regulatory report with analytical explanation of the methodology for determination of allowed revenues and full justification of such determination.
8. The decision on tariffs in printed form shall be delivered to the applicant or to its authorized representative, and shall be published (without the annex mentioned in paragraph 7) on ERO's official web site before starting of the heating season.

Article 5 Appeal

1. Thermal energy enterprises have the right to appeal to the competent court of jurisdiction regarding determination of allowed revenues and the decision of the tariff approval.
2. The appeal must include full justification of its basis.
3. The appeal referred to in paragraph 1 of this article, may be filed to the competent court of jurisdiction within 30 days from the receipt of the final decision on the tariff approval.
4. The appeal shall not prevent implementation regarding the determination of allowed revenues and decision on tariff approval, compliant to the article 49 of the Law on Energy Regulator.



Chapter III Maximum Allowed Revenues

Article 6 General Principles

1. The maximum allowed revenue is the upper income limit allowed to the regulated thermal energy enterprise to be achieved during a regulatory period.
2. Maximal allowed revenues will be determined based on Tariff Methodology adopted by ERO.
3. In accordance to the principles of the Tariff methodology, the maximum allowed revenues shall enable the thermal energy enterprise to recover the justified reasonable costs required for performing the regulated business activities.
4. The maximum allowed revenue comprises of:
 - a) Allowed operating and maintenance costs (Article 7);
 - b) Allowed depreciation (Article 8);
 - c) Allowed return on the regulatory asset base (Article 9);
 - d) Allowed cost of losses (Article 10); and
 - e) Adjustment (Article 11).
5. In determining reasonable costs, ERO shall refer to, but is not bound by or limited to:
 - a) Past volumes, cost and service quality information relating to the regulated thermal energy enterprise;
 - b) Projected volumes, costs and service quality relating to the regulated enterprise;
 - c) Comparisons with similar utilities and activities in Kosovo and countries elsewhere in Europe, taking into account the similarities between the thermal energy sector in those countries and that of Kosovo.
6. The resulting reasonable costs shall be allocated between fixed costs and variable costs, with the former being recovered from capacity charges and the latter from energy charges, as described in Article 14.

Article 7 Allowed Operating and Maintenance Costs

1. In submitting its estimates of operating and maintenance costs required to be recovered through maximum allowed revenues for any forthcoming regulatory period, the regulated enterprise shall only seek to recover costs that can be reasonably attributed to the regulated thermal energy activity.



2. Allowed operating and maintenance costs shall include relevant costs of the generation and the distribution and supply business activities. Corporate or common costs should be allocated to generation, distribution and supply using normal and customary accounting practices.
3. Allowed operating and maintenance costs will include also the cost of bad debt which will be calculated by applying allowed level of bad debt according the formulas in Schedule 1. Level of the allowed bad debt will be and approximate evaluation of the reasonable bed debt that an enterprise might have. Allowed level of bad debt will be determined from ERO during each tariff review.
4. Allowed operational and maintenance costs consist of fixed and variable part.
5. The fixed part of operating and maintenance costs consists of:
 - a) Repairs and maintenance;
 - b) Materials and services;
 - c) Overhead and administration costs;
 - d) Staff costs;
 - e) Sales and other related administrative expenses;
 - f) Fixed component of the payments for external heat purchases, and other fixed costs, if applicable.
6. The variable part of allowed operating and maintenance costs is defined as those costs that vary with the units produced / supplied and would not be incurred if the units produced / supplied were to be zero.
7. The variable part of allowed operating costs of the generation activity comprises of the following components (their calculation prescribed in Article 12):
 - a) Costs of own generation of heat only;
 - b) Costs of heat from own cogeneration;
 - c) Costs of heat purchases from external cogeneration and/or other heat generation sources;
 - d) Annual licensing fee (which is based on the quantities of thermal energy produced according to the Rule on taxes issued by ERO).
8. The variable part of allowed operating and maintenance costs of the generation activity is net of costs of heat for covering network losses and transportation losses as defined in Article 10.
9. The variable part of allowed operating and maintenance costs of the distribution and supply activity consists of the operating and maintenance costs that vary with the amount of heat distributed through the network.



Article 8 Allowed Depreciation

1. Allowed depreciation costs shall be calculated on a straight-line basis as a function of asset lifetimes and the regulatory asset base for different asset classes as described in Schedule 2.
2. The allowed depreciation shall include depreciation of regulated existing assets (considered used and useful for the regulated activity), of new investments on assets, including assets financed by capital contributions – i.e. grants and subsidies.

Article 9 Allowed Return on Assets

1. The allowed return on assets shall be calculated as a product of the regulatory asset base (as defined in Schedule 2) and the allowed rate of return.
2. The regulatory asset base represents the value of the thermal energy enterprise's assets considered to be used and useful for the regulated activity, including new investments if approved by the ERO, and is net of assets financed by capital contributions – i.e. grants and subsidies (details are described in Schedule 2).
3. The allowed rate of return shall be equal to the Weighted Average Cost of Capital (WACC) and determined based on the capital asset pricing model as described in Schedule 3.
4. The allowed rate of return applied for the thermal energy business activity is determined by the ERO and may be the same for the whole thermal energy sector in Kosovo.

Article 10 Allowed Network Losses

1. The thermal energy enterprise shall make continuous efforts to reduce the network heat losses in accordance with a plan setting out targets and measures to be taken for the coming regulatory periods as part of the development (investment) plan.
2. The allowed cost of losses shall be included explicitly in the maximum allowed revenue of the distribution activity and deducted from the variable operating and maintenance costs of the generation activity.



3. The loss allowance represents the share of variable generation costs for providing heat to cover the allowed amount of network losses. The allowed cost of losses is calculated as the allowed amount of network losses divided by the total generation of heat entering the network multiplied by the total variable costs of generation. The calculation of the cost of losses is further specified in schedule 1.
4. ERO may set for each regulatory period an allowed level of network losses expressed in MWh/year and/or percentage.
5. Network losses are the sum of technical losses in the transportation and distribution network and are calculated according to the following principles:
 - a) Transportation losses (if applicable): The difference between amount of heat entering the transportation network and amount of heat exiting the transportation network at the boundaries between transportation and distribution network.
 - b) Distribution losses: The difference between amount of heat entering the distribution network (either from transportation or directly from generation facilities) and amount of heat exiting the distribution network at the boundaries between the distribution network and the customers (as defined in the Thermal Energy Law). As far as possible, the latter shall be based on recorded values in metered sub-stations.
6. In setting the allowed level of network losses, the ERO shall take into account:
 - a) The actual level of network losses for the most recent regulatory period (based on metered and estimated values);
 - b) A loss reduction that is reasonable and achievable based on the regulated enterprise's investment plan;
 - c) Efficiency measures for loss reduction implied by ERO.
7. The allowed level of network losses shall be determined such as to encourage the regulated thermal energy enterprise to reduce losses but not impose financial risk for the enterprise.
8. The method for measuring and setting the actual level of network losses may be reviewed prior to each regulatory period. Consistency with the methodology prescribed in paragraphs 1 to 6 of this article shall be ensured.

