Electricity Metering
RULES:

Chapter I.
General Provisions

Article 1. Through the rules for electricity metering it is defined the following:

1. Metering principles, manners and sites of active and reactive electricity;
2. Requirements for metering accuracy, verification of the metering systems and the relevant communication links;
3. Development, maintenance and access to the metering system database;
4. Registering of the commercial metering devices for active and reactive electricity;
5. Rights and obligations of the parties to the electricity transactions; of the electricity system operator and those of the distribution network operators, connected to the electricity metering.

Chapter II.
Metering principles

Article 2. A metering system shall be provided for each connection to the electricity transmission network, respectively the distribution network, including every intersystem distribution line.

Article 3. (1)The electrometers for commercial and control metering shall read and register kilowatt – hours (kWh) and kilovar – hours (kVArh) at the metering site of active and/or capacitive/inductive reactive electricity.

(2) Active and reactive electricity at each metering site shall be read simultaneously at intervals, defined by the electricity sale-trade contract at regulated prices or according to the Electricity Trading Rules, when the transactions are at freely negotiated prices. The public supplier should give information about the reading periods, defined by the electricity sale-trade contracts at regulated prices to the electricity system operator.

Article 4. Each metering site should have permanent alphanumeric identification code.

Article 5. The technical requirements, metrological characteristics and specifications of the metering system shall be defined by the voltage level at the metering site and by the quantity of the electricity, which is to be metered.

Article 6. Installation of control electrometers shall be made by the decision and at the expense of the party, which buys or sells electricity. Control electrometers can be used for providing metering data in case of general electrometers failure.

Article 7. All metering systems shall be delivered, operated, supported and controlled in accordance with the regulation requirements and the operative legislation.

Chapter III.

Site for connection and operation of metering systems.

Article 8. The site for connection to the electricity transmission, respectively distribution network shall be defined by the contract for connection, under the Regulation for connection of electricity producers and consumers to the electricity transmission and distribution networks to article 116, paragraph 7 of the Energy Law.

Article 9. The produced electricity and the electricity, used by consumers shall be metered by facilities for commercial metering – ownership of the transmission or of the relevant distribution company.

Article 10. (1) The transmission company shall deliver, install and maintain the facilities for commercial metering and the adjoining apparatuses for registering and transmitting data in cases, when the following is metered:

1. The electricity of a producer, connected to the transmission network;
2. The electricity, leaving the transmission network and entering the distribution networks.
3. The electricity, entering the electric outfit of the eligible consumers, connected to the transmission network;
4. The industrial electricity, used by consumers, connected to the transmission network;
5. The electricity, fed/given to the intersystem distribution lines.

(2) The distribution company shall deliver, install and maintain the facilities for commercial metering and the adjoining apparatuses for registering and transmitting data in cases, when the following is metered:

1. The industrial electricity, used by consumers, connected to the distribution network at medium and low voltage;

2. The electricity, used by public consumers; connected to the distribution networks at low voltage;
3. The electricity, entering the electric outfit of the eligible consumers, connected to the distribution network;
4. The electricity of a producer, connected to the distribution network.

(3) The delivery, installation and maintenance of the facilities for commercial metering and the adjoining apparatuses for registering and transmitting data in sites for energy exchange between neighbouring distribution companies shall be regulated under a contract between both parties.

(4) The party, which buys or sells electricity does not have the right to reconstruct, repair or change the elements of the facilities for commercial metering, installed by the transmission, respectively distribution company, authorized state body or officials, entitled by this body.

Article 11. (1) The transmission, respectively distribution company shall provide access for visual monitoring to the readings, collected by the facilities for commercial metering to the party, which buys or sells electricity.

(2) The consumers should provide unobstructed access to all the elements of the metering system for their installation, inspection and electricity quantities report, to transmission, respectively distribution company representatives, under conditions, defined by the electricity selling contract at regulated prices or by the electricity selling contract for using the transmission, respectively distribution network at freely negotiated prices.

Article 12. The transmission company shall define a specific project code and a permanent alphanumeric identification code for each electricity metering site.

Article 13. (1) Where approved tariffs enable the consumers of a given group to choose the mode of metering the electricity quantity, the transmission or distribution company, as the case may be, shall install metering devices corresponding to the consumer`s choice stated in writing.

