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ZYRA E RREGULLATORIT PËR ENERGJI
REGULATORNI URED ZA ENERGIJU
ENERGY REGULATORY OFFICE



REGULATORY REPORT
Determination of Maximum Allowed Revenues for District Heating Gjakova JSC
Heating season 2022/2023

Pristina, December 2022



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1 Introduction

According to primary legislation- Articles 47 and 48 of the Law on Energy Regulator, the Energy Regulatory Office (ERO) is responsible for the determination of tariff methodology and approval of tariffs in the regulated energy sector; therein is a set of broad principles such as justification and non-discriminatory principles under which energy enterprises should recover all justified costs including the reasonable return on their investments. Also, Articles 18 and 19 of the Law on Thermal Energy determine that the supplier charged with public service obligation carries out the supply of thermal energy at regulated tariffs.

While the thermal energy sector in the transportation and distribution of thermal energy is classified as a natural monopoly, also due to the fact that there is still no competition in generation and supply, the district heating tariffs, containing all the above-mentioned components, are subject to approval by ERO.

In line with its legal obligations and powers, Energy Regulatory Office issued Thermal Energy Pricing Rule. This rule sets the procedures for submission, review of tariff application and approval of tariffs and Methodology on Calculation of Allowed Revenues and Tariffs.

For determination of allowed revenues for the heating season 2022/2023, the following are taken into account:

- Information provided by DH Gjakova in its tariff application for heating season 2022/2023;
- Other information from DH Gjakova within the framework of regulatory reporting for the previous season; In this regard, it should be emphasized that the historical data for DH Gjakova are incomplete due to the change in thermal energy production technology - specifically, the new biomass heating plant started regular operation in 2021.

Procedure of tariff review process:

- **On 6 June 2022** –ERO issued a letter of notice on the commencement of the tariff review for DH Gjakova for the 2022/2023 season; this was followed by the request of ERO for data and information submitted on 10 June 2022, which described in detail the data and information that DH Gjakova shall submit for tariff review as well as the Plan and Schedule;
- **On 23 August 2023** –DH Gjakova, via e-mail, submitted the preliminary tariff application for 2022/2023 season, with some of the data required for tariff review- the ‘preliminary’ application was submitted with the purpose of prior review by ERO, given that this was the first tariff review after a long period.
- **On 23 September 2022** –Following the analysis and evaluation of data and information submitted by DH Termokos, ERO sent the written comments, specifying requirements for correction, improvement and completion of the initial application;
- **On 17 October 2022** –DH Gjakova re-submitted the application with some of the corrections and improvements, required in ERO’s comments, as well as responses to ERO comments.



2 Principles and Formulation of Tariff Methodology

For the purpose of determination of allowed revenues and thermal energy tariffs for 2022/2023 season, the Methodology determined in Thermal Energy Pricing Rule is applied.

Principles

The basic principle of this methodology is that tariffs of utilities providing public services shall cover all justifiable costs - operational and capital, so that in one hand the customers should not pay excessively over the cost incurred for the provision of their service, while on the other hand the utility should recover all reasonable and justifiable costs plus a reasonable rate of return in capital investments. Final price of service is usually defined to include all operational expenses of utilities providing public services i.e. to recover cost of production, distribution and supply (operation and maintenance, fuel, salaries, network losses costs, common costs, administrative costs etc.) plus a reasonable return on its investments devoted to the public service provision.

Given that in some cases such regulation does not encourage enterprises to raise operational efficiency and stimulate cost savings, on the contrary, they may encourage over-investment in assets and also, taking into account the Regulator's obligation to protect customers, it is required that enterprises should not only prove the declared "reasonable expenses", but also show an increase in operational efficiency and costs. Such measures create the basis for coordination at the beginning of the tariff review, in which the Regulator rewards or punishes the enterprise for the increase or decrease in efficiency and cost control.

Formulation

For the purpose of calculation of Allowed Revenues and for final tariff calculation, Thermal Energy Pricing Rule (Annexes 1, 2, 3 and 6) provides the detailed formulation of Tariff Methodology. However, for consistency reasons, the formulation shall be shortly presented in this report too.

Schematically, the Tariff Methodology can be shown as below. The costs which the enterprise should recover are built up from its operational costs, depreciation representing the ability of the enterprise to replace its assets, costs of network losses and the return on the Regulatory Asset Base (RAB), which in fact represents the profit for the company.



$$RAB_t^{end} = RAB_n^{start} + INV_n + WC_n - DEP_{n-1} - DIS_{n-1}$$

The Regulatory Asset Base (RAB) represents the enterprise assets considered to be used and useful in the provision of public service, that include: i) starting Regulatory Asset Base (RAB_t^{start}), which actually represents the final RAB executed in the previous season 2021/22 (n-1), new investments when they are planned and approved by the Regulator (INV_n); iii) sufficient working capital of the company to perform its activities (WC_n); Depreciation of assets carried out in the previous season 2021/22 (n-1) (DEP_{n-1}) and iv) Disposed Assets (DIS_{n-1})

ERO will take as a Rate of Return the value of WACC (Weighted Average Cost of Capital). WACC (%) is the sum of weighted average of the equity cost and debt cost, and is calculated according to the formula:

$$WACC = [(D/V) * k_d] + [(E/V) * k_e]$$

Ku:

D/V -	Debt Share of the total capital base
E/V -	Equity Share of the total capital base
V -	Total capital base, which is the total of equity and debt
k_d -	Cost of debt
k_e -	Cost of equity

3 Determination of Allowed Revenues

For determination of Allowed Revenues of DH Gjakova JSC. for heating season 2022/2023, according to Thermal Energy Pricing Rule, ERO has undertaken the following:

- 1) Evaluation and determination of allowed operational costs;
- 2) Evaluation and determination of depreciation;
- 3) Determination of Allowed Return on RAB (return on investments), which includes:
 - a) determination of RAB – evaluation and approval of the assets of the company, verification and approval of planned investments and working capital; and
 - b) calculation of the allowed Rate of Return (RoR)/ WACC;
- 4) Evaluation and determination of allowed cost for network losses.

In determining the allowed revenues, ERO has taken into account the following:

- Information provided by DH Gjakova in its tariff application for the 2022/2023 heating season- information regarding estimated revenues from the sale of heat and other related services, total forecasted costs, planned investments and assets, forecasted heat production and supply, as well as forecasted heating area;
- Information that ERO has ensured from the regular reporting of the previous seasons/years.