Article 11 **Adjustment Mechanism**

1. The adjustment mechanism shall account for under- or over-recovery of the maximum allowed revenues on basis of deviations between forecasted and realized revenues as well as a bad debt allowance.



2. The under-recovery or over-recovery of the maximum allowed revenue in one year, mentioned in paragraph 1 of this Article, will be reflected in allowed revenues for the next regulatory period as follows:
 - a) Differences between forecasted and actual supply / consumption shall be accounted for in the variable part of the reviewed revenues; and
 - b) If the regulated enterprise fails to supply customers with heat, the fix part of reviewed revenue shall be decreased accordingly.
3. The forecasted revenues are the maximum allowed revenues that have been approved by ERO in the existing annual review for forthcoming regulatory period.
4. Adjustment of revenues is based the fixed and variable cost components that are adjusted for:
 - a) The differences between actual and allowed fix and variable costs that are not controllable by the regulated enterprise; and
 - b) Differences between allowed and actual amount of heat generated or heat consumed.
5. Adjustment of revenues will take to consideration also the allowed bad debt, which is decrease in realized revenues, incurred by the inability to collect payments from costumers and is calculated as percentage of the maximal allowed revenues.

Article 12

Allowed Variable Costs for Generation of Thermal Energy (Heat)

1. The allowed costs for generation thermal energy (heat) are calculated according to the following:
 - a) For items mentioned in Article 7, paragraph 6, point a) the costs are calculated as the sum of fuel costs, and other expenses including chemicals and water, electricity and directly attributable staff costs.
 - b) For item mentioned in Article 7, paragraph 6, point b) the costs are calculated as the share of the sum of fuel costs, other expenses including chemicals and water and directly attributable staff costs that are allocated to heat of the cogeneration unit. The calculation principles for allocation of the variable costs to heat are described in Schedule 7.
 - c) For item mentioned in Article 7, paragraph 6, point c) the costs comprise of the variable component of the payments for external heat purchases.
2. Fuel costs shall be determined as expected amount of fuel consumption multiplied by allowed fuel price.



3. The allowed fuel price shall be determined by the Energy Regulatory Office with reference to:
 - a) The actual costs of fuel supplies; and
 - b) Current national, regional and international fuel prices.
4. The expected amount of fuel consumption shall be determined with reference to the specific consumption of fuel, which is estimated based on expected amount of heat generated by that fuel.

Article 13 Pass-Through Costs

The regulated thermal energy enterprise shall be allowed to fully pass-through the annual license fee or any other administrative fees (expenses) that are prescribed by the applicable law within its operating and maintenance costs. The enterprise shall be allowed to pass-through any other cost that is caused as a result of respective legislative changes.

Article 14 Allocation of Costs into Fixed and Variable Components

1. The maximum allowed revenue shall be allocated to a fixed and a variable cost component.
2. The variable component of maximum allowed revenue comprises of the variable part of the allowed operating and maintenance costs as defined in Article 77 paragraphs 6, 7 and 8, as well as network losses as defined in Article 10.
3. The fixed component of maximum allowed revenues consists of:
 - a) Fixed part of the allowed operating and maintenance costs as defined in Article 7 paragraph 4;
 - b) Allowed annual depreciation as defined in Article 8; and
 - c) Allowed return on assets as defined in Article 9.
4. ERO may reallocate at its discretion a certain share of the fixed cost component to the variable component of the maximum allowed revenue or vice versa, in order to ensure an adequate ratio of the fixed and variable tariff components.

Chapter IV Thermal Energy Tariffs

Article 15 General Principles



1. The tariffs shall reflect the cost causation principle and tariff groups shall be distinguished according to the following criteria:
 - a) Thermal energy system;
 - b) Metering devices installed and operational at substation of connection;
 - c) Consumption pattern; and
 - d) Fixed and variable cost character.
2. The maximum allowed revenue and associated tariffs shall be determined separately for each thermal energy system.
3. The thermal energy enterprise shall work continuously to upgrade all sub-stations with metering devices and submit a meter roll-out plan (including associated costs) to ERO, which shall be considered in determination of allowed revenues and tariffs.
4. The tariff structure as set in paragraphs 5 to 7 of this Article and in Article 16 shall be applied after a transition period as determined by ERO, before which the previous tariff structure shall be continued.
5. Depending on the metering infrastructure in place, customers shall be invoiced according to the metered or un-metered tariff as follows:
 - a) Customers connected to a sub-station equipped with functional metering devices, irrespective of the number of customers connected to this substation, (further “metered customers”) shall be invoiced according to the metered tariffs – based on measured consumption of thermal energy;
 - b) Customers in ‘multi-unit buildings’ where unit-level metering devices are installed and functional shall be invoiced according to the metered tariffs – based on measured consumption at the substation level and at the unit level, in line with the Methodology provided in the Schedule ‘8’ of this Rule;
 - c) Customers in ‘multi-unit buildings’ where unit-level metering devices are not installed or are not functional shall be invoiced according to the metered tariffs – based on the measured consumption at substation-level, which shall be allocated to each of the connected customer proportionally to the customers’ heated area [m²]
 - d) Customers connected to a substation without functioning metering devices (further “un-metered customers”) shall be invoiced according to un-metered tariffs – based on the surface of heated area.
 - e) Customers connected to a substation without functioning metering device, but with installed and functional unit-level metering devices shall be invoiced according to the principles reflected in Schedule 8 of this Rule.
6. Un-metered customers shall be further divided into two sub-groups corresponding to their consumption pattern:



- a) Residential / household customers; and
 - b) Commercial and institutional customers.
7. The thermal energy tariffs for both metered and un-metered customers shall consist of a fixed and variable tariff component such that:
- a) Within each regulatory period the revenues that the regulated enterprise expects to earn from fixed tariffs are equal to the fixed part of maximum allowed revenues approved by the ERO provided that heat was available to customers;
 - b) Within each regulatory period the revenues that the regulated enterprise expects to earn from variable tariffs are equal to the variable part of maximum allowed revenues approved by the regulator.
8. The calculation principles are prescribed in Schedule 6.

