



# **Metering Code of electricity of Distribution System Operator**



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## Metering Code of Electricity of DSO

Code of measurement is legal obligation prepared initially in year 2008 from DSO and OST and approved from Regulator in conformity with laws in force. In year 2014 DSO has updated the code of measurement (metering) to adjust to law changes in energy sector which was updated as such from ERO in conformity to rights given through law for energy regulator.

New legislative change during year 2016 and 2017 brings the requirement for update of metering code with purpose to harmonize the code with primary and secondary laws in force. This is third version of metering code of electricity of DSO.



Law on Electricity no. 05 / L-085 defines the Metering Code as the set of mandatory minimum norms for metering and registration of electricity. Furthermore, the Law on Electricity states that through the Metering Code is defined and regulated the maintenance of metering systems, collection and processing of data from commercial metering points of network users; determines the requirements for connection to the distribution network, and determines the criteria for the placement of electricity in the network through metering devices to be placed at the border of the transmission system or distribution system with consumers or producers.

This metering Code of DSO, in addition to the primary and secondary laws of electricity, also operates in accordance with the Administrative Instruction on Measurement and Measurement Accuracy as amended by responsible ministry.



## 1. General Part of DSO Metering Code

### 1.1. Introduction

- 1.1.1. The Electricity Metering Code of Distribution System (hereinafter referred to as "Metering Code") describes in general implementation of electricity metering rules at different parts of Distribution System for different Distribution System customers and User categories. Also, the Metering Code shall cover measurements performed at Independent Generators directly connected to Distribution System
- 1.1.2. Metering requirements for measurements at the exchange points between Transmission System and Distribution System shall be covered through TSO Metering code and also requirements to be fulfilled by this code
- 1.1.3. The electricity Metering Code rules of the DSO have a purpose to regulate electricity metering for customers who are connected to DSO network, and will be used by Licensed Suppliers that supply electricity in the territory of the Republic of Kosovo
- 1.1.4. The rule that determines the metering of electricity for all customers and generators of electricity is included in DSO Metering Code, respectively Electricity Metering Code of the OST
- 1.1.5. The Electricity Metering Code shall be applied and implemented by all Distribution System Users including:
- a. Each licensed **DSO** that should operate under conditions set in the License
  - b. Other licensed **DSO's** who are connected to **Distribution System**
  - c. **End customers which are connected in distribution system, including aslo self producing customers;**
  - d. **Independent Generators** connected to **Distribution System**; and
  - e. Each **customer** that is being supplied by **Independent Generators** connected to **Distribution System**



## **1.2. Metering Rules Hierarchy**

- 1.2.1 The hierarchy enforcement of this electricity Metering Code, in all official metering documentation shall be based on list classification given below:
- a. Primary laws (basic): Law for energy regulatory in force, law No. for energy in force and law for electricity in force
  - b. Rule on General Conditions of Energy Supply
  - c. Administrative Guidelines for measurement and accuracy of measurement
  - d. TSO Metering Code
  - e. DSO Metering Code

## **2. Scope, Objectives and Used Standards**

### **2.1. Main Scope of this Code**

- 2.1.1 According to this Code minimum acceptable standards shall be defined which will have an effect to accurate electricity measurements with which are served customers, generators and users, suitable for purpose of billing in conformity to Rule for General Conditions of Energy Supply respectively, according to tariff structure approved by Regulator and in accordance with tariff agreed with customer (if applicable).
- 2.1.2 This Code must contain most suitable and efficient operation rules of metering points, by offering possibilities as much as economically during the electricity distribution and delivery by containing all interconnections which shall comply / adjust with this Code.
- 2.1.3 **Most important criteria of the Metering Code of Distribution System are:**
- i. Each connection/interconnection (exchange) point shall have installed metering equipment for measuring;
  - ii. Metering equipment, must be registered in register of measuring devices certified in Republic of Kosovo as are: meters, metering transformers and



- follow up equipment which must be suitable for measurement by containing the elements of power, applied tariffs and quantity of active energy and (or) reactive going through that metering point;
- iii. The Licensed DSO is responsible for conditions for meter's installation for measurement to all customers that are supplied pursuant to the License act.;
  - iv. The DSO must ensure continuous accuracy of all installed meters for measurement which must fulfill respective electricity metering international standards
  - v. Installed meters must be secure, and have easy access to be read and to be maintained from DSO;
  - vi. Any Licensed Supplier dealing with trade (sale) of electricity to customers which supplies might be authorized for access to read these meters
  - vii. Operator of system can trust reading of meters to suppliers or some other contractor. In this case, operator of system remains responsible to ensure accurate and regular reading, in accordance with this code.
  - viii. For smart meters which are installed for end customers, the authorized persons from DSO and / or responsible persons of laboratory for testing of meters within the responsible ministry in presence of authorized persons from DSO have the right to make software control of meter
  - ix. **eDSO** must safe keep history of data in electronic meters for meters situations which have to do with billing (once in month) for at least 12 months and these data must be archived in relevant database of DSO for at least 5 years;
  - x. DSO has the right to install Control meter and also to Control meters of Control measurement as it is requested from this code and can be used for extracting of data then when main meters of measurement are in defect or for other reasons;
  - xi. Commission assigned from side of responsible ministry is responsible for auditing of meters installed for measurement so that they are in compliance with conditions of this code;

## 2.2. The DSO Metering Code Objectives (Purposes)

- 2.2.1. The Metering Code covers practices-recommendations to be used and equipment specifics to be ensured for metering and registration of different



meters as are meters for measurement of energy: active and reactive with all relevant parameters

**2.2.2.** Measurement of other parameters as are: active and reactive power, Power factor, voltage, current, frequency, etc;

**2.2.3.** Specifies requests for calibration, testing and commissioning of meters and measuring equipment and also other parts that are required for measurement

**2.2.4.** The Code describes generally technical specifications for different metering elements

**2.2.5.** Description on Meter reading, data communication and management.

**2.2.6.** Procedures for evaluation of consumption when meters and follow up measuring devices are in defect and as well as other questionable issues related to consumption by customers shall be addressed and managed by the assigned commission through the special procedures

## **2.3.** Reference Standards

**2.3.1.** International standards which shall be applied for **metering** and shall be used for **metering meters**, auxiliary installations (equipment) and computing and payment systems are presented as follows:

Standard No.	Standard Title (in English language)
<b>IEC</b> 62053-22 Ed. 1.0 (2003) replaces standard <b>IEC</b> 60687	Specification for AC Static Wat-hour Meters for Active Energy (Classes 0.2s and 0.5s)
<b>IEC</b> 62053-21	Alternating Current Static Wat - hour Meters for Active Energy (Classes 1 and 2)
<b>IEC</b> 62053-24	Alternating Current Static VAr - hour Meters for Reactive Energy (Classes 0,5S,1S and 1)





<b>IEC 60044-1 &amp;2</b>	Instrument transformers - Current transformers & Instrument transformers - Inductive voltage transformers
<b>IEC 60338</b>	Telemetry for consumption and demand
<b>IEC 62055-31</b>	Electricity metering - Payment systems

Use of accuracy indexes A, B and C are in accordance with above written standards therefore are applicable and in full harmony with highlighted accuracies.

According to Rule MID:

1. Accuracy class cl.2 is equivalent with cl.A,
2. Accuracy class cl.1 is equivalent with cl.B,
3. Accuracy class cl.0.5 is equivalent with cl.C,

If is written accuracy class c.2, cl.1. cl.0.5 all the data for these classes of accuracy mean also classes of accuracy according to MID.

A wider list of **IEC** Standards is provided under Annex 1 (Metering Meters), Annex 2 (Measuring Current Transformers - **CTs**) and Annex 3 (Measuring Voltage Transformers - **VTs**).



