RULES FOR MEASURING THE AMOUNT OF ELECTRICITY
Issued by the State Commission for Energy and Water Regulation
Published in SG No. 98 of November 12, 2013, repealed by SG No. 15 of February 14, 2017.
Repealed, with the exception of Articles 48, 49, 50, and 51, by Decision No. 1500 of February 6, 2017, in administrative case No. 2385 of 2016 of the Supreme Administrative Court - SG, No. 15 of February 14, 2017, effective from February 14, 2017.

Section I.

General Provisions
Art. 1.
(1) The rules for measuring the quantity of electricity determine:

1. The principles, methods, and locations for measuring the quantities of active and reactive electrical energy and power;
2. The requirements for measurement accuracy, verification of the technical and metrological characteristics of the measuring instruments/systems, and their associated communication links;
3. The content of registers and databases of primary data of the measurement systems, their maintenance, as well as access to the register of the measurement system;
4. The measurement, validation, processing, storage, and provision of data from the measurement of electricity;
5. The rights and obligations of the owner of a measurement system and the parties to the electricity transactions;
6. The conditions and procedures for determining cases of unmeasured, improperly and/or inaccurately measured electricity and methods for recalculating (correcting) the quantity of electricity.

(2) These rules do not regulate the exchange of information between market participants as defined by the Rules for Electricity Trading (SG, No. 66 of 2013).

Section II.

Principles of Measurement
Art. 2.
(1) For each point of commercial measurement in the electrical transmission or distribution network, including each intersystem power line, the transmission network operator or, respectively, the distribution network operator, shall provide and maintain a measurement system.
(2) For each commercial measurement system, a control measurement system may be installed, which reserves the commercial system according to these rules, with the measuring instruments and control systems having metrological characteristics no worse than those of the commercial measurement instruments. These are provided and maintained by the party (participant) that requested them.
(3) For the purposes of settling the relations in electricity transactions and validating information in the event of a failure of commercial and control measuring instruments, another method of supplementing the data is allowed.
(4) For the purpose of preparing an energy balance of the transmission and distribution network,

the respective network operators have the right to install their own measurement systems for the technical measurement of the passing electricity.

Art. 3.
(1) Meters for commercial and control measurement between different network operators, as well as meters for commercial and control measurement between a network operator and a producer, record and register the exchanged energy in both directions, in kilowatt-hours (kWh) and kilovar-hours (kVArh), respectively, in the four quadrants, at the point of measurement of active and reactive (capacitive/inductive) electrical energy.
(2) Meters for commercial and control measurement of customer facilities record and register kilowatt-hours (kWh) and/or kilovar-hours (kVArh) at the point of measurement of active and/or reactive (capacitive/inductive) electrical energy.
(3) Commercial and control meters measure and register, at the point of measurement with installed power greater than or equal to 100 kW, the data for active and reactive energy in accordance with Ordinance No. 1 of 2013 on the Regulation of Electricity Prices (SG, No. 33 of 2013).
(4) The frequency of reading the quantities of active and reactive electrical energy at each measurement point is at least once a month, with the period not exceeding 31 days.
(5) Distribution network operators are not required to install and maintain means for hourly commercial measurement of electricity for each settlement period for facilities:

1. Connected to the "low voltage" network with provided power up to 100 kW;
2. Of household customers.
   (6) The owners of measurement systems carry out the reading of the quantities of electricity in accordance with the reading periods under paragraph 4 and provide the measurement data to the respective persons according to the Rules for Electricity Trading (RTE).

Art. 4.
(1) Each measurement point must have a permanent alphanumeric identification code.
(2) Each measurement point must necessarily belong to a specific balancing group in accordance with the RTE.

Art. 5.
(1) The technical requirements and specifications of the measurement system are determined by the voltage level, the provided power at the measurement point, and the quantity of electricity to be measured according to Ordinance No. 3 of 2004 on the Design of Electrical Installations and Power Lines (published in SG, Nos. 90 and 91 of 2004; amended Nos. 108 of 2007 and 92 of 2013).
(2) The metrological characteristics of the measuring instruments/systems are determined in the Ordinance on Measuring Instruments Subject to Metrological Control, adopted by Council of Ministers Decree No. 239 of 2003 (published in SG, No. 98 of 2003; last amended No. 56 of 2011) and the Ordinance on the Essential Requirements and Conformity Assessment of Measuring Instruments, adopted by Council of Ministers Decree No. 253 of 2006 (published in SG, No. 80 of 2006; last amended No. 48 of 2010)

Art. 6. All measurement systems shall be delivered, serviced, maintained, and monitored in accordance with the requirements of these rules and the applicable legislation.