Knowing that forecasted information is key to determination of allowed revenues, it should be reliable and realistic. Generally, in forecasting/planning the business, a realistic approach should be applied, followed by a comprehensive assessment of multiple factors affecting the business; i.e assessment of the market and forecasting the expansion of customer base, assessment of production/supply



capabilities and financial capabilities of the company. Naturally, the proper forecasting/planning has to be based on the data that the company has realized during a certain period.

It must be noted here that DH Gjakova's tariff application was complete to an extent. However, in some of the data and information of the application were noticed inaccuracies, noncompliance and inconsistencies which, with some exceptions, were improved, explained and supplemented following ERO's comments and joint meetings between ERO and DH Gjakova.

In fact, regarding the forecasted information (as defined in Appendix 4 of the Thermal Energy Pricing Rule), DH Gjakova has submitted to ERO the statements/tables that include forecasted revenues and costs, technical data and data of customers, operating assets and forecasted investments, for the one-year period that fully covers the heating season - period: 15 October 2022 – 14 October 2023. Whereas, as supporting documents it submitted: i) Audit Report as well as statutory and financial statements for 2021 ; ii) List of assets – detailed data on fixed assets where the initial value of the asset purchase is given; iii) planning of investments for a one-year period that includes the 2022/23 season; iv) planning for new connections for the 2022/2023 season, respectively the expansion of the customer heating area.

ERO has made efforts and has engaged the available expertise to make a realistic evaluation of the forecasted information submitted by DH Gjakova. A comprehensive analysis and evaluation of the presented information was conducted. With respect to this, it should be emphasized that the absence of historical data for previous seasons has presented additional obstacles due to the impossibility to compare the respective data from previous seasons, in order to carry out the accurate determination (forecast) of allowed revenues for 2022/2023 season.

3.1 Evaluation and determination of allowed operational costs

The plans for operating costs submitted by DH Gjakova for the one-year period covering the entire heating season 2022/2023, are structured as variable and fixed costs, a division which is mainly in accordance with the provisions of the Thermal Energy Pricing Rule, as well as advanced accounting principles and Kosovar Accounting Standards.

In this section, the forecasted expenses as presented by DH Gjakova and the allowed operating expenses that ERO has approved will be shown in a tabular manner (Table 1.) The table is followed by an analytical explanation of each item of operational costs.



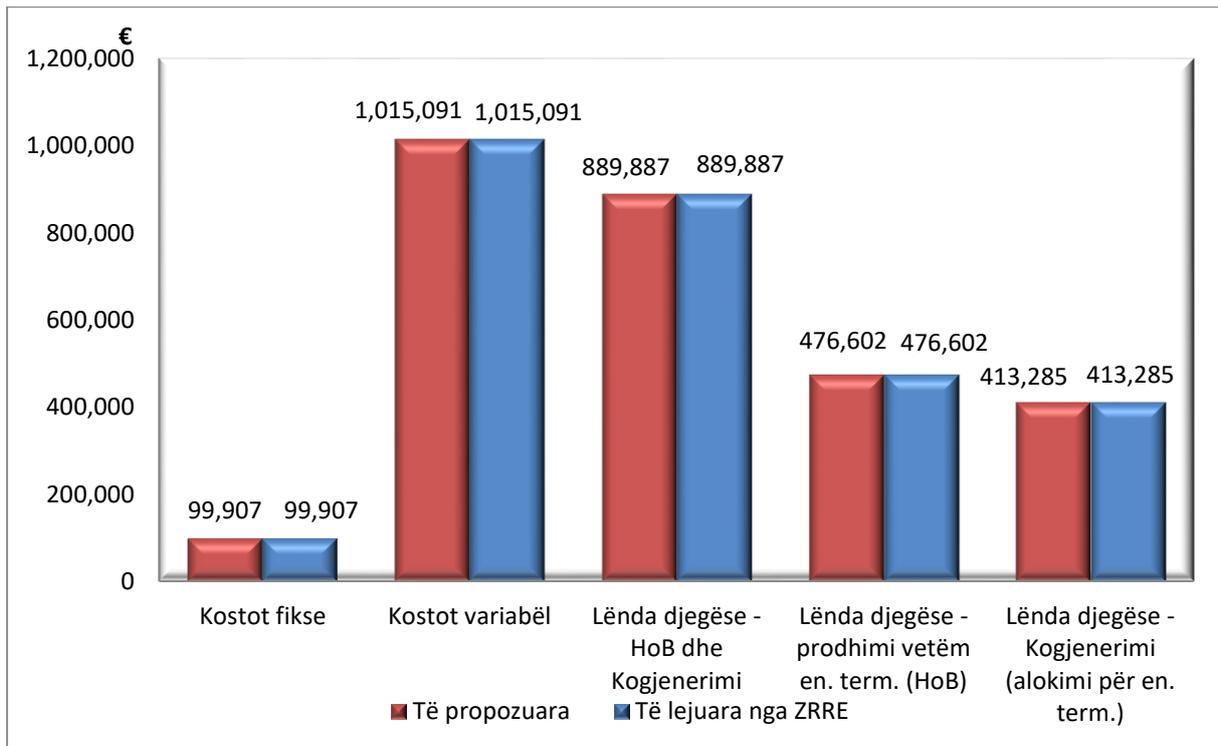
Table 1: Costs presented by DH Gjakova JSC, and the ones allowed by ERO (in €)

Operational costs 2022/2023 season Allocation for thermal energy		Proposed by DH Gjakova	Allowed by ERO
Variable costs			
1	Fuel– production in thermal energy only (HoB)	476,602	476,602
2	Fuel– Cogeneration (allocation for ther. ene.)	413,285	413,285
3	Water for replenishment of the system	13,721	13,721
4	Water treatment chemicals	601	601
5	Electricity (prod. & Subst. Distr.)	15,893	15,893
6	Personnel cost (direct labour)	74,120	74,120
7	Annual licensing tax	1,467	1,467
8	Allowed bad debt	19,402	19,402
9	Others- variable	0	0
10	Total variable costs	1,015,091	1,015,091
Fixed costs			
11	Materials, services	12,591	12,591
12	Repairs and maintenance	376	376
13	Expenses for administration	9,939	9,939
14	Personnel expenses (different from direct labour)	77,001	77,001
15	Cost of sales and other administrative costs	0	0
16	Total fixed costs	99,907	99,907
17	Total operational costs	1,114,998	1,114,998
18	Fixed costs	99,907	99,907
19	Variable costs	1,015,091	1,015,091



Figure 2: Schematic presentation of operational costs proposed by DH Gjakova and allowed by ERO for the heating season 2022/2023

The details of main costs are graphically presented as follows:



Analytical explanation

Detailed explanations and justifications for determination/allowance of each group of costs, namely for the main positions of operational costs, are provided below.