Article 16 **Tariff Structure and Invoicing**

1. For metered customers (as defined in paragraph 5 of Article 15) tariffs shall be as follows:
 - a) Fixed tariff component: monthly capacity charge based on contracted heat capacity [€/kW per month];
 - b) Variable tariff component: monthly energy charge based on metered heat supply [€/MWh or cent€/kWh];
 - c) In the case when more than one customer are connected to a substation ('multi-unit buildings'), the measured consumption in such substation shall serve as reference measurement for invoicing, while allocation to the costumers shall be done as follows:
 - c.1) for the cases when in 'multi-unit buildings' exist metering devices at unit level, allocation is done according to the methodology described in the Schedule '8';
 - and
 - c.2) for the cases when in 'multi-unit buildings' doesn't exist metering devices at unit level, the consumption measured at the substation level shall be allocated to each connected customer proportionally to their respective heated area [m²].
2. For un-metered customers (as defined in paragraph 5 of Article 15) tariffs shall be as follows:
 - a) Fixed tariff component: monthly capacity charge based on an approximate value for heat capacity per square meter of heating area [€/m² per month];
 - b) Variable tariff component: monthly energy charge based on an approximate value for heat consumption per square meter of heating area [€/m² per month];
 - c) The estimated values for heat capacity and heat consumption per square meter of heating area shall be different for residential and commercial/institutional customers and reflect their specific consumption pattern;



- d) The approximate values for heat capacity and heat consumption per square meter of heating area shall be set by ERO based on their analysis.
3. The invoice from the regulated thermal energy enterprise to its customers shall be issued monthly for each of the months of the heating season and include the tariffs as specified in paragraph 1 and paragraph 2 of this article.

Chapter V Transitional and Final Provisions

Article 17 Publications

1. Decisions on approved tariffs shall be published on the official website of ERO.
2. Submissions and other documentation received in relation to a price review, and regulatory reports as annexes to the decisions issued by ERO shall be published on its official website, excluding any material identified as being commercially confidential by the submitting entity and accepted as such by the ERO.
3. Thermal energy enterprises shall publish the approved regulated tariffs in at least one daily newspaper circulated within Kosovo within 5 working after ERO's announcement and publication of the decision on the ERO's official website.

Article 18 Language and Interpretation

1. This Rule is issued in the Albanian, Serbian and English languages. In case of any discrepancy, the Albanian version shall prevail.
2. The application and all documents submitted to the ERO shall be in one of the languages officially in use in Kosovo.
3. If during implementation of this Rule any uncertainty on interpretation of its provisions may appear, Board of ERO will issue clarifications respectively valid interpretation on respective provisions.

Article 19 Amendments

1. ERO retains the right to amend or modify any provision of this Rule.



2. Procedures for amendment or modification of this Rule will be the same as for its approval. The ERO will provide appropriate opportunities for consultation with licensees and other interested parties.

Article 20 Repeal

This Rule repeals the "Temporary Instruction I_07_2008 on the Principles of Calculation of Tariffs and Prices in the Thermal Energy Sector in Kosovo for the Heating Season 2008/2009" approved by the Board of the ERO on June 14, 2008.

Article 21 Entry into force

This Rule enters into force upon its adoption by the ERO Board and will be published in the official website of ERO.

SCHEDULES

Schedule 1 Maximum Allowed Revenues Calculation

1. This schedule sets out the formulas for calculating the maximum allowed revenue of the regulated thermal energy enterprises.



2. In line with the principles prescribed in Article 66 of this Rule, the maximum allowed revenue shall be calculated for each regulatory period using the following formula:

$$\mathbf{MAR = OPM + DEP + RTN + CLOSS + ADJ}$$

Where:

MAR	Maximum Allowed Revenue;
OPM	Allowed operating and maintenance costs (in line with the provision of Article 7);
DEP	Allowed depreciation (in line with the provision of Article 8);
RTN	Allowed return on assets (in line with the provision of Article 9);
LOSS	Cost of network losses for the network activity (in line with the provision of Article 10);
ADJ	Revenue adjustment factor (in line with the provision of Article 11);

The calculation of the cost of network losses and the revenue adjustment factor is specified in detail in paragraphs 3 and 4 of this Schedule. The calculation of the allowed depreciation and the allowed return on assets is described in Schedule 2.

3. The allowed cost of losses is calculated as the allowed amount of network losses divided by the total generation of heat entering the network multiplied by the total variable costs of generation according to the formula below:

$$\mathbf{CLOSS = (LOSS_{ALLOW} / GEN_{TOTAL}) * GENCOST_{VAR}}$$

Where:

CLOSS	Cost of network losses for the network activity (€);
LOSS_{ALLOW}	Allowed quantity of losses (MWh);
GEN_{TOTAL}	Total generation of heat entering the network (MWh);
GENCOSTS_{VAR}	Variable costs of generation (€).

4. The revenue adjustment factor is calculated in line with stipulations of Article 11 of this Rule and is based on the difference between allowed revenue and the actual revenue, and the allowed bad debt according to the expression below:

$$\mathbf{ADJ_n = (1 + R_{ADJ}) * (AAR_{n-1} - MAR_{n-1} + R_{BD} * MAR_{n-1})}$$

Where:

ADJ_n	Revenue adjustment factor in actual regulatory period (€);
R_{tADJ}	Interest rate for adjustment item (%);
AAR_{n-1}	Actual Allowed Revenue in the previous regulatory period (€);
MAR_{n-1}	Maximum Allowed Revenue in the previous regulatory period (€);



R_{BD} Allowed level of bad debt during relevant year determined by ERO as percentage (%).

5. For the purpose of determining regulated thermal energy tariffs, the maximum allowed revenue shall consist of a fixed revenue part and a variable revenue part in line with provisions of Article 144 and as follows:

$$\mathbf{MART = R_{t_f} + R_{t_v}}$$

Where:

MAR Maximum Allowed Revenue
R_f Fixed part of the allowed revenue
R_v Variable part of the allowed revenue



Schedule 2 Depreciation, Regulatory Asset Base and Return on Assets

1. This schedule describes the determination of the regulatory asset base for the purpose of calculating the allowed depreciation and the allowed return on assets.
2. The total regulatory asset base shall be used for determining the allowed depreciation and shall be the regulatory value of the thermal energy enterprises' fixed assets considered to be used and useful in the provision of thermal energy but excluding unjustified investments.
3. The self-financed regulatory asset base shall be used for determining the allowed return on assets and shall be the regulatory value of the thermal energy enterprises' fixed assets considered to be used and useful in the provision of thermal energy but excluding:
 - a) Assets acquired from capital contributions (grants, subsidies); and
 - b) Unjustified investments
4. For the purpose of establishing the regulatory asset base and determining depreciation, the asset classes and corresponding regulatory asset lifetime should be determined. It is on ERO-s competence to determine the regulated asset lifetime accordingly to asset categories based on international best regulatory practices.
5. For already existing used assets, which have not been fully depreciated, the remaining useful lifetime of each asset or group of assets shall be assessed.
6. The value of the regulated assets prior to the start of the first regulatory period shall be the aggregate of individual book keeping values of fixed assets used and useful for the regulated business.
7. The total allowed regulatory asset base shall be updated prior to each regulatory period as follows:

$$\mathbf{RAB}_{n\text{end}} = \mathbf{RAB}_{n\text{start}} + \mathbf{INV}_n - \mathbf{DIS}_{n-1} - \mathbf{DEP}_{n-1} + \mathbf{WC}_n$$

Where:

RAB_n^{end}	Allowed regulatory asset base end value in the relevant regulatory period 'n';
RAB_n^{start}	Allowed regulatory asset base starting value in the relevant regulatory period 'n';
INV_n	Allowed new investments / capital expenditures in the relevant regulatory period 'n';
DIS_{n-1}	Disposals in the previous regulatory period 'n-1';
DEP_{n-1}	Depreciation in the previous regulatory period 'n-1';
WC_n	Allowed working capital in the relevant regulatory period 'n'.



