Georgian National Energy and Water Supply Regulatory Commission
Resolution N10
April 17, 2014
Tbilisi
On approving Network Code

Based on the Article 5(1) of the Law of Georgia on Electricity and Natural Gas, Georgian National Energy and Water Supply Regulatory Commission has approved the following:

1. Annexed Network Code shall be approved.
2. This resolution shall enter into force on the date of its publication.

Network Code

Chapter I
General Provisions

Article 1. Scope, aim and object

1. Network Code (hereinafter – the Code) sets procedures, terms, principles and standards for development, management, availability and secure utilization of transmission network by electricity system participants and applicants.
2. This Code applies to the applicants and following participants of electricity system:
   a) Dispatch Licensee;
   b) Transmission Licensee;
   c) Electricity Market Operator;
   d) Electricity Generator;
   e) Distribution licensee;
   f) User connected to transmission network;
   g) Other users not envisaged under sub-paragraph "f", but who fall within the scope of this Code.
3. The aim of this Code is to regulate relations between participants envisaged under paragraph 2 of this Article and determine their rights, duties, responsibilities and accountability in order to ensure:
   a) Transparent, non-discriminatory and economical (least cost principle) availability and use of transmission network taking into consideration its secure, reliable and effective operation;
   b) Approval of technical condition requirements for users and applicants;

c) Exchange of relevant information between electricity system participants.

4. Code encompasses such issues as technical, economical and operational criteria of availability and use of the transmission network, planning its expansion and improvement, drafting and enforcing electricity supply and demand schedules, exchange of data and information, electricity metering policy.

Article 2. Definitions

1. Terms used in this code are as follows:
   a) User – electricity system participant envisaged under sub-paragraphs "d" -"g" of Article 1 (2);
   b) Electricity Generator – Generation Licensee and small power plant;
   c) Applicant – person seeking to connect to the transmission network;
   d) Declarant – applicant or user, who submits application to relevant Transmission Licensee regarding new connection or modification of the existing connection;
   e) Connection Application – written request prepared in compliance with this Code regarding connection to the network or modification of the existing connection;
   f) Annual Report – report, where annual operational data on activities of electricity system participants are summarized in an approved manner;
   g) Installed Capacity – active capacity that enables equipment to run for a long time without congestion, in compliance with technical conditions or passport data;
   h) Automatic Load Shedding of User – process when automatic disconnection of pre-selected Users' loads takes place in accidental condition;
   i) Automatic Voltage Regulator – system designed for maintaining admissible voltage on a bus bar, through automatic regulation of generators excitation flow and/or through automatic changes of power transformers' transformation factors.
   j) Total Blackout – the situation when electricity system is switched out and its restoration is impossible without instructions of the Dispatch Licensee;
   k) Power Plant – facility comprising one or more generation units/aggregates and designed for producing electricity (generation);
   l) Black Start – The process of recovery from total system blackout using a generating unit with the capability to start and synchronize with the system without an external power supply;
   m) Approved Plan of Outages for Generation Units – plan of outages drafted by Dispatch licensee, comprising outage periods of power units/aggregates during 0 and 1 year;
   n) Approved Plan of Outages for Transmission Network - plan of outages drafted by Dispatch licensee, comprising outage periods of transmission network units during 0 year;

o) Connection Agreement – an agreement between Declarant on the one hand and the Transmission Licensee and Dispatch Licensee on the other, which specifies the terms and conditions pertaining to the connection of the User to a new connection point of the transmission network;
p) Connection Date – the date on which testing of the electrical equipment envisaged under the project have been properly completed and on which it is ready to be put into operation;
q) Connection Point – point where User's assets are materially connected to the transmission network;
r) Critical Loading- refers to the condition when the loading of transmission lines or substation equipment/installations is between 90%-100% of the continuous rating;
s) Supervisory Control and Data Acquisition (SCADA) – data collection and control system;
t) Customer Congestion Management – regulation of customers' loading in the accidental conditions for the purpose of maintaining frequency within permissible limits;
u) Directly-Connected Customer – any user directly connected to the transmission network, other than the Generation and Distribution utilities;
v) Normal Regime – electricity system operation regime during which every customer is supplied with electricity within its admissible quality limits.
w) Emergency Regime – electricity system operation regime during which electricity supply is interrupted and/or electricity quality indicators are beyond admissible limits.
x) Electrical Equipment – combination of electrical tools designed for electricity generation, transformation, transmission, distribution or consumption;
y) Electricity Unit/Aggregate – installation, designed for electricity generation and is placed in different types of power stations;
z) Inflexible Planned Outages – scheduled outages of electricity system units, date of which is defined in advance by electricity system participant and cannot be amended other than situations prescribed in this code;
z^1) Flexible Planned Outages - scheduled outages of electricity system units, date of which can be amended upon the request of Dispatch Licensee;
z^2) Forced Outages- outages of electricity system units caused by damage or any other unscheduled reasons;
z^3) Frequency Control – the retention of the frequency on the transmission system within acceptable limits.
z^4) Frequency Regulation – automatic adjustment of active power output by generation unit/aggregate and/or consumption discharge;
z^5) Power Station Schedules – chart of hourly generation of the Power station.
z^6) Repair – combination of economically reasonable activities that aim to restore

working ability and proper state of the unit (equipment/installation);

z^{7}) *has been withdrawn;*

z^{8}) Interruptible Load – a load which is available to be disconnected, either automatically or by the operator, for restoration or control of the power system frequency.

z^{9}) Load Limitation – reduction of load by the User within the limits defined in advance by the Dispatch licensee;

z^{10}) Voluntary Load Curtailment - voluntary and agreed reduction of demands of Users selected by Dispatch Licensee to foster frequency control;

z^{11}) Schedule of Repair Works – combination of schedules agreed with Dispatch Licensee and where repair works of the equipment owned by Transmission Licensees, electricity generators, Distribution Licensee and users are given.

z^{12}) Offer of Connection – offer of the Dispatch licensee to connect applicant's electrical equipment to the transmission network that comprises technical conditions, presumable connection date, draft of connection agreement and connection fee;

z^{13}) Operating Reserve- active capacity reserve of generation, necessary to maintain electricity system parameters within acceptable limits in case of accidental or occasional deviation into the electricity system.

z^{14}) Operational Date - date on which electrical equipment/installation is put into operation after being tested;

z^{15}) Operational Tests- tests carried out by the Dispatch Licensee in order to develop and amend operational procedures, to train staff and also to acquire information on operation of electricity system in abnormal conditions.

z^{16}) Electricity System – combination of power plants and electrical networks interconnected within generation, transmission, distribution and consumption process and managed according to uniform regime.

z^{17}) Project Planning Data – data that Dispatch Licensee requires from Users in the process of new connection or modification of the existing connection.

z^{18}) Registered Capacity – capacity registered by the Dispatch Licensee that is calculated by deducting generation unit/aggregate limited by force (if such) from installed capacity of generation unit/ aggregate.

z^{19}) Registered Data – those items of standard planning or detailed planning data which become fixed upon connection.

z^{20}) Reliability - ability of electricity system to maintain sustainability during disturbances;

z^{21}) Standard Planning Data – general data, which are required by Dispatch Licensee from Users in an approved manner;

z^{22}) Electrical Installation – combination of interconnected equipment that perform electricity generation, transformation, transmission, distribution, accumulation and consumption activities;

z^{23}) Substation – combination of electrical equipment designed for network commutation, electricity receipt, transformation and distribution;

z^{24}) Test Program – procedures that specifies sequence of relevant activities and date when testing of respective units should take place.

z^{25}) Year 0 – is current calendar year; Year 1 – the next calendar year; Year 2- the calendar year after Year 1 and so forth;

z^{26}) Providing Hourly Data – providing electrical parameters on an hourly basis;

$z^{27)}$ Technical Service – operation or complex of operations for maintaining working ability or proper state of equipment in terms of appropriate use, readiness, maintenance and transportation;

z^{28}) Active Electricity – the integral of active power with respect to time;

z^{29}) Active Power – the time average of the instantaneous power over one period of electrical wave;

z^{30}) Reactive Power – the product of voltage and current multiplied by the sine of angle between them;

z^{31}) Metering Equipment – meter and metering transformer;

z^{32}) Calculating Meter – meter used for financial settlement of electricity (capacity);

z^{33}) Controlling Meter - meter used for controlling calculating meter and substituting it in case of damage to the calculating meter and/or in case of losing metering data.

z^{34}) Metering Point – place where electricity is metered.

z^{35}) Metering point - combination of equipment used for metering electricity (capacity) at metering points and calculating it (current transformers, voltage transformers, connection circuits and electricity meter/meters);

z^{36}) Balance Interface – margin of electricity network material separation between electricity system participants;

z^{37}) Approval of Metering Equipment – combination of actions undertaken by metrological institution or other accredited body with similar authority for verifying compliance of metering equipment with approved metrological requirements. In case is the result is positive the compliance is verified by compliance stamp on metering equipment or verification certificate is issued;

z^{38}) Accuracy Class of Metering Equipment – maximum admissible relative inaccuracy %;

z^{39}) Electricity (Capacity) Control and Metering Automatic System – combination of software and technical facilities, designed for automatic metering of electricity. The system includes metering complex for measurement and calculation;

z^{40}) Current Transformer – metering transformer for transforming large amounts of alternating current to values convenient for metering and designed for switching metering facilities (ammeter, meter, wattmeter and other) into the electrical circuits of alternating current.

z^{41}) Voltage Transformer - metering transformer for reducing high voltage supplied to

metering equipment of alternating current installations what ensures secure service of metering facilities;

z^{42}) Connection Point Modification – amending (improving) technical characteristics of electrical equipment/installations connected to the network or substituting (making additions) existing electrical equipment/installations with new ones, that causes (or may cause) change of capacity connection to the network and/or any other impact on the network requiring approval of new technical conditions by network owner.

z^{43}) Available Capacity - installed capacity of electricity reduced by certain amounts for non-compliance of operational conditions with designing conditions;

z^{44}) Working Capacity – maximum capacity of power plant that can be obtained through possible maximum use of available primary resources (hydro resources, fuel etc.) within 24 hours or several consecutive hours, taking into consideration the technical condition of energy unit/ aggregate (deducting capacity spent during repair process.

z^{45}) Automatic System of Commercial Accounting - complex of software and technical facilities designed for metering and collection data necessary for uniform settlement of electricity (capacity) wholesale trade, as well as for bilateral direct agreements and for estimating balance electricity (capacity) amounts.

z^{46}) Metering Communication Equipment – communication/network devices used only for electricity metering;

z^{47}) Metering Communication Circuits – communication/interface wires used only for electricity metering;

z^{48}) Testing Metering Equipment – measuring metering equipment to verify compliance of accuracy class with passport data.