Art. 7. When constructing new or reconstructing existing measurement systems, the projects shall be coordinated with the transmission network operator or the distribution network operator.

Art. 8. The electricity produced and the electricity consumed by customers shall be measured using commercial measuring instruments, which are the property of the transmission network operator or the respective distribution network operator.

Art. 9.
(1) The transmission network operator is obliged to deliver, install, and maintain a system for commercial measurement, registration, and data transmission in cases where the following is measured:

1. Energy from and to a producer connected to the transmission network;
2. Energy leaving and entering the transmission network to and from distribution networks;
3. Energy entering the electrical installations of customers connected to the transmission network;
4. Energy entering/leaving the transmission network through intersystem power lines;
5. Energy for the own needs of high/medium voltage substations where the transformers for own needs are before the ownership boundary of the transmission and distribution network installations.
   (2) The distribution network operator is obliged to deliver, install, and maintain the commercial measuring instruments and the accompanying apparatus for data registration and transmission in cases where the following is measured:
6. Energy used by non-residential customers connected to the distribution network;
7. Energy used by residential customers connected to low voltage distribution networks;
8. Energy entering the distribution network from producers, and energy delivered from the distribution network to producers connected to this network at medium and low voltage.
   (3) The delivery, installation, and maintenance of commercial measuring instruments and the accompanying apparatus for data registration and transmission at the points of energy exchange between adjacent distribution network operators shall be regulated by an agreement concluded between them.
   (4) The party purchasing or selling electricity is not entitled to modify, repair, or replace elements of the commercial measuring instruments/systems, nor to tamper with seals, marks, or other control devices placed by the respective network operator, authorized state body, or authorized officials.

Art. 10.
(1) The respective network operator is obliged to provide the party purchasing or selling electricity with the opportunity to monitor the readings of the commercial measuring instruments.
(2) Customers and producers shall ensure unrestricted access for the network operator's authorized personnel to all elements of the measurement system for their installation, verification, and reading of electricity quantities at any time, as outlined in the access and transmission agreements between the parties.

Art. 11.
(1) When the approved tariffs allow customers from a given group to choose the tariff measurement of the quantity of electricity, the respective network operator is obliged to install

measuring devices that correspond to the customer's written choice.
(2) In the case under paragraph 1, the customer shall make their choice in the connection agreement or submit a written request to the respective network operator to change the tariff measurement.
(3) Within 30 days, the respective network operator shall replace the commercial measuring instruments to match the requested tariff.

Section III.
Determination of Points for Commercial Measurement

Art. 12.
(1) When electricity is fed from producers into the transmission network or, correspondingly, into the distribution network, the point of measurement shall be on the high-voltage side of the step-up transformers and/or transmission lines.
(2) For producers with a three-winding power transformer, the measurement point shall be on the high-voltage side and the medium-voltage side. The energy received at medium voltage shall be measured by the operator of the respective network into which the energy is fed.
(3) The producer may establish technical measurements at the generator voltage of the power transformer.

Art. 13. When electricity is transferred from the transmission network to the distribution network, the point of measurement shall be:

1. At the 110 kV network owned by the distribution network operator—on the 110 kV side;
2. For equipment owned by the transmission network operator:
   a) On the medium-voltage side of a step-down transformer (110 kV/MV);
   b) On the transformers for the internal needs of the equipment;
   c) On the medium-voltage side of transmission lines through which customers are connected to the transmission network, when these lines are owned by the customer.

Art. 14.
(1) When electricity is transferred from the transmission network or the distribution network to a customer, the point of measurement shall be on the higher voltage side of the customer's step-down transformer (if such a transformation exists) or at the point where the customer is connected to the transmission or distribution network, respectively.
(2) When electricity is transferred from the network operator to a producer, the point of measurement shall be on the higher voltage side of the respective transformer.
(3) Electricity measurement is also conducted when a third party has provided access through its own electrical installations and equipment to the network operator for other customers.

Art. 15. For intersystem power lines, the point of measurement shall be organized by the transmission network operator at the border substation (installation) in accordance with the recommendations of ENTSO-E and bilateral agreements for the supply (exchange) of electricity.

Section IV.
Identification Code

Art. 16. To standardize and ensure data exchange in the electricity market and among interested parties, each point of electricity measurement shall be described by a specific identification code unique to the site. The structure of the identification code is determined by the respective network operator.

Section V.
Requirements for Measurement Systems

Art. 17. Depending on the voltage level and the provided capacity, the measurement system includes:

1. Measurement transformers;
2. Meters—commercial, control, and technical;
3. Devices for communication and data transmission;
4. Additional and auxiliary devices and circuits, including panels (cabinets);
5. Secondary measurement circuits, terminal blocks, and fuses.

