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

RULE ERO/Nr.03/2020

Rule and Methodology on Preparation of Electricity and Thermal Energy Balances

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CHAPTER I - RULE ON PREPARATION OF ENERGY BALANCES

1 PURPOSE

The purpose of preparing this document is to establish the principles, procedures and methodology for preparation of electricity and thermal energy balances.

This document ensures that operators operating in the energy sector submit their production, consumption and loss plans according to the provided timeframe, to enable the most efficient operation of the respective energy systems. This information is necessary so that operators plan their schedule of capital investment, revisions and repair and maintenance plan as well as import and export planning by relevant operators.

2 DEFINITIONS AND INTERPRETATIONS

DSO	Distribution System Operator, as defined in Article 3, paragraph 1.37 of the Law on Energy (Law No. 05/L-081).
ENTSO-E	European Network of Transmission System Operators for Electricity.
ERO	Energy Regulatory Office, as defined in Article 3, paragraph 1.58 of the Law on Energy (Law No. 05/L-081)
GAP	Generation Adequacy Plan, as defined in the Grid Code (Planning Code, Section 9.2)
Ministry	The Ministry responsible for Energy
TDP	Transmission Development Plan – a document that TSO publishes every year according to the requirements of Article 10 of the Law on Energy, (Law No. 05 / L-081) and as defined in the Grid Code (Article 5 of the Planning Code).
TSO	Transmission System Operator, as defined in Article 3, paragraph 1.38 of the Law on Energy (Law No. 05 / L-081).
GDP	Gross domestic product
Party	The party has the meaning of trading party as defined in the Market Rules

3 LEGAL BASIS

Based on the Law on Energy no. 05/L-081, the forecast of electricity, natural gas and thermal energy demands, and the manner and measures of its fulfilment are set in the Annual Energy Balance and Long-Term Energy Balance that are approved and published by the Regulator.

Article 8 of the Law on Energy, paragraph 2 states that: *Methodology, rules and procedures for the preparation and adoption of Annual Balance and Long Term Energy Balance shall be set in a special regulation to be drafted and adopted by the Regulator.*

Whereas, paragraph 3 states: *The regulation as per paragraph 2 of this Article shall regulate issues related to tasks and responsibilities of operators in preparation of electricity, natural gas and thermal energy balances, obligations of parties involved in the supply of data to respective operators and preparation of balance documents, contents of data, timelines and submission of data, as well as for submission and adoption procedures.*

This rule, which also contains the development methodology of Energy Balances, has been developed based on such requirements of the Law on Energy, and the tasks of the Energy Regulatory Office (ERO) set out in the Law on Energy Regulator regarding the *drafting and adoption of sub-legal acts*. This document describes the types of balances, requirements for the data to be contained, time limits, and procedures for their design and approval.

According to the Law on Energy, three different documents are required:

- **Annual Energy Balance for the previous year** - is prepared, approved and published by the Agency responsible for official statistics. This document shall be prepared every year.
- **Annual Energy Balances** – are developed by the Transmission System Operator (for electricity) and Thermal Energy Distribution System Operator (for thermal energy) after receiving the opinion from the Ministry, are submitted for approval to the Regulator. These documents should be prepared annually.
- **Long-term Energy Balances** - include the forecast for a ten (10) year period and are developed by the transmission system operator (for electricity) and Thermal Energy Distribution System Operators (for thermal energy) which, after obtaining the opinion from the Ministry, are submitted for approval to the Regulator. Updates of the long-term energy balance are approved every two (2) years.

The TSO and DSO should consult with the Energy Regulatory Office in relation to the planning of the necessary energy balances forecasts.

Pursuant to the Law on Energy, the Regulator, upon individual approval of balances, publishes them in a unique document by at latest fifteenth (15) December of the current year that proceeds the following period.

4 COOPERATION WITH OTHER INSTITUTIONS

In order to prepare energy balances, the institutions including the relevant ministries, are required to cooperate in terms of data provision:

- **Ministry**

  Provides relevant data, information and comments and also gives its opinion in relation to the compliance of balance documents with energy strategy documents and its respective implementation plans.

- **Ministry of Agriculture, Forestry and Rural Development/Kosovo Forest Agency**

  Provides data on biomass, bio fuels and agricultural residues used as fuel for electricity and thermal energy production.

- **Ministry of Environment and Spatial Planning/Environmental Protection Agency**

  Provides data on emissions of key pollutants (CO2, SO2, NOX, dust, etc.), and their conversion factors for all fuels.

- **Kosovo Agency of Statistics**
- Provides data on Gross Domestic Product (GDP), data on share of economic sectors in GDP (households, industry, services, and agriculture), population data, and number of households, data on energy statistics under its jurisdiction, and other relevant data.

- **Electricity Enterprises**

  Provide data on gross and net electricity generation (by type of used fuel), installed capacity of power plants, import and export, electricity supply, transmission and distribution losses, substation data, length and voltage line information, new and planned lines, as well as other relevant data.

- **Thermal Energy Enterprises**

  Collect and prepare energy data for gross and net generation of thermal energy, own consumption, thermal energy losses in distribution, installed and operational capacities, thermal energy consumption, heating fuel consumption, number of substations, data on the length of the network, new and planned lines as well as other relevant data.

- **Independent Commission for Mines and Minerals (ICMM)**

  Provides data on the use of mineral resources, geographic, geological data.

- **Municipalities**

  Provide data on energy requirements according to municipal development plans, as well as other relevant data.

5 ENERGY BALANCES

Energy balances should contain data and information required to ensure proper functioning of the energy sector. The data presented in balances, mainly data of long-term balances, should be consistent with the Energy Strategy of the Republic of Kosovo.

The need for investment in the energy system, in order to ensure the security of supply for customers, is foreseen based on these data.

Electricity and Thermal Energy Balances may include information that by nature is confidential or sensitive. Examples of such information are plans to expand and reduce (or close) large generation or consumption capacities. The plans for new generation capacities may also be considered sensitive. During the preparation of the Annual and Long-term Energy Balance, the TSO and DSO shall mark as "confidential" all data that were provided to them in a confidential manner.

The necessary data and guidelines for preparation of annual and long-term Electricity and Thermal Energy Balances are presented below.

For preparation of the Annual and Long Term Balance of Electricity and Thermal Energy, the data should be collected by Generation Companies, TSO, DSOs, Suppliers, Customers connected at 110 kV and above (for electricity).

Compulsory components of annual energy balances are:

- *demand forecast for each month of the following year;*
- *supply forecast for meeting the demand;*
- *forecast of energy raw materials consumption, reserve levels and reserve capacities;*
- *annual level of reserve capacity (reserve limit) of power plants and equipment;*
- *appropriate levels of operational reserves each year and criteria related to energy efficiency each year*.

Compulsory components of long-term balances are:

- *demand forecast;*
- *supply forecast for covering the demands;*
- *the manner for meeting the demands;*
- *a list of necessary deposit levels and reserve capacity needed to ensure the planned level of supply stability.*

Data will be collected by TSO (for electricity), respectively by DSO (for thermal energy). Relevant requests are submitted in the form of questionnaires for different parties.

5.1 Electricity Balances

The annual electricity balance should contain the forecasted data of: generation, consumption and load (of each customer group and total demand), electricity losses in the Transmission System (TS) and Distribution Systems (DS), as well as electricity imports and exports. Additionally, electricity balances should also contain data on generating unit overhauls, gas emissions, energy efficiency, grid transmission lines and transformers overhauls and main grid investments.

The long-term electricity balance should include: a description of the electricity sector, methodology of demand-forecasting, (planning each customer group's consumption and load and total consumption for different scenarios, forecasting efficient measures that affect electricity consumption reduction, forecast and development of other alternatives that affect the reduction of electricity consumption, forecasting import and export), an overview of previous and current Electricity System (ES) situation, generation and demand scenarios based on Gross Domestic Product (GDP) and supply reliability and quality.

5.2 Thermal energy balances

Annual Thermal Energy Balance shall contain: generation data, demand forecasting (consumption) of current and potential customers, own-consumption of thermal energy generation plants, fuel type and fuel consumption for each unit, data on the installed and operational capacity [in MW], generation unit repairs, gas emissions, thermal efficiency of units/boilers [in %], energy efficiency, system repairs (pipes and substations) as well as main grid investments.

The Long-term Thermal Energy Balance includes an analysis of previous 3 years of historical data as well as planning for the next 10 years, demand forecasting, grid expansion, vision and plans for development of thermal energy system. These data will be obtained from the Thermal Energy Balances for previous years.

6 QUESTIONNAIRES

For the purpose of preparing the Annual and Long-term Electricity and Thermal Energy Balance, the form models, which shall be sent to parties for completion, must be designed. Parties shall collect data at specific schedules determined under the Methodology for preparation of Energy Balances.

Parties responsible for providing the data required in the questionnaire are:

- Generation companies;
- TSO (from its own data);
- DSOs;
- Suppliers;
- Customers connected at the 110 kV level and higher (for electricity);

The forms of questionnaires for collection of data needed to prepare energy balances are provided in Annexes.

The following tables contain some of the data types required, and the parties responsible for providing them.

Table 1 - Data and parties responsible for the Electricity Balance

Data	Responsible party / explanations
Generator's availability and capacity (load factor)	Generation Companies
Gross and net energy generation (by fuel)	Generation Companies
Transmission and distribution losses	TSO and DSO
Storage status - fuel reserves	Fossil fuel generation companies should provide information on coal (lignite) stock on deposit
Energy Efficiency Indicators	Generation Companies
Grid characteristics (line length, voltage level, new and planned transmission and distribution lines)	TSO/DSO - Transmission Development Plan (TDP) and DSO Development Plan
Energy demand and supply trends in the previous 3 years, according to energy source	TSO – such data will be obtained from the realization in respective years
Main economic indicators analysis (GDP, per capita consumption, etc.)	Kosovo Agency of Statistics
Electricity supply safety and reliability analysis	TSO
Quality and Service Continuity analysis	The TSO shall provide information on electricity supply quality, unsupplied energy and voltage performance in the system

Emission of pollutants (SO2, NOx, CO2, dust, ash)	Fossil fuel based generation companies should provide specific emission forecasts (emission quantities per unit of produced electricity) for each pollutant separately. These data will be provided separately for each generation unit.
Recommendations on measures to be taken for ensuring supply and minimizing end-user costs	The TSO (and the DSO, as appropriate) will provide information on cost-effective reinforcements in the transmission (distribution) network, which are necessary to maintain a secure supply of electricity.
Reserve electricity capacities to achieve required system security and reliability levels.	TSO and generation companies

The TSO will address licensed suppliers and customers connected at the 110 kV voltage level and higher with a request for obtaining data for preparation of energy balances. For all other customers, the data request is addressed to the DSO or respective Licensed Supplier. Furthermore, the TSO will also request generators to provide data according to the formats presented in the annex.