8. Working capital typically includes the value of necessary fuel stocks and spare parts as well as the difference between the value of invoices sent to customers (accounts receivable) and the payment received from customers. The working capital allowed cannot exceed the average allowed revenue of one month, i.e. 1/12 of the yearly allowed revenue.
9. The self-financed allowed regulatory asset base, $RAB_{t,sf}^{end}$, shall be the total allowed regulatory asset base net of assets funded by capital contributions.
10. The allowed rate of return is calculated based on the self-financed allowed regulatory asset base according to the formula:

$$RTN = RAB_{n,sf}^{end} * WACC$$

Where:

RTN	Allowed rate of return(€);
$RAB_{n,sf}^{end}$	Allowed self-financed regulatory asset base end value in year n (€);
WACC	Weighted average cost of capital (%) – Described in schedule 3.

11. The treatment of new investments and inclusion into the regulatory asset base shall comply with these principles:
 - a) Allowed capital expenditure shall be added to the regulatory asset base as from the date when the asset is put into service and at the cost allowed by the Energy Regulatory Office in the investment plan.
 - b) The Energy Regulatory Office shall include the actual rather than the allowed cost of a new investment in the regulatory asset base upon request of the regulated enterprise and only if the enterprise can clearly demonstrate that the difference between allowed and actual costs is due to factors out of the control of the regulated enterprise and best efforts were made to minimize cost increases.
 - c) If a new investment in the approved investment plan is not put into service in the current regulatory period, its allowed cost shall not be added to the regulatory asset base and any revenues earned from it in the current regulatory period shall be deducted from revenues in the following regulatory period.



Schedule 3 Weighted Average Cost of Capital

1. The Weighted Average Cost of Capital (WACC) shall be calculated on a pre-tax basis according to the following formula:

$$\text{WACC} = (1 - g) * R_E / (1 - t) + g * R_D$$

Where:

WACC	Weighted average cost of capital (%);
g	Gearing or debt level defined as percentage of the total capital: debt/(equity + debt) (%);
R_E	Return on equity (%);
R_D	Return on debt (%); and
t	Corporate income tax in Kosovo.

2. The values for the components of the WACC shall be determined by the Energy Regulatory Office in consultation with the regulated enterprises.
3. The gearing (g) shall be a value between 0 and 1, and shall represent the share of debt in total financing. The value shall be determined based on a balanced consideration of the current financing mix of the regulated enterprises and the financing mix that might be expected to be achievable now and in future taking account of the financing mix of similar utilities.
4. The return on equity shall be calculated based on the Capital Asset Pricing Model (CAPM) according to the following formula:

$$R_e = r_f + \beta * ERP$$

Where:

r_f	Risk-free rate;
β	Equity beta; and
ERP	Equity risk premium.

5. The risk-free rate is defined as equal to the cost of non-concessionary sovereign debt in Kosovo (in real terms) or countries with a similar credit rating as Kosovo.
6. The equity beta expresses the systemic risk and is the covariance between the return on the individual equity asset and the return on the market.



7. The equity risk premium is defined as a variance between the average income of risky investments and the risk free rate.
8. The return on debt shall be guided by the average interest rate of existing long-term loans (exceeding one year) to the regulated enterprise, expressed in real terms and weighted according to the value in Euros of each loan.
9. The ERO may set the same WACC for all of the thermal energy sector if considered reasonable.



Schedule 4 **Application for Allowed Revenues and Tariffs**

1. An application for approving revenues and tariffs of heat shall specify:
 - a) The name of the applicant, the address of the main office, the name of the contact person, the business registration certificate, and the tax registration number of the applicant;
 - b) A proposal and full justification for the requested revenues and tariffs; and
 - c) The application should be signed by the authorized person representing the applicant.

2. Together with application, the applicant shall submit to ERO following documents:
 - a) The annual statutory financial statements (income statement, balance sheet, and cash flow statement) for the previous year with attachment; the auditor report if the annual financial statements of the applicant was subject to independent financial auditing.
 - b) Detailed description of available funds and/or sources of funding for performing the thermal energy activity, and evidence of the availability of such funds/sources of funding.
 - c) Detailed calculations, evidence and justification for the calculation of each separate element of the tariffs in accordance with the requirements of this Rule.
 - d) Information regarding the estimated revenue for the sales of heat to final customers, the total forecasted costs of production, distribution and supply of heat, investment/development plan (if any) and the forecasted financial statements (forecasted Income Statement, Balance Sheet and Cash Flow Statement), the total heat capacity contracted, and the total yearly forecasted heat production in MWh – this information should cover the period from 15 October of actual year until 14 October of forthcoming year.
 - e) Detailed breakdown of cost items, and the accompanying explanation and documentation as to justify and clarify stated forecasted information.
 - f) A technical statement explaining the status of certain issues. This includes the status and plans for installation of meters in un-metered sub-stations, a calculation and assessment of energy losses in the distribution network, and a plan with intended measures aimed at reducing network energy losses.
 - g) A list of all submitted documents.

3. If the applicant intends to implement a long-term investment project, in addition to the documents specified in paragraph 2 of this schedule, it shall submit:
 - a) A financial model for the period of the project;
 - b) A description of important parameters of the financial model;
 - c) The signed agreements which govern the implementation of the project and the principles of pricing (if any);
 - d) Full justification of the reasons for such investment.

Schedule 5 **Procedure for Verification and Formal Examination**



1. Where an application complies with the provisions of this Rule, ERO shall examine all the data listed in the application and in the attachments and documents thereto.
2. ERO may verify on its own initiative the stated data and circumstances, may contact heat enterprises and ask for additional documents or information.
3. The thermal energy enterprises shall provide documents and information to ERO, in accordance with Article 4 of this Rule.
4. Within a timeframe specified in the Implementation Plan and Timetable, following the receipt of the application, the ERO shall examine the submitted application, attachments and required documents.
5. In case of non-compliance or if the required documents are not attached, ERO shall notify the applicant. The written notification shall invite the applicant to rectify his application within a timeframe specified in the Implementation Plan and Timetable from the date of notification.
6. In case the applicant fails to rectify the non-compliance of his application, attachments or required documents within the period stipulated in paragraph 5 of this schedule, the ERO shall reject the application and notify the applicant in writing within a timeframe specified in the implementation plan and timetable from the date set forth in paragraph 5.
7. In the case of failure of applicant to comply with requirements set forth in paragraph 6, the ERO shall impose fines in accordance to Article 57 of the Law on Energy Regulator until the fulfillment of the requirements stipulated in paragraph 5, and will set the heat tariffs based on the existing information and its best estimations.