### 3. Metering Point

#### 3.1. Description

**3.1.1.** Metering Point is the point where is performed the electricity exchange measurement between Distribution System, Transmission System, Generators, customers, self-producing customers and other users, separating boundary of assets is determined according to relevant methodology for connection.

**3.1.2.** Metering devices installed at the Metering Points shall measure the electricity flow as: Active and Reactive Energy, and Active and Reactive Power in accurate method in each certain time interval.

#### 3.2. Ownership

**3.2.1** Metering systems are the property of the DSO, according to the Electricity Law in force

**3.2.2** In substations 220/35/10(20)kV and 110/35/10(20)kV, meters placed in distributive feeders / exits on side of medium voltage (35kV, 20kV and 10kV) are property of DSO, except official measurements between TSO and DSO where owner is TSO.

#### 3.3. Electricity Meters Installation Right and Access to Property

**3.3.1.** DSO or some authorized operator from DSO will install metering system outside residential (living) object

**3.3.2. Customer must secure required space for metering system**, without taking in consideration the ownership of space and also to allow access for personel authorized of DSO at system of meters, in conformity to law for energy in force and rule for general conditions of supply with energy.



**Meters can be placed also in place of separating border of assets**, respectively at cases of air low voltage network in closest point from object of Customer by receiving approvals from competent bodies or in cases for private property then approval must be taken from owner.

3.3.3. Selection of the location where metering equipment will be installed, for each case shall be:

- i. Suitable and with easy access in the data of meter including also access through different technology equipment which enable it;
- ii. To be in place where are no various waste, trash and every place where are no flammable means and space where are placed meter (meters) not to be used for other purposes;
- iii. Protected from possibility of access by animals which may cause damages;
- iv. In minimum distance (1.5m) from earth, except in case when cabinet is placed on earth.

3.3.4 Depending from location and method of placing, metering system might be placed but not limited:

- i. In property, respectively object which is in ownership of customer. Responsible for safety, care and proper progress of work of metering system is DSO.
- ii. In property, respectively in common object of few customers.
- iii. Outside property of customer, in public ownership
- v. responsible for safety, care and proper progress of work of metering system is DSO. The DSO will perform regular inspections of these metering systems. For each physical damage, suspicion or danger, customers must report competent bodies / organs (DSO, person or company authorized, police, etc.). DSO answers in shortest time to request – informing of customer.

### **3.4. Security**

**3.4.1.** The box must comply with relevant international standards as its resistance against fire, moisture and safety from striking voltage, etc.



### 3.5. Meter System Operation and Maintenance

**3.5.1. Metering Systems operation and maintenance** includes: their initial installation pursuant to the required standards, regular **maintenance**-including systematic testing and certification, replacement of meters and specific units, **CT, VT** and other **meters control**, installation of conductors, terminations, proper layout of the cables, protection, periodic and regular **meter** reading and extraction of the data from the **meter, maintenance of Data Collection Center** and attention to any eventual failure of the **metering meters system**, in accordance with tasks and responsibilities of DSO determined in law for electricity in force.

**3.5.2. Meters maintenance** is responsibility of the **DSO**

### 3.6. Minimum Technical Requirements for the Meters and their Types

**3.6.1. Meters** to be used shall be suitable for **metering** of active and reactive energy, total and absolute and other sizes of electricity according to consumption by category, accurately and shall meet required tariff standards set by **Regulator, or in the agreement with the customers (if applicable)**.

**3.6.2.** Type of meters which will be used will depend from loads / requests of load based on contract and also from category of customer determined based on type of consumption. Technical Specification minimum for meters of electricity for each type of meters, **is given based on respective standards of IEC for each type of measuring meters and also for current and voltage measuring transformers.**

**3.6.3.** Other technical features in terms of nominal values, sustainability, application, testing basic values, protection, security, etc. will be described in Distribution Code, Technical Regulations, Technical Standards IEC, while this code is defined more in terms of selection, application, security and accuracy of measurement

**3.6.4.** Classes Allowed (cl) of measuring devices according to a) load (load - power) and b) according to voltage are presented in the following tables:



a) Classes Allowed ( cl ) of measuring devices according to load

Accuracy Class ( cl )						
Maximum power demand	>50MVA	10-50MVA	1-10 MVA	<1 MVA	<50 KVA	
Current Transformers	0.2 s	0.2 S	0. 2S	0.2S	0.5	
Voltage transformers	0.2 s	0.2	0.5	0.5	-----	
Active energy meters	0.2 s	0.2 s	0.2	0.5	1.0	
Reactive energy meters	0.5	0.5	0.5	1	2*	

\*Reactive energy is used to customers that have connected producer in network 0.4 kV with direct measurement

b) Allowed classes ( cl ) of measuring devices according to voltage

Voltage	35 kV	10 (20) kV	0.4 kV (semi indirect measurement)	0.4 kV (direct measurement)
Current Transformers	0.2 s	0.2 S	0. 5	
Voltage transformers	0.2 s	0.2		
Active energy meters	0.2 s	0.2 s	0.5 S	1
Reactive energy meters	0.5	0.5	1	2*

\* Reactive energy is used to customers that have connected producer in network 0.4 kV with direct measurement.



Selection of highest class compared to allowed one will be advantage but not obligatory.

**3.6.5.** Limits of accuracy of measuring equipment are determined with accuracy class and have meaning like in following: cl 0.5 will mean that error limits of this metering equipment are  $\pm 0.5\%$ . Similar is understood also for other cases like example cl 2.0 has maximum limits of error  $\pm 2.0\%$ , etc.

The following table presents maximum limits of allowed error in both sides in  $\pm$  % percentage for all meter types (meters and multifunctional meters) used for metering of active electricity in the Republic of Kosovo.

For direct meters values for tables in following are taken from standard IEC 62053-21 whereas for indirect / semi indirect meters values are taken from standard IEC 62053-22.

Value of Current (Balanced system if not expressed differently)			Error allowed percentage $\pm$ in [%] For meters class			
For direct meter	For indirect / semi indirect meters	Power Factor	0.2	0.5	1	2
$0.05 I_b \leq I < 0.1 I_b$	$0.01 I_n \leq I < 0.05 I_n$	1	0.4	1.0	1.5	2.5
$0.1 I_b \leq I \leq I_{max}$	$0.05 I_n \leq I \leq I_{max}$	1	0.2	0.5	1.0	2.0
$0.1 I_b \leq I < 0.2 I_b$	$0.02 I_n \leq I < 0.1 I_n$	0.5 induk.	0.5	1.0	1.5	2.5
$0.1 I_b \leq I < 0.2 I_b$	$0.02 I_n \leq I < 0.1 I_n$	0.8 capac.	0.5	1.0	1.5	-
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.5 induk.	0.3	0.6	1.0	2.0
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.8 capac.	0.3	0.6	1.0	-



Value of Current (Balanced system if not expressed differently)			Error allowed percentage ± in [%] For meters class			
For direct meter	For indirect meter	Power Factor	0.2	0.5	1	2
Three phase meters with single phase load with balanced voltages						
$0.1 I_b \leq I \leq I_{max}$	$0.05 I_n \leq I \leq I_{max}$	1	0.3	0.6	2.0	3.0
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.5 induk.	0.4	1.0	2.0	3.0
With special requests of users						
$0.2 I_b \leq I \leq I_b$	$0.1 I_n \leq I \leq I_{max}$	0.25 indu.	0.5	1	3.5	-
$0.2 I_b \leq I \leq I_b$	$0.1 I_n \leq I \leq I_n$	0.5 capac.	0.5	1.0	2.5	-

**3.6.6.** Minimum condition to be met by all **metering system** (GM) will be set by accuracy limits, this definition encompasses in itself all the errors summary of each element of the measuring system including interfaces - the implication in precision of conductors and connections

The error tolerance limits of entirety metering systems related to **active energy** are presented in the table below:

Condition	Error limits of Active Electricity according to power factor					
Current expressed as of percentage of nominal value	Power Factor Cosφ	Metering Point error limits (+/-)				
		>50MVA	10-50MVA	1-10MVA	<1MVA	<50kVA
10%-120%	1	0.5%	0.5%	1.0 %	1.0 %	2.0%
5%-10%	1	0.7%	0.7%	1.0%	1.0%	2.0%



1%-5%	1	1.0%	1.0%	1.5%	1.5%	2.5%
10%-120%	0.5(-)	1.0%	1.0%	1.5%	1.5%	3.0%
10%-120%	0.5(+)	1.0%	1.0%	1.5%	1.5%	3.0%

The error tolerance limits of entirety metering systems related to **reactive energy** are presented in the following:

Condition	Error limits of reactive electricity according to power factor				
Current expressed as of percentage of value of metered current	Power Factor	Metering Point error limits (+/-)			
		> 50 MVA	10-50MVA	1-10 MVA	<1 MVA
10%-120%	0	3.0%	3.0%	3.0%	3.0%
20%-120%	0.866(-)	4.0%	4.0%	4.0%	4.0%
20%-120%	0.866(+)	4.0%	4.0%	4.0%	4.0%

**3.6.7.** Variations of voltage, frequency, temperature, reverse sequences and harmonics will affect in accuracy and errors may increase up to three times of applied class

Table on the effects of external factors on the accuracy of meters and maximum allowed values of errors allowed; temperature and asymmetry:

Impact of Scaling / Size	Power Factor	Value of current (balanced if not differently expressed)	Average temperature coefficient [%/K] exceeding / error (limit) (+/-) <b>For meter class</b>
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		For direct meters	For indirect meters	0.2	0.5	1	2
Variations of environment temperature	1	$0.1I_b \leq I \leq I_{max}$	$0.05I_n \leq I \leq I_{max}$	0.01	0.03	0.05	0.10
	0.5 ind.	$0.2I_b \leq I \leq I_{max}$	$0.1I_n \leq I \leq I_{max}$	0.02	0.05	0.07	0.15
Three phase meters with single phase load (with balanced voltages)	1	$0.1I_b \leq I \leq I_{max}$	$0.05I_n \leq I \leq I_{max}$	0.3	0.6	2.0	3.0
	0.5 ind.	$0.2I_b \leq I \leq I_{max}$	$0.1I_n \leq I \leq I_{max}$	0.4	1.0	2.0	3.0

Meters starting current shall be according to the presentation in the following table:

Meter ( Measurer)		For meter class			
Method of connection	Power factor	0.2	0.5	1	2
Direct Connection	1	-	$0.005 I_b$	$0.004 I_b$	$0.005 I_b$
Connection through CT's	1	$0.001 I_b$	$0.002 I_b$	$0.002 I_b$	$0.003 I_b$
Connection through CT's and VT's	1	$0.001 I_b$	$0.001 I_b$	$0.002 I_b$	-

Table on the effects of external factors on the accuracy of meters and maximum allowed values of errors allowed; voltage, frequency and harmonics etc.

Size of influence	Power Factor	Value of Current (balanced if not differently expressed)	Limit of error variation in percentage (+/-) for meter of cl.
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		For direct meter	For indirect meter	0.2	0.5	1	2
Voltage variation $\pm 10\%$	1	$0.05 I_b \leq I \leq I_{\max}$	$0.05 I_n \leq I \leq I_{\max}$	0.1	0.2	0.7	1.0
	0.5 ind.	$0.1 I_b \leq I \leq I_{\max}$	$0.1 I_n \leq I \leq I_{\max}$	0.2	0.4	1.0	1.5
Frequency variation $\pm 2\%$	1	$0.05 I_b \leq I \leq I_{\max}$	$0.05 I_n \leq I \leq I_{\max}$	0.1	0.2	0.5	0.8
	0.5 ind.	$0.1 I_b \leq I \leq I_{\max}$	$0.1 I_n \leq I \leq I_{\max}$	0.1	0.2	0.7	1.0
Phase inverse sequence	1	$0.1 I_b$	$0.1 I_n$	0.05	0.1	1.5	1.5
Unbalanced voltages	1	$I_b$	$I_n$	0.5	1	2	4
Components of harmonics	1	$0.5 I_{\max}$	$0.5 I_{\max}$	0.4	0.5	0.8	1.0
Sub-Harmonics of current	1	$0.5 I_b$	$0.5 I_n$	0.6	1.5	3.0	6.0
Contin. field. magn. External	1	$I_b$	$I_n$	2.0	2.0	2.0	3.0
Induction mag. external 0.5 mT	1	$I_b$	$I_n$	0.5	1.0	2.0	3.0
Electromagnetic field RF	1	$I_b$	$I_n$	1.0	2.0	2.0	3.0
Operating accessories		$0.05 I_b$	$0.01 I_n$	0.05	0.1	0.5	1.0
radio-frequency fields of contacts	1	$I_b$	$I_n$	1.0	2.0	2.0	3.0
Transitory impacts	1	$I_b$	$I_n$	1.0	2.0	4.0	6.0
Sustainability in the tidal oscillations of dischargers	1	-	$I_n$	1.0	2.0	2.0	3.0



- 3.6.8.** The measurement accuracy is verified under the rules of Meteorology and in testing different values which are described in detail in these rules which are drafted by the Meteorological Agency of Kosovo within the responsible ministry.
- 3.6.9.** Environmental conditions and electrical stability during laboratory tests will be prescribed in the rules of AMK, based on standards IEC 62053; 11, 21, 22, 23 and are not subject to this Code.
- 3.6.10.** Electricity **metering meters, CTs, VTs** with precision lower than those required in the specification of minimum requirements, will be kept in use until their replacement is enabled

### **3.7. Minimum Standards for Metering Equipment**

- 3.7.1.** In cases when the Regulator is required to change the tariffs, then the DSO and the TSO will adapt the metering equipment to the new tariffs, then it must implement the recommendations of the Regulator.
- 3.7.1.1** The calculation time will be done as per universal time and time calculation changes (summer and winter time) are done by meter itself while synchronization in real time of meter is done through the **Center for Data Gathering (collection)**.
- 3.7.2.** When different tariffs are used, which means different electricity prices, depending from the hourly electricity use, the metering equipment must have installed time meter (internal clock) as required by **Metrology** procedures and relevant International standards as **IEC** standards
- 3.7.3.** When electricity sales are done for different **customers** based on time and taking into account electrical installation, measurements must be done every 15



minutes of demand value, each calculation period must start at the full hour, every half an hour or every  $\frac{1}{4}$  of hour.

### 3.8. Testing and Calibration System

**3.8.1.** Approval, certification, testing and sealing of the metering meters is determined in law for metrology and sub law acts.

**3.8.2.** All **meters** and metering equipment must be calibrated or attested and sealed with state seals periodically as per determined intervals and as defined by manufacturer respectively relevant international standards, **IEC** standards (SK EN; 50470-3, 62056-21, 62052-11, 52056-46 and SK EN; 62053.) for metering and pursuant to the set regulations from responsible ministry.

**3.8.3.** **Data records** for all **meters** will be maintained by **DSO** unit containing their serial number, installation date, the date when it is pulled out of use, date of re-installment and seal number as required by law and rules of **Regulator**. These data may be requested at any time by **Metrology** Directorate.

**3.8.4.** The **DSO** must maintain records of all **meters**, showing their serial number, sealing number, testing date, errors appearing during time of tests, and accuracy value after calibration in order to enable possible control at any time period requested determined by **Regulator** and international electricity standards.

### 3.9. Inspection and Field Testing's

**3.9.1** The **DSO** shall test **meters** as per regular plan and ad-hoc tests or as requested by the **Customer** (this test cannot be done more often than once in every 2 (two) years for direct meters. For each **Customer** requirements, in shorter term possible, expenditures of testing must be carried by its side.