Table 2 - Data and parties responsible for the Thermal Energy Balance

Data	**The responsible party and explanations**
Thermal Energy Generation Capacities and Availability (load factor)	Thermal energy generation enterprises, including cogeneration
Gross and net generation of thermal energy (by fuel type)	Thermal energy generation enterprises, including cogeneration
Deposited fuel reserves	Thermal energy generation enterprises, including cogeneration, should provide information on the stock of fossil fuels
Energy efficiency Indicators for thermal energy generation plants	Thermal energy generation enterprises, including cogeneration.
Thermal energy transmission grid losses (if applicable) and distribution network losses	DSO
Network characteristics (length of pipelines, new pipelines planned for transport and distribution of thermal energy)	DSO (DSO Development Plan)
The demand for thermal energy and	Suppliers - These data will be taken from realizations in the

supply trends in the previous 3 years	respective years.
Main economic indicators analysis (GDP, population, per capita consumption, etc.)	Kosovo Agency of Statistics
Thermal energy supply safety and reliability analysis	Thermal Energy Enterprise - Supplier
Service quality and continuity analysis	Thermal energy enterprise - The supplier will provide information on unsupplied thermal energy and the performance of the system's main indicators: pressure and temperature.
Pollutants emission (SO_2, NO_x, CO_2, dust, ash)	Fossil fuel generation enterprises should provide specific emission projections (the amount of emission per unit of thermal energy produced) for each separate pollutant. These data will be provided separately for each generation unit.
Recommendations on measures to be taken for securing supply and minimizing end-users costs	The DSO will provide information on cost-effective reinforcements in the transport and distribution network, which is necessary to maintain the safe supply of thermal energy.
Fuel supply sources and thermal energy reserve capacities to achieve the required levels of system safety and reliability	Thermal energy generation enterprises, including cogeneration.

The TSO (for electricity) and the DSO (for thermal energy) should commence activities for preparing balances on the 15th of June each year for annual balances and every two years for long-term balances. Initial drafts are prepared in September and, after receiving the opinion from the Ministry of Economic Development (Ministry), are sent to ERO for approval.

ERO analyses the document and, if necessary, requests additional information or clarification and approves it at the latest on 15th of December of the current year for the forecasted period.

CHAPTER II - METHODOLOGY FOR PREPARATION OF ENERGY BALANCES

The Methodology for preparing electricity and thermal energy balances for one-year and long-term (ten-year) periods describes the manner of preparing balances, necessary data, people responsible for providing data and time limits. The data on the annual balances are addressed on a monthly basis, and on the long-term balance on an annual basis.

Energy balances should include an explanation of how to calculate the forecasts of: energy generation, parameters (inputs) used in load and consumption calculation for each customer group and the total consumption, TSO and DSO energy losses, energy import and export, etc. as well as the description of the methodology (approach) for drafting the energy balance.

When forecasting the energy balance, the bottom-up or top-down approach (method) may be used, but notwithstanding the approach employed, energy generation and consumption must be balanced on a monthly and annual basis.

Top-down method

Under this method, generators forecast their production regardless of the consumption demand that might arise. Subsequently, the difference or lack of electricity, between generation and consumption may result in additional import or export. This method can result in a higher amount of import because generators can plan revisions or overhauls that are not aligned with the consumption plan.

Bottom-up method

When using the bottom-up approach, the demand forecast is first applied, and then demand coverage options from domestic generation and import are reviewed. The forecast of energy demand can be divided as follows: electricity demand forecast at distribution grid level and energy demand forecast at the transmission grid.

Considering the generators' non-flexible production and the changing consumption on a daily and monthly basis, the most appropriate approach would be to combine the two methods. According to this, the plan for generation of electricity from generators should be harmonized with the electricity consumption plan, so that the need for imports is as small as possible. The purpose of this method is that generation, namely consumption, is rationalized as a cost and quantity of generation and consumption.

7 PREPARATION OF ELECTRICITY BALANCES

The forecast of electricity demand

Electricity balances shall contain demand forecasts, maximum and minimum load (MW), transmission losses (TSO) and distribution losses (DSO) that are separately projected and added to demand forecasts; surpluses/shortcomings that will be calculated as difference between electricity forecast demand and available electricity from generation.

All demand forecasts should be based on the realization of past demands, expectations for increased number of customers, consumption fees impact, economic development and alternatives to replacement of electricity from other sources. The planning of consumption should also consider the GDP for the balance forecasting period, temperature changes and load connections/disconnections. Consumption planning should be tailored to known specific changes (e.g. large assumed loads, or forecast of changes in the operation of customers connected at the 110 kV level and higher).

Own consumption in thermal power plants

Fossil fuel-based thermal power plants must be supplied with electricity in order to put in operation the auxiliary systems of the thermal power plant, as well as auxiliary devices (e.g. respective mines). This section describes how the energy demand for thermal power plants will be calculated as it is necessary to correctly determine the energy used for own consumption.

Figure 1 presents a schematic representation of Kosovo A and Kosovo B thermal power plants, and the method of self-supply with electricity. Potential thermal power plants expected to be built in the future will have similar designs. The figure also shows the demand in the transmission system, which means: the DSOs and customers demand at the 110 kV level and higher.

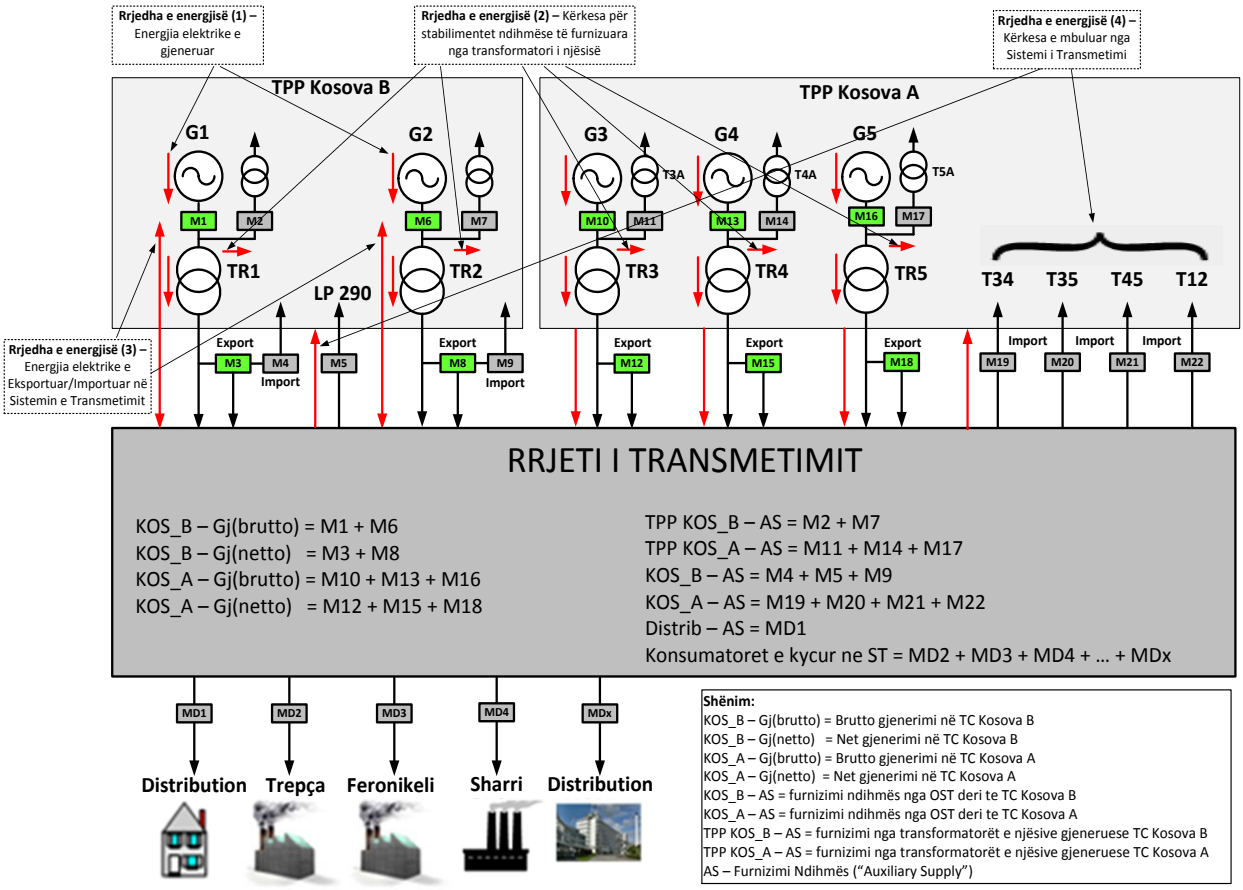

Figure 1 Scheme of electricity flows in Kosovo thermal power plants

Regarding energy flows in and from the thermal power plant, we can identify four energy flows:

- Energy flow (1)_- Gross energy produced by M1, M6, M10, M13 and M16 generators
- Energy flow (2) - Electricity used for own consumption supplied directly from the generator (self-consumption) through a unit transformer. This electricity flows through the transformer for own consumption of the unit (M2 and M7 for TPP B while M11, M14 and M17 for TPP A), and this electricity is not covered at all by the transmission system. When the generator unit does not produce, it will act as a load to the transmission system and will be considered as small import to the thermal power plant.
- Energy flow (3) - The energy received or supplied by the Transmission System through the generator transformer is equal to the energy measured by the M3 and M8 meters (export) or M4 and M9 meters (import).
- Energy flow (4) - Energy consumed by auxiliary power supply and other devices directly supplied by the Transmission System. This energy is measured with M5 and M19 to M22 meters.