(2) In case to para.1 the consumer shall present a written statement to the transmission, respectively distribution company with a request for changing the mode of metering. The statement shall include the reasons for requesting the changes.

(3) Within 30 days the transmission, respectively distribution company, after inspection of the existing mode of commercial metering at consumer`s site, shall offer a contract for implementing the requested changes.

(4) All costs, excluding the costs made for the metering devices, shall be at the expense of the consumer.

Chapter IV

Determination of the metering points

Article 14. When the electricity from the consumers is fed to the transmission, respectively distribution network, the metering point shall be at the high voltage side of the step-up transformers. The net quantity of the fed electricity shall be metered.

Article 15. When the electricity from the transmission network is given to the distribution network, the metering point shall be at the medium voltage side of the reducing transformer and at the side 110 kV, owned by the distribution company. The net quantity of the fed electricity shall be metered.

Article 16. (1) When the electricity from the transmission, respectively distribution network is given to the connected consumer, the metering point shall be at the higher voltage side of the reducing transformer of the consumer (in case of existing transformation of that type) or at the connection site of the consumer to the transmission, respectively distribution network. Technological costs of electricity at a given facility (equipment) shall be at its owner`s expense.

(2) When the electricity from the transmission, respectively distribution company is fed to the producer, the metering point shall be at the high voltage side.

Article 17. With intersystem electric lines the metering point shall be organized by the transmission company at the boundary sub-station (appliance), under the recommendations of the UCTE and the bilateral contracts for electricity supply /trade/.

Article 18. (1) In case the metering point does not coincide with the interconnection point, the metering data could be corrected if necessary.

(2) The transmission, respectively distribution company and the party, which electricity is metered shall negotiate the compensation. The agreed procedure for determining the amount of compensation shall be included in the metering system register.

Chapter V.

Identification code

Article 19. For unification and facilitation of the database exchange form the electricity market, each metering point shall be defined by a specific project code and a permanent alphanumeric identification code, described in Appendix 1.

Article 20. The transmission company shall define the identification codes of all metering points. These codes shall be kept in the metering system register and the relevant communication links for each party.

Article 21. The identification code should not be removed to a different metering point, should not be changed or reedited, as it shall remain permanent during its whole market resource.

Article 22. In case of transference or closure of the metering point, the corresponding identification code should have opening and final date, as well as contrlol report of the change.

Article 23. When the database and information exchange between the transmission, respectively the distribution company and the corresponding party, the State Energy Regulatory Commission and the State Agency for Metrology and Technical Supervision /SAMTS/ is implemented, the identification code of each metering point shall be used.

Chapter VI.

Requirements to the metering sytems.

Article 24. Depending on the voltage level and the magnitude of the electric charge, the metering system shall include:

1. Metering transformers;
2. Commercial electrometers;
3. Communication devices;
4. Additional and servo-devices and linkwork;
5. Panel (board) for installation of electrometers and elements of the metering system, safeguarded against dust and humidity and providing possibility for sealing.
6. Secondary circuits for metering, terminal lines and overload switches;
7. Control electrometers, if such are installed.

Article 25. The main metering devices and the elements of the metering systems should correspond to the following requirements:

1. To be protected by seals or other devices, which do not allow unregulated access of unauthorized individuals;
2. To switch on a device, reading and registering two-way fluxes of active and reactive electricity;
3. To have installed electric devices for recording and transmitting data to the database of the metering system;
4. To switch on a device, which provides the possibility for visual image of the increasing quantity of metered electricity by tariff zones and settlement periods;
5. To be accurate in accordance with the requirements of the Regulation for Metering Devices, which are subject to metrological monitoring and to Appendix 2;
6. To have overload protection.

Article 26. (1) The metering transformers (current and voltage) should correspond to the requirements for accuracy under the Regulation for Metering Devices, which are subject to metrological monitoring and to the Appendix 2.

(2) The technical data of the metering transformers shall be included in the metering system register.

(3) In medium and high voltage networks (110 kV and more) each commercial metering point shall be supplied by a set of current and voltage transformers with a separate winding for commercial metering.

Article 27.(1) According to the operation principle the electrometers for commercial metering shall be inductive or static.

(2) The electrometers data report shall be made directly or by remote sensing methods.

Article 28 (1) The commercial metering of active and reactive industrial electricity shall be implemented:

1. By three-element electrometers - at low voltage three-phase lines;
2. Two-element electrometers are allowed at medium and high voltage distribution lines, which are elements of the electricity distribution network;
3. By three-element electrometers - at distribution lines with voltage 110 kV and higher.