2. Terms applied in this code bear the same meaning as in the law of Georgia on Electricity and Natural Gas and current legislation of Georgia.

Article 3. Obligation to Fulfill Requirements of this Code

1. Dispatch licensee is obliged to enforce relevant arrangements to ensure fulfilment of requirements under this Code.
2. In order to ensure fulfilment of requirements given in this Code the Dispatch licensee is entitled to undertake measures applying to electricity system participants, give orders, directions instructions that are binding upon addressees. Electricity system participants are obliged to carry out their activities in compliance with requirements and principles set forth in this Code, make their electrical equipment and system services available for Dispatch Licensee and comply with its orders, directions and instructions.

Article 4. Data, Information and Confidentiality

1. Issuance of instructions, orders and directions under this Code shall take place between parties and comply with forms and remedies stated in this Code.
2. All data provided by Declarant to Transmission Licensee and later to Distribution Licensee is confidential based on current legislation of Georgia until connection to the Transmission Network or submission of the application to the Transmission Licensee.
3. Dispatch licensee is obliged to provide User with relevant data in case of request. The use of such data is permissible only for purposes indicated in the request and the User is obliged to maintain its confidentiality according to the current legislation of Georgia.

Article 5. Management of User's Network

If network (or its part and relevant equipment) owned by User is important for regime, Dispatch Licensee is entitled to manage and control that network by analogy to transmission network on the basis of mutual agreement.

Chapter II
Transmission Network Connection Rules

Article 6. Aim and Purpose of Transmission Network Connection Rules

1. Transmission network connection rules (hereinafter - connection rules) define general technical and organizational terms of connection to the transmission network and its use and are binding upon dispatch licensee, transmission licensee, user and applicant.
2. Purpose of connection rules is to :
   a) Ensure secure operation of transmission network and electrical equipment/installations connected to it and stable functioning of electricity system;
   b) Define parameters of transmission network in connection points. Select appropriate electrical equipment/installations, charts, control and security systems;
   c) Define basic terms and conditions of connection agreement.
3. Aim of connection rules is to:
   a) Define fair and non-discriminatory rules and standards for connecting User to the transmission network;
   b) Define standards for appropriate functioning of transmission network in connection points;
   c) Determine technical solutions and criteria for connection to the transmission network taking economic justification (least cost principle) into consideration.

Article 7. Basic Requirements for Transmission Network Connection

1. Declarant seeking new network connection to the transmission network or modification of an existing connection shall apply to the respective transmission licensee and enter into connection agreement with dispatch and transmission licensees.
2. All electrical equipment/ installation at connection point shall meet requirements of the existing legislation of Georgia.
3. Dispatch and transmission licensees are obliged to deliver and supply electricity of due quality to the connection point.

Article 8. Connection Application

1. Dispatch licensee is obliged to draft application template for connection to the transmission network and submit it to the Georgian National Energy and Water Supply Regulatory Commission for approval.
2. Declarant is obliged to submit connection application to the transmission licensee owning transmission network to which connection or modification of existing connection should take place.
3. Together with requisites given in Article 78 of Basic Administrative Code of Georgia application shall include:
   a) Applicant's name, organizational form, bank details, address, phone number and e-mail;
   b) Contact person responsible for receiving technical information;
   c) Location, including disposition plan and cadastral maps;
   d) Brief description of electrical equipment/ installation for proposed connection or modification to existing connection;
   e) New data of transmission network planning complying with this code;
   f) Presumable dates of connecting declarant's electric equipment/ installation to the transmission network or putting it into operation;
   g) Documents envisaged under current legislation stating ownership of connected units (in case of modification);
   h) Documents stating ownership of land necessary for constructing new units (in case of new connection).

Article 9. Reviewing Connection Application

1. Transmission licensee is obliged to verify whether the application corresponds to the requirements, whether it contains information envisaged in Article 8, notify declarant in case of detecting fault and give him/her 5 days term for its correction.

2. Within 10 calendar days after correcting faults or after finding out faultlessness of the application, the Transmission licensee essentially examines application and then sumbits it to the Dispatch licensee together with its remarks.
3. Within 20 days after receipt of application the Dispatch licensee reviews application and remarks of Transmission licensee and delivers its decision to Transmission licensee, the latter forwards decision to Declarant within 3 days after its receipt.
4. Dispatch licensee makes decision envisaged in paragraph 3 of this Article based on the investigation of possible impact of declarant's electric equipment/installations on transmission network.
5. Decision of Dispatch licensee shall comprise:
   a) In case of positive decision – offer on connection, drafted in accordance with requirements set forth in Article 10;
   b) In case of negative decision – well- grounded refusal to satisfy application, if it is observed during investigation of possible impact on transmission network that declarant's electric equipment/installations do not meet safety and reliability requirements of electricity system set by Georgian legislation and/or connection project worsens condition of the transmission network. Hereby, the Dispatch licensee is obliged to give the Declarant guidance on amendments to be made into the application so that it becomes acceptable, in case if during investigation of possible impact on transmission network it is observed that such amendments connection will not worsen condition of transmission network. In given case, if declarant will not submit relevant amendments (or duly amended application) within 20 days after receiving decision of Dispatch licensee connection application will not be proceeded;
   c) Before expiration of the term given under sub-paragraph "b" of this paragraph Dispatch licensee having agreed with transmission licensee is entitled to extend term only once on the basis of declarant's well-founded request, such extension shall not exceed 20 working days.
6. As an exception terms set for each stage of connection application review may be extended due to the complexity of application and investigations to be undertaken only with the consent of declarant.

Article 10. Offer of Connection

1. Offer of connection shall comprise:
   a) Technical condition, where detailed description of the connections should be given, including description of electric equipment/installations necessary for connection, details of SCADA and data transmission systems and information on necessary amendments into existing transmission network;
   b) Presumable dates of connection;
   c) Connection agreement draft;

d) Connection fee that should be paid by Declarant on the basis of current legislation.

2. Declarant shall communicate its written consent to the Dispatch and Transmission licensees within 20 (twenty) days after receipt of an offer from transmission licensee. Otherwise, the offer becomes invalid automatically. Dispatch licensee having agreed with Transmission licensee can extend the term only once before its expiration upon reasoned request of the Declarant.

Article 11. Connection Agreement

1. Connection agreement is concluded between declarant, dispatch licensee and relevant transmission licensee. Standard terms and conditions of connection agreement are drafted by transmission and dispatch licensees and submitted to Georgian National Energy and Water Supply Regulatory Commission.
2. Connection agreement should entail following basic requirements:

a) Obligation of parties to comply with requirements of the Code;

b) Declarant's obligations to supply Dispatch and relevant Transmission licensees with data envisaged in this code, including:

b.a) information on the loading features, schedule and other project data (if necessary);

b.b) Power Plant project data – in case of Power Plant connection;

b.c.) Connection schemes;

b.d.) Relay protection and automation schemes in its units and connection points;

b.e.) SCADA and data transmission system schemes.

3. Connection agreement should clearly define unit ownership, operational management and technical service issues.

4. In order to ensure electricity system reliability the connection agreement should comprise following requirements for all types of units to be connected:

a) Reactive capacity regulation for voltage control purpose;

b) Ability of fluctuating/interruptible loading;

c) Any other types of services designed for electricity system.

5. In addition to the requirements given in paragraph 4 of this Article, Power Plant connection agreement shall comprise:

a) Primary regulation of Energy unit/aggregate frequency;

b) Secondary regulation of Energy unit/aggregate frequency;

c) Black start capability;

d) Operating reserve of energy units/aggregates.

e) Power plant automatic remote control ability of dispatch licensee.

Article 12. Drawings and Charts of Connection Point

1. Connection point drawings are prepared for each electrical equipment/installation and they comprise all drawings necessary for designing standards.
2. Declarant drafts all necessary Drawings and Charts of electrical equipment/installation situated on its side of connection point, in accordance with the connection agreement and submits it to Dispatch and Transmission licensees.
3. Transmission licensee, having agreed with dispatch licensee drafts all Drawings and Charts of electrical equipment/installation necessary for Declarant situated on its side of connection point in accordance with connection agreement and submits it to Declarant.
4. If connection point has to be (or is) situated on unit owned by Declarant, the latter is obliged to draft drawings for the entire connection point. Otherwise, drawings for the entire connection point are prepared by Transmission licensee in agreement with Dispatch licensee.
5. Connection point drawings and Charts shall clearly reflect electricity connections of primary and secondary commutation and related apparatus.
6. The connection point stamp shall entail names of authorized persons, dates and signatures.
7. Connection point drawings and charts shall be approved by the Transmission and Dispatch Licensees. Copies connection point drawings and charts shall remain with each party.
8. Obligations (procedures, terms, standards, etc.) of preparing connection point drawings by transmission licensee and declarant shall be agreed between parties under connection agreement.
9. Connection point drawings shall be used in construction, operation, repair or designing works.

Article 13. Connection of Declarant's Unit (putting into operation

1. Before putting Declarant's electrical equipment/ installations into the operation it is mandatory to undertake preliminary testing in compliance with instructions of Dispatch licensee. After being tested the Declarant is obliged to submit written notification to the respective transmission licensee on being ready for connection, to which following shall be enclosed:
   a) Precise specifications, drawings and charts of the basic equipment;
   b) Information on technological, relay protection and automation equipment;
   c) Copies of security rules and instructions of Declarant's electrical equipment/ installations and list of responsible staff;
   d) Information on contact's person, who are fully authorized to make decisions Declarant's behalf;
   e) Technical service plan offered by Declarant;

f) Information on testing procedures of connection point and Declarant's electrical equipment/installations;
g) Reports of testing readiness of electrical equipment/installations for connecting to the transmission network.

2. Transmission licensee examines written notification envisaged under paragraph 1 of this Article and after having agreed it with Dispatch licensee gives consent on connection to the transmission network or notifies declarant on the necessity of additional testing.

Article 14. Frequency Limits

1. Dispatch licensee is obliged to ensure electricity system performance so that electricity system operation parameters are maintained within limitations of this Article.
2. Nominal frequency of Transmission Network shall be 50 Hz. Hereby, even in below stated incidental situations it is inadmissible that frequency exceeds 53.0 Hz. Dispatch licensee is obliged to maintain frequency within following limits:
   a) During parallel-synchronous operation:
      f=50±0.5 Hz not less than 95% in 24 hours,
   b) During isolated operation:
      f=50±1 Hz not less than 95% in 24 hours,
   c) During post-contingency situation:
      c.a) 49.0-5a Hz long-term,
      c.b) 48.0-49.0 Hz not more than 15 minutes,
      c.c.) 47.5.0-48.0 Hz not more than 2 minutes,
      c.d) 50.5-51.0 Hz not more than 20 minutes,
      c.e) Frequency maximum quasi-steady-state deviation from nominal value shall not exceed ±0.3 Hz.
      c.f) Frequency maximum dynamic deviation shall not exceed ±0.8Hz.