All four types of energy flows are used for the compilation of Energy Balances.

7.1 Annual electricity balance

7.1.1 Contents of the Annual Electricity Balance

Content and data required for preparing the Annual Electricity Balance are listed below. Explanations for the points below are given in italics.

- Introduction.
- Review of the annual electricity balance.
- Criteria for drafting the annual electricity balance.
- Installation capacity for electricity generation– *Must be treated separately for each power plant, by type of primary source of electricity.*
- Electricity generation plan – *Must be treated separately for each power plant regardless of the type of primary source of electricity, capacity or the system in which it is connected to the network; For each generation unit of each power plant, the report will include the forecast for monthly electricity production, the electricity that will be used for own consumption (if any). Electricity for own consumption will be divided into electricity supplied by generators through block transformers and electricity supplied from the transmission system. The submitted documents will take into account the planned disconnections of generation units.*
- Renewable Energy Sources (RES) - *Must be treated separately according to the type of primary energy source*.
- Plan for total electricity generation – *A summary table covering the entire generation.*
- Import and export electricity planning –*Imports in the annual balance should be presented separately for different categories (universal service customers, unregulated customers, losses in transmission and distribution system, as well as imports to cover auxiliary services). Also, the balance should show the export when the system has excess electricity.*
- Electricity consumption plan - *Includes monthly energy demand for customers connected to the transmission system and customers connected to the distribution system, classified according to supply at the voltage levels (35kV, 10 kV, 0.4 kV).*
- Electricity losses – *Losses in transmission and distribution, divided into technical and commercial losses, i.e. unauthorized consumption of electricity (at the request of ERO can be also classified in different categories).*
- Maximum (peak) and minimum system load schedule - *Represents the maximum monthly (MW) system request per large customers, distribution, as well as the minimum request for the entire system*.
- Auxiliary services – In the context of auxiliary services the following will be presented: primary reserve (frequency-power), secondary and tertiary reserves foreseen for each month.
- Balance of annual electricity for the current year - *presents a monthly energy balance, including: production by generators, import by category (for regulated, unregulated customers, losses in TSO and DSO), consumption in distribution and transmission system (large customers, excavation, generator costs), transmission and distribution losses - technical and commercial (depending on ERO requirements and divided by categories), and exports representing excess*

electricity by making the equalization of the system balance. The method of balance components calculation can be found below in this document.

- Dynamics of coal production and consumption in relation to stock situation – *Monthly forecasts for production of lignite, consumption and movement of stock in storage*.
- Planning of overhaul and generation capacity revisions – *Provides a forecast of overhauls including possible future capacity changes (increase or decrease) due to repairs or other reasons that must be provided for each central regardless of whether it operates with fossil fuels, water or other renewable sources.*
- Emissions of air pollutants by thermal power plants for each energy generation unit by combustion of fossil fuels – *the planned emissions of SO_2, NO_x and CO_2 should be calculated by the thermal energy generation company itself on the basis of the amount of energy that is expected to be generated and the specific emission coefficient (i.e. the amount of emissions per unit of energy produced).*
- Indicators of power plant efficiency – *Calculation of the thermal efficiency of all fossil fuel power plants should be presented*.
- Overhauls, revision and maintenance of transmission (lines) and transmission (transformers) capacities and high voltage equipment in substations - *The text providing information regarding the table that describes overhauls shall be presented here.* The transmission system overhaul plan includes interconnection lines with other TSOs and transformers 400/220, 400/110 and 220/110 kV which are harmonized with TSOs of neighboring countries. *The initial date and supposed duration of the disconnection must be indicated for each disconnection.*
- Projects that are scheduled for the next year – *Overview of transfer projects expected to be realized during the next year.*

7.1.2 Energy balance

The energy balance contains all electricity flows at both transmission and distribution level. In case of annual energy balance, the balance must present the monthly flows.

The timeframes for drafting of the Electricity and Thermal Energy Balances are summarized in diagram form in the annexes to the rules on the preparation of energy balances.

- Net national product (PNn)

$$\boldsymbol{PNn = GnTC + Gt + Gsh}$$

Where:

G_nTC – Net generation of electricity from power plants

G_t - Generation of electricity from other generators connected to the transmission grid

G_{sh} – Generation of electricity from generators connected to the distribution grid

Net national production includes production from generators by deducting own costs from internal schemes and from transmission.

Production from power plants should be presented by separately treating generator's own consumption (from internal schemes and the transmission system).

$$GnTC = GbTC - Shvb - Shvt$$

Where:

GnTC – Net generation of electricity from power plants

GbTC – Gross generation of electricity from power plants

Shvb – Own consumption of power plants from internal schemes

Shvt – Own consumption of power plants from transmission

- Electricity at the entry of transmission (EhT)

Electricity at the entry of transmission represents the entire energy which loads the transmission network, which includes: national net production after deducting the production of generators at the distribution system, energy for own-consumption that is received from transmission and energy from imports.

$$Eht = PNn - Gsh + Shvt + Imp$$

Where:

PNn- National net production;

Gsh- Generation of electricity from generators connected to the distribution system;

Shvt- Own expenses of thermal power plants from transmission;

Imp- Import.

- Import (Imp)

Import means the electricity imported from all parties for the purpose of satisfying the difference between the overall demand of the party and the coverage of this demand from the national production. Import should be presented separately for different categories of customers, as well as a total amount of Kosovo's power system import.

$$ImpP = KP - MKPNn$$

$$Imp = \sum ImpP$$

Where:

ImpP – Import of the party;

KP- Demand of the party;

MKPN- Coverage of the party's demand from national production.

- Available energy (ED)

This amount of energy is obtained by adding the national generation and import as well as by deducting the previously contracted export:

$$ED = PN_n - Exp_{kp} + Imp$$

Where:

PNn- National net production

Exp_{kp}- Party's previously contracted export;

Imp- Import

- Overall demand of the electricity system (KS)

The forecast of the overall electricity system demand consists of distribution demand as well as transmission demand.

$$KS = Kkt + Km + Ksh + Hsh + Ht$$

Where:

Kkt – Consumption of customers connected to the transmission grid;

Km – Mining consumption;

KSh – Consumption of electricity in the distribution grid;

Hsh- Losses in distribution grid;

Ht – Losses at the transmission level.

- Transmission system demand (Kt)

Presents the energy demand of customers connected to the transmission grid including mining consumption and transmission losses.

$$Kt = Kkt + Km + Ht_{lej} + Ht_{tej}$$

Where:

Kkt- Consumption of customers connected at the transmission system;

Km- Mining consumption;

Ht_{lej}-Allowed losses at the transmission network;

Ht_{tej}-Exceeded losses at the transmission network.

- Distribution network demand (Ksh)

Distribution network demand is obtained taking into account the demand of customers' categories connected to the distribution network (35kV, 10kV and 0.4kV) and losses in the distribution network.

Distribution network electricity demand is calculated according to the following formula:

$$\boldsymbol{Ksh = Kksh + Hsh_{tek} + Hsh_{jotek} + Hsh_{tej}}$$

Where:

KKsh – demand of customers connected to the distribution grid;

Hsh_{tek}- technical losses in the distribution grid;

Hsh_{jotek} - nontechnical (commercial) losses in the distribution grid

Hsh_{tej} – Any exceeded eventual losses in the distribution network (presented as a difference between expected losses and losses allowed by ERO)

- Demand of the distribution network from the transmission network (Ksht)

$$\boldsymbol{Ksht = Ksh - Gjsh}$$

Where:

Ksh- Demand in the distribution network;
Gjsh – Production from generators in the distribution network.

- Network losses

The balance should also include transmission losses (allowed and exceeded), and distribution losses, which should be handled separately. They should be handled as:

- Transmission Network Losses:

  Allowed Losses and

  If the value allowed by ERO is exceeded, **Exceeded Losses**

- Distribution System Losses:

  Allowed Losses

  Technical Losses;

  Nontechnical (Commercial) Losses; and

  If the value allowed by ERO is exceeded, **Exceeded Losses**

- Export (Exp)

Export represents the amount of electricity delivered abroad, by each party, based on a contractual agreement, or any other agreement between the contracting parties.

$$\boldsymbol{Exp = \sum ExpP}$$

Where:

ExpP- Export of parties.

Balance reconciliation (S)

The Electricity Balance represents the total energy entering the system and energy leaving the system. Balance equalization is done as follows:

$$S = PNn - KS + Imp - Eks = 0$$

Where:

PNn- National net production;

KS- Overall demand of the power system;

Imp- Import;

ExpP- Export of the parties;

7.1.3 Deadlines for the annual electricity balance

ERO is required by the Law on Energy to approve and publish the Annual Energy Balance at latest by fifteen (15) December of the current year that precedes the following period.

The TSO should submit the Annual Electricity Balance to ERO upon receipt of the opinion by the Ministry. The following deadlines are in accordance with the Law on Energy, and present obligatory deadlines for the compilation of the balance:

- By the 15th of June of each year, ERO will request, through an official letter, the inclusion of certain data in the annual forecasting. If requests are not submitted by June 15, then TSO will assume that the format will be identical as the previous one.
- The TSO will submit questionnaires to obtain data from generation companies, DSO, suppliers as well as other parties by 1st of July. Customers supplied at the level of 110kV and higher will be required to provide information on the forecast of their consumption. Samples of these questionnaires are provided in Annex C to this Rule.
- Questionnaires filled in by the parties should be returned by July 31st.
- Between the 1st of August and the 10th of September, the TSO will prepare the draft Annual Balance of Electricity. During this period the TSO may have additional questions regarding the data submitted by the parties. Such remarks may be submitted in the case of ambiguity, misunderstandings, possible mistakes, etc. Should the TSO identify any remarks, it will discuss it with the party that provided the relevant data.
- The TSO shall send the initial draft of the Annual Electricity Balance for consultations by the 10th of September. This document should be submitted to the Ministry for comments, and the ministry should return eventual comments to the TSO within 20 calendar days from the day of submission.
- The TSO shall include the comments of the Ministry and send the document to ERO for review and approval by 5th of October.
- ERO shall analyze and submit the first comments on the balance to the TSO by the 25th of October. TSO's responses on ERO's comments, which essentially do not affect the parties, shall be submitted with a deadline of 5 working days. If the document undergoes substantial changes (according to the assessment of ERO or KOSTT) from the initial data submitted by the parties,

then the relevant data according to the responsibilities are sent once again to the parties for commenting, with a response period of 7 calendar days from the date of submission (other parties in relation to KOSTT). If within this period there is no comment, then it is considered that the parties have no objections.