(2) With public consumers the metering shall be implemented by mono-phase or three-phase electrometers with front installation.

Article 29. (1) The electrometers to article 28, para.1, which are of a static type, shall meter and record the quantities of active and reactive electricity at certain periods of time and to register them in their own memory.

(2) The electricity quantity shall be metered either for capacitive and for inductive capacity factors. The active and reactive electricity flux shall be metered and registered separately in both directions.

Article 30 (1) The electrometers to article 28, para.1, which are of a static type, should have a display for showing all integrating quantities.

(2) The electrometers grade of fit should correspond to the requirements, under the Regulation for Metering Devices, which are subject to metrological monitoring.

Article 31. The electrometers to article 28, para.1, which are of a static type, should be equipped by an additional electricity supplying system and their own reserve system; they should be provided with monitoring and control devices, together with an emergency alarm system for internal and external failure indication.

Article 32. (1) The electrometers should be sealed. The seal shall be installed in a way, which allows the internal parts of the metering device to be inaccessible, except in case of seal damage.

(2) The technical data and the specification of electrometers and their elements shall be put in the metering system register.

Article 33. (1) The metering system, together with its elements should cover the requirements for general accuracy, set in Appendix 2.

(2) If necessary, the electrometers could be compensated in case of errors, made by the metering transformers and the relevant connections to the electrometers.

(3) The compensation values shall be recorded by the transmission, respectively distribution company and should be proved for validation of the compensation criteria. All parameters shall be kept in the metering system register.

Article 34. (1) The transmission, respectively distribution company shall determine the necessity of equipping the electrometer with a built in clock with an inlet for synchronization with a standard clock. The electrometers time is set according the Bulgarian standard time.

(2) The synchronization shall be implemented by integrated receiver and synchronized radio signal or by synchronizing rating signal from the transmission company.

Article 35. (1) The transmission, respectively distribution company shall determine the necessity of equipping the static electrometer with a device for automatic registering with its own electricity memory, which includes devices for saving data for each metered quantity.

(2) The capacity of the memory should permit the storage of minimum 4 (four) metered values of data, transmitted at intervals of 15 (fifteen) minutes for a 50 (fifty) day period.

Article 36. (1) Under the article 35, para.1, the metering system including static electrometer should be equipped by devices for protection of the energy-dependent data, stored in the memory.

(2) If possible the data shall be kept in energy-independent memory. In case of supply loss, the data saved in the memory are kept for at least 50 (fifty) days of the stored effective time, while the external supply is switched off. Every operation "reading" should not erase or change saved data of metering.

Article 37. (1) The metering system, including static electrometer, should be equipped by interface devices for internal or external communication, for instance modem or transmitter, which provide data exchange for local or correspondence inquiry according the operative standard.

(2) The communication connection shall provide metering data transfer to the transmission company. The inquiry shall be implemented by one of the following means of communication:

1. State and/or private phone networks;
2. State or private radio/satellite network;
3. High frequency communication by high voltage distribution lines.

Article 38. (1) The transmission company provides the communication connection.

(2) The electrometer data report, together with the partially or fully electrometer measuring should be possible just by the access at appropriate security level.

(3) The technical specification of the data transfer form, the records, the means for error inspection and the security level shall be defined by the transmission company.

Article 39. (1) Each metering system is subject of inspection for:

1. Accuracy;

2. Working capacity;

3. Reduced voltage level of the standby battery;

4. Memory inspection;

5. Insulation.

(2) The reliability of the metering transformers and the metering systems should be at level over 99% annually. The disposal for work of the communication connection should be over 95% annually.