Art. 18. Measurement devices must meet the following conditions:

1. Be protected by passwords, keys, seals, or other devices that prevent unauthorized access by unqualified persons;
2. Have technical and metrological characteristics in accordance with the requirements of the Regulation on Measuring Instruments Subject to Metrological Control, the Regulation on Essential Requirements and Conformity Assessment of Measuring Instruments, and Regulation No. 3 of 2004 on the Construction of Electrical Installations and Transmission Lines;
3. When measuring on the high-voltage side, they must have overvoltage protection;
4. Have data storage capability, except in the cases mentioned in Art. 3, para. 5.

Art. 19.
(1) Measurement transformers (current and voltage) must comply with the metrological characteristics specified in the Regulation on Measuring Instruments Subject to Metrological Control.
(2) In medium and high-voltage networks, each point of commercial measurement is supplied by one set of current and voltage transformers with a separate winding for commercial measurement on the current transformer and a separate voltage circuit from the voltage transformer for commercial measurement according to the application.
(3) Each measurement point for the exchange of electricity via intersystem power lines is supplied by one set of current and voltage transformers with separate windings for the primary and control meters on the current transformers and with separate circuits for the primary and control meters connected to the measuring winding of the voltage transformer, connected to separate fuses.

Art. 20.
(1) Depending on the operating principle, commercial measuring instruments are either induction or static.
(2) Meter readings are taken remotely or on-site.

Art. 21. Commercial measurement of electricity is conducted:

1. For three-phase lines—with three-phase meters; measuring with three single-phase meters is not allowed; in cases of traction load, the measurement is carried out in a single-element connection scheme of the meter;
2. For single-phase lines—with single-phase (single-element) meters;
3. When using three-phase meters with measuring transformers, only connection schemes with three current and three voltage transformers are applied, except for measurements in traction substations;
4. In the transmission network, measurement with only one meter for electricity from more than one feeder is not allowed, except in cases where the primary switchgear scheme requires it—in the so-called "breaker-and-a-half" connection scheme.

Art. 22.
(1) Static meters must measure and record the quantities of active and reactive energy over specified time intervals and register them in non-volatile memory or in the database of remote reading systems, except those measuring electricity in facilities connected to "low voltage" networks with provided power up to 100 kW.
(2) The flow of active and reactive energy is measured and recorded in both directions for facilities meeting the conditions in Art. 3, para. 1.
(3) The flow of active and reactive energy is measured and recorded for customer facilities meeting the conditions in Art. 3, para. 2.

Art. 23.
(1) The measurement system must achieve the accuracy requirements specified in the appendix to these rules.
(2) If necessary, data from measurement systems may be compensated for errors in the measurement transformers and their corresponding connections to the meter.
(3) The compensation values are recorded by the transmission network operator or the distribution network operator and must be substantiated to justify the compensation criteria. All parameters are saved in the measurement system's register.

Art. 24.
(1) The respective network operator determines the need for equipping the meter with a built-in clock with an input for synchronization with a standard clock. The meter's time is set according to Bulgarian standard time. The time on meters measuring intersystem exchange is set according to Central European Time.
(2) When determining hourly tariff structures, the start and end times are:

1. For non-residential customers, the peak zone is:
   a) For the period November 1st - March 31st, from 8:00 AM to 11:00 AM and from 6:00 PM to 9:00 PM;

b) For the period April 1st - October 31st, from 8:00 AM to 12:00 PM and from 8:00 PM to 10:00 PM;

2. For all customers, the night zone is:
   a) For the period November 1st - March 31st, from 10:00 PM to 6:00 AM;
   b) For the period April 1st - October 31st, from 11:00 PM to 7:00 AM.

Art. 25.
(1) The respective network operator determines the need for the static meter to have non-volatile memory to store data for each measured quantity.
(2) The non-volatile memory must allow the storage of at least four measured data values taken at 15-minute intervals for a period of 62 days.

Art. 26.
(1) The measurement system, including a static meter according to Art. 24, must be equipped with means to protect the volatile data stored in memory.
(2) Data is stored in non-volatile memory. After a power loss, the data stored in memory must be retained for at least 62 days of accumulated operating time without external power. Any "read" operation must not erase or alter the stored measured data.

Art. 27.