- The final document after the inclusion of all comments, including eventual comments from the Regulator, should be sent to ERO for approval no later than the 30th of November.
- The Regulator shall, at the latest, by the 15th of December of the current year, approve the balance and unify it in a joint document with the thermal energy balance and the same shall be published on the official website.

The parties are obliged to submit in excel format (spread-sheet), together with the questionnaires, the calculations of all data on hourly basis (summarized), in order to argue the rationale of values presented in the document, and together with its own calculations, the TSO should submit them to ERO with the balance sheet.

7.2 Review of the annual electricity balance

n case of any event related to the production or consumption of electricity that will change the forecasts compared to those presented in the approved Balance Sheet for the current year, and if the change in the production forecast exceeds the value by 15% of the annual forecast of national production, or if the change in the consumption forecast exceeds the value of 10% of the annual system demand forecast, the parties may request a review of the Annual Electricity Balance.

The implementation of the change will include the period from the date of receipt of the request for change by the Transmission System Operator. The Transmission System Operator analyses the request for change, and if it deems that the request meets the criteria of this paragraph, then in consultation with ERO will initiate the amendment of the Electricity Balance for the current year. This amendment must be included in a new version of the document, which must be prepared by the Transmission System Operator, no later than 10 calendar days from the receipt of the request.

ERO will review and approve the revised document, no later than 10 calendar days from the receipt of the document for approval (depending on the possibility of holding a meeting of the ERO board).

7.3 Long-term (10 year) electricity balance

The long-term electricity balance includes analysis of 3 year historical data and an analysis for the next 10 years. Historical data will be obtained from the realization of electricity from previous years.

7.3.1 Economic development projections

Economic development projections, which the TSO obtains from the Ministry, taking into consideration scenarios based on the Energy Strategy and the annual growth rate of GDP. On these grounds, the TSO shall also prepare scenarios for developing energy demands. Each scenario will include assessment related to energy demand.

7.3.2 Demand and loss forecasts

For the most part of the demand, forecasts are based on:

- Current demand and historical demand trends,
- Growth factors based on economic development projections,
- Information provided by the DSO,
- Information provided by licensed suppliers,
- Large individual demands (customers connected at the 110 kV level or higher) will be treated separately.

Transmission losses are forecasted by TSO, while distribution losses by the DSO and results are communicated to the TSO. The balance document must explain the method used for loss calculation. The losses in transmission and distribution should be presented separately in the balance and the same should be divided into technical and commercial losses, and other categories as requested by ERO.

7.3.3 Generation forecast

During the preparation of long-term balance, it is necessary to make assumptions based on circumstances and developments that affect the electricity sector.

Existing generation capacities

It is assumed that existing generation capacities will continue to operate on the same basis as in the previous years, unless the TSO is informed that thermal power plant will be closed or temporarily disconnected for technical reasons, e.g. repairs or overhauls. This information is usually confidential and can only be included if the owner's explicit consent has been obtained or if the exclusion of this information would have a negative impact on the accuracy of the energy balance (see Article 10 of the Planning Code).

New generation capacity

New or proposed generation capacity may have one of the following statuses:

- Under construction;
- Approved, with a connection agreement, but construction has not yet started;
- Planned, with or without a connection agreement.

The long-term Electricity Balance will include all power plants that have signed a Connection Agreement: The commissioning dates for these new power plants will generally be the same as those presented in the Connection Agreement, unless the TSO can prove that these dates are not realistic (or are impossible) to achieve. Information on electricity generating power plants without the Connection Agreement must be considered confidential (Ref. Item 10 of the Planning Code). If electricity generating power plants without the Connection Agreement are included in the long-term Electricity Balance, then they will be included taking into account generation scenarios from the current Energy Strategy.

7.3.4 Emissions of air pollutants

The TSO will request data on emissions of air pollutants from generation companies. This will mainly be calculated by the generation companies, multiplying the expected production of energy with a specific emission rate (expressed in volume or weight, or emission of pollutants per unit of energy produced).

If generation companies expect the emission of specific pollution rate to change in the future (for example, due to changes in fuel, or installation of emission control equipment), then they will show the "before" and "after" values, as well as the date when change is expected to occur.

7.3.5 Content of Long-Term Electricity Balance

Main points of the content of the long-term Electricity Balance are shown below. Explanations are given in "*italic*".

- Introduction,
- Kosovo Electricity Industry,
    - Market structure and legislation in the electricity sector,
    - Overview of Kosovo's transmission network,
    - Vision of the long-term development of the transmission network,
- Electricity demand forecasts,
    - Methodology for forecasting the demand,
    - Forecasting demand growth in different scenarios - *For each scenario, the report will include information on GDP growth, the ratio between GDP and demand, maximum demand and total electricity demand for each year, as well as assumptions regarding electricity consumption. Demands of customers connected to the 110 kV voltage and higher will be treated separately.*
- Forecasting of electricity supply,
    - Overview of past and present situation in the SEE,
    - Electricity generation – *This will include an overview of existing electricity generating power plants - capacity, fuel type and thermal efficiency (for fossil-fuel-based power plants), efficiency of hydro power-plants, wind and photovoltaic power plants,*
    - Forecasting of electricity generation – *For each scenario, this will present an overview of electricity generating power plants - building of new capacities, closing, rehabilitation - and the expected energy that will be supplied by each power plant,*
    - Lignite in Kosovo – *This will include forecasts of expected lignite production - data must be provided by mine owners*.
- Electricity supply and demand balance – *For each scenario, this section shows total Electricity Balance for the previous three years, and for each of the next ten years. It represents the total available electricity and compares it with the total expected electricity demand. It also represents the expected maximum consumption position,*
    - Electricity supply and demand balance in previous years,

  - Import and export of electricity - *For each scenario, this part will encompass the import and export of electricity for each year,*
  - Long-term Electricity Balance for the following period - *For each scenario, this part shows the total Electricity Balance for the next ten years.*
- Reliability and quality of supply - *This includes data on unsupplied energy,*
  - Reliability of transformers and transmission lines– *This includes data on discontinuation of lines, average number and duration of overhauls in the lines, as well as the average number and duration of overhauls in transformers,*
  - Reliability of distribution lines and transformers - TSO will request information from DSO regarding these data*,*
  - Availability of electricity production,
- Emissions of air pollutants from electricity generation in Kosovo – *For each fossil fuel-based unit, the predicted emissions SO_2, NO_x and CO_2 will be calculated based on predicted electricity generation and specific emission rate (i.e. the amount of emissions per unit of generated electricity). Comparison between emission rates and Kosovo standards will also be made,*
  - Legal framework
  - Current state of emission levels of pollutants from thermal power plants and emissions forecasts for the forecasting period
- Annex A - *Fundamental features of the transmission* grid
- Annex B - *Generation Development Scenario I*
- Annex C - *Generation Development Scenario II*
- Annex D - *Generation Development Scenario III*
- Annex E - B*asic scenario of power demand and power peak in Kosovo*
- Annex F - F*uel needs of existing and new thermal power plants*
- Annex G - *Pollutants emission level*

7.3.6 Long-Term Electricity Balance deadlines

According to the Law on Energy, the long-term Energy Balance is approved for a ten (10) year period. Updates of the long-term Energy Balance are approved every two (2) years.

The TSO should submit the long-term Electricity Balance to ERO after consultation with the Ministry[1].

The following timelines are harmonized with the Law on Energy and present compulsory schedules for the preparation of long-term Electricity Balance:

- By the 15th of June of every second year, ERO will request, through an official letter, the inclusion of certain data in the long-term forecasting. If requests are not submitted by June 15, then TSO will assume that the format will be identical as the previous one.
- By 1st of July:
  - The TSO will submit questionnaires, to the relevant Ministry, regarding economic development projections and development of energy capacities to be used during the preparation of a long-term electricity balance. This includes projection requirements for economic development and prospects for future generation (capacity building and closure). One sample of this document is provided in Annex B of this Rule. TSO will require meetings to discuss this document.
  - TSO will also send a formal request ("questionnaire") to other parties (DSO, suppliers, generation companies, customers who are supplied at the level of 110kV and higher) so that TSO could be able to prepare long-term Electricity Balance. Samples of these questionnaires are given in Annex D of this Rule.
- Questionnaires completed by the party must be returned by the 31st of July.
- In the period between 1st of August until the 10th of September, the TSO will prepare the draft of the Long-Term Electricity Balance. During this period, the TSO may have additional questions about the information provided by parties. Such remarks may be submitted in case of ambiguity, misunderstanding, possible mistakes, etc. Should the TSO identify any remarks, it will discuss it with the party that provided the relevant data. The OST shall send the initial draft of the Annual Electricity Balance for consultations by the 10th of September. This document should be submitted to the Ministry for comments, and the ministry should return eventual comments to the TSO within 20 calendar days from the day of submission.
- The TSO shall include the comments of the Ministry and send the document to ERO for review and approval by 5th of October.
- ERO shall analyze and submit the first comments on the balance to the TSO by the 25th of October. If the document is subjected to substantive changes (according to ERO or KOSTT's assessment) from the initial data provided by the parties, the corresponding data, based on their area of responsibility, will be resent to parties for commenting, with a deadline of 5 calendar days to reply (other parties in relation to KOSTT). If there are no comments within that period, the TSO shall consider that parties have no objections. TSO's responses to ERO's comments, which do not substantially affect the parties, should be made within 5 working days.

[1] Law on Energy No. 05/L-081, Article 8, paragraphs 4- 6.

- The final approved document after the inclusion of all comments should be sent to ERO no later than the 30th of November.
- The Regulator shall, at the latest, by the 15th of December of the current year, approve the balance and unify it in a joint document with the thermal energy balance and the same shall be published on the official website.