The new biomass heating plant, in addition to two units (HoB boilers) for the production of thermal energy only (heating), also has a co-generation unit (CHP) of thermal energy and electricity, which is planned to start this season. For this reason, there is a need to allocate costs in the costs related to thermal energy (heating) and electricity, in order to avoid any double presentation of costs during the determination of allowed revenues and heat tariffs. The allocation of co-generation costs was carried out based on the Methodology in Appendix 7 of Thermal Energy Pricing Rule, which included the allocation of operational and capital costs (assets); for this, the cost allocation method will be briefly presented first.

- **Allocation of co-generation costs**

As described in Appendix 7, the basic principle for the allocation of co-generation costs is the ratio between the consumption of fuel in the co-generation plant and the pre-assumed consumption of fuel in 'alternative forms of energy production'. By "alternative forms" is meant the traditional technologies of separate production of thermal energy and electricity with the same capacity and using the same fuel.

Therefore, during the calculation of the ratio (proportion) was considered the planned production of electricity and thermal energy in the co-generation unit, production efficiency of 'alternative forms' as specified in appendix 7 – efficiency of energy transformation from fuel in electricity (0.4) and thermal energy (0.9).



Using the formulas of Appendix 7, the corresponding percentage proportions were calculated: the proportion of fuel consumption for the production of electricity $F_E=24.9\%$, and the proportion of fuel consumption for the production of thermal energy (heating) $F_H=75.1\%$.

This proportion was then used to carry out the division of the operating costs (variable and fixed); specifically, since the subject of the tariff review is thermal energy, then the general operating costs are multiplied by $F_H=75.1\%$, resulting in separate costs for thermal energy (heating). Consequently, the operating costs in table 1 and in the following explanations are presented as allocated for thermal energy (heating).

Approximately the same approach was used for the allocation of assets in assets allocated for thermal energy and electricity in order to calculate capital costs. Initially, the assets that belong to thermal energy and electricity from a technological point of view were divided, and the corresponding proportions were calculated in relation to the total assets; these respective proportions were used for the allocation of supporting/joint assets in assets belonging to thermal energy and electricity respectively. Details on asset allocation are provided in Chapter 3.2.

Variable costs:

- **Cost of heavy fuel oil – biomass (wood chips):**
 - The cost of biomass proposed by DH Gjakova in the amount of €889,887 is based on the estimated amount of biomass usage of 7,026 tons and the purchase price of €168.47/ton. Given that the estimated amount of biomass includes the total amount for the production of thermal energy and electricity, this cost has been reduced by the coefficient of allocation for thermal energy (75.1%) that has resulted in the proposed value.
 - Evaluation – The forecast amount of fuel consumption – biomass – is derived from the overall energy balance (which includes thermal energy and electricity), while the biomass purchase price is documented with the biomass supply contract. Using the allocation methodology described above, ERO has once again re-calculated the planned amount of fuel for thermal energy, in order to compile the Balance of thermal energy (heating) only, to specify the billing determinants. This re-calculation has resulted in the amount of biomass for thermal energy only in the amount of 5,282.17 tons, which multiplied by the purchase price (€168.47/ton) results in the **biomass cost of €889,887**, which is allowed for this tariff review.

- **Cost of water for replenishment of the heat system and water treatment chemicals:**
 - DH Gjakova has proposed the cost in the amount of €13,721, for the estimated amount of water consumption for replenishment of the distribution system (primary network), as well as the cost for water treatment chemicals in the amount of €601.
 - Evaluation – Taking into account the required water consumption for the usual replenishment of the system, and also considering a part of the network losses due to water leaks, ERO evaluates that the presented costs are justifiable; therefore, ERO approves the **proposed cost of water of €13,721** and of **chemicals** in the amount of **€601**.

- **Electricity cost**



- For the electricity cost, DH Gjakova has proposed a total value of €15,893 - this cost takes into account the consumption of electricity in the system's plants and in a number of substations (usually in old collective housing buildings. It should be noted that the proposed value of the cost of electricity represents that part of the consumption which cannot be covered by the own production (from the CHP unit) and must be taken from the electricity network.
- Evaluation- ERO evaluates that the calculation of electricity consumption and the division into the part that is covered by own consumption and the part that must be taken from the electrical network, respectively from the Supplier, is grounded and real; therefore, approves the presented cost of **electricity** in the amount of **€15,893**.
- **Personnel cost (“direct labour”)**
 - DH Gjakova presented the personnel cost - "direct labour", in the amount of €74,120 (the part allocated for thermal energy from the amount of €98,674), which covers the gross salaries and pension contribution for 16 staff members directly engaged in production and distribution.
 - Evaluation – To evaluate the personnel cost presented by DH Gjakova, ERO has referred to the Audit Report on the financial statements for the year 2021. In these financial statements, it is noted that the total amount of 'personnel expenses' for the year 2021 is €201,185 - gross wages: 191,776 and pension contributions payable by the employer: 9,409 €. Taking into account the personnel cost presented for the administrative and managerial staff, then ERO evaluates that the personnel cost presented by DH Gjakova corresponds to the amount of "personnel expenses" in the audited financial statements for 2021. ERO, therefore allows the **personnel cost - 'Direct labor'** in the amount of **€74,120**.
- **Bad debts cost and annual licensing tax**
 - DH Gjakova did not present the cost of bad debt in the regulatory statement 'b' but in the explanatory Report presented this cost in the value of 19,402 €, while it specified the allowed rate of 5%, it did not specify the amount used for the calculation. ERO has calculated the amount of €388,040, which multiplied by 5% gives the proposed value of bad debt. DH Gjakova has also not presented the cost of annual licensing tax.
 - Evaluation -In line with the provisions of the Thermal Energy Pricing Rule, the cost of bad debt can be calculated as a reasonable share of the revenues of the enterprise (i.e. the value of billing from the sale of heat realized from the previous season). This 'reasonable share' shall be set in a manner that encourages the enterprise to add its efforts to increase the level of the collection of payments from customers, but at the same time takes into account that a considerable amount cannot be objectively collected, therefore shall remain as a debt that will not be realized. From what was said above, ERO considers that the level of bad debt of 5% is justifiable, therefore allows the **bad debt cost** in the value of **19,402 €**.