3.9.2 The Licensed **DSO** must have proper testing equipment for all **meters** that are under use.

3.9.3 The portable electronic equipment for testing meters with static source with accuracy class 0.2 must be available for the testing purposes. **Portable equipment** as mentioned above with accuracy class 0.2 (the ones with class cl.0.1 may be also used) used for testing must be tested and calibrated from time to time using electronic etalons of higher class according to the rules, or at least attested with calibrated equipment of cl. 0.05.

3.9.4 Testing of **metering systems** and **meters** must be done periodically as per following table:

No.	Meter Type	Minimum Testing Period
1	Indirect multifunctional meters connected through CT and VT	At least 1 (one) time in year or when complaint is received, which ever time is shorter.
2	Semi-Indirect multifunctional meters connected through CT'	At least 1 (one) time in two years or when complaint is received, which ever time is shorter.
3	Single phase and three phase low voltage meters-direct connection	At least 1 (one) time in 8 (eight) years or when complaint is received, which ever time is shorter.

3.9.5 Testing from DSO in presence of the customer representative, whenever is possible, especially for meters of maximum demand (so called GM multifunctional) must be done on annual basis or depending from case that appears.



3.9.6 In case of any request of **the customers**, the meter/metering equipment shall be tested with proper equipment under the rules of this Code and procedures coming from **DSO**, according to possibility in the presence of customer or its representative.

3.9.7 The **DSO** must maintain records of all **meters** showing their serial number, whereabouts, sealing number, testing date, errors during tests time and accuracy value in order to enable possible control at any time period requested determined by **Regulator** and international electricity standards.

3.9.8 Time period according to Administrative Instruction UA 02-15, for regular verification of measuring devices:

1. 8 years for electronic meters of electricity single phase and many phases of alternative current connected directly;
2. 6 years for electronic meters of electricity single phase and many phases of alternative current connected through measuring transformers;
3. 12 years for inductive meters single phase and many phases of electricity of alternative current connected directly;
4. 6 years for inductive meters single phase and many phases of electricity of alternative current connected through measuring transformers;

3.9.9 Verification of measuring accuracy of current measuring transformers and voltage measuring transformers is preferred after period of 12 years.

### 3.10. Metering Equipment Sealing

**DSO** might place two or more seals in each meter, breaker / switcher, in maxi graph (in reset) and other apparatuses... in special cases, according to law no. 05/L - 085 for electricity – with request from Customer and in his account can be



installed additional control equipment for measurement of production and consume of electricity.

**3.10.1. Meters, meter's terminals, meter boxes, measuring cubicles, terminals in secondary at CT and VT, terminals where tests are performed, etc. must be secured with clear plastic labels and readable showing their number they have, DSO identification sign and tied with non-corrosive steel wire.**

**3.10.2.** The **DSO** is responsible for control and maintain seals and equipment for sealing, by maintaining sealing equipment records, register of authorized persons that have these equipment and their installation

**3.10.3.** If the authorized person of the licensed DSO finds or certifies that the seal is touched or destroyed, then he must as soon as possible notify the body responsible for sealing and the party where it was found damaged seal,

**3.10.4.** The **DSO**, respectively authorized person for sealing, after receiving notice must inside 7 days to replace the damaged seal.

**3.10.5.** Whenever is realized / seen that metering equipment does not fulfill safe metering criteria (the metering equipment where seal is damaged), the **DSO** must replace metering equipment whereas for existing must be done testing and calibration needed as required by this **Metering Code** and procedures of DSO approved from Regulator.



## 4. Evidencing and Operation with Metering Point

### 4.1 Meter Reading, Data Downloading and Collection in the Data Base

**4.1.1** The **DSO** shall arrange **meter** reading of the **customers** of different categories through their authorized representatives depending from customer category. The **meters** or recorded data can be read manually or using **meter** reading equipment through the **meter's** optic gate or equipment for remote **meter** reading done by the **DSO** representative

**4.1.2** When the electronic meter is installed for customers and producers, the DSO must be required to keep database of measurements of meter for customer or generator for:

- a) 12 months history of data which have to do with situations of meters for billing (the data once / one time per month); and
- b) 5 years in archive

### 4.2 Right to Meter Data Access

**4.2.1** Persons which have the right of Access in meter data are:

- a) **DSO**, responsible for meter's installation
- b) **DSO Control Centre**
- c) **Transmission Operator** if such data are required for planning purposes of **Transmission System**;
- d) **Customer of electricity or producer of electricity respectively user** / owner of meters, as it requires the case and up to allowed required level;
- e) Any other person who for certain time period has an agreement for supply with electricity to the **customers**. Based on clause (e), the person must present written authorization by the **customer** to **DSO**; and
- f) Personnel authorized, but only then when one such information is requested for issues related to controls and reviews.





### 4.3 Operation and maintenance of system of metering meters

4.3.1. Operation and Maintenance of the Metering Meters System must be DSO's exclusivity.

4.3.2. Operation and Maintenance of the Metering System includes installation based on required standards, regular maintenance, CT and VT control and other meters, installation of conductors, terminals, proper cabling, protection, cleaning and condition of meter box connections, seals condition, daily meter reading as well as extraction of the data from meter reading equipment by the Data Gathering Center and paying attention on eventual failure of the Metering Meters System.

### 4.4 Metering Code Main Provisions along supply of customers with electricity

4.4.1 Taking into consideration electricity supply responsibilities to different **customers** and other procedures, these provisions are emphasized in aspect of obligations towards metering point like in following:

- the reading of electricity **metering meters**
- Assessment of the consumption in case when are failures and supply interruption
- **Meters** sealing
- Access to customers properties that are supplied with electricity for reading of meters, inspection and testing of metering meters of electricity; and Laboratory testing's and stamping them from responsible ministry according to determined periods from Administrative Guidelines

### 4.5 Replacement of defective meters and those to be calibrated

4.5.1 **The DSO** must have in his inventory spare **meters** available in sufficient quantity for potential replacements of the **meters** to be calibrated, don't function and those might become defective meters



**4.5.2 The spare meters** inventory standards (norms) must be held at every District. Must be taken into account for comparison the number of meters sent for repair (servicing), and calibration and those which may be defective and also use of statistics for replacing of meters in this aspect

#### **4.6 Disputes Settlement Mechanisms**

**4.6.1 Potential** disputes between **Customers** and **DSO** shall be solved based on the agreement based on Law for Electricity in force, and also according to "Rule on the Resolution of Complaints and Disputes in Energy Sector" issued and approved by **Regulator**

**4.6.2 Any** disputes between **Users** and **DSO** related to **metering meters** and metering methods shall be solved based on "Rule on the Resolution of Complaints and Disputes in Energy Sector" based on provisions of this **Code** and the **Distribution Code**

**4.6.3 Any** dispute between **TSO** and **DSO** on metering methods and in respect to **metering meters** at the exchange points must be solved based on provisions of **TSO Metering Code and Network Codes and Distribution Codes**. If adequate settlement is not found then respective commission and Regulator shall be consulted

#### **4.7 Special Meters**

**4.7.1 Prepaid Meters** for payment of electricity can be installed by Licensed **DSO**, instead of conventional **meters** if required and necessary. Prepayment means that **customers** will pay in advance for their electricity before they consume it.

**4.7.2 Tariff Meters** will be placed and may be placed when **Regulator** decides on electricity **metering** methods and instructions set by this body.



**4.7.3 The meter** used for measuring exported/imported energy which **customer** with possibility to produce electricity (with gas, air turbines and with photovoltaic cells production) can export surplus energy.