Article 40. (1) The secondary circuits of the metering system are implemented by shield cable under the following conditions:

1. Voltage circuits (when metering all voltage levels) – by multicore cable (4 cores);

2. Current circuits (when metering medium and high voltage level) – by a separate pair of cables for each phase from current transformer to the electrometer's terminal line;

3. Current circuits (when metering high voltage level) – by a separate pair of cables for each phase from current transformer to the control switchboard and by four cables from the control board to the terminal line;

4. The minimal section of the secondary circuits shall be 2,5 mm2 for copper wire, where the cable section in the secondary current circuit should be consistent with the capacity of the secondary winding of the current transformer and the secondary voltage circuit should provide voltage drop, less than 0,5%;

5.The ground connection of the secondary circuits shall be implemented at one point of the specialized terminals of the metering transformers;

6. The ground connection of the shield cable (the protective cover) shall be implemented at the electrometer's panel;

7. The terminal lines of the secondary circuits are equipped with appliances, providing optimum possibility for independent by-passing of each phase, as well as in case of secondary circuit break down;

8. The secondary circuits are put at terminal lines:

- In control switchboard for current and voltage circuits – when metering high voltage level;
- In cell-head board for voltage circuits – when metering medium voltage level;
- At electrometer's panel – when metering low voltage level;

9. The installation of terminal lines in control and cell-head switchboard shall be implemented in a box, protected against dust and humidity and providing possibility for sealing;

10. Safety devices, installed respectively in control and cell-head switchboard shall be used for preserving the secondary voltage circuits;

11. The signalization for voltage dropping out in the secondary metering circuits shall be implemented separately for each metering system and shall be put at the control switchboard of the relevant connection;

12. The signalization for the effective voltage dropping out shall be put at the central alarm panel.

(2) The electrometer's panel supply with alternating voltage 220 V shall be implemented by a separate panel with its own safety device and signalization in case of dropping out;

Article 41. The metering data, stored in the metering system shall be protected from direct local or distant access by passwords. The passwords shall be kept in the metering system register.

Article 42. (1) The metering site and all the elements, settings and parameters of the metering system should be clearly defined and put down in the metering system register.

(2) All changes of elements, settings and parameters shall be agreed with the relevant party. In case of urgent changes the operator of the electricity system shall inform the relevant party.

(3) The project, technical specifications and electric schemes of the metering system elements shall be documented by the operator of the electricity system, respectively by the operator of the distribution network.

Chapter VII

Metering system register and metering data

Article 43. (1) All technical data for the metering system elements, physical data with metering results, concerning each metering site and data for administrating the metering system register shall be kept in the central database, called metering system database, consisting of two parts:

1. Metering system register;
2. Metering data.

(2) The operator of the electricity network provides:

- Updating, maintenance and administration of both parts of database;
- Safe and confidential manner of administrating, processing, maintaining and keeping the registered data and the metering data.

Article 44. (1) For each enterprise, registered at the balancing energy market, the operator of the electricity system provides a virtual electrometer, which keeps the values of the consumed and given by this enterprise active and reactive electricity for every settlement period.

(2) The projects of the commercial parties, which are not registered at the balancing energy market, shall be declared at the public provider and/or the public supplier.

Article 45. (1) For each metering system the operator of the electricity system is obliged to provide all necessary data and technical specifications according to the requirements, defined by Appendix 1.

(2) The operator of the electricity system shall provide access to the metering system register only to the authorized persons and to the parties, concerning the metering points of their own projects.

Article 46. Each inspection of the metering system accuracy, defined by Appendix 2, each change of its elements should be in accordance with the settlement and should be noted in the register.

Article 47. The metering system register shall consist of information about:

1.Brand, type, serial number, year of production and grade of fit of the metering devices;

2. All data, connected with the technical and metrological specifications and standards as minimum and maximum current, rated standby voltage, operating proportions and accuracy of all devices in the metering system, including the technical data of the power and metering transformers;

3. Identification code, exchange procedures, etc.;

4. Local information as physical site, name of the authorized contact person, etc.;

5. Information about the communication connection (type, technical parameters, etc.);

6. All data, concerning the program for inspection and schedule of assets substitution, records from inspections of different devices of the measuring system.

Article 48. (1) The metering data are the second part of the database, which consists of all metered and calculated values, used for the payment purposes.

(2) The operator of the electricity system shall collect data by remote sensing methods, shall store them at para.1 and record them in the metering system database for the purposes of payment and making inquiries for the parties.

(3) The operator of the electricity system shall develop procedures for collecting and storage of metering data and shall inform the parties about these procedures.

(4) In case the correspondence data collecting is impossible, the operator of the electricity system shall provide the relevant party receiving the data by other means.

Article 49. The operator of the electricity system shall provide reliable communication connection and correspondence data transfer from the metering system to the database.