1. The metering system, including a static electricity meter, must be equipped with interface devices for internal or external communication, except for those measuring electrical energy of objects connected to low-voltage networks with a provided power up to 100 kW.
2. The metering system for measuring intersystem exchange, including a static electricity meter, must be equipped with interface devices for direct real-time transmission of data from the primary and check electricity meters to the SCADA dispatching system, as well as to the metering system database.
3. The owners of the metering systems must read the data from the static electricity meters on-site or remotely at least once a month. The independent transmission operator has the right to access for periodic readings of the static electricity meters on intersystem power lines.

Art. 28.

1. The reading of data from the electricity meter, as well as partial or full parameterization of the meter, must be possible only through access at an appropriate security level.
2. The technical specification of the data transmission format, protocols, error-checking methods, and security level are determined by the owner of the measuring instruments.
3. Static electricity meters must be parameterized according to the capabilities of the meter type to record all events related to incorrect or inaccurate measurement of electrical energy. This parameterization must ensure the storage of events for the longest possible period of time or number of events. During the use of a meter for commercial or control

measurement, the logs of these events are deleted by the owner of the measuring instruments after notifying the respective participant.

Art. 29.

1. The secondary circuits of the metering system for objects connected to the transmission network must be executed with screened cables under the following conditions:
    - Voltage circuits (at all voltage levels) - with a separate pair of cables for each phase from the voltage transformer to the control cabinet/terminal block, and from the control cabinet to the terminal block - with a four-wire cable;
    - Current circuits (at all voltage levels) - with a separate pair of cables for each phase from the current transformer to the control cabinet/terminal block at the current transformer, and from the control cabinet to the terminal block - with a four-wire cable;
    - The minimum permissible cross-section of the secondary circuits is regulated by Regulation No. 3 of 2004 for the installation of electrical installations and electrical lines, where the cross-section of cables in the secondary current circuit must be in accordance with the power of the secondary winding of the current transformer, and the secondary voltage circuit must ensure the permissible voltage drop;
    - Grounding of the secondary circuits is performed at a single point on the specialized terminals of the measuring transformers;
    - Grounding of the screened cable (protective sheath) is performed at the metering board;
    - The terminal blocks of the secondary circuits are equipped with accessories providing optimal possibility for independent short-circuiting of each phase, as well as for breaking the secondary circuits;
    - The secondary circuits are brought out to terminal blocks:
        - a) in the control cabinet for current and voltage circuits - at high voltage level;
        - b) in the pre-metering cabinet for voltage circuits - at medium voltage level;
        - c) at the metering board - for low voltage level;
    - The installation of terminal blocks in the control and pre-metering cabinet is performed in dust and moisture-proof enclosures with sealing possibilities;
    - For protection of the secondary voltage circuits, single-pole fuses mounted in enclosures with sealing possibilities are used in the control and pre-metering cabinet, with separate protection for each individual circuit;
    - Voltage loss signaling in the secondary metering circuits is implemented for each metering system individually, and for intersystem exchange measurement is displayed on the control panel of the respective connection;
    - Signaling of operational voltage loss during intersystem exchange measurement is displayed on a central signaling panel;
    - The metering board, secured against dust and moisture and with sealing possibilities, is powered with alternating and direct current from the respective board - for own needs through separate fuses and signaling for their loss.

2. The secondary circuits of the metering system for objects connected to the distribution network must be executed under the following conditions:
    - Voltage circuits (at medium and high voltage) - with a four-wire cable;
    - Current circuits (at medium and low voltage levels) - with a four-wire cable or with a separate pair of cables for each phase from the current transformers to the terminal block in the metering board;
    - Current circuits (at high voltage level) - with a separate pair of cables for each phase from the current transformer to the control cabinet, and from the control cabinet to the terminal block - with a four-wire cable;
    - The minimum permissible cross-section of the secondary circuits is 2.5 mm² for copper conductors, where the cross-section of cables in the secondary current circuit must be in accordance with the power of the secondary winding of the current transformer and the length of the secondary circuit, and the secondary voltage circuit must ensure the voltage drop specified in Regulation No. 3 of 2004 for the installation of electrical installations and electrical lines;
    - Grounding of the secondary circuits is performed at a single point on the specialized terminals of the measuring transformers;
    - When using a screened cable (protective sheath), it is grounded;
    - Terminal blocks for secondary circuits are equipped with accessories providing optimal possibility for independent short-circuiting of each phase, as well as for breaking the secondary circuits;
    - The secondary circuits are brought out to terminal blocks:
        - a) in the control cabinet for current and voltage circuits - at high voltage level;
        - b) at the metering board - for medium and low voltage levels;
    - The terminal blocks in the control and pre-metering cabinet are mounted in dust and moisture-proof enclosures with sealing possibilities;
    - For protection of the secondary voltage circuits, single-pole fuses with sealing possibilities are used.
3. When using current transformers for measuring electrical energy, the following must be ensured:
    - The load on the connection where the electrical energy is measured must be within the following range of the declared primary current of the current transformer: from 1% to 120% for current transformers with accuracy class 0.2 S and 0.5 S; from 5% to 120% for other accuracy classes;
    - The load on the used secondary winding of the current transformer must be within the range of 25% to 100% of the nominal secondary power of that winding.