**4.8** Metering meters for customers of HV, MV and LV with multifunctional metering

**4.8.1** Meters and measuring equipment for substations and sub-substations interlinked TSO with DSO that supplies with voltage level over 35 kV (without including it) must install meters and respective measuring equipment, according to rules and codes of TSO

**4.8.2 Customers** that are connected in voltage level 35 kV and 10 (20) kV of substation, there where exist also level 6 kV must have special meter in exit points of delivery (supplies) in their direction.

**4.8.3 For** 10 (20) kV customers supply at substations placed on the poles, these **meters** and metering equipment must be installed at the panel, be visible and suitable for reading. These **customers** are considered as 0.4 kV **customers**. All such **customers** must ensure specific access and without any problem to the **meters** for authorized **DSO** workers

**4.8.4 Current Metering Transformers (CT)** used for measurement (and they) are of one quotient only, serving only for measurement of electricity. This quotient must be selected based on EU applicable international standards, with exception to MV substations of DSO where maintenance and supervision is the sole right of DSO.

**4.8.5** When we chose quotient ratio for **CT**, the maximum load must be considered 80% of the maximum contracted load or 100% of maximum recorded load (for existing customers).



- 4.8.6** Respective sectors of DSO must control ratio of quotient of CT's every year or when is requested increase of request / demand from customer.
- 4.8.7** For customers whose metering point is placed in 10 kV level, cabinet where are placed metering equipment including CT's and VT's as whole - units, must be placed in property of customer with permanent access of DSO. This connection must be realized in accordance with rules appointed / set up of DSO
- 4.8.8 For customers** supplied by voltage level 35 kV with metering point at this level must be realized the same connection as in the point 4.8.7.
- 4.8.9 Current measuring transformers** in secondary circle must be ensured that in no circumstance not to be open overvoltage dischargers must be placed before metering point
- 4.8.10** Connections of CT's and VT's in customers of **MV** (medium voltage) 35,10(20 kV) must be realized in the way that:
- (a) With cable with steel winding / covering will be realized connection of CT's and VT's as a whole uninterrupted up to box of panel of metering meters
  - (b) If none steel cable is used, then such cable must be inserted in the tubes (tubes determined with respective standards) and must not directly dive / insert under and or cable channel
  - (c) There where is done connection of cable with boxes of CT's and VT's as unit (for each one) and also of box of metering meters must be realized with metallic fastener / gripping and also with safety nuts and must be closed with epoxy material or thermoplastic shrink wrap.
  - (d) The steel part of cable rope (wrap) must be earthed through metallic gripping as it is mentioned above



- (e) Preferred length of contractile thermoplastic ropers (wraps) or other material must be at least 1.5 m from the connection terminal of **CT's** or **VT's**
- (f) All CT's or VT's and the metering meters are preferred to be close to each other

**4.8.11** The **MV** (medium voltage) **meters** location must be at the reasonable distance from entrance point of the **customer's** property so **DSO** authorized person can have access to the metering **meter** without requiring assistance from authorized staff of the **MV customer**. The location shall have clear visibility out of **customer's** property. The box where **metering** equipment are installed must be insulated from the moisture and other weather conditions as per **IEC** relevant standards.

**4.8.12** The **DSO** must secure all **metering meters** for all **MV connections**. Under certain conditions when such connection possibility does not exist, at the **LV** (low voltage) side must be installed Metering Equipment and as soon as possible these connections must be replaced with those at the **MV** side.

**4.8.13** When exists metering equipment connection only at the **LV** side, whereas the customer has billing in tariff group of MV according to agreement for connection, the **DSO** shall charge the **customer** with losses caused as consequence of losses in the Transformer, or change the connection agreement and billing is transferred to LV( in agreement / harmony with customer).

**4.8.14** The customer has the right to select the billing tariff group if the conditions set out in the Distribution Code and the DSO Security and Planning Standards, approved by the Regulator, are met

**4.8.15** Measuring points for low voltage customers, with semi-indirect multifunctional measurements must be developed same as to the guidelines set for MV measurement points with a difference that VT's do not exist, while the place of



taking voltage of the measurement point should be covered (thermal atmospheric insulation cover) with contractive thermoplastic material. In cases when metering point with CT's and meters are placed in one special cabinet is done sealing of cabinet.

#### **4.9 Low Voltage Customers Metering Procedures with direct measurement**

- 4.9.1 Low voltage consumers by way of electricity consumption and their activities are divided into several different tariff groups that could be commercial by direct measurement, households, institutions, public lighting etc., but in terms of measurement and completion of the metering point represent the same way of treatment
- 4.9.2 Metering equipment must be placed outside property of customers, in suitable place and also in box (cabinet) which must be closed.
- 4.9.3 The point of installation of the electricity meter must provide access for reading, inspection and maintenance. The measuring equipment must be suitable for inspection and maintenance to be performed by a person authorized by the DSO
- 4.9.4 The electricity **metering** equipment box must be sealed with two seals that will enable interventions either by the **customer** or the person reading the **meter** authorized by **DSO**
- 4.9.5 Within the metering **meter** box shall not be placed any fuse or serial connector before the metering **meter** so, the unauthorized personnel and the **customer** will not have possibility to have access before the metering **meter**. For cases when necessary and possessed Main Connection Box (OKK or KPO - as named usually) they must be constructed in such a way as to close and make impossible the access, and shall be sealed by the DSO



- 4.9.6 Supply line until the box where the **meter** and metering equipment are placed must be realized of adequate specified cable, under technical standards, and must not be interrupted, extended or damaged throughout whole his route (apart from external visible connections to consoles or similar with limited access).
- 4.9.7 In cases when supply to the **customers** is done through underground cables, it shall not have any interruption between these cables, "T" connections and the OKK or box where the electricity **meter** and **metering equipment** are placed.
- 4.9.8 All **connections** shall be done through **meter** terminals connectors.
- 4.9.9 Any circuit breaker for electricity supply switching / interruption must be placed after the **meter**

#### 4.9.10 Procedures of metering for different customers in residential buildings

- a) Measuring **Meter's panel** in the multi store buildings shall be placed mainly in the ground floor and will be set during the phase od connection and projecting technical requirements with DSO approval, being in place for easily access for **meter reading, monitoring** and **maintenance** by **DSO** authorized staff
- b) The multi store buildings must have the electricity **meter** for measurement of total energy for all objects in the respective transformer region with distant remote reading as well as **meters** for each **Customer separately**.
- c) Grounding (earthlink) must be done for the whole panel as required by relevant international standards and technical rules.
- d) Customers in these facilities (objects) are of all categories in LV; Household, commercial, etc



#### 4.10 Metering Point Totality

4.10.1 When describing the technical conditions of connection will be determined the place and type of measurement and other technical specifications according to Distribution Code and Metering Code and rules and standards in force. Application of other technical details is described in the technical regulations, technical standards (IEC), guidelines, recommendations, manufacturer's recommendations, etc.

4.10.2 **DSO** based on laws on energy and electricity, codes, standards and other regulations in force, will create procedures on accessing method, maintenance, monitoring and control of all metering points throughout the territory of Kosovo.

#### 4.11 Measurement Inaccuracy

4.11.1 Inaccuracy of measurement has the meaning when some measuring element has defect electrical / physical of it and as result the border / limit of accuracy of measurement might be value determined or not determined. In case of determination of inaccuracy in measurement, which means inaccuracy of meter itself or also in whole of metering system or some of his elements (inaccuracy means also non adequate connection of metering systems of currents and voltages like in aspect of direction also of relevant phases), after testing of metering equipment and / or determination of inaccuracy of metering system or some his elements in empirical form or his testing and after is verified the limit of inaccuracy, is drafted report for situation and values tested of metering equipment and / or definition of percentage of inaccuracy of metering system or some of his element. Regardless it is error in plus or minus and surpasses value 3 times of accuracy class (example for direct meters the accuracy class is 2.0, allowed limit would be 6.0%) then is done re-calculation of energy and correction of billing for last 12 (twelve) months for customers non residential /





non household respectively 6 last (months) for household customers, according to value determined of error.