Article 50. The distribution company shall develop, maintain and administer database for all consumers and producers, connected to the distribution network, no matter if they conclude transactions at regulated or freely negotiated prices. For the commercial parties, registered at the balancing energy market, the distribution company provides the operator of the electricity system valid data for use and storage in the database.

Article 51. (1) The metering data shall include:

1. Reported values of the active and reactive electricity, collected by the metering systems;
2. Calculated values of the initial data from the operator of the electricity system;
3. Estimated and corrected or changed data in case of missing or wrong data;
4. Planned data and values, used for payment purposes.

(2) The transmission, respectively distribution company shall provide the necessary metering data to the parties to transactions with electricity for payment purposes.

Article 52. (1) The metering data shall be collected, processed, administered and stored by safe and confidential manner.

(2) The data for past periods shall be stored in the metered database for 2 (two) years period in accessible format and for 6 (six) years in archive.

Article 53. (1) The operator of the electricity system shall be responsible for the inspection of the data validity and the substitute data in case of error or missing data.

(2) The operator of the electricity system, together with the parties, shall develop procedures and instructions for data validation and substitution.

(3) In case of complete absence of metering data or in case of errors, made by the metering devices, the data are replaced by the best possible calculated data, where

shall be used statistic reports, information from information-managing system (SCADA) of the Central Board of Monitoring and other sources and methods, coordinated with the relevant party.

(4) In case the metering data could not be restored from the metering system in the term, required for payment, the substitute value shall be prepared by the operator of the electricity system, where shall be used a method, agreed with the parties in advance.

(5) In case when missing metering data or inaccurate data of the metering system is provided, the operator of the electricity system shall inform the relevant parties up to 24 (twenty-four) hours from discovering the fact in a workday.

Article 54. (1) Each party could ask the operator of the electricity system to make an inspection, which to establish the correspondence between the data in the database and the data from his metering system.

(2) When there is a lack of correspondence between the metering system data and these in the database, the concerned party and the operator of the electricity system shall define together the most appropriate way of correction, using the metering system database.

Article 55. The operator of the electricity system could provide direct or additional access to the metering system database to authorized persons and/or organizations.

Article 56. Access right to all data, concerning the metering point has:

1. Transmission, respectively distribution company;
2. Operator of the electricity system;
3. Party from the relevant metering system.

Article 57. Electronic access to the database shall be provided, where appropriate security systems, defined by the operator of the electricity system are used.

(2) The metering system database and the passwords for electronic access shall be confidential and be subject of protection, in accordance with article 114 from the Energy Law.

(3) The operator of the electricity system shall provide appropriate planning of the access to the database with reference to prevent information system overloading.

Chapter VIII

Metering systems inspection

Article 58. Metering devices should correspond to the technical and metrological requirements, defined by the Regulation for Metering Devices, which are subject to metrological supervision.

Article 59. Commercial metering devices address the requirements for accuracy only in cases, when the quality of the electricity at the metering site meets the standard requirements.

Article 60. All commercial and control metering devices shall be subject to initial and follow-up inspections under the Metering Law and the Regulation for Metering Devices, which are subject to metrological supervision.

Article 61. The inspection of the metering system and the relevant communication connection could be asked by the party, which buys or sells electricity, in case of using somebody else's appliance and by its owner. The expenses shall be undertaken by the party, which asks the inspection, when the results show that the equipment covers the required accuracy. On another occasion the expenses shall be undertaken by the transmission, respectively distribution company.

Article 62. (1) The transmission, respectively distribution company shall make inspections of the metering systems about the correspondence between them and these rules.

(2) The metering devices shall be checked about the correspondence between them and requirements for accuracy, defined by the Regulation for metering devices, which are subject to metrological supervision and to Appendix 2.

(3) The inspection of the metering system general accuracy, according to Appendix 2, shall be negotiated by the parties.

Article 63. (1) All electrometers (commercial and control) shall be subject to initial inspection. The results form the inspection shall be noted in the metering system register.

(2) The inspection shall be made by an authorized by the SANTS physical or juridical person.

Article 64. In case the commercial electrometer at the metering system in network 110, 220 and 400 kV shows tapping more than 1,5 % from the registered data of the relevant control metering system, both systems should be checked. If the commercial

electrometer shows evident fault, data of the control electrometer shall be accepted as correct.

(2) When the inspection registers inadmissible error, according to the Regulation for Metering Devices, which are subject to the metrological supervision and to Appendix 2, and there is no evidence when the error was done, the incorrect reported electricity quantity shall be defined by a procedure, envisaged in the sale-trade electricity contract.