Art. 30.

Data from measurements stored in the metering system are protected from direct local or remote access through passwords defined by the owner of the metering system.

Art. 31.

1. The measurement location and all related elements, settings, and parameters of the metering system must be clearly defined and recorded in the metering system register,

except for those measuring electrical energy of objects connected to low-voltage networks with a provided power up to 100 kW.
2. All changes to elements, settings, and parameters must be coordinated with the respective participant. In case of urgent changes, the owner of the metering system must notify the respective participant.
3. The project, technical specifications, and electrical diagrams of the elements of the metering system are documented by the owner of the metering system.

Section VI.
Register of the Measurement System

Art. 32. (1) The register of the measurement system contains information about:

1. the brand, type, serial number, year of manufacture, and accuracy class of the measuring instruments;
2. all data related to technical and metrological specifications and standards, such as minimum and maximum current, nominal auxiliary voltage, operating range, and accuracy of all devices in the measurement system, including the technical data of power and measuring transformers;
3. identification codes, compensation procedures, etc.;
4. local information, such as physical location, name of the authorized contact person, etc.;
5. communication links (type, technical parameters, etc.);
6. all data related to the testing program and asset replacement schedule.

(2) The register of the measurement system for intersystem exchange measurement must include the information specified in paragraph 1 for the measurement systems at the relevant substations of the neighboring system operator.

Art. 33. (1) All technical data for the elements of the measurement system are kept by their owners. (2) The owners of the measurement systems ensure:

1. the updating, maintenance, and administration of the register;
2. a secure method for administering, processing, maintaining, and storing data in the register.

Art. 34. Any verification of the accuracy of the measurement system according to the application of these rules, as well as any changes to its elements, settings, and parameters, must be reflected in the register.

Section VII.
Measurement Data

Art. 35. Measurement data include the recorded values of active and reactive energy.

Art. 36. (1) Measurement data are collected, processed, administered, and stored by the owner of the measurement system.

(2) Data for past periods are stored in the database for a period of 5 years.

Art. 37. (1) The operator of the relevant network creates, maintains, and administers a measurement database for all customers and producers connected to the transmission, respectively distribution network.

(2) The owners of the measurement systems are required to provide information on the reported electrical energy from and to the electrical installations of producers and customers and to provide it in accordance with the Rules for the Trading of Electrical Energy and the terms of the contracts.

Art. 38. (1) The owner of the measurement systems is responsible for verifying the validity of the data and substitute data in case of errors or missing data.

(2) When the measurement location does not match the connection location, the measurement data are corrected. The need and extent of the correction are determined based on the voltage drop at the measurement point, as established by an independent accredited laboratory at the expense of the relevant network operator.

(3) The correction is carried out in one of the following ways:

1. in the meter by compensating for the losses in the respective power line and/or transformer;

2. through the data validation software, with the relevant network operator and the party whose energy is being measured agreeing on the method of compensation and the procedure for determining its amount, which is included in the measurement system register.

(4) For measurement systems owned by the transmission network operator, the principles for data validation are applied in the following order:

1. use of data from control meters;

2. use of data from meters at counter measurement points (adjusted with the respective coefficient);

3. use of data from technical measurements;

4. use of data from substation balance;

5. use of data from operational control information systems or other measurement systems;

6. use of statistical (numerical) methods for data calculations.

(5) For measurement systems owned by the distribution network operator, the principles for data validation are applied with priorities determined in contracts between the parties:

1.use of data from control meters;

2.use of data from meters at counter measurement points (adjusted with the respective coefficient);

3.use of data from technical measurements;

4. use of data from substation balance;

5. use of data from operational control information systems or other measurement systems;

6. use of statistical (numerical) methods for data calculations.

(6) If the measurement data cannot be restored from the measurement system within the payment period, the substitute value is prepared by the owner of the measurement system.

(7) Upon discovering a loss of measurement data or inaccurate data from the measurement system, the owner of the measurement system must notify the relevant trading participants within the deadlines specified in the transmission contracts.

Art. 39. (1) Any participant may request the owner of the measurement system to perform a conformity check between the data in the database and the data from the commercial measurement system.