3. Users are obliged to ensure that their electrical equipment/installations meet conditions given in paragraph 2 of this Article.

Article 15. Voltage limits

1. Dispatch licensee shall ensure that in normal conditions voltage complies with requirements given in this paragraph.
2. Voltage variations in normal and abnormal conditions are acceptable within following limits:

a) Permissible voltage deviation for various nominal voltage is given in the chart below:

Nominal Voltage	35	110	220	330	400	500
Voltage Limits	±10%		±5%			

b) In Post-contingency situations permissible voltage deviation for various nominal voltage is given in the chart below:

Nominal Voltage	35	110	220	330	400	500
Voltage Limits	±15%		±10%			

3. Deviation of parameters from limits given in Sub-paragraph 2(b) of this Article in abnormal situations may last no longer than 30 minutes.
4. In order to fulfill requirements of this Article Transformers and Autotransformers with 110 kW and more nominal voltage of transmission licensee's substations shall be equipped with technical equipment of regulation. Hereby, Transformers and Autotransformers with 110 kW and more nominal voltage that need to be equipped with automatic voltage regulation equipment shall be disclosed on the basis of research conducted by Dispatch licensee.

Article 16. Harmonic Distortion

1. All electrical equipment/installations connected to the transmission network shall be capable of withstanding the permissible levels of harmonic distortion.
2. No electrical equipment/ installation connected to the transmission network shall impose more than 1.5% harmonic distortion in the transmission network and in case of harmonics – more than 1%.

Article 17. Voltage Unbalance

1. User's electrical equipment/installation shall not cause more than 1% phase-to-phase unbalance from no load to nominal loading in any connection point of the transmission network.

Article 18. Voltage Fluctuation and Flicker

1. User shall ensure that:
   a) Voltage fluctuation in any connection point of electrical equipment/installations during load changes shall not exceed 1% of nominal voltage;
   b) Voltage Flicker in connection point shall not exceed P_{st} = 0.8 and P_{lt}=0.6 limits, with 95% reliability intervals, with measurements taken over one week.
2. On the basis of the Dispatch licensees' decision any voltage fluctuation envisaged under sub-paragraph 1(a) of this Article may be permissible up to 3%, if it will not endanger transmission network or other users connected to transmission network.

Article 19. Voltage Variation during Transition Period

1. In the process of designing declarant's network and operating existing network measures that reduce impact of transition period on transmission network should be envisaged.

Article 20. Grounding

1. Neutral of the transformers with 110 kW and higher voltage shall be grounded. Dispatch and respective Transmission licensees are obliged to indicate in the connection agreement grounding requirements at connection points and permissible factors of short- circuits close to the ground, which should not exceed 1.4.

Article 21. Operation of Electrical Equipment/ Installations

1. User shall ensure commutation equipment for each connection point of electrical equipment/ installation.
2. User shall own and operate all electrical equipment/ installations on its side of connection point.
3. Transmission licensee is obliged to own and operate transmission network, including connection point.
4. Dispatch licensee is obliged to operate transmission network efficiently and all electrical equipment/ installations connected to it on the basis of the agreement with User.
5. User is obliged to comply with orders of dispatch licensee in order to ensure management of generated and consumed capacity and electricity.
6. User is responsible for complying with rules of operation and security of User's electrical equipment/installations.

Article 22. Relay Protection and Automation of Electrical Equipment/Installations

1. User is obliged to equip its electrical equipment/installations with relevant relay protection and automation devices.
2. Relay protection and automation schemes and parameters are agreed with and their operation settings are approved by Dispatch Licensee.
3. Relay protection schemes shall ensure quick and selective isolation of faulty electrical equipment/installations from transmission network, such requirements are envisaged in connection agreement.

4. Relay protection and automation devices of electrical equipment/installations connected to the transmission network shall be tested on the basis of passport data and/or requirement of the Dispatch Licensee in order to achieve established level of speed and selectivity.
5. Ability of proper and successful operation of relay protection and automation devices of electrical equipment/installations shall exceed 99% according to relay protection and automation reliability indicator.
6. Fault clearance time (from inception of cause for relay protection and automation to circuit breaker arc extinction) through relay protection and automation of electrical equipment/installations connected to the transmission network shall not exceed indicators given in the chart below.

Network Voltage	Fault Clearance Time
330 kW and higher	80 milliseconds
220 kW	100 milliseconds
110 kW	120 milliseconds

7. Probability that Fault Clearance of electrical equipment/installations will require more time than it is defined in paragraph 6 of this Article shall be less than 1%.
8. In case of circuit breaker's failure, user's electrical equipment/installations and transmission network in connection points shall be equipped with circuit breaker's failure automation backup, that will switch off all relevant circuit breakers connected to bus bar in no more than 300 milliseconds.
9. Carrying out works on continuous and alternating current circuits of relay protection and automation of user's electrical equipment/installations by User or on behalf of User without prior consent of Dispatch licensee is not allowed.
10. In accordance with requirements given in the connection agreement electrical equipment for automatic repeated switching shall be installed into the user's network.
11. Dispatch Licensee is authorized to:
    a) Install system automation to avoid system accidents;
    b) Switch off Users in order to avoid avalanche fall of frequency and voltage;
12. Generating Unit shall be equipped with protection systems, which will switch off relevant generator in case of excitation loss.
13. For system necessities the Dispatch Licensee is authorized to require electricity Generator to provide protection system from asynchronous regime on its energy units and it should be envisaged under the connection agreement.

Article 23. Requirements for Declarant's Power Plant

1. Nominal capacity factor values for the power plant energy units/aggregates shall be provided within following limits:

Name	cosϕ
Thermal Power Plants	0.85 -0.90
Hydro Power Plants	0.80 – 0.85

1[1]. Power Plant Generators are classified to A, B, C, and D categories according to their installed capacity and requirements they should fulfill:

a) Hydropower plant Generator categories and requirements that they should comply with are given in the chart below:

Category	Installed Capacity limits (MW)	Voltage Regulation Ability	Requirements for Sustainability	Frequency regulation (Operational Reserve)		Black Start Ability
				Primary	Secondary	
A	<1	-	-	-	-	-
B	1÷<5	+	+	-	-	Upon agreement
C	5÷<7	+	+	Upon agreement	-	+
D	≤7	+	+	+	Upon agreement	+

b) Thermal Power Plant Generator categories and requirements that they should comply with are given in the chart below:

Category	Installed Capacity limits (MW)	Voltage Regulation Ability	Requirements for Sustainability	Frequency regulation (Operational Reserve)		Black Start Ability
				Primary	Secondary	
A	<10	-	-	-	-	-
B	10÷<30	+	-	-	-	-
C	30÷<50	+	+	-	-	-

D	≤50	+	+	+	Upon agreement	Upon agreement

2. Generator shall be able to deliver nominal active capacity on a generators bus bar, except if it is otherwise specified in the connection agreement.
3. Generator shall be able to deliver nominal active capacity on a generators bus bar within limits given in Article 14.
4. Voltage variations in normal conditions given in Article 15 shall not affect active capacity amounts delivered on a generator bus bar in normal conditions.
5. Step-up transformer's switch, self-consumption transformer and generator's excitation system shall be designed and selected so that generators be able to operate on nominal voltage of transmission network and regulate reactive capacity in accordance with curve characterizing generator capacity. Generator's reactive capacity shall not be limited to controlling protection systems of basic and subsidiary electrical equipment and uncoordinated operating interference.
6. Generator shall have ability of transition to reactive capacity consumption condition due to its curve characterizing capacity, taking into consideration maintenance of sustainability during operating with transmission network.
7. In normal conditions generator's reactive capacity delivery on generator's bus bar by maintaining active nominal magnitude shall ensure voltage level maintenance from nominal to ±5% interval and maintaining sustainable operation with the transmission network.
8. Dispatch licensee is authorized to request provision of black start of the system from pre-selected power plants. Such power plants will provide Black Start capability through an agreement with the Dispatch licensee. In case if agreement cannot be reached Dispatch licensee shall apply Georgian National Energy and Water Supply Regulatory Commission. In case if agreement is reached, power plant is obliged to allow access of Dispatch licensee's representative in the process of black start testing and investigating.
9. When electricity frequency reaches limits given in article 14, every energy unit/ aggregate shall stay synchronized with electricity system within a given time, so that the dispatch licensee is able to take measures for improving situation. Owner of energy unit/ aggregate is obliged to participate in frequency and voltage regulation through variation of active and reactive capacities, in accordance with the requirements of Dispatch Licensee.
10. Energy unit/ aggregate shall be equipped with speed governor system in order to satisfy frequency change demand caused by capacity regulation in normal conditions.
11. In the process of designing and operating energy unit/aggregate droop alteration within 2% to 8% shall be envisaged. Governor dead band (inherent and intentional) should not exceed 0.05 Hz. The abovementioned droop alteration and dead band requirement shall apply to all generators. Users shall not change settings of speed and frequency governors without prior

agreement of the Dispatch Licensee. Automatic governor system shall ensure loading from neutral point to its maximum in no more than 20 seconds.

12. During autonomous operation of energy unit, generator's speed governor system must also be able to operate at frequency range between 45.0Hz and 55, 0 Hz, if it's not limited with passport terms and conditions of producer.
13. Each generator shall be equipped with high response excitation system and automatic voltage regulation system that control actual voltage of power plant on a bus bar and operate constantly.
14. Automatic voltage regulation system shall ensure maintenance of steady-state generator voltage within ± 0.5% in accordance with Article 15 of this Code, so that steady-state of the generator is maintained.
15. Maximum voltage shall exceed the rated voltage of the generating unit at least twice for static exciters and for brushless exciters at least 1.6 times. The excitation system shall be capable of maintaining its maximum voltage for no more than 10 seconds.
16. Every generator shall be equipped with voltage and excitation automatic regulation and reactive capacity limiting equipment. Electricity generator is not allowed to transfer exciting unit from automatic to manual mode without prior consent of the Dispatch Licensee.
17. Step-up transformers of generation unit may have under voltage ratio adjuster in order to dispatch reactive capacity in accordance with the connection agreement. Transformation ratio, tap range and step size shall fully meet reactive capacity requirements envisaged in this Article.
18. Dispatch Licensee is authorized to acquire metering control and other data of power plant, that it might require for fulfilling obligations conferred upon it by the legislation.
19. Power plant shall have ability of uninterrupted operation within voltage variation range given in Article 15 and during short circuit on one or more phase of the transmission network, which may cause the voltage at the connection point to drop to between 0% and 80% of the nominal voltage in 500 milliseconds, followed by a period of one (1) second where voltage may vary within the 80-110% range of the nominal voltage, and a subsequent return of the voltage within the range 90-110% of the nominal voltage.
20. In case of negative phase sequence the generator shall be able to operate in accordance with requirements of international standards recognized in Georgia. Generator shall not be switched off until backup protection system of attachment, having experienced short circuit causing negative phase sequence, operates.
21. The high voltage windings of the generator's step-up transformer must be star connected, with the star point grounded. If adjacent to substation, star point of step-up transformer shall be connected to the grounding system of that substation.
22. Power plants must be designed in a manner to avoid its deactivation in case of frequency variations given in Article 14. Electricity generator is obliged to protect energy units/aggregates from damage caused by exceeding frequency limits. In such cases decision on disconnecting energy unit/aggregate from the network is made by electricity generator.
23. After disconnection from transmission network the power plant shall operate on loads (autonomous mode) within frequency limits envisaged under Article 12.