(3) When the metering system inspection registers metering error, less than 1,5 times from the admissible error on specifications, the reported data shall not be changed.

(4) In cases to para.s 1 and 2 the transmission, respectively distribution company shall provide enough accurate replacing data for correction of the error for the period, when it was considered to happen.

(5) The transmission, respectively distribution company shall prepare a report for coordination of data, transmitted from the electrometer and shall present it to the relevant party.

Article 65. (1) All metering transformers shall be subject of initial inspection.

(2) Before coming to commercial use, new metering transformers shall be examined and checked, according to the Regulation for Metering Devices, which are subject of metrological supervision.

(3) The follow-up inspection of the metering transformers shall be made by the decision of the parties to the electricity sale-trade contract or when there is evident change.

Chapter IX

Control metering

Article 66. (1) Installation of a control metering system shall be by a decision of and at the expense of the party, which buys or sells electricity and it shall be co-coordinated with the transmission, respectively distribution company.

(2) The procedure for using the data form the control electrometers for the payment purposes shall be defined by the electricity sale-trade contract, signed by the parties, respectively in the general provisions for sale of electricity.

Article 67. (1) Control metering system is different from the commercial one and shall use separate windings of the current transformers.

(2) Control metering systems could be supplied by secondary circuits, used for other purposes.

(3) Control metering systems could not use metrological indexes, lower than these of commercial metering.

Article 68. (1) The party does not have the right to reconstruct, repair or change the elements of the metering system devices, as well as to break a seal, a sign, or another control appliance of these devices in the absence of the transmission, respectively distribution company representative.

(2) The transmission, respectively distribution company does not have the right to reconstruct, repair or change the elements of the metering system devices, as well as to break a seal, a sign, or another control appliance of these devices in the absence of the party representative.

Chapter X

Control over Rules compliance

Article 69. The control over compliance with these rules is a part of the control over the compliance with the terms of the licenses, issued by the State Energy Regulatory Commission.

Article 70. All disputes, arisen with regard to these rules compliance, shall be addressed for implementing resolution procedures to the State Energy Regulatory Commission under the Energy Law.

ADDITIONAL PROVISION

§ 1. Within the meaning of these rules:

1. “A virtual electrometer” is a relative working term, which means keeping the values of the consumed and given by a relevant enterprise active and reactive electricity for every settlement period.

2. “Metering” means registering the produced or consumed active and reactive electricity.

3. “Control electrometer” is an electrometer, different form the commercial one, which serves as an information source in some cases.

4. “Intersystem distribution lines” are lines and the adjoining facilities, which provide connection with other electricity systems or their parts.

5. “Enterprise” is each independent, with regard to the electricity metering, producing unit of a commercial party, which produces or consumes electricity.
6. “Eligible consumer” is an electricity consumer, addressing the requirements, defined by the Rules for terms and procedure of access to the transmission and distribution electricity networks.
7. “SCADA” is an information-managing system for collecting, processing, registering and visualizing of information, needed either for the operative and emergency management of the electricity system and for the post-operative analysis.
8. “Accuracy” is the envisaged admissible error of each metering device, depending on its location and the admissible error of the current and voltage transformers connected.
9. “Commercial electrometer” is a main component of each metering system, which provides metering information for commercial purposes.
10. “Commercial parties” are the electricity producers, the eligible consumers and the electricity tradesmen, who conclude transactions under the Electricity Trading Rules.
11. “Party” is each of the participants to the electricity transactions.
12. “UCTE” is the Union for co-ordination of electricity transmission.

FINAL PROVISION

§ 2. These rules are made by virtue of article 83, para.1, item 6 of the Energy Law and are adopted by the State Energy Regulatory Commission on the strength of article 27, para.1, item 7 of the Energy Law by decision N P-2/04.06.2004, item 4.

APPENDIX N1

Structure of the metering sites identification code

State (2 signs)	Transmission company (s) (4 signs)	Region (5 signs)	Serial numbers (5 signs)

State	International state identification, for instance Bulgaria: BG
Distribution company	The transmission company shall define identification numbers of the distribution companies
Region	Metering site identification number
Serial numbers	Defined individually for each metering system. Some signs could be defined to distinguish the metering system by type (producer/distribution company/eligible consumer).