Schedule 6 Details of Tariff Calculation

1. Revenue requirements shall be allocated to tariffs for different customer groups in compliance with the principles defined in Chapter IV of this Rule.
2. Customers shall be divided into customer groups for tariff purposes according to Article 15 paragraph 4 and 5 of this Rule and cross-subsidies between customer groups shall be gradually phased out towards cost-reflective tariffs.
3. The allocation shall be determined by the ratio of engaged heat capacity for the fixed part of the revenue and by the ratio of heat demand / consumption for the variable part of the revenue as follows:

$$R_f^i = R_f * HP^i / \sum HP, \text{ and}$$

$$R_v^i = R_v * HD^i / \sum HD$$

Where:

R_f^i	Share of fixed part of revenue for customer group 'i' (€);
R_f	Fixed part of maximum allowed revenue (€);
HP^i	Engaged heat capacity of customer group 'i' (kW);
$\sum HP$	Total aggregated engaged heat capacity for both customer groups (kW);
R_v^i	Share of variable part of revenue for customer group 'i' (€);
R_v	Variable part of maximum allowed revenue (€);
HD^i	Season heat demand of customer group 'i' (MWh); and
$\sum HD$	Total season heat demand (MWh)

4. The engaged heat capacity of a customer group shall be equal to the contracted heat capacity of this group or calculated as follows:

$$HP^i = CD^i * HS^i / 1000$$

Where:

HP^i	Engaged heat capacity of customer group 'i' (kW);
CD^i	Specific heat demand of customer group 'i' (W/m ²);
HS^i	Heated space of customer group 'i' (m ²).

5. The specific heat capacity demand represents the estimated heat capacity demand per square meter (defined as maximum load demand per square meter for designed outdoor temperature) for every customer group.



6. The season heat demand shall be equal to the metered consumption or calculated using the following formula:

$$HD^i = CD^i * LH^i * HS^i * 10^6$$

Where:

- HDⁱ** Season heat demand of customer group 'i' (MWh);
CDⁱ Specific heat demand of customer group 'i' (W/m²);
LHⁱ Nominal full load hours of customer group 'i' (h); and
HSⁱ Heated space of customer group 'i' (m²)

7. The nominal full load hours for heating are based on the specific requirements regarding continuity of supply and are calculated as the ratio between annual heat supplied to customers and contracted heat capacity for each customer group.
8. The end-consumer tariffs shall be calculated as follows:

- a) For non-metered customers as defined in Article 155:

$$t_f^{nm} = R_f^i / HP^i * CD^i / 6; \text{ and}$$

$$t_v^{nm} = R_v^i / HD^i * CD^i * LH^i / 1000 / 6$$

Where:

- t_f^{nm}** fixed tariff / capacity tariff for non-metered customer group 'i' (€/m² per month);
R_fⁱ share of fixed part of revenue for customer group 'i' (€);
HPⁱ engaged heat power (capacity) of customer group 'i' (kW);
CDⁱ specific heat demand (capacity) of customer group 'i' (kW/m²);
t_v^{nm} variable tariff / energy tariff for non-metered customer group 'i' (€/m² per month);
R_vⁱ share of variable part of revenue for customer group 'i' (€);
HDⁱ season heat demand of customer group 'i' (MWh); and
LHⁱ nominal full load hours of customer group 'i' (h)

- b) For metered customers as defined in Article 155:

$$t_f^m = R_f^i / HP^i / 6; \text{ and}$$

$$t_v^m = R_v^i / HD^i$$

Where:



- t_f^m** fixed tariff / capacity tariff for metered customer group 'i' (€/kW per month);
- R_f^i** share of fixed part of revenue for customer group 'i' (€);
- HP^i** engaged heat power of customer group 'i' (kW);
- t_v^m** variable tariff / energy tariff for metered customer group 'i' (€/MWh per month);
- R_v^i** share of variable part of revenue for customer group 'i' (€); and
- HD^i** season heat demand of customer group 'i' (MWh).

9. Where metering is in place, the metered values shall always be preferred over the estimated or calculated values for tariff determination purposes.



Schedule 7 Cost Allocation Methodologies for Cogeneration of Heat and Electricity

The benefit distribution method is applied for cost allocation to electricity and heat for own cogeneration. In this method, the fuels used in cogeneration production are allocated to electricity and heat in the proportion of fuel consumption for the alternative energy supply forms. The alternatives used are condensing power production and heat-only boilers with the same fuel and energy output capacities as the cogeneration plant. The fuel consumption of the alternative forms of energy supply, F'_e for electricity and F'_h for heat can be calculated according to the equations below:

$$F'_e = E/\eta_e$$
$$F'_h = H/\eta_h$$

Where:

- E** electricity production in the cogeneration plant;
- η_e efficiency of the alternative form of electricity production (condensing power);
- H** heat production in the cogeneration plant; and
- η_h efficiency of the alternative form of heat production (heat-only boiler).

The standard values used for the efficiency of the alternative production are:

$$\eta_e = 0,4$$
$$\eta_h = 0,9$$

The fuel consumption in the cogeneration plant, F , is divided between electricity and heat in accordance with the ratio of the fuel consumption of the alternative electricity and heat supply forms F'_e and F'_h as follows:

$$F_e = F'_e / (F'_e + F'_h) * F$$

$$F_h = F'_h / (F'_e + F'_h) * F$$

The variable costs are allocated to electricity and heat by using the same ratio which is used above for allocating fuel consumption for heat and electricity.



Schedule 8

Heat Cost Allocation Methodology in Multi-Unit Buildings

1 The purpose and the scope

- 1.1 The main purpose of the Heat Cost Allocation Methodology in Multi-Unit Buildings (hereinafter ‘the Methodology’) is to implement ‘consumption-based billing, by instructing DH supply companies on how to calculate the heating bill for the customers residing in Multi-Unit Buildings.
- 1.2 The Methodology shall be implemented by DH Companies holding a heat supply license issued by ERO; it will be implemented for calculation of heating invoice for customers residing in the Multi-Unit Buildings connected to the district heating system.
- 1.3 The Methodology shall be applicable for all Multi-Unit Buildings, where functional heat metering at building substation-level and at the unit-level exists.
- 1.4 Regardless of the buildings’ type of central heating installations (‘vertical’ or ‘horizontal’ central heating installation) and the corresponding unit-level heat measurement arrangements (HCA or Individual units’ heat meter), the Methodology shall apply to the both cases.