24. Electricity generator shall ensure power plant synchronization control of circuit breakers indicated by Dispatch Licensee, which, depending on the power plant configuration, should contain:
    a) Generator's circuit breakers;
    b) High voltage circuit breaker of generator transformer;
    c) Circuit breaker of 110 kW and higher voltage transmission line connecting power plant with transmission network.
25. From electrical equipment/installations controlled by Transmission Licensee the Dispatch licensee provides electricity generator with data necessary for synchronization of energy unit/aggregate, in order to facilitate synchronization of generator transformer with high voltage circuit breakers and generator circuit breakers on the basis of relevant connection agreement. In accordance with paragraph 24 of this Article, synchronization equipment shall ensure synchronization within following conditions:
    a) Frequency – within limits set under Article 14 of this Code;
    b) Voltage - within limits set under Article 15 of this Code.

Article 24. **Requirements for Distribution Licensees and Users Connected to Transmission Network**

1. At nominal system voltages (110 kW and above) the higher voltage windings of three-phase transformers and transformer banks connected to the transmission network, if star-connected, shall have their star point suitable for grounding. For this purpose neutral connection must be brought out of the tank.
2. Distribution Licensee shall take all necessary measures for ensuring disconnection of user through automatic frequency discharge. Technical requirements towards automatic frequency discharge shall be given in the connection agreement.
3. If the connection agreement envisages 100% limitation of user's loading, transmission licensee can allow User to install automatic frequency discharge on its side.
4. Distribution Licensees and Users connected to the transmission network are obliged to ensure that capacity rate at connection point be no less than 0, 85. For this purposes, Distribution Licensee and User connected to the transmission network shall ensure relevant arrangements, including installation of the relevant facilities.
5. Distribution Licensees shall provide reactive power compensation into low voltage system close to the load point, in order to maintain voltage limits indicated in Article 15 of this Code.

Article 25. Issues related to the operational management, technical maintenance and safety of the electrical equipment/installations of Users

1. The owner is responsible for the operational management and technical maintenance of the electrical equipment/installations of the User, unless other requirements are not envisaged in the connection agreement.

2. Any User, whose electrical equipment/installations are located on the substation of the transmission licensee, is obliged to follow the instructions and requirements of the transmission and Dispatch Licensees for the purpose of providing works.
3. If the Dispatch Licensee and/or Transmission Licensee provides the works on their own electrical equipment/installations, which is located on the facility of the User, it is obliged to follow the safety instructions and requirements set for that facility.

Article 26. Identification of the facility and the electrical equipment/installations

1. If necessary, the Transmission Licensee is obliged to provide information on nomenclature and numbering system of the electrical equipment/installations to each User. The User is obliged to use aforementioned numbering system in relation to its electrical equipment/installations.
2. The party who provides the assembly of the electrical equipment/installations is responsible to provide the clear and unambiguous signs on its facility for identification of the facility and the electrical equipment/installations.
3. The numbering of each component of the electrical equipment/installations shall be shown on the electric circuit of the facility.

Article 27. Access to the Facility

1. The provisions related to the accession of the Transmission Licensee and User to the facility are defined by this Code and the connection agreement.
2. The user provides unhindered access (including its instruments, electrical equipment and transport facilities) of Dispatch Licensee and Transmission Licensee to the connection point (in case the connection point is located at the User's facility) and equipment of Dispatch Licensee and/or Transmission Licensee located in the premises of the User.
3. The maintenance of the electrical equipment/installations of the User that are located on the substation of Transmission Licensee shall be carried out according to the current legislation of Georgia. The Dispatch Licensee is authorized to check the test results and the maintenance recordings related to that electrical equipment/installations at any time. The Dispatch Licensee is also authorized to check the electrical equipment/installations at the connection point within its competence.
4. The maintenance of all electrical equipment/installations of Transmission Licensee that are located on the User's facility shall be carried out according to the current legislation of Georgia.

5. The Dispatch Licensee, Transmission Licensee and User are obliged to allocate the staff for providing the necessary safety measures and operational activities.

Chapter III
Transmission Network Planning Rule

Article 28. The Goals of the Transmission Network Planning Rule

1. The goal of the Transmission Network Planning Rule (hereinafter "Planning Rule") is to define the transmission network planning procedures, technical requirements, procedures for cooperation and information exchange among the participants of electricity system and Applicants for the purpose of coordinating the design, construction, reconstruction and further extension of transmission network.
2. The Planning Rule defines the:
    a. responsibility of participants of the electricity system and Applicants related to the Transmission Network Development Plan;
    b. mechanisms of relations between the participants of electricity system and Applicants;
    c. criteria and standards of transmission network planning by which the dispatch and transmission licensees shall ensure safe, reliable and efficient performance of transmission network;
    d. information and data which shall be presented by the Transmission Licensee, Applicant and the User to the Dispatch Licensee for the purpose of transmission network development planning;
    e. information and data which shall be presented by the Dispatch Licensee to the Transmission Licensee, Applicant and User for selection of electrical equipment/installations.

Article 29. Transmission Network Planning

1. The Dispatch Licensee carries out the development of transmission network plan including all necessary research and evaluation.
2. The Dispatch Licensee provides the collection and coordination of data from Transmission Licensees, Applicants and Users, also information exchange between electricity system operators of neighboring counties.
3. The Dispatch Licensee shall develop unified Transmission Network Development Plan for 10 year period, which shall be presented to the Ministry of Energy of Georgia and Georgian National Energy and Water Supply Regulatory Commission.

4. The Dispatch Licensee is obliged, on the basis of information described in this Chapter and other necessary information, to develop 10 Year Forecasted Balance of Electricity Generation and Consumption.
5. The participants of electricity system and Applicants are obliged to fulfill the conditions related to the planning according to the provisions of this Chapter.

Article 30. Main Principles

1. In planning process together with other circumstances the following issues shall be envisaged:
    a. technical requirements of reliability;
    b. issues related to the economic and operational management, technical service, relay protection and automatics;
    c. issues related to the coordination of electricity generation, consumption and distribution facilities;
    d. IT and environmental protection requirements.
2. Transmission Network Development Unified Plan shall envisage issues related to the reliability, economy, environmental protection, development forecasts, planning of interconnections and local transmission network.
3. The following two criteria are used in this Code for assessing reliability of the transmission network:
    a. Adequacy – ability of the electricity system to uninterruptedly satisfy the consumers' requirements on electricity, taking into account the both scheduled and unscheduled outages of system elements;
    b. Stability – ability of the electricity system to withstand sudden disturbances such as electric short circuits or unexpected outage of system elements.
4. These planning criteria shall be taken into account during the assessment of various development scenarios and probabilities of contingencies.
5. The participants of electricity system and Applicants shall follow planning criteria and standards during the Transmission Network Development Planning.
6. While offering the expensive engineering solutions by the Applicants, the Dispatch Licensee is authorized to offer the reasonable alternative for the purpose of ensuring reliable and safe functioning of electricity system.
7. The long-term plans shall be reviewed annually.
8. The planning process shall consist of the following major stages:
    a. Data collection;
    b. Data processing;
    c. Modelling;
    d. Drafting the optimal plan for removing or mitigating any deficiencies;
    e. Preparation of the unified transmission network development plan.

9. The planning process shall include:
    a. Assessment of electricity system performance by annual seasons;
    b. Detail study of electricity system performance for the short-term period;
    c. Requirements for strategic planning applicable to medium and long-term periods.

10. The planning process shall begin with assessment of electricity system performance. Any identified potential risks shall be analyzed in detail to ensure their elimination or mitigation.
11. The short-term period for electricity system planning is defined from 1 to 5 years and long term period – from 5 to 10 years.
12. The electricity system development plan shall allow elimination and/or reduction of identified risks.

Article 31. Required Data for Transmission Network Planning

1. The Declarants before connection to the network and the Applicants after connection to the network, as well as the Transmission Licensees, are obliged to provide information to the Dispatch Licensee for the purpose of ensuring electricity system development planning in accordance with the forms and periodicity approved by the Dispatch Licensee.
2. The Distribution Licensee and electricity generators in case of any capacity power plant and/or energy unit/aggregate, and the consumers in case of installed capacity more than 5 MW, are obliged to notify the Dispatch licensee 24 month in prior about the planned conservation, as well as decommissioning and removal from dispatch control of such funds.
3. The Dispatch Licensee is obliged to use network data of neighboring countries while exploring the simulation of electricity system development with neighboring systems.

Article 32. Classification of required data for Transmission Network Planning

1. The data for transmission network planning is classified into 4 main categories:
    a. preliminary design data;
    b. design data;
    c. standard data;
    d. Detailed (additional) data.
2. Design data shall be presented by Declarants in case of requesting the new connection or modification of existing one after receiving of the connection offer.
3. Standard data shall be presented annually by all existing Users of the transmission network.
4. Detailed (additional) data may be additionally requested by the Dispatch Licensee in addition to the design and standard data.
5. In the process of requesting the new connection or modification of existing one by the Declarants, before receiving the offer, all data presented by Declarants will be considered as

a preliminary design data. After receiving the offer pursuant to the established rule, the preliminary design data and other additional data presented by the Declarant will be considered as a design data.