With respect to the licensing tax, it should be emphasized that the annual licensing tax is calculated based on the ERO Rule on Taxes which for generation of electricity from RES is set at 10% of net production. Based on this, ERO has calculated the **annual licensing tax** in the amount of **1,467 €** - for the amount of net production of thermal energy 14,674 MWh.



From what was stated above, it results that **Variable Costs**, received by ERO are determined in the amount of **1,015,091€**.

Fixed costs

- **Cost: Repairs and maintenance**

- DH Gjakova, for the cost of repairs and maintenance, has planned a minimum value of €376 - this is due to the fact that the heating plant is new, newly built and in the warranty period from the contractor.
- Evaluation – Taking into account the justifications mentioned above, ERO accepts the **repairs and maintenance cost** in the amount of €376.

- **Cost: Materials and services**

- For this position, a value of €12,591 was proposed by DH Gjakova for the purchase of various materials for production and the distribution network, as well as fuel and servicing for vehicles in the field;
- Evaluation – Taking into account that the proposed value refers to the accounting values of the costs described for the previous periods, ERO allows the **'Materials and Services'** cost in the amount of **€12,591**.

- **Administrative cost**

- DH Gjakova has proposed the administration cost in the amount of €9,939, which reflects the usual expenses for office materials, information technology and communication.
- Evaluation – ERO evaluates the amount presented as reasonable to cover the costs for ordinary administrative services and acknowledges the proposed cost in the amount of **€9,939**.

- **Personnel cost ('different from direct labour')**

- For the cost of personnel in the administration and other support services DH Gjakova presented the cost in the amount of €77,001 (the part allocated for thermal energy from the amount of €102,509), which covers the gross salaries and pension contributions for the administration and managerial staff.
- Evaluation – To evaluate the personnel cost presented by DH Gjakova, ERO has referred to the Audit Report on the financial statements for the year 2021. In these financial statements, it is noted that the total amount of 'personnel expenses' for the year 2021 is €201,185 - gross salaries: 191,776 and pension contributions payable by the employer: 9,409 €. Taking into account the cost of personnel "direct labor" presented for the staff directly engaged in production and distribution, then ERO evaluates that the cost of personnel presented by DH Gjakova corresponds to the amount of "personnel expenses" in the audited financial statements for 2021. ERO therefore allows the **cost of personnel - 'different from direct labor'** in the amount of **€77,001**.

From what was stated above, it results that Fixed Costs received/allowed by ERO are determined in the amount of **99,907 €**.



- Total operational cost allowed for 2022/2023 season

Operational costs are comprised of the amount of the fixed costs and variable costs and are calculated according to the formula below:

$$\text{OC} = \text{Variable costs} + \text{Fixed costs}$$

From the formula are calculated:

Operational costs in an amount of **1,114,998 €**

In cases where the enterprise accepts subsidies for operation (such as for the purchase of fuel), then according to regulatory practices the value of the subsidy is deducted from the value of operating costs, for the reason that the enterprise is not charged with a cost or a part of the cost which is covered by the subsidy.

Based on the budget allocations from the Ministry of Economy for 2022, the allocation planned in the Draft Budget Law for 2023, as well as the commitment from the Municipality of Gjakova for additional subsidy in 2023, ERO evaluates that the amount of the subsidy for DH Gjakova for the 2022/2023 season is €650,000; this amount is deducted from operating costs, therefore the **Allowed Operating Costs** are calculated:

$$\text{OC}_{\text{LEJ}} = 1,114,998 \text{ €} - 650,000 \text{ €} = 464,998 \text{ €}$$

3.2 Determination of Regulatory Asset Base (RAB)

Determination of RAB is the main component for the calculation of annual depreciation and allowed return on assets, which presents the allowed profit from the regulated business activity.

The Regulatory Asset Base - in line with Appendix 2 of the Thermal Energy Pricing Rule, is calculated according to the formula:

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

where:

$\text{RAB}_n^{\text{end.}}$ –represents the assets planned for the season 2022/23 ('n');

$\text{RAB}_n^{\text{start.}}$ – Initial Regulatory Asset Base, which actually represents the final RAB, realized in previous season 2021/22 ('n-1');

INV_n –New investments planned and approved by the Regulator for a one-year period which includes the heating season 2022/2023;

WC_n –Sufficient working capital for the company to carry out its activities;

DEP_{n-1} –Depreciation of assets realized in previous season 2021/22 ('n-1'); and

DIS_{n-1} –Disposed assets in previous season 2021/2022 ('n-1').

Given that in this season the tariff review process takes place after a period of many years, during which the assets of DH Gjakova have undergone visible changes in structure and monetary value, mainly due to investments in the EU project New Heating Plant and the Biomass Cogeneration Unit



and in the SECO project for rehabilitation of the network and thermal substations, then the RAB is considered to be determined for the first time, and therefore the formula is modified as follows:

RAB = Net Accounting Value of Existing Assets (following accumulated depreciation) + INV (new investments) + WC (Working Capital) – DIS (Disposals).

3.2.1 Determination of existing assets

Regarding the existing assets, it should first be noted that DH Gjakova rightly did not present the old assets - the old heavy fuel oil heating plant and the distribution network, for the following reasons:

- The old heavy fuel oil heating plant, apart from the fact that it was in a bad technical condition and almost completely depreciated, this heating plant is currently not used for the production of thermal energy, respectively for the provision of the service which is subject to this tariff review; therefore, this asset cannot be included in the Regulatory Asset Base (RAB).
- In addition to that, most of the distribution network, including the substations, was in technical condition and almost completely depreciated, and for this reason they underwent rehabilitation (replacement with new pipelines and equipment) within the SECO project.

From what was stated above, the determination of existing assets shall contain:

- a) Assets invested within the EU project: new heating plant and new biomass co-generation unit; and
- b) Assets invested within the SECO project: Rehabilitation of distribution network and thermal substations.

a) EU Project Assets: New heating plant and biomass co-generation unit

For the evaluation of these assets, the data/documentation of the project, which was also presented by DH Gjakova in Statement 'A' and the explanatory document, were used. The total assets of the new heating-plant and the co-generation unit are evaluated at €12,632,507 (ref. table 3).