2 Main principles and the approach for designing the Methodology

- 2.1 The following main principles shall govern the Methodology:
 - a) Customer’s heating invoice shall be fair and transparent reflecting the actual measured and estimated heat consumption of the unit owned by such customer;
 - b) Invoicing shall be based on metered consumption at thermal substation-level and by taking into account unit-level measurements and other specific arrangements reflecting unmeasured heat at unit-level, such as transmission of heat by common building piping network and by heat transmission by adjacent walls/ceilings between building units. For this purpose, heat supply/consumption balance of the building shall be the base for allocating the heat costs and further calculation of customers’ heat invoices.
 - c) The main measurement of heat takes place at the building’s thermal substation, which is the delimitation point between heat supplier and the customer; substation-level heat metering is the reference measurement for the heat supply company to be compensated for the heat supplied to a building.
 - d) For consumption-based billing shall be applied the so-called ‘tariff for metered customers’ issued by ERO; this tariff is comprised of the capacity charge component and energy component.



- e) Heat invoice of the customers residing in the multi-unit buildings shall be comprised of: i) the fix components: that take into account customer's heat capacity and building's common heat consumption, and shall be charged to customers regardless of the amount of heat consumed; and ii) variable component that shall account for the metered amount of the heat consumed.

2.2 The Methodology adopts the approach that is based on the building envelope heat consumption balance, which considers the following:

- Heat metered at thermal substation-level is the main referent measurement of heat supplied to the building for which the heat supply company should be compensated;
- The difference between heat measured at building's substation-level and the aggregated heat consumption of all building's units (measured at unit level) shall be allocated proportionally to the heating area of each unit;
- According to this, the individual heat invoice of every customer – unit's owner – shall take into account the heat consumption measured at the unit-level and the corresponding share of common building consumption, which represents the difference between the heat consumption measured at substation-level and aggregated heat consumption of all units measured at unit-level;
- A share of common building consumption is allocated to the building's units proportionally to the heated (area) surface of each unit.

3 Heat Consumption Balance of a Multi-unit Building

3.1 Pursuant to the scope of the Methodology (1.2 – 1.4), main principles (2.1) and the approach for designing the Methodology (2.2), the Heat Consumption Balance of a Multi-Unit Building shall be prepared each month of the heating season preceding preparation of invoices.

3.2 The Heat Consumption Balance of the Multi-Unit Building should be conducted due to the specifics of technical design and setup of central heating installations and respective heat metering arrangements, summarized as follows:

- a) Heat consumption of the entire Multi-Unit Building is measured at substation-level by the heat meter;
- b) In the Multi-Unit Buildings with 'vertical' central heating installations, the unit's heat consumption is estimated by using Heat Cost Allocators mounted in every radiator that estimate the heat transmitted by the radiators;
- c) In the Multi-Unit Buildings with 'horizontal' central heating installations, the unit's heat consumption is measured by using heat meter installed in the



connection point entering the unit, which measures the heat consumption in a unit;

- d) In the Multi-Unit Building besides heat consumption of the units also the 'Common consumption' takes place, in the form of: i) heat transmission by the pipes passing through common spaces of the buildings (corridors, staircases etc.); ii) heat transmission by the pipes passing through the units (in the case of using HCA's mounted on the radiators); and iii) heat transmission between the walls and ceilings of adjacent units.

3.3 Heat Consumption Balance shall take into account the heat consumption measured at building's substation-level, heat consumption measured at unit-level and the 'Common consumption' that is not measured; for a multi-unit building the basic Heat Consumption Balance formula is:

$$(1) \quad \mathbf{BHC_{MS-L}} = \sum_{i=1}^n \mathbf{U_i HC_{MU-L}} + \mathbf{CHC_{NM}}$$

Where:

BHC_{MS-L} - is the heat consumption of the entire building measured at Building's substation-level;

$\sum_{i=1}^n \mathbf{U_i HC_{MU-L}}$ - is the sum of units' heat consumption measured at unit-level;

n – the number of units in the building; and

CHC_{NM} – 'Common Heat Consumption' that included heat transmitted by the pipes and heat transmission within the building, which are not distinctly measured.

3.4 The aggregated consumption of the units ($\sum \mathbf{U_i HC_{MU-L}}$) is calculated differently for the case where the HCA's are used to measure unit's heat consumption and for the case where individual heat meters are used to measure unit's heat consumption; details for each case in the following paragraphs (3.5 and 3.6).

3.5 Calculation of Aggregated consumption of building's units ($\sum \mathbf{U_i HC_{MU-L}}$) when unit's heat consumption is measured with Heat Cost Allocators (HCA) involves two-step calculation:

- a) Calculation of heat consumption of all radiators of each unit represent the sum of heat transmitted by all radiators of the unit:

r



$$(2) \quad \mathbf{UHC}_{\text{MU-L(HCA)}} = \sum_{i=1} \mathbf{HTR}_i$$

Where:

$\mathbf{UHC}_{\text{MU-L(HCA)}}$ – Unit's heat consumption measured by using HCA's;

$\sum \mathbf{HTR}_i$ – Heat transmitted by all radiators of the unit measured by a HCA; and

'r' – Number of radiators in the unit.

b) Calculation of the heat consumption of all units of the building, according to the formula:

$$(3) \quad \sum_{i=1}^n \mathbf{U}_i \mathbf{HC}_{\text{MU-L(HCA)}} = \mathbf{U}_1 \mathbf{HC}_{\text{MU-L(HCA)}} + \mathbf{U}_2 \mathbf{HC}_{\text{MU-L(HCA)}} + \dots + \mathbf{U}_n \mathbf{HC}_{\text{MU-L(HCA)}}$$

Where:

'n' is number of units in the multi-unit building.

3.6 Calculation of aggregated consumption of building's units ($\sum \mathbf{UHC}_{\text{MU-L}}$), when unit's heat consumption is measured by individual Unit's Heat Meter (UHM) represents the sum of heat consumption of each building's unit, as per formula:

$$(4) \quad \sum_{i=1}^n \mathbf{U}_i \mathbf{HC}_{\text{MU-L(UHM)}} = \mathbf{U}_1 \mathbf{HC}_{\text{MU-L(UHM)}} + \mathbf{U}_2 \mathbf{HC}_{\text{MU-L(UHM)}} + \dots + \mathbf{U}_n \mathbf{HC}_{\text{MU-L(UHM)}}$$

Where:

$\mathbf{UHC}_{\text{MU-L(UHM)}}$ – Unit's heat consumption measured by Individual Unit's Heat meters (UHM);

'n' - the number of units in the multi-unit building.