6. Electricity system participants are obliged to present annually the standard data envisaged by this Article to the Dispatch licensee. The date for the submission of this data is the last working day of September each year. This data shall include the information for the next 5 years. If there are no changes in the data from the last date of submission to the next date in the particular year, the Declarant may submit a written statement on unchanged data for that particular year instead of submission of the data.
7. The Dispatch Licensee is entitled to request additional detailed data in line with its approved templates upon necessity. The User is obliged to present the aforementioned information in 30 days after receiving the request.
8. Classification of transmission network planning data is carried out according to the following characteristics:
    a. Forecast data: this category consists of forecast indicators assessed by the User for the next 5 years including the generation and consumption forecasts.
    b. Estimated data of planned electrical equipment/installations: this category includes the estimated data and value of parameters about the electrical equipment/installations and/or power plant evaluated before the connection of the User to the transmission network.
    c. Registered data of electrical equipment/installations: the data which was refined after the connection as final values.
9. The Dispatch Licensee is authorized to request the data and conducting additional calculation/research from the Declarant and/or User upon necessity.
10. The list and template for the submission of standard planning data and detailed planning data is approved by the Dispatch Licensee and published on its web-site.
11. In case any User deems that forecast data prepared by the Dispatch Licensee does not properly represents the planning data of the User, it is entitled to address the Dispatch Licensee with the request of correction of abovementioned data.

Article 33. Transmission Network Study for planning purposes

1. The Dispatch Licensee is obliged to conduct necessary studies for transmission network planning periodically or upon necessity four providing economical, safe, reliable and stable functioning. The Dispatch Licensee is obliged, to prepare:
    a. forecast for the next 10-year period on transmission network operation;
    b. evaluation of the drafts of transmission network development;
    c. evaluation of the drafts submitted by the Declarant to the Dispatch Licensee;
    d. impact assessment on the transmission network and /or Users' network which may be caused by forecasted load values;

e. identification of gaps in the transmission network or User's network as a result of the study and define elimination measures;
f. evaluation of transmission network operation during normal and emergency modes;
g. evaluation of transmission network and electricity system performance during transitional processes;
h. transmission network development plans;
i. any other assessment which may be necessary for providing safe and reliable functioning of transmission network.

2. Transmission network study for planning purposes may include:
   a. the study of load flows in transmission network;
   b. short circuit analysis;
   c. the study of static and dynamic stability;
   d. the study of established modes;
   e. the study of voltage values in the nodes;
   f. the study of electromagnetic transitional processes;
   g. the studies related to reliable operation of transmission network;
   h. any other studies ion necessity.

Article 34. Computer modeling

1. The Dispatch Licensee approves mode processing methods and procedures by using mathematical modeling for the purpose of transmission network planning.

Article 35. Criteria of transmission network planning

1. Upon planning of transmission network the electricity standard parameters shall be maintained according to the Articles 14 and 15 of these Codes under conditions of electricity system load and expected values of electricity generation.
2. Upon planning of transmission network the measures of avoiding system failure and ensuring system stability shall be considered under conditions of expected emergencies which may be caused by:
   a. the loss of one system element (N-1);
   b. the loss of one system element, plus emergency shutdown of one energy unit/aggregate (N-G-1);
   c. emergency shutdown of system element when another system element is under repair (N-1-1).
3. Upon the circumstances envisaged in Paragraph 2 of this Article, electricity system shall maintain stability within allowed limits of post-emergency mode parameters according to Articles 14 and 15 of this Code.

4. Transmission network operation conditions in the post-emergency mode shall be set according to the results of simulation tests. A brief summary is given in Annex 1. The abovementioned does not exclude the possibility of more detailed testing, which enables better planning of certain components of transmission network.
5. Additional detailed testing may include:
    a. the assessment of substation reliability;
    b. the simulation of voltage drop;
    c. the calculations of asynchronous mode;
    d. the dynamic stability;
    e. the switching simulations;
    f. other necessary studies.

Article 36. Emergency study under different scenarios

1. The aim of study of emergency situations is to review the following scenarios in order to avoid the outspread of electricity system emergency and disturbance of stability:
    a. Basic scenario;
    b. Emergency situations of high probability;
    c. Emergency situations of low probability.
2. Basic Scenario:
    a. Basic scenario of electricity system or normal mode is the condition when all elements of electricity system are in working regime and mode parameters are under normal limits. For such scenario the study is conducted under conditions of steady state;
    b. To provide the normal value of voltage under conditions of considered loads in the basic scenario the switching of transformer coil output, shunt reactor and synchronous condenser, bus-bar sectionalizing and other means of regulation may be used. Several basic scenarios may be developed for the purpose of modeling of expected level modes and electricity generation schedules.
3. Emergency situations of high probability:
    a. the loss of one element test (N-1) implies the possibility of the loss of one element of a energy unit/aggregate (in some cases it may be one power station) or electricity network. To minimize the damage caused by potential loss of one element the method of switching output transformer coil, using shunt reactor and bus-bar sectionalizing may be used.
    b. For the purpose of preparing (from one energy unit/aggregate to second element shutdown) for the second emergency situation in case the loss of one system element (N-G-1) and emergency shutdown of one energy unit/aggregate(in some cases it may be one power station) N-G-1 may be modified by using the following methods: switching output transformer coil, switching shunt reactor on/off, generation re-dispatch and bus-bar sectionalizing;

c. Emergency shutdown of system element when another system element is under repair (N-1-1) implies the shutdown of one element of transmission system or one energy unit/aggregate (in some cases it may be one power station) when other element of system is under repair mode. The repair process may be planned so that the system can be ready for the emergency shutdown of the second element by the following methods: switching output transformer coil, phase angle regulation, the change in dispatch schedule and bus-bar sectionalizing;
d. Conducting N-1-1 study may occur when at the same time two elements are forcibly disconnected, but between the first and the second outage the time is enough for recovering flows within normal limits;
e. The defined criteria for N-1-1 cases may differ considering that the probability of N-1-1 is much less than N-1. For N-1-1 cases decreasing of consumption load is allowed;

4. Emergency situations of low probability: For the purpose of maintaining electricity system stability, the system shall withstand stronger but less probable emergency situations (damage of bus-bar, damage of bus-bar connection equipment, damage of breakers, improper work of relays, failure of double chain line, etc.) so that it will not be followed by voltage collapse or Cascading failure.

Article 37. Transmission Network Performance Standards

1. The levels of the short circuit currents:
    a. the maximum level of the short circuit currents shall not exceed 90 % of parameters of electrical equipment;
    b. the neutral of transmission network with 110 kV and more voltage, generally, shall be grounded. At the moment of short circuit on the ground the voltage of the short circuit shall not exceed 80 % of nominal interphase voltage.
2. Testing of Dynamic Stability:
    a. Dynamic stability shall be maintained upon three-phase short circuit or two-phase short circuit to ground;
    b. While providing the dynamic stability test the damaged element shall be switched off with the main protection. At the same time the autorecloser shall be in operation.
    c. The asynchronous mode is forbidden even for the short period while testing.
3. Cascade failures:
    a. Emergency situation shall not cause the violation of the integrity of transmission network or system shutdown by reason of cascading blackouts of transmission network or power plant. The results of potential emergency case studies shall be envisaged upon electrical equipment planning and determination of relay protection settings.

b. special protection circuits: for the purpose of avoiding the spreading of cascading blackouts in transmission network and system shutdown the special protection circuits may be carried out.

4. For the purpose of avoiding voltage collapse the reliability margin shall always be maintained between load level of transmission network and static stability violation level. It shall be defined by study of electricity system parameters during the increase of transmission network load.
5. The allowed limits of parameters of wires (normal and emergency):
    a. the thermal parameters of transmission line wires shall be determined by the parameters of the most sensitive element, which can be a wire parameters, sag or thermal parameters of electrical equipment.
    b. Normal and emergency thermal stability margins of electrical equipment shall be determined according to the seasonal characteristics. Upon determining the relevant parameters for normal and congestion situations the parameters of additional electrical equipment shall be taken into consideration such as: distribution equipment, bushing, measuring transformers, ratio adjuster and etc.
    c. Upon planning of both normal and emergency situations the congestion of electricity equipment is forbidden, except the cases when remedy of the situation occurs immediately (automatically or by operator), but allowed marginal parameters must be preserved (current strength).
        ca. In case of overhead lines – nominal load (current strength) with 110% values during 30 minutes;
        cb. In case of transformers and cables the current legislation of Georgia, standards of producer and International Electrotechnical Commission shall be observed.
6. Electricity system must be planned in such way that the voltage shall remain in the limits described in Article 15 of this Code.
7. The values of voltage variation:
    a. While functioning in the Basic scenario when all lines are in working condition the value of voltage jump caused by the switching of the condenser and shunt reactor shall not exceed 3.0% of nominal voltage.
    b. In emergency case (N-1) the maximum value of voltage before and after of this case shall not exceed 10%.
8. Electricity system must be planned in such way that the frequency shall remain in the limits described in Article 14 of this Code.

Article 38. Additional Measures on Avoidance of Accidents

1. For the preparation of the previous period of emergency (Basic Scenario) the below listed measures shall be carried out to recover the system parameters in normal limits:

a. the switching of transformer coil output;
b. Switching on and/or off the shunt reactor, static and synchronous condenser;
c. bus-bar sectionalizing.

2. The basic scenario includes avoidance of both network congestion and deviations of voltage from normal parameters. It also includes preparation of the system for potential specific emergency cases. The basic scenario is used as a benchmark for the purpose of researching the emergencies.
3. The N-G-1 and N-1 cases consider that from the moment of first outage, including starting of the repair works on any element, till the second outage, there is sufficient time to prepare the system for the second outage.
4. In N-1 and N-G-1 cases and considering that post-accidental limits of the parameters had not been violated, for the purpose of recovering the system parameters in normal limits the following activities shall be done:
    a. the switching of transformer coil output;
    b. phase angle regulation;
    c. Switching on and/or off the shunt reactor, static and synchronous condenser;
    d. Change of generation dispatch plan (redispatch);
    e. switching
5. Special measures shall be chosen which have the most impact on the restoration of emergencies.
6. In N-G-1 and N-1-1 cases the reduction of load by disconnection of customers may be used for the purpose of avoiding the violation of limits of post-accidental parameters.
7. Change of generation dispatch plan (redispatch):
    a. Change in load of working energy units/aggregates is allowed after emergency shutdown of network element (N-1) and energy units/aggregates (G-1) for protection of N-G-1 or N-1-1 requirements;
    b. In case of unforeseen and emergency shutdown of transmission network element the change in capacities of energy units/aggregates is allowed for the purpose of restoration of transmission network parameters in normal limits.
8. Voltage regulation by the switching of transformer coil output:
    a. The condition of transformer coil output shall be chosen for repair mode outages of basic scheme, energy units/aggregates or network element before N-G-1 or N-1-1 cases;
    b. As a post-accidental action, it is acceptable to switch the transformer coil output in two substations for restoration of electricity system parameters in normal limits;
    c. Switching of transformer coil output is done on those transformers which have the most impact on transmission network.
9. Proper value of phase angle shall be chosen for phase regulators according to the different scenarios.