Due to the co-generation unit, the total assets have also been subjected to the respective division (allocation) into assets allocated for thermal energy (heating) and electricity, where an approach similar to the allocation of operating costs has been used. According to the methodology used, first were identified the assets that exclusively belong to thermal energy (such as boilers for the production of thermal energy only - HoB) and electricity respectively (such as turbines, generators) and joint and supporting assets (such as heating and administrative building, fuel management system, water treatment system, etc.). Calculation values and details are presented in the following table:

Tab. 2: Calculation of the share of different categories of assets

No.	Description	Value (€)	Share (in %)
1	Assets exclusively related to thermal energy	2,225,774 €	47.02 %
2	Assets exclusively related to electricity	2,508,000 €	52.98 %
3	Total	4,733.774 €	100 %



The share calculated in percentage for each category will serve as the coefficient of allocation of joint/supporting assets in the respective categories – 47.02% for thermal energy (heating), and 52.98% for electricity.

Details of allocation in table '3' below:

Tab. 3: Allocation of assets in thermal energy assets and electricity assets

Asetet në kuadër të Projekti EU-së: Ngrohtorja e re dhe njësia e kogjenerimit me biomasë					
Kategoria	Vlera totale [€]	Alokimi në [%]		Vlera e alokimit [€]	
		En. Termike	En. Elektrike	En. Termike	En. Elektrike
1. Asetet që i përkasin vetëm en. termike	2,225,774	100.00%	0.00%	2,225,774	0
Kaldajat (HoB) për prodhimin e en. termike 2x5.5 MW _{TH}	1,403,110	100.00%	0.00%	1,403,110	0
Segmenti tubac. Ng.e Re - kyqja në rrjetin e shpërnd.	742,664	100.00%	0.00%	742,664	0
Rrjeti ujësjellësit e kanalizimit	80,000	100.00%	0.00%	80,000	0
2. Asetet që i përkasin vetëm en. Elektrike	2,508,000	0.00%	100.00%	0	2,508,000
Turbina + Gjeneratori + tubacionet e qarku ujë-avull (CHP)	2,028,000	0.00%	100.00%	0	2,028,000
Transformatori	280,000	0.00%	100.00%	0	280,000
Linja për kyqje në rrjetin e shpërndarjes en. elektrike	200,000	0.00%	100.00%	0	200,000
3. Asetet e Përbashkëta / Mbështetëse	7,898,733	47.02%	52.98%	3,713,907	4,184,827
Ndërtesa e ngrohtores dhe njësisë kogjenerimit (CHP)	1,265,446	47.02%	52.98%	595,000	670,446
Ndërtesa administrative	269,675	47.02%	52.98%	126,799	142,877
Depoja e pjesëve rezervë dhe punëtorja	287,904	47.02%	52.98%	135,370	152,534
Kaldaja e njësisë së kogjenerimit (CHP)	2,579,445	47.02%	52.98%	1,212,830	1,366,615
Pompa qarkulluese	1,109,750	47.02%	52.98%	521,794	587,956
Pajisjet tjera të njësisë së kogjenerimit	165,295	47.02%	52.98%	77,720	87,575
Instalimet elektro-mekanike	411,090	47.02%	52.98%	193,290	217,800
Pajisjet kontrolluese	197,825	47.02%	52.98%	93,015	104,810
Sistemi i trajtimit të ujit	302,624	47.02%	52.98%	142,291	160,333
Sistemi ekspandues i mbajtjes së shtypjes	153,435	47.02%	52.98%	72,144	81,291
Sistemi i menaxhimit të lëndës djegëse (l.d.) dhe rivendosi emergjent të furnizimit me energji elektrike	575,235	47.02%	52.98%	270,470	304,765
Sistemi e deponimit energjisë dhe makineritë bartëse të l.d.	571,010	47.02%	52.98%	268,483	302,527
Rrjeti i telekomunikimit	10,000	47.02%	52.98%	4,702	5,298
Total vlera e asetëve	12,632,507			5,939,681	6,692,827

Therefore, as shown in table 3, the value of allocated assets for thermal energy (heating) is 5,939,681€.

b) SECO Project Assets: Rehabilitation of distribution network and thermal substations

Within the SECO project, this year the works on two main components have been finalized:

- Rehabilitation of the distribution network in the amount of 2,172,164 €, which has included:
 - The rehabilitation of the northern branch, where the complete renovation was carried out by replacing the existing steel pipes with new pre-insulated pipes - 9,700 m of pre-insulated pipes in total with dimensions from DN32 to DN300, as well as the first 360 valves -insulated with dimensions from DN40 to DN300.
 - The rehabilitation of the southern branch of the network, where repairs of water leaks were mainly undertaken in different segments of this part of the network; and
 - Installation of network segmentation valves and hydraulic balancing devices for both branches of the network.
- Rehabilitation of thermal substations in an amount of 1,016,232 €, which has included:
 - Rehabilitation of 342 existing substations –226 substations mainly in individual houses and 116 substations in collective housing buildings and commercial facilities and various institutions; and



- Installation of 9 new substations in public buildings.

Details of these two components with respective values are presented in the following table:

Tab. 4: Assets within SECO Project

Projekti SECO-s: Rehabilitimi i Rrjetit dhe Nënstacioneve Termike			
Komponenta: Rehabilitimi i Rrjetit të shpërndarjes			
Përshkrimi	Vlera [€]		
Punimet preliminare dhe përgatitore - demolimi i 3,110 m kanale dhe 66 shahta të betonit	140,155		
Furnizimi i gypave dhe pajisjeve përcjellëse - 9,700 m gyp DN32-DN300 dhe 360 valvula DN40-DN300	1,188,348		
Punimet në instalimin e gypave dhe pajisjeve përcjellëse	444,407		
Punimet ndërtimore	384,547		
Pjesët rezervë	14,707		
Nëntotal	2,172,164		
Komponenta: Rehabilitimi i Nënstacioneve Termike		Nr. NST	Vlera [€]
Rehabilitimi i pjesës primare me matësa të energjisë termike dhe rregulatorë të rrjedhjes	226	180,670	
Rehabilitimi i pjesës primare me matësa të energjisë termike dhe rregulatorë të presionit, temperaturës dhe rrjedhjes	99	493,949	
Rehabilitimi i pjesës primare me matësa të energjisë termike dhe rregulatorë të presionit, temperaturës dhe rrjedhjes, plus shkëmbyesit e nxehtësisë	26	341,613	
Nëntotal	351	1,016,232	
Total	3,188,396		

It should be emphasized that, in terms of allocation, these assets belong exclusively to thermal energy, i.e. they are allocated 100% to thermal energy (heating) assets.