3.7 'Common Heat Consumption' (CHC), as described in detail in the paragraph 3.2. 'd', refers to the heat transmitted by the installation pipes and transmission of heat between building's compartments (units/common spaces); CHC is the only element of basic formula of Heat Consumption Balance (1) that is not measured, and is derived from the formula (1):

$$(5) \quad \mathbf{CHC}_{\text{NM}} = \mathbf{BHC}_{\text{MS-L}} - \sum_{i=1}^n \mathbf{U}_i \mathbf{HC}_{\text{MU-L}}$$

3.8 'Common Heat Consumption' calculated by the formula (5) shall be allocated to individual customers – owners of building's units – proportionally to the heated area of each unit; details of allocation are presented in the next section 4.



4 Allocation of Building's Common Heat Consumption

- 4.1 'Common Heat Consumption' of a Multi-unit Building is allocated to the building's units proportionally to the heated area of each unit, by using the Area Allocation Coefficient calculated for every unit according to the formula:

$$(6) \quad k_{UAA} = \frac{UA}{\sum_{i=1}^n U_i A}$$

Where:

- k_{UAA} – The Area Allocation Coefficient of a Unit;
 UA – Area of a Unit of Multi-unit Building (in m²);
 $\sum_{i=1}^n U_i A$ – Total area of all building's units, as a sum of the areas of all units of a building (m²);
'n' – the number of units in the Multi-unit Buildings.

- 4.2 The share of a building's unit in the building's common consumption represents the allocation of 'Common Heat Consumption' of the building to a particular unit, and is calculated by using Unit's Area Allocation Coefficient, as per formula below:

$$(7) \quad US_{CHC} = k_{UAA} * CHC_{NM}$$

Where:

- US_{CHC} – Unit's Share of Common Heat Consumption (in kWh) - the portion of 'Common Heat Consumption' of the Multi-unit building that is allocated to a certain unit of the building;
 k_{UAA} – The Area Allocation Coefficient of a Unit;
 CHC_{NM} – 'Common Heat Consumption' of the Multi-unit building (in kWh) - that is calculated under the formula (5)

5 Calculation of the Individual Customer's Heat Invoice

- 5.1 Pursuant to the tariff for 'metered customers' issued by ERO and main principles of this Methodology (1.2.1 'd' and 'e'), the Heat Invoice of the individual customer – owner of the unit – in Multi-unit Building shall consist of the following components:
- a) The Thermal Capacity component – that is the charge for thermal capacity of a unit owned by individual heat customer; the thermal capacity component shall be regarded as fix charge independent of the heat consumption of such unit.



- b) The Heat Allocation component – that is the charge for the share of building's 'Common Heat Consumption' allocated to a unit; the heat allocation component shall be considered as fix charge independent of heat consumption of such unit.
- c) The Heat Consumption component – that is the charge for the amount of heat consumption measured at unit-level (by means of HCA or Individual Unit's Heat Meter).

5.2 The charge for Thermal Capacity component represent the fix charge to an individual customer irrespective of the measured heat consumption of a customer's unit; it is calculated by multiplying a unit's thermal capacity and the Heat Capacity Tariff, according to the formula:

$$(8) \quad \mathbf{TCC = HCU * HCT}$$

Where:

TCC – Thermal Capacity Charge (in €);

HCU – Thermal Capacity of a Unit (in kW) – HCU is determined by the Heat Supplier based on a methodology proposed by the Heat Supplier in agreement with ERO;

HCT – Heat (Thermal) Capacity Tariff (in €/kW per month) – the fix component of the Tariff for 'metered' customers issued by ERO.

5.3 The Charge for the Unit's Share of the 'Common Heat Consumption', representing the portion of common consumption of the Multi-unit building allocated to a certain unit, is considered as fix charge to an individual customer irrespective of the measured heat consumption of a customer's unit; it is calculated by multiplying the Unit's Share of 'Common Heat Consumption' and the Thermal Energy Consumption Tariff, as per formula:

$$(9) \quad \mathbf{CUS_{CHC} = US_{CHC} * TET}$$

Where:

CUS_{CHC} – the Charge for the Unit's Share of 'Common Heat Consumption' (in €);

US_{CHC} - Unit's Share of 'Common Heat Consumption' (in kWh), calculated as per formula (7);

TET – Thermal Energy (Heat) Consumption Tariff (in €/kWh) – the variable component of the Tariff for 'metered' customers issued by ERO.

5.4 The Charge for the Heat Consumption (HCC) measured at unit-level, represents the variable charge to an individual customer for the heat consumption measured at unit's level; it is calculated by the formula:



$$(10) \quad \text{HCC} = \text{UHC}_{\text{MU-L}} * \text{TET}$$

Where:

- HCC** – The Charge for Heat Consumption (in €);
UHC_{MU-L} – is heat consumption of a unit (in kWh) that is measured at unit-level;
TET - Thermal Energy (Heat) Consumption Tariff (in €/kWh) – the variable component of the Tariff for ‘metered’ customers issued by ERO

5.5 The total amount of the individual customer’s heat invoice is the sum of three invoice’s components as calculated under paragraphs 5.2 – 5.4

Annex: Example of heat invoice calculation for a unit in a multi-unit building

In order of to facilitate the implementation of the Methodology the example of calculation of the heat invoice for an individual customer – owner of a unit – is provided. Prior to performing the calculation, a sample typical Multi-unit building and the sample unit is visualized, followed by contemplating respective inputs that include: number and types of units with corresponding heating spaces, heat consumption of the entire building (measured at substation-level) and of the units (measured at unit-level). Further, the example details calculation of each invoice component according to the formulas of the Methodology.

1. Sample Multi-unit building and sample units

1.1 Structure of the Sample Building Structure

- A 6 floors building consisting of 24 units;
- 4 commercial premises are situated on the ground-floor;
- The other 5 floors consist of 20 apartments, each floor having 4 apartments.