The parties are obliged, together with the questionnaires, in Excel format, to submit calculations of all data (summarized) in order to argue the justification of presented values in the document, and as such, together with their calculations, TSO should submit them to ERO with the balance document.

7.4 Generation Adequacy Plan

The Grid Code obliges the TSO to create a Generation Adequacy Plan (GAP) every two years (Article 9 of the Planning Code). There is a series of duplicated data between the GAP and the long-term Electricity Balance. These two documents show how the future demand for electricity in Kosovo will be met.

Generation Adequacy Plan is prepared using the same data as long-term Electricity Balance. It also meets the requirements of ENTSO-E, as well as the obligations of the TSO according to European Contract.

8 PREPARATION OF THERMAL ENERGY BALANCES

8.1 Data required for Thermal Energy Balance

Thermal Energy Balances must contain data based on which can be made energy forecasts, including elements:

- **Thermal energy generation plan**
  - Existing generation capacities by type of fuel (cogeneration/oil)
  - Gross generation
  - Own consumption
  - Net generation
- **Demand/Consumption**
  - Capacity and thermal energy demand forecast
  - Demand (consumption) of existing and potential customers in distribution
  - Own consumption of the thermal energy generation plants
- **Network Losses**
  - Transmission losses
  - Distribution losses
    - Technical losses
    - Commercial losses (unauthorized use of thermal energy)
- **Thermal Energy Customer Supply Plan**
- **Efficiency of thermal energy**
- **Annual Thermal Energy Balance**
- **Planning for overhaul, repair and maintenance of production capacities and grid**
- **Emissions of air pollutants from the thermal energy production plant**

8.1.1 Thermal Energy Demand Forecast

Thermal Energy Balance will include demand forecast, maximum and minimum load (MW_{th}), own consumption, transmission and distribution losses, which are separately forecasted and will be added to demand forecasts.

Customer Demand forecast

The methodology used for thermal energy demand forecast by customers takes into account determining factors such as:

- Historical data on thermal energy consumption (in MWh) in the last 3 years;
- Indicators of the country's economic development (GDP);
- Planning for the expansion of the system - the growth of the customer base and, accordingly, the consumption;
- Corrective factors such as e.g. energy efficiency, climatic conditions, etc.

Forecasting own-consumption of thermal energy generation plants

Thermal energy generation plants consume a certain amount of thermal power in order to put in operation auxiliary systems - primarily fuel heating systems (for liquid fuels) or for drying fuel (solid fuels) - as well as for heating the plant's premises.

Forecasting own consumption should take into account the consumption of existing plants and those expected to be constructed within the period covered by the forecast.

8.2 Annual thermal energy balance

Annual Thermal Energy Balance will include demand forecast (consumption) of current and potential customers, as well as own consumption of the thermal energy generation plant.

8.2.1 Content of annual thermal energy balance

The content and instructions for development of the Annual Thermal Energy Balance are listed below. More detailed instructions on the sections are given in *italic*.

- **Introduction** - *this chapter must include the following sub-components*:
  - Legal basis*;*
  - Data and used information –
  - Basic criteria for the preparation of Annual Thermal Energy Balance
- **Thermal energy system**– a short description of thermal energy system where the following sub-components will be covered:
  - Thermal energy generation capacity,
    - *Installed capacities [in MW] and operational/available capacities [in MW] unit, including cogeneration;*
    - *The year of commissioning and the planned year of decommissioning;*
    - *Thermal efficiency of units/boilers [in %], as well as fuel type and fuel consumption for each unit [per ton/MWh].*
  - Distribution grid (for DH Termokos and the transport grid of TPP Kosovo B-DH Termokos),
  - Vision/plans for development of thermal energy system.
- **Thermal Energy Generation Plan**
  - Availability and reliability of existing capacities of thermal energy generation and reserve capacity of thermal energy;
  - Forecasts for increase of generation capacities, or for the development of new generation capacities;
  - Energy efficiency indicators of generation plants;
  - Fuel reserves, or sources of fuel supply;

  The spread-sheet must contain:
  - Thermal energy introduced by fuel (in MWh_{TH}) calculated by multiplying the amount of fuel (per ton, i.e. litres) and low calorific value (MWh_{TH} / ton or MWh_{TH} / litre);

- Gross thermal energy generation (MWh_{TH});
- Own consumption (in MWh_{TH}): i) Consumption of thermal energy for functioning of auxiliary systems; and ii) consumption of thermal energy for heating the plant's premises;
- Net thermal energy generation (in MWh_{TH}), which is introduced into thermal energy transmission i.e. distribution grid.

- **Grid losses** – monthly and total predictions of losses in the transmission grid (if applicable) and in the distribution grid of thermal energy:
  - general explanations of the current level of losses, the main causes of the current level of losses;
  - explanation of the losses forecast;
  - Tabular and graphic presentation, where quantitative losses [in MWh] and percentage [%] are presented.
- **Thermal energy supply plan for customers** - contains monthly and total forecasts for thermal energy supply. The supply plan should contain:
  - A brief description of current supply and information for existing customers;
  - Corrective factors, e.g. energy efficiency, climatic conditions, etc.;
  - Tabular and graphical presentation of supplies, per months and in total.
- **Balance of the annual thermal energy** - It represents a monthly energy balance, based on monthly differences between thermal energy demand/supply and thermal energy generation plan, including grid losses. Balance represents the ability to meet the predicted demand for thermal energy, taking into account the production or purchase of thermal energy and grid losses;
- **Planning of overhaul, repair and maintenance of generation capacities and grids** - Possible changes in capacity in the future (increase or decrease) due to overhauls/repairs or other reasons;
- **Emissions of air pollutants from the thermal energy generation plant** - For each fossil fuel - based unit, predicted emissions of SO2, NOx and CO2 should be calculated on the basis of the amount of energy that is expected to be generated and the specific emission coefficient (i.e., the amount of emissions per unit of generated energy). Emissions from cogeneration are divided proportionally to the amount of electricity used for thermal energy in relation to the total generated electricity.

8.2.2 Deadlines for Annual thermal energy balance

Pursuant to the Law on Energy, ERO is required to adopt and publish the Annual Energy Balance, no later than the fifteenth (15) December of the current year proceeding the next period.

The thermal energy distribution system operators must submit the Annual Thermal Energy Balance to ERO after obtaining the Ministry's opinion. The following deadlines are in accordance with the Law on Energy and represent mandatory deadlines for preparation of the Annual Thermal Energy Balance:

- By the 15th of June, each year, ERO will require, through an official letter, the inclusion of certain data in the annual forecast. If no such request is submitted by June 15, then thermal energy distribution system operators will assume that the format will be identical to that of the previous year.
- By the 1st of July, thermal energy distribution system operators shall submit questionnaires to obtain data from other parties as defined in chapter 6. Samples of these questionnaires are given in Annex E of this Rule.
- Questionnaires filled in by the relevant parties should be returned by the 31st of July.
- During the period from July 31 to September 10, Thermal Energy Distribution System Operators will prepare initial draft of Annual Thermal Energy Balances. During this period, thermal energy distribution system operators may have additional questions about the data provided by other parties. Such questions can be posed in case of ambiguity, vagueness, possible mistakes, etc. If thermal energy distribution system operators identify such a remark, they will discuss this issue with the party that provided the information and try to explain the data or information. In that period, thermal energy distribution system operators will issue initial plans for the Annual Thermal Energy Balance for the consultations.
- The DSO shall send the initial drafts of Thermal Energy Balances for consultations by the 10th of September. This document must be submitted to the Ministry for comments whereas the same must provide the comments to the DSOs within 20 calendar days from the day of submission.
- DSO shall include the comments of the Ministry and send the document to ERO for review and approval by the 5th of October.
- The Operators of Thermal Energy Distribution Systems shall, by 20th of October, compile the final drafts of Annual Thermal Energy Balances and send the same to ERO for review and approval.
- The ERO carries out analysis and sends the initial comments to the DSOs. If the document suffers substantive changes (according to the assessment of ERO) from the initial data provided by the parties, in that case the corresponding data according to responsibilities should be sent once again to the parties for comments, with a deadline of 5 calendar days for replying. If there are no comments in that period, TSO shall consider that parties have no objections. DSO responses to ERO comments that do not essentially affect the parties must be made within 5 working days.
- The final document for approval shall, after the inclusion of all comments, be sent to ERO by 30th of October.
- The Regulator shall, at the latest, by 15th of December of the year preceding the following period, approve the thermal energy balances and unify it in a joint document with the electricity balance as well as publish it in the official website.

8.3 Long-term Thermal Energy Balance

The Long-Term Energy Balance includes analysis of historical data over the past 3 years, as well as planning for the next 10 years. These data will be obtained from the Thermal Energy Balance for previous years.

8.3.1 Economic development projections

Thermal Energy Distribution System Operators are provided with economic development projections from the Ministry, demanding to take into account 3 scenarios (low, medium and high scenario). The basic indicator required is the GDP's annual growth rate. Based on this, thermal energy distribution system operators also prepare scenarios for the development of demand for thermal energy. Accordingly, estimates (planning) of demand for thermal energy will include 3 scenarios.

8.3.2 Predictions of demand and losses

For the most part of the demand, predictions are based on:

- Existing demand and historical trends in demand/consumption (in MWh) in the last 3 years;
- Growth factors based on economic development projections, indicators of economic development of the country (GDP);
- Information provided on system expansion plans - increasing the customer base and, accordingly, consumption.

In prediction of demand, the prediction of own consumption of thermal energy generation plants should also be considered.

Prediction of grid losses should include losses in the transmission grid (if applicable) and the thermal energy distribution grid by years for a ten-year period; in prediction of losses, a realistic approach should be applied and acceptable levels of justified losses should also be predicted. This section should also include explanations of calculations for losses.

In particular, prediction of grid losses should include:

- general explanations of the current level of losses, the main causes of the current level of losses;
- explanations for the projection of losses;
- tabular and graphic presentation showing quantitative losses [in MVh] and percentage [%] by years.

8.3.3 Thermal energy generation forecast

Thermal energy generation forecasts should contain the forecast of generation from existing capacities and new planned capacities (if applicable).