Summary of existing assets

The existing assets allocated for thermal energy are comprised of assets invested through two projects, in the total value of:

- Assets of EU project: New heating plant and the biomass cogeneration unit:	5,939,681 €
- Assets of SECO project: Rehabilitation of the network and thermal substations	3,188,396 €
- Total existing assets:	9,128,077€

Financing manner:

All existing assets are a donation funded through the EU and SECO project.

3.2.2 Determination of allowed new investments

In the new Investments planned for the tariff review period: October 2022 – October 2023, only one project has been presented: Renovation of the SCADA System in the amount of €192,000 as a donation within the SECO project.

The existing SCADA system only covers the operation of the heating plant without taking into consideration the demand from customers and therefore the performance of the distribution network.



So it is necessary to expand and upgrade the heating plant's SCADA system to include the grid and substations. The renovation of the SCADA system to include the distribution network and thermal substations will ensure optimal utilization of the district heating system.

The renovation of the SCADA system includes:

- respective SCADA 'hardware' and 'software';
- hydraulic network equipment for the distribution system including hydraulic network calculation software; and
- Payments for licences, GSM package etc.

This project is presented in the Development Plan of the DH Gjakova system, which has been approved by ERO. It should also be emphasized that the renewal of the SCADA system to include the distribution network and thermal substations is important to optimize the central heating system as a whole, linking data from customers (capacity and heat demand) with data from the hydraulic performance of distribution network.

Referring to these details of the project, ERO recognizes this project under **New Investments** for the tariff review period, in the presented value of **192,000 €**.

3.2.3 Determination of Working Capital

According to the relevant provisions of the Thermal Energy Pricing Rule - Appendix 2, working capital is usually determined to allow monetary means for a period no longer than one month, respectively the value of average monthly income. Consequently, ERO determines the ratio 1/12 in the revenues from the sale of heat realized in the last season 2021/2022 – €388,040, and allows **working capital** in the amount of **€32,337**.

3.2.4 Disposals

Disposal refers to the assets that the regulated enterprise has removed from usage – assets that have been damaged to the extent that they cannot be repaired and used again, assets that have eventually been sold/leased (when they have been evaluated as unusable), etc.; According to the formula given at the beginning of chapter 3.2, the value of alienated assets is deductible (minus). As it was emphasized at the beginning of this chapter, DH Gjakova has not presented, as existing assets, the old assets – the old heavy fuel oil heating plant and the distribution network, therefore disposals are not taken into account in this tariff review.

Summary of the determination of RAB and RAB_f

The following table presents the summarized constituent components and respective values of Regulatory Asset Base (RAB) and Regulatory Asset Base of self-financed Assets (RAB_f).

Table 5: RAB and its components - DH Gjakova, heating season 2022/2023

Regulatory Asset Base (RAB) - DH GJAKOVA Heating season 2022-2023		Allowed by ERO [€]
3.2.1	Net Value of Existing Assets	9,128,077
3.2.2	New investments (INV _n)	192,000



3.2.3	Working Capital (WC_n)	32,337
	Regulatory Asset Base (RAB)	9,352,414

Regarding the Adjusted Base of Self-financed Assets (RABf), it should be emphasized that the same formulations apply as for the general RAB, but here the values of self-financed assets/investments are taken; details presented in the table below:

Tabela 6: RAB_f and its components - DH Gjakova heating season 2022/2023

Self-financed Regulatory Asset Base (RABf)- DH GJAKOVA Heating season 2022-2023		Allowed by ERO [€]
3.2.1	Net Value of Existing Assets – self-financed	0
3.2.2	New investments (self-financed – without donations) (INV_{f-n})	0
3.2.3	Working Capital (WC_n)	32,337
	Self-financed Regulatory Asset Base (RABf)	32,337

3.3 Evaluation and Determination of Annual Depreciation for season 2022/2023

The determination of Annual Depreciation for 2022/23 season ('n') is based on the value of total RAB determined in table '5' (Chapter '3.2') and in the weighted average depreciation rate.

In order to determine the weighted average of the depreciation rate, it was necessary to categorize the assets based on the characteristics of the assets that correspond to the respective depreciation rates; this categorization is presented in detail in table '7' below:



Tab. 7: Details of the categorization of assets to reflect depreciation rates

Kategorizimi i Aseteve të NQ Gjakova - sezoni 2022/2023				
Kategoria e asetëve	Përshkrimi	Vlera totale [€]	Alokimi En. Termike [€]	Alokimi En. Elektrike [€]
Asetet e Projektit EU: Ngrohtorja e re dhe njësia e kogjenerimit me biomasë				
Ndërtesat	Ndërtesa e ngrohtores dhe njësisë kogjenerimit (CHP)	1,265,446	595,000	670,446
	Ndërtesa administrative	269,675	126,799	142,877
	Depoja e pjesëve rezervë dhe punëtorja	287,904	135,370	152,534
Total Ndërtesat		1,823,025	857,169	965,857
Stabilimentet, pajisjet dhe instalimet elektro-mekanike	Kaldajat (HoB) për prodhimin e en. termike 2x5.5 MWTH	1,403,110	1,403,110	0
	Kaldaja e njësisë së kogjenerimit (CHP)	2,579,445	1,212,830	1,366,615
	Turbina + Gjeneratori + tubacionet e qarkut ujë-avull (CHP)	2,028,000	0	2,028,000
	Transformatori	280,000	0	280,000
	Pompa qarkulluese	1,109,750	521,794	587,956
	Pajisjet tjera të njësisë së kogjenerimit	165,295	77,720	87,575
	Instalimet elektro-mekanike	411,090	193,290	217,800
	Sistemi I trajtimit të ujit	302,624	142,291	160,333
	Sistemi ekspandues I mbajtjes së shtypjes	153,435	72,144	81,291
	Sistemi I menaxhimit të lëndës djegëse (l.d.) dhe rivendosjes emergjent të furnizimit me energji elektrike	575,235	270,470	304,765
Sistemi e deponimit energjisë dhe makineritë bartëse të l.d.	571,010	268,483	302,527	
Total Stabilimentet, pajisjet dhe instalimet elektro-mekanike		9,578,994	4,162,132	5,416,862
Rrjetet	Segmenti tubac. Ng.e Re - kyqja në rrjetin e shpërnd.	742,664	742,664	0
	Linja për kyqje në rrjetin e shpërndarjes en. elektrike	200,000	0	200,000
	Rrjeti ujësjellësit e kanalizimit	80,000	80,000	0
Total Rrjetet		1,022,664	822,664	200,000
Pajisjet TI, sist. Kontr. Dhe Inv. zyrës	Pajisjet TI dhe Sistemet kontrolluese	197,825	93,015	104,810
	Rrjeti I telekomunikimit dhe pajisjet përkatëse	10,000	4,702	5,298
Total pajisjet IT e sistemet kontrolluese		207,825	97,717	110,108
Total asetet e Proj. EU-së - Ngroht. e re dhe njësia e kogjen. me biomasë		12,632,508	5,939,682	6,692,827
Asetet e Projektit SECO-s - Rehabilitimi I rrjetit dhe nënstacioneve				
Rrjeti	Tubacionet, fittingjet, valvulat dhe pajisjet përkatëse	2,172,164	2,172,164	0
Pajisjet	Pajisjet e nënstacioneve	1,016,232	1,016,232	0
Total Asetet e Projektit SECO-s - Rehabilitimi I rrjetit dhe nënstacioneve		3,188,396	3,188,396	0
Total Asetet Ekzistuese të NQ Gjakova		15,820,904	9,128,078	6,692,827
Investimet e reja të planifikuara				
Pajis.TI & Sis. Kontr.	Rinovimi i sistemit SCAD për të përfshirë rrj. e shp. dhe nënst.	192,000	192,000	0
Total Investimet e reja - pajisje TI dhe sisteme. kontrolluese		192,000	192,000	0
Total Asetet Ekzistuese dhe Investimet e Reja		16,012,904	9,320,078	6,692,827