10. Switching on/off the shunt reactor, static and synchronous condenser shall be envisaged in different scenarios.
11. bus-bar sectionalizing and switching within the transmission network:
    a. While developing of different scenarios the bus-bar sectionalizing is allowed to ensure that electricity consumption did not cause an overload;
    b. While discussing the different scenarios, for the purpose of avoiding emergency, it is allowed to provide necessary amount of switching for restoration of electricity system parameters in normal limits.
12. Restriction of load (consumption) may be carried out during the N-1-1 and N-G-1 cases for the purpose of avoiding overload of transmission network elements and maintaining the voltage and frequency within acceptable limits.

Article 39. Transmission Network Development Plan

1. Transmission Network Development Plan shall be developed by the Dispatch Licensee taking into consideration the transmission network study results. The plan shall describe existing transmission network, necessary modifications and development.
2. The Dispatch Licensee is obliged to develop Ten-Year Transmission Network Development Plan and update it annually.
3. Transmission Network Development Plan shall define expected modes of transmission network by years and shall indicate those nodes where start of operation of new equipment/installations or rehabilitation/reconstruction of existing ones is needed, for the purpose of ensuring electricity quality parameters and reliability criteria of this Code.
4. Transmission Network Development Plan shall indicate those nodes of transmission network where connection of new power stations and/or other Users is optimal to support competition on electricity market and development of transmission network by transparent and non-discriminatory way.
5. If in some areas, where fulfillment of the planning criteria and electricity quality requirement of Transmission Network Development Plan is inappropriate from technical and economic point of view, the Dispatch Licensee is obliged to provide aforementioned technical and economic analysis together with Transmission Network Development Plan to the Georgian National Energy and Water Supply Regulatory Commission. The analysis shall discuss the following issues:
    a. probability and results of violation of normal operation of electricity system resulted by failure to comply to the planning criteria;
    b. estimated cost of activities to be performed for the purpose of compliance with planning criteria;
    c. estimated cost of activities to reduce the probability of violation of normal operation.

6. Alongside with other information the Transmission Network Development Plan shall contain information about transmission network operational parameters, which shall include the following:
    a. general parameters of transmission network taking into account the connections with the transmission networks of neighboring countries;
    b. assessment of existing condition of transmission network and complete analysis of those areas which does not satisfy the planning criteria;
    c. capacities of transmission lines with 110 kV and more voltage;
    d. transmission network flow distribution in period of high maximal loads;
    e. values of short circuit currents on the substation bus-bars with 110 kV and more voltage;
    f. losses in transmission network;
    g. development of transmission network based on the forecast growth in electricity consumption;
    h. development of transmission network based on the construction plans of new power plants;
    i. proposals of construction of new intersystem electricity lines and substations;
    j. volumes of electricity flows with electricity systems of neighboring countries.
7. Transmission Licensees are obliged to prepare the investment plans for its transmission network based on the Transmission Network Development Plan.
8. Transmission Network Development Plan shall include the annual forecast of electricity generation for 10-year period.
9. Generation forecast shall envisage the following:
    a. consumption forecast for 10-year period;
    b. necessary capacity reserve for electricity system;
    c. existing condition of power plants;
    d. parameters of those planned power plants whose memorandum of understanding or connection agreement is signed;
    e. Statistics and forecasts of import and exports;
    f. analysis of forecast balance of electricity consumption and supply of the country;
    g. recommendations for those cases when start of operation of planned power plants are delayed;
    h. recommendation to meet the demands on capacity and energy.

Chapter IV
Operational Management Rule

Article 40. Forecasting of Electricity Demand

1. The submission of load data, operational planning and control shall be done according to the following principles:
    a. the Dispatch licensee is obliged to draw up the demand forecast for long-term planning stage based on the load data provided by the Users;
    b. on short-term planning development stage the Dispatch Licensee is obliged to develop demand forecasts on the basis of information provided by the electricity producers, transmission licensees and other Users.
2. The demand on reactive capacity includes the demand on reactive capacity on User's bus-bar, and does not include the reactive conductance of transmission network and reactive compensation in electricity system on the basis of which the Dispatch Licensee shall provide the report on total reactive conductance and reactive compensation data.
3. The goals of Electricity Demand forecasting are:
    a. preparation of electricity (capacity) balance by the Dispatch Licensee on the basis of information submitted by the Users taking in the consideration the necessary capacity reserve;
    b. determination of those factors which shall be envisaged by the Dispatch Licensee in demand forecasting process on the stage of short-term operational planning development;
4. Transmission Licensees and consumers are obliged to submit the data to Dispatch Licensee on requested capacity and active energy on the different stage of planning for the purposes of long-term forecasting.
5. During the stage of operational planning (from the first year including the 5^{th} year):
    a. no later than September 30 of each year, the Dispatch Licensee is obliged to report in writing to the Users on expected date/time of annual peak demand and expected date/time of annual minimal demand.
    b. no later than October 30 of each year, each User is obliged to report in writing to the Dispatch licensee about the forecast data for each year of five-year period, particularly:
        ba. hourly demand on active capacity (by connection points and total). This data is calculated for the day of expected maximal load of Users and for the day of expected annual peak demand of Dispatch Licensee;
        bb. Annual demand on active capacity (by connection points and total) according to the consumption categories (for example: residents, commercial sector, governmental institutions, industrial customers, agricultural customers, street lighting, hospitals, etc.).
        bc. Hourly demand forecast on active capacity (by connection points and total) for the day of minimal demand represented by the Dispatch Licensee;
        bd. Demand on active capacity and capacity factor at connection point for hours of User's peak demand and for the day of annual peak represented by the Dispatch Licensee;

be. Demand on active capacity and capacity factor at connection point – in the period of annual minimal demand represented by the Dispatch Licensee.

6. The User is obliged to submit in writing the hourly schedules of capacity to the Dispatch Licensee before one month of the short-term planning stage.
7. On the stage of day ahead planning the User is obliged to inform to the Dispatch Licensee about the 1 MW or more change in next day demand at any connection point.
8. The User is obliged to report in writing to the Dispatch Licensee the data about active and reactive capacity for each day according to the hours and connection points of the previous calendar day.
9. In the process of electricity demand forecasting the Dispatch licensee shall envisage the following factors:
    a. the last period data on electricity demand including transmission network losses;
    b. the relevant information and data represented by the Electricity Market Operator;
    c. the growth forecast of social and economic development indicators of the country;
    d. the weather forecast of current and last period;
    e. repair plan known in advance for the Dispatch Licensee;
    f. the planned capacity schedules of electricity producer;
    g. expected import, export and transit of electricity;
    h. other information submitted upon the Users' necessity.
10. The Dispatch Licensee shall prepare the demand forecasts of electricity system using the appropriate methodology.

Article 41. Outage Planning

1. In the process of outage planning shall be envisaged the following:
    a. issues on planning, coordination and approval of the outages of energy units/aggregates and electricity system elements;
    b. planning parameters represented by electricity producers to the Dispatch Licensee for the purpose of operational planning.
2. The outage planning envisages those planned outages which may restrict the total registered capacity of energy unit/aggregate.
3. The Electricity Producers are obliged to inform the Dispatch Licensee about any repair work to be conducted on power station or related equipment and buildings, which may affect the ability to carry out the service by the energy unit/aggregate for electricity system.
4. Upon the outage planning in transmission network and coordination of planned outages with transmission network Users each User is obliged to operate according to the ordinance of the Dispatch Licensee.

5. The planning process of energy unit/aggregate outages shall start five (5) year in advance before the planned date. The result of this process shall be the following three plans and each of them shall include respectively prescribed time schedules:
    a. Committed Outage Plan, covering Year 0 and Year 1;
    b. Provisional Outage Plan, covering Year 2-3; and
    c. Indicative Outage Plan, covering Year 4-5.
6. In the development process of energy unit/aggregate outages program rolling over from one year to the next the procedure set out below is to be followed by electricity producers (except, in any such case, to the extent that the Electricity Producer is reasonably responding to changed circumstances):
    a. outage plan submitted by Electricity Producers for Year 2 shall reflect the Provisional Outage Plan for Year 3;
    b. outage plan submitted by Electricity Producers for Year 1 shall reflect the Provisional Outage Plan for Year 2.
7. By September 30 of Year 0:
    a. Electricity Producers shall provide the Dispatch Licensee in writing, the following data of planned outages and estimates of probabilities of forced outages for including in the Committed, Provisional, and Indicative Outage Plans:
        aa. identity of the energy unit/aggregate;
        ab. installed and registered (available) capacity;
        ac. expected duration of the outage;
        ad. planned start and end dates/hours of outage;
        ae. reference whether the date of planned outage is flexible or fixed;
        af. if planned outage is flexible, the period for which the outage could be changed if requested by the Dispatch Licensee.
    b. In relation to the outages with flexible dates, the electricity Producer must provide the Dispatch Licensee with justification on outage fixed dates if requested by the Dispatch Licensee. If the Electricity Producer fails to represent the reasonable justification to the Dispatch Licensee the outage shall be deemed to have been submitted with flexible dates and this dates may be changed upon request of the Dispatch Licensee.
8. The Electricity Producer is authorized to make only those amendments in the submitted plan which are caused upon responding to changed circumstances (within reasonable limits). Otherwise the amendments shall not be accepted and Provisional Outage Plan submitted for relevant year shall remain
9. into force.
10. Before December 1 of Year 0:
    a. the Dispatch Licensee is obliged:
        aa. to conduct reliability analysis of the transmission network for the operational planning period considering the proposed outages and calculate

the weekly peak generation capacity required from power station for the various planning periods;

ab. in the case of any problem, in the plans submitted by the Electricity Producer, to inform on this to Electricity Producers and take all possible measures for resolving them through discussions.

b. the Dispatch Licensee is authorized to contact with the User who has submitted the information and require explanations and additional information on received information upon necessity.