- ***Existing capacities***

Existing generation is assumed to continue to operate on the same basis as in previous years. Exceptions include the cases where, during the planning period, an increase or a decrease of the existing capacity is planned, as in cases when:

- There are plans to decommission a thermal energy generating unit causing a reduction of generation capacities; or in cases of outages due to technical issues when general repairs or overhauls are planned over long periods of time resulting in a reduction of thermal energy generation in a given year.
- There are plans for rehabilitation of one or more thermal energy production units that will affect the increase of production capacities against existing capacities.

➢ ***New generation capacities***

Thermal energy generation plans in the Long-term Balance should include plans for new thermal energy generation plants/units. Projections should be based on the planned commissioning date. In order to make a more realistic planning of commissioning period for new production capacity, it should be taken into account whether the planned generation capacities are:

- Under construction;
- Approved, with the connection agreement being signed but the construction has not yet started;
- Planned, with or without a connection agreement being signed.

8.3.4 Pollutants' emission forecast

Pollutants' emission forecasts will be done by fossil fuel based thermal energy generation enterprises. They will generally be calculated by generation enterprises, multiplying the projected energy generation with a specific emission rate (expressed in volume or weight or emission of pollutants per unit of generated energy).

If the generating enterprises expect the specific emission rate to change in the future (for example due to fuel substitution or due to the installation of emission control facilities) they will then have to show the changed values for the period before and after the date the change is expected to occur.

8.3.5 Contents of the document

The contents and guidelines for drafting the Long-Term Thermal Energy Balance are listed below. The most detailed guidelines for the following items are given in *italics*.

- **Introduction -** this chapter should include the following sub-components:
  - Legal basis;
  - Data and information used;
  - Basic criteria for drafting the Long-Term Thermal Energy Balance.
- **Thermal Energy System:**
  - Thermal energy generation capacities:
    - The installed capacity [in MW] and operational/available capacity [in MW] of units/boilers for generating thermal energy (the capacities of exchangers/thermal energy extraction station should be provided for cogeneration);
    - The year of commissioning (of starting operation) and the planned decommissioning year (of ceasing operation);
    - The thermal efficiency of units/boilers [in %], as well as the type of fuel and fuel consumption for each unit [in tons/MWh].

- New generation capacity forecasts;
- Distribution grid (for DH Termokos and transport network Kosovo B - DH Termokos) - data and information on the existing situation of the network, such as: length of the pipeline; the number of substations, metering situation;
- The vision/plans for the development of the thermal energy system - a brief description should be given with regard to the long-term plans for the development of thermal energy generation capacities, as well as the plans for network development (both for rehabilitation and for expansion).

- **Thermal energy generation plan** – should contain annual forecasts for each thermal power plant; in particular, it must contain:
  - Availability and reliability of existing capacities for thermal energy generation and reserve capacity of thermal energy;
  - Forecasts for increasing generation capacities, i.e. development of new generation capacities;
  - Energy efficiency indicators of generation plants;
  - Fuel reserves, namely the sources of supply with fuels; and
  - Tabular presentation of thermal energy generation forecasts, including: i) fuel consumption/energy input from the fuel; ii) gross generation; iii) thermal efficiency of generation plants; iv) own consumption and v) net generation.
- **Grid losses** – Annual forecasts for transmission network losses (if applicable) and thermal energy distribution losses, should include:
  - general explanations of the current level of losses, the main causes of the current level of losses;
  - explanation of loss forecasts - if a loss reduction is foreseen then justification should be given;
  - Tabular and graphical presentation showing the quantitative losses in megawatt hour [MWh] and in percentage [%].
- **The plan for supplying customers with thermal energy -** contains annual forecasts for supply with thermal energy; the supply plan should include:
  - A brief description of the current supply and information on existing customers;
  - Explanations regarding supply projections, providing the plans to increase the customer base and consequently the supply with thermal energy;
  - Tabular and graphical presentation of supply by years.
- **Summary of the Long-Term Thermal Energy Balance** - It represents a long-term energy balance, based on the monthly differences between thermal energy demand/supply and thermal energy generation plan, including grid losses. Balance represents the ability to meet the forecasted demand for thermal energy, taking into account the generation or purchase of thermal energy and grid losses;

- **Planning the rehabilitation of generation capacities and grids** - Possible future changes in capacities (increase or decrease) due to rehabilitation or other reasons;
- **Emission of air pollutants by thermal power plants** - For each unit using fossil fuel, the predicted SO2, NOx and CO2 emissions shall be calculated based on the amount of energy to be generated and the specific emission coefficient (i.e. the amount of emission per unit of generated energy).

8.3.6 Timeframes of the Long-Term Thermal Energy Balance

According to the Law on Energy, the Long-Term Energy Balance is approved for a period of ten (10) years. The Long-Term Energy Balance updates are approved every two (2) years.

Thermal Energy Distribution System Operators should submit the Long-Term Thermal Energy Balance to ERO after receiving the opinion from the Ministry.

To ensure the fulfilment of these requirements and the timely and efficient compilation of the Long-Term Thermal Energy Balance, the following timeframes must be complied with:

- By 15th June of every second year, the ERO will request, via an official letter, the inclusion of certain data into the long-term forecast. If no such request is submitted by 15 June, the Thermal Energy Distribution System Operators will then assume that the format will be identical to that of the previous year.
- By 1 July:
  - Thermal Energy Distribution System Operators will submit to the Ministry the questionnaires related to economic development projections (Table F2, Annex F) and energy capacity developments (Table F1, Annex F) in order to use them while drafting the Long-Term Thermal Energy Balance. Besides the Ministry, the energy capacity development questionnaire is also sent to the respective municipalities for completion. Thermal Energy Distribution System Operators will request the organization of meetings to discuss this document.
  - Thermal Energy Distribution System Operators will also submit questionnaires to obtain data from other parties as set out in Chapter 5. Samples of these questionnaires are given in Annex H to this Rule.
- Questionnaires filled in by relevant parties should be returned by 31 July.
- During the period from 31 July until 10 September, Thermal Energy Distribution System Operators will prepare the initial drafts of the Long-Term Thermal Energy Balances. During this period, Thermal Energy Distribution System Operators may have additional questions regarding the data provided by other parties. Such questions may be done in case there are ambiguities, uncertainties, possible mistakes, etc. Should the Thermal Energy Distribution System Operators identify such a thing, it will discuss this issue with the party that provided the data in question and try to clarify the data, namely the information provided. Within this period, Thermal Energy Distribution Systems Operators will publish the initial drafts of Long-Term Thermal Energy Balances for consultations.
- By 10 September, DSOs will send initial drafts of Long-Term Thermal Energy Balances for consultations. This document should be submitted to the Ministry for their comments, while the Ministry should return the comments to the DSOs within 20 calendar days from the day the document was submitted to the Ministry.

- By 5 October, DSOs will include the comments of Ministry and send the document to ERO for review and approval.
- By 20 October, Thermal Energy Distribution System Operators will issue the final drafts of the Long-Term Energy Balances and submit them to ERO for review and approval.
- ERO analyses and submits the first comments on the balance to the DSOs. If the document undergoes essential changes (according to ERO's assessment) from the initial data sent by the parties, then the respective data by responsibilities are also sent to the parties for providing their comments, with a response time of 5 calendar days from the date such data are sent to the parties. If there is no comment within this period, it is then considered that the parties have no objections. DSO responses to ERO's comments that do not essentially affect the parties should be made within 5 working days.
- The final approval document, after being supplemented with all comments, should be sent to ERO no later than 30 November.
- At the latest by 15 December of the current year preceding the next period, the Regulator approves the thermal energy balance and unifies it with the electricity balance in a joint document, publishing it on its official website.

CHAPTER III - FINAL PROVISIONS

9 GENERAL PROVISIONS

9.1 Official language

This rule, together with the methodology, is published in the official languages in the Republic of Kosovo. In the event of discrepancies between versions, the Albanian version shall prevail.

9.2 Interpretation

In case of uncertainty about any provision of this document, the ERO Board shall provide clarifications.

9.3 Supplements and amendments to the Rule and methodology

The document is subject to review as well as supplements and amendments by the ERO Board. The procedures for supplementing, amending or modifying this document are the same as those that apply for its approval.

9.4 Entry into force

This Rule and methodology (included within the Rule), will enter into force on the day of its adoption by the ERO Board, and repeals the document ZRRE/No.16/2018 “Rule and Methodology on Preparation of Electricity Balances”.

The document will be published on ERO's official website.

Board of the Energy Regulatory Office:

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Arsim Janova, Acting Chairman

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Besim Sejfijaj, Member

_____
Selman Hoti, Member

_____
Izet Rushiti, Member

CHAPTER IV - ANNEXES

10 ANNEX FOR ELECTRICITY BALANCES

This Annex contains details of questionnaires that will be distributed in order to collect necessary information and data for preparation of energy balances. The questionnaires will be sent to all parties whose data and information are considered necessary for the preparation of energy balances. When processing these data, in cases where the parties designate the information as confidential, KOSTT must take into account the confidential treatment of such data. For providing the parties easier access, questionnaires will be issued in EXCEL format and therefore their format may differ slightly from the one shown in this document. However, the content must remain the same.

	Annual Energy Balance	Long-term Energy Balance
Producers	Yes	Yes
DSO (distribution)	Yes	Yes
Licensed suppliers	Yes	Yes
Customers connected to voltage level of 110 kV or higher	If they are not entitled the universal supply but they provide supply themselves	If they are not entitled the universal supply but they provide supply themselves

10.1 ANNEX A - TIME SCHEDULES FOR ELECTRICITY BALANCES

Table A1) - Time schedules for the electricity balances

	June	July	August	September	October	November	December
Annual Electricity Balance	In case the balance format differs from the previous version, ERO sends an official letter to TSO for inclusion of certain data in the balance. TSO prepares questionnaires and sends them to the parties.	The parties fill in the questionnaires and send them to the TSO	TSO prepares initial draft of the balance	After receiving the opinion from the Ministry, TSO shall submit the initial draft of the balance to ERO	Any changes to the balance and submission of the final version for ERO approval	Reviewing the final draft of the balance by ERO and, if there is any remarks, their submission to the TSO. Completion of the document by the TSO.	Approval of the annual electricity balance by the ERO Board and the publication of the unified Balance on ERO's website.