Table 8 provides a summary of the categorization of RAB according to asset categories, respective lifespan, namely the depreciation rate for each category of assets, as well as the weighted average depreciation rate.

Tab. 8: Summary of the categorization of assets with respective depreciation rates

Kategoritë e Aseteve	Vlera [€]	Jetëgjatësia (vite)	Norma e Zhvlerësimit [%]
Ndërtesat	857,169	40	2.50%
Stabilimentet, pajisjet dhe instalimet elektro-mekanike	5,178,364	25	4.00%
Rrjetet - tubacionet, fittingjet dhe pajisjet përbërëse	2,994,828	35	2.86%
Pajisjet TI, Sistemet kontrolluese, dhe invent. imët i zyrës	289,717	5	20.00%
Total Asetet (RAB-Kap. Pun.) Mes. e Pond. Normës Zhvlerësimit	9,320,078		3.99%

As seen from the table above, the weighted average depreciation rate (DR_{WA}) is calculated 3.99%. Based on the total value of (RAB minus Working capital) and the weighted average depreciation rate, the allowed annual depreciation is calculated, as follows;

$$\text{Allowed annual depreciation (DEP}_n\text{)} = (\text{Total RAB} - \text{WC}_n) * DR_{WA} = 9,320,078 \text{ €} * 3.99\% = \mathbf{372,074\text{€}}$$



3.4 Determination of Allowed Return on RAB (Allowed profit)

As mentioned above, the calculation/determination of allowed return is calculated based on the Regulatory Base of self-financed Assets (RAB_f) and the Rate of Return (RoR), therefore it includes the following two components:

- (RAB_f); Determination of the self-financed Regulatory Asset Base; and
- Calculation of the Allowed Rate of Return (RoR), determined in the value of WACC.

First component - RAB_f is calculated in chapter 3.2 – table '6', whereas the calculation of the second component – RoR is determined in the next chapter:

3.4.1 Calculation of Allowed Rate of Return (RoR)

The objective of the Reasonable Rate of Return (RoR) on the Regulatory Asset Base (RAB) is to guarantee the district heating companies a profit that allows continuing with the investments in the assets, in order to rehabilitate and expand them.

A reasonable RoR is considered to be the rate of "Weighted Average Cost of Capital" (WACC), which is calculated on the components of the capital base, taking into account the weightings of the sums of these capital components. In other words, WACC is the sum of the weighted average cost of equity and cost of debt.

For the cost of equity, ERO follows the internationally recognized methodology called "Capital Asset Pricing Model" (CAPM). The CAPM expresses the expected cost of equity as a risk-free rate (r_f) plus the equity risk premium (ERP). We can define ERP as the difference between the equity market risk – i.e. the expected return from a well-developed market – and the risk-free rate of return, which is expressed by the formula presented below:

$$ERP = (r_m - r_f)$$

The ERP rate depends from the risk of investment in a market of a separate country.

The value of pre-tax WACC can be calculated according to the following formula:

$$WACC_{pre-tax} = [(D/V) * k_d] + [(E/V) * k_e]$$

where:

D/V	Ratio of debt towards the total capital base (as a share)
E/V	Ratio of equity towards the total base of capital (as a share)
V	Total base of the capital, which is the sum of equity and debt
k_d	Cost of debt
k_e	Cost of equity

Cost of debt (k_d) is a contractual commitment and is the interest rate that the enterprise pays in current loans.

Cost of equity (k_e) is calculated as follows:



$$k_e = r_f + \beta_e * (r_m - r_f)$$

where:

r_f The risk-free rate is derived from evaluations for return on government bonds

β_e "Beta": risk measure for the respective company

$(r_m - r_f)$ The equity market risk premium minus the risk-free rate of return

The "risk premium" is defined by "beta" and the expected risk premium of a market, which investors demand from the market as a whole. The "beta" factor measures the unpredictability of a company's return in relation to the commodity (stock) market as a whole.

Below we evaluate/calculate the cost of debt and the cost of equity for district heating companies in Kosovo, to reach the pre-tax WACC.

Cost of debt

For this heating season and the following seasons, ERO has decided that the D/V ratio is 60/100 (60% debt and 40% equity). This 60% ratio should be used in evaluations/ calculations of the commercial pre-tax WACC for the 2022/2023 heating season, as well as for subsequent seasons; if no significant changes are observed.

The cost of debt (k_d) is presented as a function of the risk-free rate that usually reflects current and projected government bond rates and the debt risk premium that takes into account average investment credit rates.

$$k_d = 8.79 \%$$

Cost of Equity

The cost of equity is presented with the formula below:

$$k_e = r_f + \beta_e * (r_m - r_f)$$

ku:

$$(r_m - r_f) = \text{ERP} - \text{Equity Risk Premium}$$

Currently, the Risk Free Rate (r_f), based on local and international financial trends of government bonds (treasury bonds), is estimated in the range of 1.1 to 3.0%. The lower range represents the level of interest on Kosovo's long-term treasury bonds while the upper range represents the 10-year average interest on Hungary's treasury bonds – representing the riskiest emitter of long-term traded debt among regional comparators. Based on this ERO sets the **Risk-free Rate at 2.3%**.