Also in cases when is placed control meter and when is verified that difference in measurement between control meter and main meter it is more than  $\pm 5\%$ , then is acted according to this point.

4.11.2 In case of impossibility to determine the inaccuracy in the metering system or when it has made 100% error (has not registered at all), then the correction of electricity will be done according to the adequate average of consumer consumption. When calculating the correction, the consumptions recorded for the disputed period with the measuring system during the time of defect (removed from the measurement) should be subtracted and the appropriate average added



## 5. Definitions used in the DSO Metering Code

5.1.1. Terminology (Definitions) used are in accordance with the laws in force, terminology (definitions) used in Distribution Code and with all DSO procedures

5.1.2. Some terms are not applied in this document, but will have application in procedures and technical specifications based on this Code.

Term	Definition
AC	Alternative Current / Voltage
The Applicants of Distribution System	Juridical Person, actual or future <b>User</b> of the <b>Distribution System</b> that applies for license to get connected or to modify the existing connection to the <b>Distribution System</b>
Application connection to Distribution System	Documents filled from <b>users of</b> perspective, which request access for connection in <b>distribution system</b> , or from existing <b>users</b> to modify existing connection. In order to get DSO approval for connection, documentation is prepared as per this Code provisions.
AKS	Kosovo Agency for Standardization within the responsible ministry
AMK	Kosovo Metrology Agency
DC	One way current /voltage
Defects	The defect is a phenomenon that occur because do to internal and external reasons and causes the deformation of parameters of electric energy or interruption of function for a certain period of time in one or more elements, that in the other hand effect the interruption of electricity supplying.
Demarcation (free space)	Limits of Allowed movements of persons in electro energy objects
Load Diagram	Progress (load flow) of load during every hour (00 – 24 hours),



for one day, or another period (15 min) for one customer, direction or switchgear, etc

<b>Active Electricity</b>	Active Electricity (kWh and its multiples) is active power which is generated or passes in one electrical circuit during one time interval, by being certain integral of active power with time limits.
<b>Visible Energy</b>	<b>Visible Energy</b> means integral of Visible Power (dependency) in relation to metered time with VAh and its multiples
<b>Reactive Electricity</b>	Reactive Energy ( <b>kVarh</b> and its multiples) is set integral with time limits of reactive power
<b>Power Factor</b>	Ratio of active electric power (W) with visible electric power (VA) ( $\cos\phi$ ). The allowed minimal value of $\cos\phi$ is 0.95
<b>The Nominal Frequency</b>	The number of alternative current periods per second expresses in Hz. In the frequency that the system operated normally is 50 Hz
<b>Installed power of electrical producer</b>	Nominal capacity of the active power that might give a <b>generator of electricity</b> without interruption based on producer documentation (certificate of producer) written in the respective label of the producer/generator
<b>Active Electrical Power</b>	The product of voltage and current and co-sinuous of the angle between them. $P=(U \times I) \times \cos \phi$ for level (size) with which is transferred energy in ( <b>kW</b> and its multiples)
<b>Reactive Electrical Power</b>	The product of voltage and current and sinuous of the phase angle between them. $Q=(U \times I) \times \sin\phi$ in ( <b>kVar</b> and its multiples)
<b>Maximum Power of Electrical Generator</b>	Maximal possible power which is capable to give generator of electricity under certain mechanical and electrical conditions.
<b>Visible Power</b>	<b>Visible Power</b> present production of effective values of current and voltage. For circuits of systems <b>AC</b> present square root of squares of active power and reactive power and measured with kVA and its multiples.



<b>Supplier</b>	Energy enterprise licensed to perform activity of supply
<b>Generator (Producer)</b>	A natural or legal person that produces electricity
<b>Independent Generator</b>	A Person or company who generates electricity including also customers with own generation, which are directly connected in distribution system of <b>DSO</b> .
<b>Electrical Producer (generator)</b>	A complex of buildings with some certain mechanical and electro energy equipment, that has for a base destination the <b>generation</b> of Electricity
<b>Generator connected in distribution system</b>	Electrical generator with unit of generation connected directly in distribution network of electricity
<b>Harmonics</b>	Sinusoidal current (voltages) with the same frequency with multiplies numeri's of nominal frequency.
<b>Technical Losses of Energy</b>	<b>Technical Losses</b> of electricity in one electrical switchgear present the difference between Electricity entering in the element and Electricity ejected from those switchgears
<b>Isolated</b>	Process of physical separation of part without voltage from the one with voltage
<b>IEC</b>	International Electrotechnical Commission
<b>Injection from the Transmission Network</b>	Passing (supply) of electricity in <b>Distribution System</b> from <b>Transmission System</b> in points of connection between them
<b>Calibration</b>	Besides meaning of meter alignment at the required value, the label used also in the <b>technical</b> sense of <b>meter certification</b> , which meets the standard for sealing with his state seal
<b>Demand (consumption)</b>	Unless otherwise stated, the demand expressed in MW or MVar of Active and Reactive Electricity
<b>Maximum Demand/Request</b>	Maximum Request means maximum value of kVA withdrawn in the meter point of supply to customer property during every



time period of 15 minutes as it is determined by **Regulator**

**Simultaneous  
Maximum Demand**

For a certain period of time, the sum of all individual requirements at all exchange points in distribution system (DS) gives as a result the simultaneous demand of DSO. For one month (30 days it would be calculated for time intervals of 15 minutes as:  $4 \times 24 \times 30 = 2880$  periods)

**Distribution Code**

Is set (whole) of technical rules that regulate the functioning of the distribution network and define the terms and conditions of **DSO** services for **Users** and **Customers**.

**Metering Code**

Means set of technical rules issued by Distribution System Operator in relation to metering of electricity

**KQKO**

Governing Commission of Operational Codes

**End Customers (tariff)**

**A Customer of electricity** who purchases electricity for self-consumption

**Customer Self  
producer**

– Is customer of electricity which in the same time and in same location is owner of micro – generator of BRE, connected in network and with right of self-consumption of electricity generated and also delivery of surplus of electricity generated to supplier.

**Ownership Boundary**

The boundary between the **Distribution System** and Equipment owned by the **User**

**Event conditions**

Operation circumstances / condition for one equipment, a special electric installation with one or more defects that damage the **distribution system** operation or interrupt the electricity supply

**Technical conditions  
for connection**

Technical requirements in the framework of the Energy Consent (approval) issued by the DSO that allows the



connection of the applicant's electrical facilities with the Distribution System

<b>KVA</b>	Kilo Volt - Ampere
<b>Connection</b>	Connection between two buildings/systems or <b>Users</b> of <b>Distribution System</b>
<b>License</b>	It is defined as in Law no. 05 / L - 085 on Electricity and the Rule on Licensing of Energy Activities in Kosovo
<b>Law on Electricity</b>	Is the current Law on Electricity approved by the Assembly of the Republic of Kosovo
<b>Short Connection</b>	<b>Short connection</b> (circuit) is happening do to various damages or wrong actions that connect the elements between two points of different potentials
<b>Fluctuations (Oscillations)</b>	Visual understanding (perception) of caused by a light oscillation that is reflected in lighting or the spectral distribution of it that is oscillated with time passing
<b>Voltage Fluctuations</b>	A series of rapid changes in voltage that can be regular or irregular
<b>Tariff Metering</b>	Electricity metering system made of metering equipment and data gathering equipment based on what the electricity supplier does calculation
<b>Connection Agreement</b>	A bilateral agreement between the <b>DSO</b> and every <b>User</b> of the <b>Distribution System</b> that contains the whole of the conditions for <b>connection</b> to the <b>Distribution System</b>
<b>Protection</b>	Measures for preventing abnormal conditions in the Energy System, detecting defects and activating alarms and signaling, until the disconnection of element in defect