11. Before December 1 of Year 0 based on the information submitted to the Dispatch Licensee and discussions with the Users if appropriate, the Dispatch Licensee shall provide in writing to the relevant Electricity Producer and other Users with a final Outage Plan showing the energy units/aggregates (with relevant periods) that may be potentially withdrawn from service during planned outages of Years 0,1,2 3,4, and 5.
12. The final Outage Plan shall describe the flexible and fixed outage periods which shall be confirmed by the Electricity Producer.
13. Amendments to planned outages is conducted if:
    a. the Dispatch Licensee would like to change dates of flexible planned outages;
    b. the Dispatch Licensee would like to move the date of fixed planned outages. In this case the Dispatch Licensee may, upon giving the Electricity Producer a written notice, request to move the planned outages. If the Electricity Producer agrees on any change in planned outages, the Electricity Producer will take the outage in accordance with that agreement.
14. In case if energy unit/aggregate for which there is a flexible planned outage or an fixed planned outage, the Electricity Producer may replace it one of the other energy unit at the same power station (having substantially the same capacity and dispatch parameters) and notice in writing to the Dispatch Licensee. The Dispatch licensee is obliged to consider the abovementioned and correct the final outage plan if there is no reason for refusal.
15. The Electricity Producer may request from the Dispatch Licensee at any time, by giving not less than seven (7) days' notice before start date of particular outage, for a short term planned maintenance outage. The request notice must contain the following information:
    a. the identity of the energy unit/aggregate concerned;
    b. disconnected and available capacities (MW);
    c. preferred start day and start time of outage or possible time interval;
    d. required duration of the Outage (which must not exceed ninety-six (96) hours.
16. On receipt of a request, the Dispatch Licensee shall examine it and reply within three (3) business days after discussing the situation with the Electricity Producer.
17. If the energy unit/aggregate needs to be disconnected so that it does not coincide with the planned dates (long-term and/or short-term outage plans), the Electricity Producer shall immediately notify the Dispatch Licensee about the abovementioned circumstances. The notification shall include:

a. the identity of the energy unit/aggregate;
b. the expected day, time and duration of unplanned outage;
c. information about the outage time and disconnected capacity (MW) (including information about capacity available while outage)

18. In a very short time after receiving the notification envisaged in the Paragraph 16 of this Article the Dispatch licensee shall confirm or offer the correction in outage start date and period to the Electricity Producer. In case the correction is agreed the Electricity Producer shall confirm it to the Dispatch Licensee.
19. In the case of forced outage of the energy unit/aggregate the electricity producer shall notify about it to the Dispatch Licensee at once. Upon setting the restoration date and time of power plant/unit, the Electricity Producer shall immediately inform the Dispatch Licensee. The Electricity Producer shall carry out proper measures in order to restore a energy unit/aggregate in a very short time. The Dispatch Licensee is authorized to check the energy unit/aggregate and relevant notes at any time.
20. The Electricity Producer is entitled to carry out only planned outages. The electricity producer shall not deviate from the schedules of planned outages of energy unit/aggregate and short-term repair plan, without preliminary consent from the Dispatch Licensee.
21. The Dispatch Licensee is authorized to reject about the planned outage of energy unit/aggregate or planned short-term repair work even if the outage was planned beforehand, if
    a. the requirements of the legislation are not followed;
    b. the generation capacity will not meet the forecasted demand and operational reserve in case of the outage.
22. In case envisaged in Paragraph 20 of this Article the Dispatch Licensee may require the Electricity Producer to postpone such outage for appropriate date.
23. No later that seven (7) days before the expiry of the flexible planned outage period or the fixed planned outage period, the Electricity Producer must notify the Dispatch Licensee in which date its energy unit/aggregate is returning to service. After completion of planned works the Electricity Producer shall indicate the volume of capacity (MW) which energy unit/aggregate may supply to the electricity system.
24. During unplanned outage the Electricity Producer shall immediately notify about the outage reason and exact time of energy unit/aggregate restoration to the Dispatch Licensee.
25. If while restoring the energy unit/aggregate, at any time, the electricity Producer becomes aware of the inability to restore energy unit/aggregate within agreed date, the Electricity Producer shall immediately notify to the Dispatch Licensee about it pointing out the reasons for delay and start time of energy unit/aggregate.

42. Planning Outages of Transmission Network

1. On the basis of prior plans supplied by the Transmission Licensee, the Dispatch Licensee shall schedule outages associated with rehabilitation and reconstruction works for second and third years, and repair works for null and first years.
2. The Dispatch Licensee is authorized to make decision differing from requirements of paragraph 1 of this Article if it is necessary for appropriate and reliable functioning of transmission network and electricity system.
3. Procedure of planning outages of transmission network shall begin 3 years prior to scheduled date. The procedure results in below given three plans, that should entail duly agreed dates:
   a) Agreed plan of outages comprises year 0.
   b) Prior plan of outages comprises year 1.
   c) Indicative plan of outages comprises year 2 and year 3.
4. Scheduling indicative plan of outages means planning outages for year 2 and year 3. Specifically, the Dispatch Licensee shall make indicative plan of the transmission network outages designed for internal use no later than September 30 of 0 year. Hereby, the Dispatch Licensee gives additional information to the relevant electricity producer on possible necessity of outages or other measures, including electricity generation figures and limiting dispatch to ensure transmission network security.
5. Prior planning of outages for year 1 is arranged in accordance with the following procedures:
   a) After each year during calendar year the Dispatch Licensee shall renew prior planning of the transmission network outages and hereby shall envisage those outages that will be caused by scheduled repair works.
   b) Until December 1 of year 0 the Dispatch Licensee shall draft final plan of the transmission network outages and make it available for Users (authorized interested parties). The Dispatch Licensee also gives written notification to Users on issues that might affect them, including commencement and end dates of the transmission network outages. The Dispatch Licensee indicates also where internal switches, emergency blackouts, emergency load management and other measures, including energy unit/aggregate figures and dispatch, are necessary in order to ensure transmission system security within permissible limits.
6. In accordance with paragraph 5 of this Article prior plan of outages drafted for year 1 becomes agreed plan of outages after one year.
7. Phases of agreed plan of outages are as follows:
   a) The Dispatch Licensee shall renew plan of the transmission network outages each Thursday for the period of next Saturday to upcoming 1 week;
   b) The Dispatch Licensee shall give written notification to relevant Users on those issues of outage plan that might affect their operation including commencement and end dates of outages of the relevant part of the transmission network;
   c) In case if necessity of diverging from outage plan occurs, the User and the Dispatch Licensee shall immediately notify each other.

Article 43. The System Service

1. Basic system service that is important for proper functioning of the transmission network and that defines electricity (capacity) quality of supply is:
   a) Frequency control;
   b) Voltage control;
   c) Operational reserves;
   d) Black Start of the system.
2. The Dispatch Licensee shall completely control all system services. It should determine which system service should be provided, when and by whom it should be provided.
3. Aims of the system service are:
   a) Formation of approaches that ensure frequency and voltage control into the transmission network in order to ensure efficient management by the Dispatch Licensee.
   b) Establishment of various time intervals for efficient management of reserves that are used by the Dispatch Licensee during reserve management and defining procedures for appraisal of energy units'/aggregates' and other facilities' reserves.
   c) Drafting requirements for power plants that participate in black start of the system.
4. The Dispatch Licensee controls frequency through following means:
   a) Primary control of frequency is exercised up to 30 second period from frequency variation;
   b) Secondary control of frequency is exercised within 30 second to 10 minute period from frequency deviation through automatic and remote control of energy units/ aggregates.
   c) Frequency shall be maintained within limits set under the Article 14 at expense of operational reserves.
5. Energy units/aggregates connected to the transmission network shall be equipped with automatic speed governor system. Each automatic speed governor system shall be responsive to ±0.015 Hz frequency deviation.
6. In exceptional cases electricity generator may restrict the action of speed governor system on the basis of prior consent of the Dispatch Licensee:
   a) To Ensure security of the staff and/or avoid damage to energy unit/aggregate;
   b) To Ensure reliability of energy unit/aggregate;
   c) When restriction is based on instructions of the Dispatch Licensee.
7. In order to ensure electricity system reliability, unity and security of electrical equipment/installations connected to it the Dispatch Licensee shall control transmission network voltage within approved limits and for this purpose enforce following measures:
   a) Management of reactive capacity charging (MVAR) within electricity system through connecting reactors;
   b) Demand control and management of reactive capacity (MVAR) within transmission network;

c) Control and management of reactive capacity losses (MVAR) of the transmission network;
d) Energy unit/aggregate reactive capacity (MVAR) management;
e) Change of transformation rate of transformers (automatic and remote);
f) Management of reactive capacity compensating facilities (static capacitors, synchronous condensers);
g) Dynamic voltage control system.

8. The Dispatch Licensee is obliged to determine and modify (as appropriate) voltage control procedures of the transmission network.
9. The Dispatch licensee shall continuously monitor voltage at control points in accordance with instructions.
10. Excitation system of each energy unit/aggregate shall be operated under the continuous control of automatic voltage regulator. Electricity producer is not entitled to disable automatic voltage regulator or restrict its action, except cases given below, which shall be immediately notified by electricity producer to the Dispatch Licensee:
    a) Ensuring security of the staff and/or avoiding damage to the energy unit/aggregate;
    b) Ensuring reliability of energy unit/aggregate;
    c) When restriction complies with instructions of the Dispatch Licensee.
11. If the energy unit/aggregate operates without automatic voltage regulator, the Dispatch Licensee may restrict or, if necessary, completely disable such energy unit, as far as it is necessary for secure functioning of the network within established requirements.
12. The Dispatch Licensee is entitled to instruct electricity producer to adjust reactive capacity output.
13. The Dispatch Licensee is entitled to change loads of energy unit/aggregate or loading schedule if it is necessary for maintaining transmission network voltage at connection point within levels defined in this Code. Hereby, these measures may be applied only in such accidental situations that put electricity system reliability and security at risk.
14. Use of additional voltage control mechanisms is acceptable during electricity system emergency conditions. This shall include (but not limited to) the following measures:
    a) Upon agreement with electricity producer the Dispatch licensee is entitled to require regulation of energy unit/aggregate;
    b) Customer loading control may be used for avoiding voltage deviation from emergency limits set under this Code.
15. During scheduled outage of the transmission network (within normal conditions) and/or emergency situations the Dispatch Licensee may be forced to exercise management that might periodically affect reliability of Users' functioning. In such cases the Dispatch Licensee is entitled to require efficient switching of the transmission network for following reasons:
    a) Outage of electrical equipment/installations for repair works, testing, relay protection or other works provided by the User;

b) Outage of electrical equipment/installations due to existence of potential danger or necessity of emergency repair;
c) During voltage control;
d) Reducing power flows on the transmission network to levels consistent with transmission network substation capabilities and electricity system security requirements.