10.2 ANNEX B - QUESTIONNAIRE FOR THE MINISTRY OF ECONOMIC DEVELOPMENT

Table B1) **- Economic Development Projections:**

MED - DATA FOR THE NEXT 10 YEARS - SCENARIO……												
New lignite-based Power Plants - Power, Energy		**n[1]**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
New lignite-based PP – Installed Capacity	MW											
New lignite-based PP – Gross Generation	GWh											
HPP – over 10 MW		**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
HPP – Installed Capacity	MW											
HPP – Gross Generation	GWh											
HPP - under 10 MW		**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
HPP - Installed Capacity	MW											
HPP - Gross Generation	GWh											
Other renewable energy sources - RES (wind, biomass, solar, etc.) – power, energy		**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
RES - Installed Capacity	MW											
RES - Gross Generation	GWh											

Table B2) **- Economic Development Scenarios for GDP:**

MED - DATA FOR THE NEXT 10 YEARS												
BASE SCENARIO		**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
GDP	**%**											

LOW SCENARIO		**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
GDP	**%**											

HIGH SCENARIO		**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
GDP	**%**											

10.3 ANNEX C - QUESTIONNAIRES FOR THE ANNUAL ELECTRICITY BALANCE

This section presents questionnaires that will be provided by the TSO to parties in order to complete the Annual Electricity Balance.

Table C1) – Questionnaire for generation enterprises on installed capacities

Generator ..... Generation unit .....

Installed Capacity					
Commissioning year (Date)	**Installed Capacity MW**	**Available Power MW**		**Technical Minimum MW**	
		Generator	Threshold	Generator	Threshold

Table C2) **– Questionnaire for forecasting generation by lignite-based generation enterprises (or other fossil fuels)**

Planned generation for the current year. Thermal Power Plant.....

Planned Generation														
Month		**Total**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Gross Generation	MWh													
Self-consumption	MWh													
Net Generation	MWh													
Transmission generation cost (from energy generated from the transmission system for own consumption) (Energy from TS)	MWh													

Note:

Please refer to Figure 1 of this document for explanation of the numbering of electric meters, where:

1. *Gross generation refers to electric meters reading M1, M6, M10, M13, and M16.*
2. *Own consumption from internal schemes refers to electric meters reading M2, M7, M11, M14, and M17.*
3. *Own consumption from transmission refers to electric meters reading M4, M5, M9, M19, and M22.*

Planned fuel and heavy fuel oil consumption for the current year. Thermal Power Plant.....

Planned fuel and residual fuel oil consumption														
Month		**Total**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
HFO consumption	ton													
Oil consumption	ton													

Table C3) **- Specific Emissions**

Thermal Power Plant ..... Generation block.....

Calculated emissions for the current year						
Month	**Energy Production**	**Dust**	**SO2**	**NOx**	**CO2**	**Ash Production**
	MWh	t	t	t	t	t
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						
Total						
Per unit	(kg/MWh)	1.8	2.88	3.07	1143	236

Table C4) **- The dynamics of generation and production of coal as well as the stock of coal**

Thermo Power Plant .....

Production and consumption of coal				
Months	**Coal Generation**	**Coal Consumption**	**Market (Sales to third parties)**	**Stocks**
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				
November				
December				
Total				

***Table C5)* - Questionnaire for non-fossil fuel-based generation enterprises**

Planned electricity generation for the year ……..

Power Plant: ……..

Planned Electricity Production													
Month	**Total**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Generator G1													
Generator Gn													
Total													

Table C6) - Questionnaires for overhauls for generation enterprises

Planned outages for Maintenance or refurbishment for year……

Planned outages for Maintenance or refurbishment													
Month	**Total**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Generator G1													
Generator Gn													
Total Ri, Re, R													

*Note: **Ri** refers to Repairs, **Re –** Revisions, and **R** – Reserves*

***Table C7)* - Questionnaire for DSOs/suppliers**

Customer demand in the Distribution Network

Customer demand in the Distribution Network													
Month	**Total**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Distribution demand													
Distribution HPP and RES-based HPP													
Available													
Delivered													
35kV													
10(20)kV													
0,4kV													
Household													
Net Distribution Network													
Technical Losses													
Commercial Losses													
Exceeded Losses													
Total Losses in the Distribution Network													

Table C8) - Questionnaire for suppliers on the import for regulated customers

Questionnaire for suppliers on the import for regulated customers													
Month/MWh	Total	January	February	March	April	May	June	July	August	September	October	November	December
Import for regulated customers	**0**												

Table C9) - Questionnaire for suppliers on the import for non-regulated customers

Questionnaire for suppliers on the import for non-regulated customers													
Month/MWh	Total	January	February	March	April	May	June	July	August	September	October	November	December
Import for non-regulated customers	**0**												

Table C10) **- Questionnaire for customers connected to the 110 kV voltage level or higher**

Costumer ……

Costumer Energy Demand							
Month	**Power**	**Active Energy**			**Reactive Energy**		
	Pmax	HT	LT	HT+LT	HT	LT	HT+LT
	MW	MWh			MVArh		
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							
Total							

Note: HT is the High tariff period (07:00 to 22:00 in winter and 08:00 to 23:00 in summer), LT is the Low tariff period (22:00 to 07:00 in winter and 23:00 to 08:00 in summer)

10.4 ANNEX D - QUESTIONNAIRES ON LONG-TERM ELECTRICITY BALANCE

Table D1) **- Questionnaire for lignite-based generation companies (or other fossil fuels)**

Plant**……**

Planned Production for 10 years												
Fuel Type – Production and amount of fuel	Unit	n	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
Gross Energy Production - lignite	GWh											
Gross production Heavy Fuel Oil	GWh											
Gross production from Oil	GWh											
Lignite consumption	ton											
HFO consumption	ton											
Oil consumption	ton											
Reserves	ton											

Note: if the heavy fuel oil (HFO) and the oil are used only for start-up and as supplemental fuel as additional fuel when lignite quality is low, then it is recognized that any prediction of the use of fuel cannot be accurate.

Table D2) **- Questionnaire for production companies on historical data**

Plant…… Number of generating unit: ……

TPP production during last 3 years				
Generation	**Unit**	**n-3**	**n-2**	**n-1**
Gross Generation	GWh			
Self-consumption	GWh			
Net generation	GWh			

Table D3) **- Questionnaire for generation companies on the data forecast**

Company……

TPP GENERATION FOR THE NEXT 10 YEARS												
Production		n	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
Gross Production	GWh											
Self-consumption	GWh											
Net Production	GWh											
Capacity												
Installed Capacity	MW											
net capacity	MW											
net available capacity	MW											
Technical Minimum	MW											
Reliability parameters.												
Major Planned outages	Day											
Unplanned outages	day											
Maintenance: (0=revision, refurbishment, repairs).	0,1,2											
Pollutant emissions												
SO_2	ton/ year											
NO_x	ton/ year											
CO_2	ton/ year											
Dust	ton/ year											
Ash	ton/year											

Note: Own consumption includes the energy consumed by the plants internal system and the Transmission System.

Table D4) **– Questionnaire for generating companies (Hydro, wind, solar and biomass power plants)**

Plant ……..Unit ……

Generation for the next 10 years												
Generation		n	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
Gross Generation	GWh											
Self-consumption	GWh											
Net generation	GWh											
Capacity												
Installed Capacity	MW											
Net capacity	MW											
Net available capacity	MW											
Technical Minimum	MW											
Reliability parameters.												
Outages Planned	Day											
Outages unplanned	Day											
Maintenance: (0=revision, refurbishment, repairs).	0,1,2											

Table D5) **– Questionnaire for KOSTT/DSO/supplier for imports/exports**

Questionnaire for.....

Data for the next10 years												
Import-Export (MWh)	Tariff	n	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
Planned imports	(HT) High Tariff											
	(LT) Low Tariff											
Planned exports	(HT) High Tariff											
	(LT) Low Tariff											

Table D6) **– Questionnaire for DSO on the historical data**

Distribution Data for the previous 3 years				
NET CONSUMPTION OF ENERGY IN DISTRIBUTION BY TYPE [MWh]	**Number of customers**	**n-3**	**n-2**	**n-1**
Household Customers				
Commercial Customers				
Industrial Customers				
Total Net consumption (MWh)				
DISTRIBUTION LOSSES		**n-3**	**n-2**	**n-1**
Technical loses	MWh			
Commercial loses	MWh			
Exceeded Losses	MWh			
Total (MWh)	MWh			
GROSS CONSUMPION IN DISTRIBUTION		**n-3**	**n-2**	**n-1**
Total	MWh			
METERED CONSUMPTION BY VOLTAGE LEVEL		**n-3**	**n-2**	**n-1**
35kV level	MWh			
10(20) kV level	MWh			
0.4kV Industrial /Commercial level	MWh			
0.4kV Household level	MWh			
Total	MWh			
MAX. LOAD ON DISTRIBUTION SYSTEM	**MW**	**n-3**	**n-2**	**n-1**
NET LOAD	MW			
Technical distribution losses at peak demand	MW			
Gross load	MW			

Table D7) **– Questionnaire for DSO on the long term forecast data**

Distribution Data for next 10 years												
Net energy consumption by type [MWh]	**Number of costumers**	**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
Internal Customers												
Household Customers												
Commercial Customers												
Industrial Customers												
Total Net consumption (MWh)												
Distribution Losses	**MWh**	**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
Technical Losses	MWh											
Commercial Losses	MWh											
Exceeded Losses	MWh											
Total (MWh)	MWh											
Metered Consumption by type	**MWh**	**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
35kV level	MWh											
10(20) kV level	MWh											
0.4kV Industrial/commercial level	MWh											
0.4kV Household level	MWh											
Total	MWh											
Peak load in distribution	**MW**	**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
Net load	MW											
Technical Losses during peak demand	MW											
Gross load	MW											

Table D8) **- Questionnaire for customers connected to the 110 kV voltage level or above**

Company ……..