1.2 Inputs – Units’ areas

- Areas of Commercial Premises (CP):

CP1:	150 m ²
CP2:	120 m ²
CP3:	80 m ²
CP4:	60 m ²

<u>Total:</u>	<u>410 m²</u>



Areas of Apartments (AP)– typical floor

AP1:	100 m ²
AP2:	90 m ²
AP3:	80 m ²
AP4:	70 m ²

Total: 340 m² * 5 = 1,700 m²

- Total Area of all 24 Units: 410 m² + 1,700 m² = 2,110 m²

1.3 Inputs – Heat (Thermal Energy) Monthly Consumption

- Heat Consumption of CP's:

CP1:	2,500 kWh
CP2:	2,050 kWh
CP3:	1,350 kWh
CP4:	1,050 kWh

Total: 6,950 kWh

- Heat Consumption of AP's – typical floor

AP1:	1,400 kWh
AP2:	1,250 kWh
AP3:	1,100 kWh
AP4:	950 kWh

Total: 5 * 4,700 kWh = 23,500kWh

- Total Heat Consumption of all Units: 6,950 kWh + 23,500 kWh = 30,450 kWh

- Total Heat Consumption of the Building: 37,200 kWh

2. Heat Balance of the Multi-unit Building – Calculation of Building's Common Heat Consumption

2.1 Heat Consumption Balance of the Building formula is used:

$$(1) \quad \text{BHC}_{\text{MS-L}} = \sum_{i=1}^{24} \text{HC}_{\text{MU-L}} + \text{CHC}_{\text{NM}}$$



2.2 Monthly heat consumption of the entire Multi-unit building (from building substation meter reading):

$$\mathbf{BHC_{MS-L} = 37,200 \text{ kWh}}$$

2.3 Monthly heat consumption of all units (from unit-level measurements):

$$\sum_{i=1}^{24} \mathbf{U_i HC_{MU-L} = 30,450 \text{ kWh}}$$

Note for 2.3:

For simplicity reasons for example calculation the bulk consumption of units is envisaged regardless the type of unit-level metering device – HCA or UHM; otherwise the calculation slightly differs for the type of unit-level metering device used:

- When HCA is used:

First step: Calculation of heat consumption of all radiators of each unit is calculated by summing up the heat transmitted by all radiators of the unit, as per formula (2) of the Methodology:

$$(2) \quad \mathbf{UHC_{MU-L(HCA)} = \sum_{i=1}^r HTR_i}$$

Second step: Heat consumption of all units of the building is calculated as the sum of heat consumption of each unit, according to the formula (3):

$$(3) \quad \sum_{i=1}^{24} \mathbf{U_i HC_{MU-L(HCA)} = U_1 HC_{MU-L(HCA)} + U_2 HC_{MU-L(HCA)} + \dots + U_{24} HC_{MU-L(HCA)}$$

- When individual UHM is used:

First step: Meter readings of unit's heat consumption ($\mathbf{UHC_{MU-L(UHM)}$) from UHM's of each apartment

Second step: Calculation of heat consumption of all units by summing up the heat consumption of every unit, as per formula (4):

$$(4) \quad \sum_{i=1}^{24} \mathbf{U_i HC_{MU-L(UHM)} = U_1 HC_{MU-L(UHM)} + U_2 HC_{MU-L(UHM)} + \dots + U_{24} HC_{MU-L(UHM)}$$

2.4 Monthly Heat Consumption of Common Spaces of the Building ('Common Heat Consumption' - $\mathbf{CHC_{NM}}$), is not measured but is derived from formula (1):



$$(5) \quad \text{CHC}_{\text{NM}} = \text{BHC}_{\text{MS-L}} - \sum_{i=1}^{24} \text{U}_i \text{HC}_{\text{MU-L}}$$

$$\underline{\text{CHC}_{\text{NM}}} = 37,200 \text{ kWh} - 30,450 \text{ kWh} = \underline{6,750 \text{ kWh}}$$

3. Allocation of Common Heat Consumption of the Building to the Sample Unit

Common Heat Consumption of a Multi-unit Building is allocated to the building's units proportionally to the heated area of each unit

3.1 Sample unit 'U₃' (Apartment – 'AP3') - inputs for section '3' of the example:

- U₃ Area: $\text{U}_3\text{A} = 80 \text{ m}^2$
- Total Area of all 24 units: $\sum_{i=1}^{24} \text{U}_i\text{A} = 2,110 \text{ m}^2$
- Monthly Building's Common Heat Consumption (as calculated under 2.4):
 $\text{CHC}_{\text{NM}} = 6,750 \text{ kWh}$

3.2 Firstly Area Allocation Coefficient is calculated for particular unit according to the formula (6):

$$(6) \quad k_{\text{UAA}} = \frac{\text{U}_3\text{A}}{\sum_{i=1}^{24} \text{U}_i\text{A}}$$
$$k_{\text{UAA}} = \frac{80 \text{ m}^2}{2,110 \text{ m}^2} = 0.038$$

1.3 Unit's Share of 'Common Heat Consumption' of the Building is allocated to the unit U₃, as per formula (7):

$$(7) \quad \text{US}_{\text{CHC}} = k_{\text{UAA}} * \text{CHC}_{\text{NM}}$$
$$\text{U}_3\text{S}_{\text{CHC}} = 0.038 * 6,750 = 255.924 \text{ kWh} \cong 256 \text{ kWh}$$

4. Calculation of Monthly Heat Invoice for the customer – owner of the Unit 'U₃'

4.1 Sample unit 'U₃' - inputs for section '4' of the example

- Heat (Thermal) Capacity of the unit U₃: $\text{HCU}_3 = 7.5 \text{ kW}$
- Monthly Heat (Thermal energy) Consumption of U₃: $\text{U}_3\text{HC} = 1,100 \text{ kWh}$
- Heat (Thermal) Capacity Tariff: $\text{HCT} = 0.78 \text{ €/kW per month}$



- Thermal Energy (Heat) Consumption Tariff **TET = 36.25 €/MWh = 0.03625 €/kWh**
/Tariffs above as set by ERO for DHC Termokos for the heating season 2020/2021/

4.2 The charge for Thermal (Heat) Capacity (TCC) is calculated according to the formula (8):

$$(8) \quad \text{TCC} = \text{HCU}_3 * \text{HCT}$$

$$\text{TCC} = 7.5 \text{ kW} * 0.78 \text{ €/kW} = 5.85 \text{ € per month}$$

- Fix component that is irrespective of Unit's heat consumption measured at Unit-level

4.3 The Charge for the Unit's Share of the 'Common Heat Consumption' (CUS_{CHC}) is calculated as per formula (9):

$$(9) \quad \text{CUS}_{\text{CHC}} = \text{U}_3 \text{S}_{\text{CHC}} * \text{TET}$$

$$\text{CUS}_{\text{CHC}} = 256 \text{ kWh} * 0.03625 \text{ €/kWh} = 9.28 \text{ €}$$

- Fix component that is irrespective of Unit's heat consumption measured at Unit-level

4.4 The Charge for the Heat (Thermal energy) Consumption (HCC) measured at unit's level is calculated by the formula (10):

$$(10) \quad \text{HCC} = \text{U}_3 \text{HC}_{\text{MU-L}} * \text{TET}$$

$$\text{HCC} = 1,100 \text{ kWh} * 0.03625 \text{ €/kWh} = 39.88 \text{ €}$$

- Variable component that reflects the unit-level metered consumption

4.5 Total monthly heat invoice for the unit U_3 (without VAT) will amount:

$$\text{Tot. Inv.} = 5.85 + 9.28 + 39.88 = 55.01 \text{ €}$$