<b>Protection back up (Reserve protection)</b>	The protection system that will interrupt a switch or other mechanisms that cut/interrupt <b>the short circuit current</b> in lack of protection operation, of another protection system.
<b>Maintenance</b>	The process of all the technical and organizing activities done for the elements of Electro Energy System during the maintenance period in order to recuperate their reinforcing capabilities for the planned functions.
<b>Separator</b>	A device (mechanism) which provides in the open position a clear disconnection of an electric circuit
<b>Planned Interruptions</b>	Are the interruptions in electricity supplying do to lack of generation, overload of electro energy system elements (unless when it's an obligated interruption) and also interruptions because of planned maintenance.
<b>Interruptions because of defects in electro energy system</b>	Interruptions in electricity supplying due to defects of the Electro Energy System elements (like Lines, substation transformers, generating units, etc).
<b>Circuit Breaker</b>	A mechanical connection/disconnection equipment capable of cutting the currents in normal circuit conditions and also to transmit and interrupt the current for a certain period of time in special abnormal conditions of the circuit, such as the ones of the circuit of short connection.
<b>Load / Demand (consumption)</b>	Load is level with which electricity distributed in or from one system or a part of system, expressed in MW and MVA <sub>r</sub> (which means active power and reactive power).
<b>Peak</b>	The Maximum of Load value in MW recorded within a specific time period.
<b>Maximum Load</b>	Maximum Load Recorded means maximum value of kW withdrawn in the meter point of supply to customer property during every time period of 15 minutes as it is determined by



## Regulator

<b>Simultaneous Maximum Demand (load)</b>	For a period of set time (a period of 15 minutes), the sum of all individual loads at all exchange points in <b>DS</b> gives as a result the simultaneous load of <b>DSO</b> . For one month (30 days it would be calculated for time intervals of 15 minutes as: $4 \times 24 \times 30 = 2880$ periods).
<b>Irregular Loads</b>	Loads able to create <b>harmonics</b> , fluctuations or lack of balance in the system.
<b>Event</b>	An unpredicted / unplanned occurrence that happens in system and includes the general description, defects, incidents and destructions.
<b>Unit or General equipment for Reading</b>	Means the <b>Unit (meter)</b> or <b>General Equipment</b> for reading with all additional equipment that can download the data from various static AC energy meters when they are loaded with specific software which will be called program for reading of metering instrument
<b>Meter</b>	<b>Meter</b> is equipment for measuring the two direction active energy, active power, reactive power, visible power, current, voltage, power factor, frequency and every other electrical parameter that results from these metering's. Meter must be in the situation to record various parameters as it is requested for special categories of customers based on applied tariffs time by time.
<b>Main Meter and Check Meter</b>	<b>Primary Meter</b> which is used for billing purposes is denominated as <b>Main Meter</b> . <b>Check Meter</b> is used as support to Main Meter for billing purposes when <b>Main Meter</b> cannot record or makes larger errors exceeding allowed limits under the standards





<b>Operational Meters</b>	<p>Metering equipment and auxiliary equipment for metering that are installed for:</p> <ul style="list-style-type: none"> <li>- Operational purposes and system control;</li> <li>- Monitoring and Manual Recording Purposes;</li> <li>- Evaluation of consumption in local substation installed in MV and LV side of distribution transformer 10(20)/0.4 kV and 35/0.4 kV.</li> </ul>
<b>Generating Unit</b>	Any generating unit that generates electricity
<b>Norms</b>	Standards, codes, regulations, recommendations, decisions and other normative documents set by law, acts of sub legislation, regulatory, orders, other official documents and contracts.
<b>Objects of electro energy sector</b>	A complex of structures, buildings and various equipment projected to generate, transmit and distribute electricity
<b>Market Operator</b>	Is a legal person, licensed by Regulator and responsible for the organization and administration of trade in electricity and final settlements / balancing among producers, suppliers and the customers
<b>Operation</b>	A planed action conducted in the Distribution System
<b>DSO</b>	Means the Distribution System Operator according to Law no. 05 / L - 085 on Energy
<b>TSO</b>	Means the Transmission System Operator, according to Law no. 05 / L - 0815 On Energy
<b>Earthing Equipment</b>	A Fixed or Portable equipment for providing the secure connection between a follower (conductor) and earth
<b>Parties</b>	A <b>Generator</b> , Trader or <b>other party</b> that are user of Distribution System
<b>Tracking the Load Data</b>	Follow up of Load Data is the database of load value defined in kW, kVar or kVA (with their multipliers) for each undetermined time interval.



<b>Period of load</b>	Period of load which means period during which the active, reactive or visible power are integrated such way to produce average value of load. For purposes to place (agreement) every period of load must be in time period of 15, 30 or 60 minutes and it will start from hour 0.00 and in accordance with applied tariffs.
<b>Distribution System User</b>	<b>Public Supplier, Independent Suppliers, Independent Generators</b> connected to the Distribution Network, <b>tariff customers</b> connected directly to the distribution network and also every other physic or juridical person that profits from the services of distribution network
<b>Main User</b>	The main users are: Generators with installed power over 100 kW directly connected to the <b>Distribution System</b> and also all the customers connected to the medium voltage level of the Distribution System
<b>Connection Point</b>	Physical point at which installations of Distribution System Users are connected with the Distribution System
<b>Supply Point from Transmission System</b>	A connection point between the <b>Transmission System</b> and <b>Distribution System</b> or between <b>Transmission System</b> and a <b>User</b> connected directly to the <b>Transmission System</b>
<b>Metering Point</b>	The metering point the physical place where the electricity metering system is installed and where the metering system meets all the technical and accuracy conditions under the Code of Electricity Metering. Physical metering point is determined fully by the agreements between the Parties
<b>Joint (common) Point</b>	The point in the <b>Distribution System</b> that is electrically and technically closer to the Connection Point from where are connected or can be connected the loads of the other clients
<b>Dispute Procedures</b>	Procedures described in "The Rule on Resolution of Disputes



and Complaints in Energy Sector”, approved by Regulator

<b>Independent Electricity Producers</b>	The Electricity Generators separate from the Electricity System that produce electricity for their own use, or for sale to the special clients or for sale to the electricity system
<b>Protocol</b>	Protocol is the software used for information exchange with external equipment or equipment for exchange point
<b>Access in the Distribution System</b>	The right of Licensed subjects that <b>generate</b> or supply electric energy and also the right of electro energy customers to connect and to use the services of <b>distribution system</b> in compliance of legislation in power.
<b>National Dispatching Center</b>	Center from where Operation and Monitoring of Transmission Electro Energy System of TSO is done, internal and external with other Systems outside Kosovo, considering the programming and maintaining of operation security and the quality parameters based on technical conditions.
<b>Distribution Dispatching Centre</b>	Center from where Operation and Monitoring of Distribution Electricity System of DSO is done in all territory of Kosovo considering the programming and maintaining of operation security and the quality parameters based on technical conditions.
<b>Centre for Data Gathering</b>	Center for Data Gathering means center that collects and processes the data from electricity <b>measuring meters</b> for various applications example: energy calculations and electricity auditing, payment of energy and system for calculation of losses.
<b>RAT</b>	Automatic Voltage Regulation
<b>Electricity Transmission Network</b>	Electricity Transmission Network on the 110 kV, 220 kV, 400 kV levels that facilitate the transmission (carrying) of large amounts of energy in long (far away) distances.