(2) The costs of performing the check are borne by the initiating party if the results show conformity. In all other cases, the costs of the check are borne by the relevant network operator.

(3) In the event of a discrepancy between the measurement system data and the data in the database, the affected participant and the owner of the measurement system jointly determine the most appropriate way to resolve the discrepancy based on the data from the measurement system.

Section VIII.
Verification of Measurement Systems

Art. 40. Measurement systems for commercial and control measurement meet general accuracy requirements only when the quality of the electrical energy at the measurement location meets the standard's requirements.

Art. 41. All measuring instruments for commercial and control measurement are subject to initial and subsequent checks in accordance with the Measurement Law, the Regulation on Measuring

Instruments Subject to Metrological Control, and the Regulation on Essential Requirements and Conformity Assessment of Measuring Instruments.

Art. 42. (1) A check of the measurement system may be requested by the party purchasing or selling electrical energy. The costs are paid by the requesting party.

(2) The costs of the check are borne by the requesting party if the results show that the measurement system is within the required accuracy.

(3) The costs of the check are borne by the owner of the measurement system if the results show that it is not within the required accuracy.

Art. 43. (1) The operator of the relevant network performs checks of measurement systems for compliance with the requirements of these rules.

(2) Measurement systems are checked for compliance with accuracy requirements as specified in the appendix to these rules.

(3) The verification of the overall accuracy of the measurement system according to the appendix to these rules is agreed upon between the owners of the measurement systems and the parties to the electricity transactions.

(4) The overall accuracy check is performed through:

1. setups for checking the overall accuracy of the measurement system;
2. computational procedures for determining the overall accuracy based on the results of checks on the errors of individual elements of the electrical energy measurement system.

Art. 44. (1) In addition to the checks under Art. 43, the network operator (owner of the commercial measurement instrument) performs on-site technical checks of the measurement system/commercial measuring instruments.

(2) The reading of commercial measuring instruments is not considered a technical check under these rules.

Art. 45. (1) When a check under Art. 41 reveals an error exceeding the permissible limit according to the Regulation on Measuring Instruments Subject to Metrological Control and the appendix to these rules, or incorrect and inaccurate measurement or non-measurement, and it is unknown when the detected error occurred, the quantity of electrical energy is determined according to the procedure specified in contracts with the transmission network operator or in Section IX of these rules for the distribution network operator.

(2) In cases under para. 1, the transmission network operator provides replacement data according to the procedure in Art. 39 for the period during which the error is considered to have occurred.

(3) When a control meter is installed and it is found that the measured electrical energy from the commercial meter differs from that of the control meter by an amount exceeding twice the error specified in the appendix to these rules, both measurement systems are checked. If it is determined that the commercial measurement system does not meet the regulated technical and metrological requirements, while the control measurement is functioning correctly, the data from the control meter are accepted as valid.

Art. 46. (1) All measuring transformers are subject to initial verification.

(2) New measuring transformers, before entering commercial use, are tested and verified in accordance with the Regulation on Measuring Instruments Subject to Metrological Control.

Section IX.
Cases and Methods for Recalculation of Electrical Energy Quantity by Network Operators

Art. 47. (1) When performing checks under Art. 43 and 44, the relevant network operator prepares an inspection report.

(2) The report is signed by a representative of the relevant network operator and by the client or their representative.

(3) In the absence of the client during the preparation of the inspection report or if they refuse to sign it, the inspection report is signed by at least two witnesses who are not employees of the relevant network operator.

(4) In cases under para. 3, the relevant network operator sends the inspection report to the client by registered mail with return receipt.

(5) When the inspection reveals non-compliance with the metrological and/or technical characteristics of the commercial measuring instrument with the regulated standards, integrity violations, and/or functionality issues, or the addition of a foreign element to the system, the commercial measuring instrument is dismantled and placed in a sealed bag, which is closed with a seal bearing the mark of the relevant network operator and a unique number. The seal number and unique number are recorded in the inspection report. The relevant network operator sends the dismantled commercial measuring instrument to the competent metrological supervision authority within seven days from the date of the inspection.

(6) In cases under para. 5, the relevant network operator installs functioning commercial measuring instruments. When the inspection reveals a change in the connection scheme, the relevant network operator restores the correct connection scheme.