Energy consumption for the next 10 years												
ENERGY DEMAND		n	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
Base Scenario	GWh											
High Scenario	GWh											
Low Scenario	GWh											
MAXIMUM POWER DEMAND												
Base Scenario	MW											
High Scenario	MW											
Low Scenario	MW											
Power factor	cos(ϕ)											

11 ANNEXES FOR THERMAL ENERGY BALANCES

11.1 ANNEX E - TIME SCHEDULES OF THERMAL ENERGY BALANCES

Table E1) **- Time schedules of thermal energy balances**

	June	July	August	September	October	November	December
Electricity balances	In case the format of the balance differs from the previous version, ERO shall send an official submission to the DSO requesting for the inclusion of certain data on the balance. The questionnaires are drafted by the DSO	Filling out the questionnaires	The DSOs prepare the initial drafts of the Balance	After receiving the opinion from the Ministry, the DSOs submit the initial drafts of the Balance to the ERO	Eventual changes to the Balance and submission for approval of the final versions to the ERO	Review of the final balances drafts by the ERO, and if there are remarks, submit them to the DSOs. Finalizing the document by the DSOs.	Approval of Thermal Energy Balances by the ERO Board, and publication of unified balance on the official ERO website.

11.2 ANNEX F - QUESTIONNAIRE ON NEW THERMAL ENERGY CAPACITIES

Table F1) **- Forecast for new capacities**

Company.....

DATA ON THE CAPACITIES FOR THE NEXT 10 YEARS													
SCENARIO													
New thermal power generation capacities including cogeneration - only the capacity	Unit	n	n+1	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
Installed capacity	MW												
Gross generation of thermal energy	MWh												
New grid capacities - thermal energy transport (if applicable)	MW												
Grid length	km												
New grid capacities - thermal energy distribution	MW												
Grid length	km												

Table F2) **- Economic development projections**

MED - DATA FOR NEXT 10 YEARS													
BASE SCENARIO													
GDP		n	n+1	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
	%												

LOW SCENARIO													
GDP		n	n+1	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
	%												

LOW SCENARIO													
GDP		n	n+1	n+1	n+2	n+3	n+4	n+5	n+6	n+7	n+8	n+9	n+10
	%												

11.3 ANNEX G- QUESTIONNAIRES FOR ANNUAL THERMAL ENERGY BALANCE

Table G1) **– Questionnaires for thermal energy production companies (including cogeneration)**

DATA ON THERMAL ENERGY GENERATION CAPACITY						
Generation unit including cogeneration	**Year of putting into operation**	**Installed thermal capacity (MW)**	**Thermal capacity available (MW)**	**Thermal efficiency (%)**	**Fuel type**	**Fuel consumption (kg/MWh)**
Total						

Add rows if necessary depending on the generation unit

Table G2) **– Questionnaire for production companies**

Data for production forecasted for year.....

THERMAL ENERGY GENERATION							
Description/month	**January**	**February**	**March**	**April**	**October**	**November**	**December**
Energy Fuel (MWh)							
Thermal efficiency of generation plants in thermal energy plant (%)							
Gross generation in generation plants in thermal energy plant (MWh)							
Gross generation in cogeneration plants (if applicable) (MWh)							
Total thermal energy gross generation (MWh)							
Quantitative losses in the transmission grid (if applicable) (MWh)							
Own consumption (MWh)							
Net thermal energy generation (MWh)							

Table G3) – Questionnaire for overhaul of electricity generation companies

Planned outages for Maintenance or refurbishment for year ……
Generation Company.....

REPAIR, OVERHAUL AND MAINTENANCE PLANNING FOR YEAR _____													
Months / **Thermal energy generation unit**	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total months**
Generator U1													
Generator Un													
Total R, r													

Note: 'R' refers to major repairs, overhaul or maintenance, 'r' refers to small overhaul or maintenance

***Table G4)*- Questionnaire for emissions for generation companies**

Company ..... Unit .....

FORECASTED EMISSIONS FOR THE CURRENT YEAR – YEAR_____						
Months	**Thermal energy generation**	**Dust**	**SO2**	**NOx**	**CO2**	**Ash**
	MWh	**t**	**t**	**t**	**t**	**t**
January						
February						
March						
April						
October						
November						
December						
Total						
Per unit	(kg/MW)	1.8	2.88	3.07	1143	236

Table G5)–Questionnaire for thermal energy distribution system operator

NETWORK LOSSES -YEAR _____								
Description	**January**	**February**	**March**	**April**	**October**	**November**	**December**	**Total**
Quantitative losses in the transport network (if applicable) (MWh)								
Loses in percentages in the transport network (%)								
Quantitative losses in distribution network (MWh)								
Loses in percentages in the distribution network (%)								
Total quantitative losses in network (MWh)								
Total network losses in percentage (%)								

Table G6) – Questionnaires for the thermal energy supplier

CUSTOMER DEMAND FOR THERMAL ENERGY – YEAR _____									
	Household Customers			Commercial and Institutional Customers			Total Customers		
	Heating surface (m^2)	Heating capacity (MW)	*Quantity* of thermal energy (MWh)	Heating surface (m^2)	Heating cap. (MW)	Quantity of therm. energy (MWh)	Heating surf. (m^2)	Heating cap. (MW)	Quantity of therm. energy (MWh)
January									
February									
March									
April									
October									
November									
December									
Total / months *									

** For the heating surface and the heat capacity average should be calculated, while for the quantity of thermal energy the amount*

THERMAL ENERGY DEMAND (CUSTOMER DEMAND PLUS NETWORK LOSSES)–YEAR _____								
Description	January	February	March	April	October	November	December	Total
Thermal energy customer demand (MWh)								
Total quantitative network losses (MWh)								
Total customer demand plus losses (MWh)								

11.4 ANNEX H – QUESTIONNAIRES FOR LONG-TERM THERMAL ENERGY BALANCE

Table H1) **– Questionnaires for thermal energy generation companies (including cogeneration)**

Generation company .....

DATA ON THERMAL ENERGY GENERATION CAPACITY						
Generation unit including cogeneration	**Year of releasing into operation**	**Installed thermal capacity (MW)**	**Available thermal capacity (MW)**	**Thermal efficiency (%)**	**Fuel type**	**Fuel consumption (kg/ MWh)**
Total						

Table H2) **– Questionnaire for electricity generation companies on historical data**

THERMAL ENERGY GENERATION in the last 3 seasons			
Description/Period	**n-1**	**n-2**	**n-3**
Fuel energy (MWh)			
Thermal efficiency of the generation plants in thermal energy plant (%)			
Gross generation in generation plants in thermal energy plant (MWh)			
Gross generation in cogeneration plants (if applicable) (MWh)			
Total gross generation of thermal energy (MWh)			
Quantitative losses in the transport network (if applicable) (MWh)			
Own consumption (MWh)			
Net thermal energy generation (MWh)			

Table H3) **- Questionnaire for electricity generation companies on forecasting data**

PRODUCTION OF THERMAL ENERGY IN THE FOLLOWING 10 SEASONS – period ……										
Description/month	**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+8**	**n+9**	**n+10**
Fuel energy (MWh)										
Thermal efficiency of the generation plants in thermal energy plant (%)										
Gross generation in generation plants in thermal energy plant (MWh)										
Gross generation in cogeneration plants (if applicable) (MWh)										
Total gross generation of thermal energy (MWh)										
Quantitative losses in the transport network (if applicable) (MWh)										
Own consumption (MWh)										
Net thermal energy generation (MWh)										
Gases emission										
SO_2 (Ton/ann.)										
NO_x (ton/ann.)										
CO_2 (ton/ann.)										
Dust (ton/ann.)										
Ash (ton/ann.)										

Table H4) **– Questionnaires for thermal energy distribution system operators**

GRID LOSSES - 3 previous seasons			
Description	**n-3**	**n-2**	**n-3**
Quantity losses in the transport network (if applicable) (MWh)			
Losses in percentages in the transport network (%)			
Quantity losses in the distribution network (if applicable) (MWh)			
Losses in percentage in the distribution network (%)			
Total quantity losses in the network (MWh)			
Total network losses in percentage (%)			

NETWORK LOSSES FOR THE FOLLOWING TEN SEASONS - period.....											
Description	**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
Quantitative losses in the transport network (if applicable) (MWh)											
Losses in percentage in the transport network (%)											
Quantity losses in the distribution network (if applicable) (MWh)											
Losses in percentage in the distribution network (%)											
Total quantity network losses (MWh)											
Total network losses in percentage (%)											

Table H5) – Questionnaires for thermal energy suppliers for the previous seasons

THERMAL ENERGY CUSTOMER DEMAND - FOR 3 PREVIOUS SEASONS									
	Households Customers			**Commercial and Industrial Customers**			**Total Customers**		
	Heating surface (m^2)	Thermal capacity (MW)	Quantity of thermal energy (MWh)	Heating surface (m^2)	Thermal capacity (MW)	Quantity of thermal energy (MWh)	Heating surface (m^2)	Thermal capacity (MW)	Quantity of thermal energy (MWh)
n-3									
n-2									
n-1									

Table H6) - Questionnaires for the supplier of thermal energy for the upcoming season

Company.....

THERMAL ENERGY CUSTOMER DEMAND - for the upcoming 10 seasons (period .....)									
	Households Customers			Commercial and Industrial Customers			Total Customers		
	Heating surface (m^2)	Thermal capacity (MW)	Quantity of therm. energy (MWh)	Heating surface (m^2)	Thermal capacity (MW)	Quantity of thermal energy (MWh)	Heating surface (m^2)	Thermal capacity (MW)	Quantity of thermal energy (MWh)
n									
n+1									
n+2									
n+3									
n+4									
n+5									
n+6									
n+7									
n+8									
n+9									
n+10									

Table H7) **– Questionnaires for thermal energy suppliers including losses for the upcoming season**

Company.....

THERMAL ENERGY DEMAND FOR THE UPCOMING 10 SEASONS (CUSTOMERS DEMAND PLUS GRID LOSSES) - period _____											
Description	**n**	**n+1**	**n+2**	**n+3**	**n+4**	**n+5**	**n+6**	**n+7**	**n+8**	**n+9**	**n+10**
Thermal energy customer demand (MWh)											
Total network quantity losses (MWh)											
Total customer demand plus losses (MWh)											

End of document