Metering system register

The register is a part of the metering system database and it consists of information form the metering, connected with the metering systems, defined by the metering rules, which determine the validity and accuracy of the metering data.

The function of the register is to facilitate:

- Registering of the connection points, metering sites and concerned parties;
- Inspection of the compliance with the Electricity Metering Rules;
- Control of the changes in the registered information.

The register should consist of the following information at least:

1. Points of connection and metering referent data, including:
   - Locality and identification data (numbers of the plans);
   - Data for calculating the compensations for losses;

- Sites identification titles;
- Determination of a contact person, responsible for each site on behalf of the relevant party;
- Information about the register data coding.

2. Identification and characteristics of the metering system:

- Identification numbers;
- Identification title of the metering system;
- Types and models of the metering systems;
- Transformation factors of the metering transformers;
- Data for current test and inspection programs, test results and reference to the test reports;
- Schedule of test, inspections and change of the metering system;

3. Transmitting information data, including:

- Phone numbers for data access;
- Communication equipment type and serial numbers;
- Data or instructions for communication reports;
- Transforming data information;
- Identification and access rights of the consumers;
- Access passwords to the electrometers (kept in confidential or protected areas)

4. Validation and data exchange procedure, negotiated by the concerned parties, including:

- Algorithm;
- Data comparison methods;
- Processing and emergency signals (voltage source limits and phase angle limits);
- Inspection of metering compensation data;
- Alternative data sources.
- Hour calculation of production (consumption);
- Others.

APPENDIX N2

General accuracy

The general metering accuracy depends on the accuracy either of the electrometer and the current and voltage transformers. The general metering accuracy at the metering point for all existing and newly metering systems should permanently be within the confines of an error, given in the table below:

Quantity	**Accuracy of the different elements of the metering system**	**Current**	**Capacity factor**	**Error limit**
Active energy	Electrometer for active energy 0.2 S Current transformer 0.2 S Voltage transformer 0.2	20 % to 120 % of the rated current 5 % to 20 % of the rated current 1 % to 5 % of the rated current 20 % to 120% of the rated current	1 1 1 0.5 inductive to 0.8 capacitive	± 0.4 % ± 0.4 % ± 0.6 % ±0.93%
Active energy	Electrometer for active energy 0.5 S Current transformer 0.2 S Voltage transformer 0.2	5 % to 120 % of the rated current 1 % to 5 % of the rated current 10 % to 120% of the rated current	1 1 0.5 inductive to 0.8 capacitive	±0.83% ±1.23% ±1.41%

Quantity	**Accuracy of the different elements of the metering system**	**Current**	**Capacity factor**	**Error limit**
Active energy	Electrometer for active energy 0.5 S Current transformer 0.5 S Voltage transformer 0.5	5 % to 120 % of the rated current 1 % to 5 % of the rated current 10 % to 120 % of the rated current	1 1 0.5 inductive to 0.8 capacitive	±1.32% ±1.68% ±2.35%

Active energy	Electrometer for active energy 1.0 S	5 % to 120 % of the rated current	1	±1.58%
		2 % to 5 % of the rated current	1	±2.02%
	Current transformer 0.5 S	20 % to 120 % of the rated current	0.5 inductive to 0.8 capacitive	±2.48%
	Voltage transformer 0.5			
Reactive energy	Electrometer for reactive energy 2.0 S	10 % to 120 % of the rated current	0	± 4.0 %
			0.866 inductive to 0.866 capacitive	± 5.0 %
	Current transformer 0.2 S	10 % to 120 % of the rated current		
	Voltage transformer 0.2			

*Note**:*** The requirements for the current with proportions from 1% to 5% of the rated current shall be applied only in cases when the electricity which is to be metered under normal working conditions is such, that the rated current of metering is below 5% (excluding 0) for periods, equal to 10% or more annually. For achieving the general required accuracy, it could be necessary the electrometers to be compensated for the errors, made by the metering transformers, and for the relevant connection to the electrometers, or they could be compensated for the losses of the power transformer. The values, which have to be compensated, are noted by the transmission company and are presented as evidence when statement for the compensation criteria is needed. The compensation could be achieved either within the range of the metering devices or within the range of the data managing software. If compensation is performed, the resultant general accuracy should be possibly closer to zero. Parameters should be stored in the metering system register of the transmission company.