Art. 48. (1) In the absence of a commercial measuring instrument or if the metrological check reveals that the commercial measuring instrument does not measure or measures with an error beyond the permissible limit, the relevant network operator calculates the quantity of electrical energy for the period from the date of identifying the incorrect/inaccurate measurement or non-

measurement to the date of installation of the commercial measuring instrument or to the previous check of the commercial measuring instrument, but not longer than 90 days, as follows:

1. For residential customers: a) If an accurate meter is present, the quantity of consumed electrical energy is calculated based on the meter, considering the accuracy class of the commercial measuring instrument; b) In the absence of an accurate meter, the quantity of electrical energy is calculated as one-third of the maximum current of the commercial measuring instrument with daily eight-hour use by the customer, and in the absence of a commercial measuring instrument, the correction is calculated based on half of the capacity of the connecting facilities (cables, wires) linking the customer's installation with the distribution network, with daily eight-hour loading;
2. For non-residential customers: a) If an accurate meter is present, the quantity of consumed electrical energy is calculated based on the meter, considering the accuracy class of the commercial measuring instrument; b) In the absence of an accurate meter, the quantity of electrical energy is calculated as one-third of the capacity of the commercial measuring instrument, and in the absence of a commercial measuring instrument, as one-half of the capacity of the connecting facilities (cables, wires) linking the customer's installation with the relevant network, with daily ten-hour loading.

(2) When a change in the connection scheme is found during the inspection of the measurement system, the correction under para. 1 is made only based on an inspection report establishing the interference in the measurement system, which meets the requirements of Art. 47 and is prepared in the presence of police authorities and signed by them.

Art. 49. (1) In case of malfunction or inaccurate operation of the tariff switch, due to which the used electrical energy is measured but not accurately registered according to the tariffs chosen by the client, the reported electrical energy is distributed based on an analogous previous period. In the absence of such a period, the quantities are corrected as follows:

1. For measurement of 2 tariff zones - in the ratio of 60 percent for the day zone and 40 percent for the night zone;
2. For measurement of 3 tariff zones - in the ratio of 20 percent for the peak zone, 55 percent for the day zone, and 25 percent for the night zone.

(2) Corrections under para. 1 are made for the period from the date of identifying the malfunction or inaccurate operation of the tariff switch to the date of the billing period with correct measurement, but for no more than 90 days.

Art. 50. In cases where a discrepancy is found between the parameters of the measurement group and those entered in the information database, leading to incorrect calculation of the quantities of electrical energy used by the client, the relevant network operator corrects the quantities of electrical energy as the difference between the reported quantity of electrical energy and the actual quantities for the period from the occurrence of the error to its detection, but for no more than one year.

Art. 51. (1) The distribution network operator provides the final supplier and the last resort supplier with information about the amount due from the respective client, resulting from detected non-measurement, incomplete or inaccurate measurement, based on the corrected quantities of electrical energy, the applicable price at which the distribution network operator purchases electrical energy from the public supplier to cover its technological expenses, and the due network charges.

(2) For clients purchasing electrical energy at freely agreed prices from a supplier other than the final supplier or the last resort supplier, the distribution network operator provides the supplier with information about the amount due from the respective client resulting from detected non-measurement, incomplete, or inaccurate measurement. If there is no framework agreement between the distribution network operator and the trader based on a combined contract between the client and the trader, the operator issues the invoice for the amount due from the client due to non-measurement, incomplete, or inaccurate measurement, based on the corrected quantities of electrical energy, the applicable price at which the distribution network operator purchases electrical energy from the public supplier to cover its technological expenses, and the due network charges.

Section X.
Control and Technical Measurement

Control Measurement

Art. 52. (1) The control measurement system is provided and maintained by the party that requested it, with its construction and operation coordinated with the relevant network operator.

(2) The control measurement system is separate from the commercial system and uses separate windings of the current transformers, as well as separate circuits of the voltage transformers.

(3) Control measurement systems cannot have worse metrological characteristics than those for commercial measurement.

(4) The control measurement is installed at the site of the commercial measurement, ensuring the same environmental conditions.

(5) At the discretion of the relevant network operator, the same secondary winding of the current transformers may be used for both commercial and control meters.

(6) The use of control measurement data is regulated by an agreement between the parties.

Art. 53. (1) The user is not allowed to alter, repair, or replace elements of the control measurement instruments without a representative of the relevant network operator, nor to tamper with seals, marks, or other control devices of these instruments.

(2) The relevant network operator is not allowed to alter, repair, or replace elements of the control measurement instruments, nor to tamper with seals, marks, or other control devices of these instruments, without a representative of the user.

Technical Measurement

Art. 54. (1) The technical measurement system is provided and maintained by the party that requested it, with its construction and operation coordinated with the relevant network operator.

(2) The technical measurement system is separate from the commercial and control systems and uses separate circuits from the existing current and voltage transformers.