Recent decisions of regulatory authorities evaluate the risk premium in equity in the range of 3.5 to 5%. Because DH Gjakova is a public enterprise, it is considered that the risk in equity is minimal and therefore it is assumed that the **ERP value is equal to 4.5%**.



The average asset beta for EU electricity grids and integrated utilities is 0.42 compared to 0.54 - 0.63 for generation and supply-only companies in the EU and the US. Because the district heating industry in Kosovo is small, it seems reasonable to assume that the increase in demand - which is the main factor for the increase of revenues- will be more unpredictable than GDP growth - which is the main factor for the growth of the commodity and stock market - than in large and developed countries. The addition of a single large customer in district heating means an increase in demand for district heating compared to the previous demand, while the impact on GDP may be much smaller. In order to take into account, the more unpredictable nature of district heating companies' revenues compared to GDP growth, we evaluate the cost of equity to be higher than the average set by EU regulators, and we consider that the reasonable " β_e " for district heating companies in Kosovo should be **$\beta_e = 1$** .

The post tax cost of equity is as follows:

$$k_{e \text{ post tax}} = 2.3\% + (1 * 4.5 \%) = 6.80\%$$

The pre-tax cost of equity is found by multiplying the highest result of the post-tax cost of equity by the ratio that considers the tax ("tax wedge") as follows:

$$\text{'Tax wedge'} = 1/(1-t)$$

where:

t The rate of tax in the profit of companies

The profit tax (t) in Kosovo is 10% and the ratio that considers the tax ("tax wedge") is:

$$1/(1-0.10) = 1.11$$

The pre-tax cost of equity is:

$$k_{e \text{ pre-tax}} = 6.80\% * 1.11 = 7.55 \%$$

As a result of the calculations above, the pre-tax WACC is calculated - rounded to two decimal places - as presented below:

$$WACC_{\text{pre-tax}} = [8.79\% * 0.6] + [7.55\% * 0.4] = 8.30\%$$

Calculation of Allowed Return in RAB_f for DH Gjakova

Based on the calculated $WACC_{\text{pre-tax}}$ of 8.30% in 3.4.1, the Allowed Return or Allowed Profit for DH Gjakova is calculated, according to the formula below:

$$RET = RoR \times RAB_f$$

Therefore, the allowed return on RAB_f is equal to $32,337\text{€} * 8.30\% = 2,683 \text{€}$.



Table 9: Allowed return (allowed profit) in RAB_f for heating season 2022/2023

Allowed Return in RAB _f for DH GJAKOVA		Allowed by ERO [€]
RAB _f	Regulatory Asset Base – self-financed	32,337
RoR	Rate of return in the value of WACC	8.30%
	Allowed return in RAB _f	2,683

3.5 Determination of the cost of network losses

The allowed cost of network losses serves to cover the costs caused to the company due to thermal energy losses in the distribution network. In accordance with Appendix 1 of the Thermal Energy Pricing Rule, this cost is calculated as the quotient between the quantitative losses of the network and the production of thermal energy entering the network (percentage level of total losses in the network), this multiplied with overall variable cost of production.

From what was said above, based on the data presented by DH Gjakova and on its own evaluations, ERO has developed the Thermal Energy Balance of DH Gjakova for the 2022/2023 season, through which it has determined the quantitative network losses of **2,935 MWh**. Expressed as a percentage, the overall level of network losses is 20%. Also, from the Thermal Energy Balance, the amount of net production (generation) of thermal energy of 14,674 MWh was derived.

Based on the higher values and the variable operating cost (€1,015,091), **the cost of losses** in the network is calculated in the amount of **€203,018**.

3.6 Adjustment

The adjustment serves to correct the eventual changes between the tariff review plans for the period (season) 'n-1' and the realizations that have actually taken place in that period (season) and those changes are included (corrected) in the next review.

Given that in this season the tariff review process takes place after a period of several years, therefore, the tariff review in this season is considered as the basic review, then for this review the adaptation (adjustment) will not be applied. Normally for future reviews the adjustment will be determined and will be an integral component of allowed revenues.

3.7 Calculation of Maximum Allowed Revenues - Summary

Total allowed revenues are calculated according to the formula:

$$\text{MAR} = \text{OC} + \text{DEP} + \text{RTN} + \text{LOS} +/- \text{ADJ}$$

First of all, it should be emphasized that in the calculation of the maximum allowed revenues are considered the operating costs deducted for the allowed cost of losses, and also if there are subsidies for operating costs, then the value of the subsidy is also deducted (the so-called allowed net operating costs in the amount of **€261,980**)



Consequently, using the formula above, the MAR value is equal to **€ 839,754** as detailed in Table 6.

Table 10: Allowed Revenues for DH Gjakova, heating season 2022/2023

Allowed Revenues DH GJAKOVA for season 2022/2023		Allowed by ERO [€]
OC	Allowed Operational Costs (net)	261,980
DEP	Annual Depreciation	372,074
RTN	Allowed Return in RAB _f	2,683
LOS	Allowed cost of losses	203,018
ADJ	Adjustment – difference between allowance and realizations	N/A
MAR	Maximum Allowed Revenues	839,755

In order to be compatible with the tariff structure, which foresees the division into the component for thermal capacity (fixed component) and the component of the amount of thermal energy, the division of the MAR into the fixed and variable part for the heating season 2022/2023 is as follows:

Fixed part of Maximum Allowed Revenues (MAR_f) 83,976 €; and
Variable part of Maximum Allowed Revenues (MAR_v) 755,779 €.

4 Thermal Energy Balance

The thermal energy balance is a very important component in the tariff review because it determines the projections for the production/purchases of thermal energy, network losses and finally the supply of customers. For this reason, the projections in the Balance Sheet are influential in the planning of the respective costs, and therefore influential in determining the allowed revenues and tariffs.

Following, the components of the Thermal Energy Balance for DH Gjakova for the tariff review of the 2022/2023 season are presented in tabular and graphic forms.

Table 11: Summary of thermal energy balance

Thermal Energy Balance - DH Gjakova 2022/2023 season		
Gross production of thermal energy in 2 HoB units	MWh	7,890
Gross production of thermal energy in CHP	MWh	6,844
Total Gross production of thermal energy.	MWh	14,734
Self-consumption	MWh	60
Net production of thermal energy (Entry in Dis. Net.)	MWh	14,674
Quantitative losses in distribution network	MWh	2,935
Share of losses in distribution network	%	20.00%
Supply/ Consumption of thermal energy.	MWh	11,739