<b>Short Current</b>	<b>Connection</b>	Current that circulates in a short circuit in a certain point of the Electro Energy System and that can be expressed in kA
<b>SCADA ( Supervisory Control and Data Acquisition )</b>		A shortcut (abbreviation) to Control, Surveillance and Data Collection in computerized system in real time that is used to monitor and control in the Real Time Transmission System or Distribution System
<b>Electro Energy Sector</b>		The unity of planning, development, construction, use, and maintenance activity to install Generation, Transmission, Distribution plants (centrals), systems/objects of Electricity Supplier and Interconnection Lines for import-export, transit and exchanges with neighboring countries.
<b>Electricity Distributor</b>		Any person or legal subject holding the Electricity Distribution license according to the legislation in force, with a voltage level lower than 110 kV.
<b>Distribution</b>		Is the transportation of electricity to the distribution systems of medium and low voltage, considering the distribution to the end customer.
<b>Review (Commissioning)</b>		The finishing process of testing of one part of <b>Distribution System</b> before that part of the <b>System</b> is put into operation
<b>General Accuracy</b>		Combination of meter accuracy, auxiliary equipment for metering transformers and also the conductors for metering system.
<b>Distribution System</b>		Distribution System in 220/35/20/10 kV substations and 110/35/20/10 kV substations includes: all outgoing cubicles 35 kV and 10(20) kV, (except MV transformer cubicle and own expense of bus bars), connection/disconnection equipment and all partitioning accompanying elements, earthing, measuring and protective in low voltage level and MV owned by DSO. Also all elements of LV and MV levels (35 kV, 10(20) kV, 6.3 kV and 0.4 kV with appropriate transformations) up to the



metering point (PM) of the customer or generator including the metering point (PM).

<b>Transmission System</b>	The electricity network owned by the TSO (OSTT).
<b>Computerized System</b>	<b>Basic Computerized System</b> means the using of data that are downloaded from measuring meters through <b>Data Gathering Center</b> or through communication network from distance and downloads in Standard Format so that later to be used for calculation, analyze and various presentation.
<b>Metering System (Bulk Meter – BM)</b>	<b>Metering System</b> means the <b>meters</b> , transformers ( <b>CT's and VT's</b> ), protection equipment of meters including the alarms and also the data collectors, conductors that are part of metering equipment in certain points.
<b>Starting from zero (Black Start)</b>	The process of returning to energy system to the previous state after a general or partial breakdown (defect).
<b>High Voltage</b>	Voltage level from 110 kV and above.
<b>Medium Voltage</b>	Voltage level from 35 kV up to 1 kV.
<b>Low Voltage</b>	Voltage in level below 1 kV
<b>Earthlink</b>	A way to provide a secure connection between the transmitters (followers) and electric equipment and ground, through grounding (earthlink) equipment
<b>CT's and VT's</b>	Means <b>Metering Current Transformers (CT's)</b> and metering <b>Voltage Transformers (VT's)</b> .
<b>Transforming Station (Substation)</b>	The whole of electrical facilities (switchgears), whose function, is to transform and transfer the electricity from one level to another level with different voltage levels
<b>Electricity Market</b>	Commercial (trade) electricity arrangements in Kosovo in accordance with Law no. 05/L - 081 on Energy and Law no. 05 / L - 085 nn Electricity



<b>Operation Order</b>	A mandatory Order for receiving unit issued by the <b>National Dispatching Centre</b> or from Dispatch Center of Distribution based on the regulations (rules) in force. Orders are carried out via telephone, fax or after the installment of SCADA system through digital messages
<b>Operation Action</b>	Actions by the unit that receives the Operation Order issued by the National Dispatching Center or Regional Dispatch Center also the actions programmed by the Parties that influence in the functioning of Energy System.
<b>Regulator</b>	Energy Regulatory Office
<b>Measuring Cubicle</b>	It presents the entirety of the metering system from CT's, VT's, meter with all the accompanying elements closed with one panel (cabinet, cubicle) special closed for measuring of electricity
<b>Measuring system</b>	It presents the entirety of the equipment from CT's, VT's, meter with all the accompanying elements (cabinet, measuring cubicle, conductors, terminals, etc.) special for measuring of electricity
<b>MID</b>	Measurement Instrument Directive



## 6. Appendixes



## Shtojca 1

<a href="#">IEC 60051-1 {Ed.5.0}</a>	Direct acting indicating analogue electrical measuring instruments and their accessories - Part 1: Definitions and general requirements common to all parts
<a href="#">IEC 60051-4 {Ed.4.0}</a>	Direct acting indicating analogue electrical measuring instruments and their accessories. Part 4: Special requirements for frequency meters
<a href="#">IEC 60051-5 {Ed.4.0}</a>	Direct acting indicating analogue electrical measuring instruments and their accessories. Part 5: Special requirements for phase meters, power factor meters and synchrosopes
<a href="#">IEC 60051-6 {Ed.4.0}</a>	Direct acting indicating analogue electrical measuring instruments and their accessories. Part 6: Special requirements for ohmmeters (impedance meters) and conductance meters
<a href="#">IEC 60145 {Ed.1.0}</a>	Var-hour (reactive energy) meters
<a href="#">IEC 60211 {Ed.1.0}</a>	Maximum demand indicators, Class 1.0
<a href="#">IEC 60338 {Ed.1.0}</a>	Telemetry for consumption and demand
<a href="#">IEC/TS 60514 {Ed.1.0}</a>	Acceptance inspection of Class 2 alternating-current watthour meters
<a href="#">IEC/TR 60736 {Ed.1.0}</a>	Testing equipment for electrical energy meters
<a href="#">IEC 61358 {Ed.1.0}</a>	Acceptance inspection for direct connected alternating current static watt-hour meters for active energy (Classes 1 and 2)
<a href="#">IEC 62052-11 {Ed.1.0}</a>	Electricity metering equipment (AC) - General requirements, tests and test conditions - Part 11: Metering equipment
<a href="#">IEC 62052-11 {Ed.1.0}</a>	Electricity metering equipment (AC) - General requirements, tests and test conditions - Part 11: Metering equipment
<a href="#">IEC 62053-11 {Ed.1.0}</a>	Electricity metering equipment (a.c.) - Particular requirements - Part 11: Electromechanical meters for active energy (classes 0,5, 1 and 2)
<a href="#">IEC 62053-21 {Ed.1.0}</a>	Electricity metering equipment (a.c.) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2)
<a href="#">IEC 62053-21 {Ed.1.0}</a>	Electricity metering equipment (a.c.) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2)
<a href="#">IEC 62053-22 {Ed.1.0}</a>	Electricity metering equipment (a.c.) - Particular Requirements - Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)





## Shtojca 2

Current Transformers	Current Transformers
<a href="#">IEC 60044-1-am1 {Ed.1.0}</a>	Amendment 1 - Instrument transformers - Part 1: Current transformers.
<a href="#">IEC 60044-1-am2 {Ed.1.0}</a>	Amendment 2 - Instrument transformers - Part 1: Current transformers.
<a href="#">IEC 60044-1 {Ed.1.2}</a>	Instrument transformers - Part 1: Current transformers.
<a href="#">IEC 60044-3 {Ed.2.0}</a>	Instrument transformers - Part 3: Combined transformers.
<a href="#">IEC 60044-8 {Ed.1.0}</a>	Instrument transformers - Part 8: Electronic current transformers.

## Shtojca 3

Voltage Transformers	
<a href="#">IEC 60044-2-am1 {Ed.1.0}</a>	Amendment 1 - Instrument transformers - Part 2: Inductive voltage transformers
<a href="#">IEC 60044-2-am2 {Ed.1.0}</a>	Amendment 2 - Instrument transformers - Part 2: Inductive voltage transformers
<a href="#">IEC 60044-2 {Ed.1.2}</a>	Instrument transformers - Part 2 : Inductive voltage transformers
<a href="#">IEC 60044-3 {Ed.2.0}</a>	Instrument transformers - Part 3: Combined transformers
<a href="#">IEC 60044-5 {Ed.1.0}</a>	Instrument transformers - Part 5: Capacitor voltage transformers
<a href="#">IEC 60044-7 {Ed.1.0}</a>	Instrument transformers - Part 7: Electronic voltage transformers