Section XI.
Compliance Monitoring

Art. 55. Compliance with these rules is part of the control over the execution of the conditions of licenses issued by the State Energy and Water Regulatory Commission (SEWRC).

Art. 56. All disputes arising in connection with the application of these rules are referred to the SEWRC for resolution according to the Energy Act.

Additional Provisions

§ 1. For the purposes of these rules:

1. **"Measurement"** means the recording of produced or consumed active and reactive electrical energy.
2. **"Technical Meter"** is a meter other than commercial and control meters and is used for electrical energy balancing or other non-commercial purposes.
3. **"Control Meter"** is a meter other than commercial and serves as a source of information in specific cases.
4. **"Inter-system Power Lines"** are power lines and their associated facilities providing connection to other electrical energy systems or parts thereof.
5. **"Object"** is any unit of a market participant related to the measurement of electrical energy that produces or consumes electrical energy.
6. **"SCADA"** is an information management system for collecting, processing, recording, and visualizing information necessary for the operational and emergency management of the electrical energy system, as well as for post-operation analysis.
7. **"Accuracy"** is the permissible error of any measuring device depending on its location and the permissible error of the associated current and voltage transformers.
8. **"Commercial Meter"** is a primary component of any measurement system that provides measurement information for commercial purposes.
9. "Commercial Participants" for the purposes of these rules include electricity producers, electricity traders, end customers, the public electricity supplier, the final electricity suppliers, transmission/distribution network operators, and last resort suppliers.

10. "ENTSO-E" is the international organization "European Network of Transmission System Operators for Electricity."

Final Provisions

§ 2. These rules were adopted by the State Energy and Water Regulatory Commission in accordance with item 3 of Protocol No. 147 of October 14, 2013, based on Article 21, Paragraph 1, Item 9 in conjunction with Article 83, Paragraph 1, Item 6 of the Energy Act, and repeal the Rules for Measuring the Quantity of Electrical Energy adopted by the State Energy and Water Regulatory Commission with Decision No. P-1 of April 10, 2007 (State Gazette, No. 38 of 2007).

Appendix to Art. 19, Paragraph 2, Art. 23, Paragraph 1, Art. 34, Art. 43, Paragraphs 2 and 3, and Art. 45

General Accuracy

The overall accuracy of measurements depends on the accuracy of both the meter and the current and voltage transformers. The overall accuracy of measurements at the measurement point for all existing and new measurement systems at all times is within the error limits specified in the table.

Quantity	Accuracy of Individual Measurement System Elements	Current	Power Factor	Error Margin
Active Energy	20 to 120% of IN	1.00	± 0.40 %	
	Meter 0.2 S	5 to 20% of IN	1.00	± 0.40 %
	Current Transformer 0.2 S	1 to 5% of IN	1.00	± 0.60 %
	Voltage Transformer 0.2	20 to 120% of IN	from 0.5L up to 0.8C	± 0.93 %
Active Energy	Meter 0.5 S	5 to 120% of IN	1.00	± 0.83 %
	Current Transformer 0.2 S	1 to 5% of IN	1.00	± 1.23 %
	Voltage Transformer 0.2	10 to 120% of IN	from 0.5L up to 0.8C	± 1.41 %
Active Energy	Meter 0.5 S	5 to 120% of IN	1.00	± 1.32 %
	Current Transformer 0.5 S	1 to 5% of IN	1.00	± 1.68 %
	Voltage Transformer 0.5	10 to 120% of IN	from 0.5L	± 2.35 %

Quantity	Accuracy of Individual Measurement System Elements	Current	Power Factor	Error Margin
			up to 0.8C	
	Meter 1.0	5 to 120% of IN	1.00	± 1.58 %
Active Energy	Current Transformer 0.5 S	2 to 5% of IN	1.00	± 2.02 %
	Voltage Transformer 0.5	20 to 120% of IN	from 0.5L	± 2.48 %
			up to 0.8C	
		10 to 120% of IN	0	± 4.00 %
Reactive Energy	Meter 2.0	10 to 120% of IN	from 0.866L	± 5.00 %
	Current Transformer 0.2 S		up to 0.866C	
	Voltage Transformer 0.2	10 to 120% of IN	from 0.866L	± 5.00 %
			up to 0.866C	

Note: The requirements for currents in the range from 1 to 5% of the rated current apply only when the energy to be measured under normal operating conditions is such that the rated measurement current is below 5% (excluding 0) for periods equal to 10% or more annually. To achieve the overall required accuracy, it may be necessary for meters to be compensated for the errors of the measurement transformers and for the corresponding connection to the meters.

Extract from the Unofficial Issue No. 98 of November 12, 2013, of the State Gazette