16. Outages on electricity system may take place automatically, without prior notification due to the operation of relay protection and system automation.
17. During accidental situation in the electricity system outages through automatic operation aiming to limit capacity flow, voltage at the points and frequency variation are acceptable.
18. The Dispatch Licensee is obliged to notify relevant User on measures to be taken on the transmission network in case if such measures may affect operation of the User.
19. If the accident has occurred into the system or relay protection and system automation has operated the Dispatch Licensee may notify Users after taking relevant measures.
20. The Dispatch Licensee is authorized to disconnect electricity equipment in order to avoid following circumstances:
    a) Risk to the staff security;
    b) Risk to the electricity system sustainability;
    c) Risk of damage to the electricity equipment/installations;
    d) If loading of the transmission network elements exceeds accidental limits;
    e) If voltage and frequency deviation exceeds limits established under this Code;
    f) Any substantial breach of conditions of the transmission network connection;
    g) Any action or inaction that may impede the Dispatch Licensee in fulfilling its obligations conferred upon it on the basis of current legislation.
21. Reserve is unused capacity that is utilized for maintaining frequency within permissible limits and balance of supply and consumption, in case of uncertainty of demand forecasts and unexpected outage of energy unit/aggregate. Reserve consists of operative (primary, secondary and tertiary reserves) and contingency reserves.
22. Primary operative reserve – electricity generator, having energy unit/aggregate providing primary operative reserve for frequency regulation and obliged to keep speed governor (system service) of that energy unit/aggregate in action and operate it in automatic mode (free regulation mode). Automatic response of speed regulator shall not exceed five (5) seconds.
23. Secondary operative reserve means additional capacity accelerating within 15-20 seconds.
24. Tertiary operative reserve is divided into Band 1 and Band 2:
    a) Band 1 – acceleration of additional active capacity and its maintenance within the period of 90 seconds to 5 minutes;
    b) Band 2 - acceleration of additional active capacity and its maintenance within the period of 5 to 30 minutes;
25. Contingency reserve is generation capacity that becomes available within 24 hours in order to ensure availability of generation capacity, compensation of diversion in the weather and

demand forecasts. Contingency reserve is provided by such power plant that does not have obligation of synchronization with electricity system, but which shall be ready for launching.

26. The Dispatch licensee is obliged to determine volume of primary, secondary and tertiary reserves that shall exist any time for ensuring system security. In such cases following circumstances together with other conditions shall be envisaged:
    a) Important events within the country;
    b) Economic indicators of operational reserves;
    c) Energy unit/aggregate of highest installed capacity connected to network, also capacity of inter-system and intra-system transmission lines;
    d) Climate conditions that might affect (directly or indirectly) reliability of energy units/aggregates and transmission networks;
    e) Possible changes of frequency caused by outage of mostly loaded element of electricity system that is calculated by means of using electricity system mathematical patterns.
27. The Dispatch Licensee shall meter quality of operational reserve utilization.
28. The Dispatch Licensee is obliged to establish reserve capacity 24 hours earlier, taking into consideration, but not limited to, the following circumstances:
    a) Statistical data of availability and reliability of certain energy units/aggregates;
    b) Risks associated with reliable operation of energy unit/aggregate;
    c) Deviations of consumption loading forecasts.
29. Electricity system black start is started up in a following manner and in compliance with following requirements:
    a) In order to recover the transmission network from a partial or total blackout, it is necessary to have power plants (Black-start stations) available which have at least one of generating unit/aggregate with ability to start-up, autonomous loading of customer and connecting to the network without voltage, in a nearest time period after instruction of the Dispatch Licensee.
    b) Those electricity generators who have obligation of electricity system black start shall ensure maintenance of pre-defined frequency and voltage levels and loading in the process of electricity system rehabilitation;
    c) The Dispatch licensee shall verify actual capacity of black start, in the event of such blackouts;
    d) Electricity producers providing black start shall ensure voice and other types of communication and operation without external electricity sources for a period defined by the Dispatch Licensee;
    e) If during the black start process energy unit/aggregate is not able to maintain parameters on approved levels, electricity producer shall immediately notify the Dispatch Licensee. The Dispatch licensee is authorized to issue relevant order in order to solve existing problem. For security purposes of staff and electricity equipment/ installations' the electricity producer may change capacity independently and notify the Dispatch Licensee immediately;

f) Electricity producer shall report the Dispatch Licensee on each activity.

30. Obligations of electricity producers who are responsible for providing black start shall be prescribed in the relevant agreement with the Dispatch Licensee.

Article 44. Exchange of Operative Information and Notifications

1. For secure management the purposes of electricity system and electricity equipment/installations between the Dispatch Licensee and electricity system participants the Dispatch Licensee shall ensure the following:
   a) Timely and effective communication in emergency situations;
   b) Preparation of the reporting forms of emergency situations and their causes to be sent between the Dispatch Licensee and Users;
   c) Definition of conditions that should be applied by the Dispatch Licensee for investigating substantial occasions having material impact on users' service quality.
2. Notifications are made in accordance with following principles:
   a) The Dispatch Licensee shall notify any User regarding feasible impacts on electricity equipment/installations that may have been occurred during operational management of the electricity system;
   b) The User shall notify the Dispatch Licensee on those feasible incidents that might affect electricity system;
   c) Notification should be given as practicable immediately, it shall entail sufficiently detailed information on existing situation, and enable the recipient to consider and evaluate implications and risks.
3. After receiving User's notification the Dispatch Licensee, if appropriate, is authorized to require detailed written report on such incident, that should comprise:
   a) Breach of frequency limits established under this Code;
   b) Breach of voltage limits established under this Code;
   c) User's Disconnection;
   d) Islanding or autonomous regime;
   e) Electricity system instability.
4. The Dispatch Licensee shall investigate any substantial incident that might affect User materially. Such incidents may include interruptions of supply, disconnections, voltage or frequency deviations, service quality contravention etc. Primary report of significant incidents must be available after 15 (fifteen) working days and final report within 2 months. The Dispatch Licensee shall initiate and coordinate activities such as investigation, preparation of written reports and engagement of participants into the process. Users shall deliver all the existing information to the Dispatch Licensee and where reasonable shall participate in the investigation process.
5. Users and Transmission Licensees shall prepare monthly reports on their activities and submit it to the Dispatch Licensee. These reports shall include data of activities, appraisal of

significant incidents and other problematic issues having occurred during previous month, also list of measures undertaken by Users and Transmission Licensees for solving problem and recommendations for preventing them in the future. Users shall also prepare quarterly and annual reports of operational activities and submit it to the Dispatch Licensee, these reports shall contain operational data and significant incidents having impact on transmission network or any User during specific year or quarter.

Article 45. Operational Communication between the Dispatch Licensee, the Transmission Licensee and Electricity System Participants

1. Operational communication implies use of standard and proper communication channels and facilities in order to exchange information on a timely basis between electricity system participants and the Dispatch Licensee for ensuring proper functioning and management of transmission network. Including:
   a) Defining contact information between the Dispatch Licensee and electricity system participants;
   b) Detailed description of means of communication between the Dispatch Licensee and electricity system participants;
   c) Defining information exchange procedure between the Dispatch Licensee and electricity system participants;
   d) Defining general proceedings of conferring authority to the staff of the Dispatch Licensee and electricity system participants.
2. National Dispatch Service of the Dispatch Licensee and operational management points of the User shall be equipped with telephone and fax device connected to the independent, separate channel that should be used only for the operational purposes.
3. The Dispatch Licensee and electricity system participants are obliged to maintain confidentiality of operating information obtained from each other, except situations envisaged under the legislation.
4. Communication systems and equipment:
   a) For ensuring communication between the Dispatch Licensee and electricity system participants SCADA and other data transmission systems should be available. All equipment should be compatible with the management system of the Dispatch Licensee;
   b) The Dispatch Licensee ensures (on behalf of respective system participant) implementation of SCADA for monitoring information and managing electrical equipment/installations of User's units in the real time;
   c) All participants of the electricity system are obliged to provide voice communication on the request of the Dispatch licensee through ensuring primary as well as secondary communication channel;
   d) All participants of the electricity system are obliged to ensure proper functioning of the recording facilities on their operating management points;

e) Locating, functioning and technical service of all communication equipment shall comply with requirements set by the Dispatch Licensee.

5. Controlling and recording devices:
   a) The Dispatch Licensee ensures placement of the SCADA remote communication equipment on User's respective unit. Relevant electricity system participant shall provide information necessary for remote control and envisaged under the connection agreement.
   b) Electricity generator shall ensure results of metering active and reactive capacity and availability of the information regarding condition of switches and disconnections on each energy unit.
   c) For controlling information on transmission network functioning the Dispatch Licensee keeps records of normal condition, transitory processes and state of the equipment and maintains them.
   d) For controlling dynamic regime of electricity system the Dispatch Licensee ensures placement of relevant equipment on electricity system participant's unit.
6. The SCADA System:
   a) The SCADA system ensures provision and exchange of the information between the Dispatch Licensee and electricity system participants on condition of the electricity system;
   b) Electricity system participants communicate with each other through standard digital interface. Boxes of communication equipment shall be placed on User's unit in relevant room. Relevant User is responsible for provision of wiring and signalling from User's power plant and electrical equipment to communication equipment cabinets.
   c) All Communication facilities (Including SCADA) shall be secured. The Dispatch Licensee together with respective electricity system participant drafts and coordinates procedures that should regulate collection of the information for this User and security of communication facilities and their accessibility.
7. SCADA and data transmission systems are placed according to the following conditions:
   a) Electricity system participants are obliged to agree types of SCADA and data transmission equipment with the Dispatch Licensee;
   b) Expenses of SCADA and data transmission system implementation, placement and operation are covered by electricity system participant.

Article 46. Transmission Network Congestion Management

1. The aim of the transmission network congestion management is to ensure electricity system reliability and security and at the same time satisfaction of customers' demand as far as possible.
2. Congestion of the transmission network shall take place in following circumstances:
   a) During malfunction or emergency trip of energy units/aggregates;

b) During malfunction or emergency trip of transmission line or any other element of the electricity system;
c) During the period when generating unit or any other component of electricity system were out of service due to the testing, technical service or repair;
d) During overloading or such voltage variation that has influenced part of electricity system or the whole system;
e) During incidents in the distribution network that might affect operation of electricity system;
f) When capacity volumes to be transmitted exceeds limits set for electricity transmission line (capacity);
g) When scheduled export and import becomes impossible due to the overloads in the internal network of the neighbouring country.

3. In case if limitations set under paragraph 2 of this Article arise the Dispatch Licensee shall undertake relevant measures for improving situation in order to suppress or minimize limitations into the transmission network for defending and restoring electricity system functioning in accordance with reliability criteria N-1. Depending on the overload the Dispatch Licensee determines measures to be taken for improving situation due to their effectiveness and enforces them immediately. Those measures are:
   a) Activation of operating reserves;
   b) Changing dispatch schedule (re - dispatching);
   c) Undertaking relevant procedures of operational procedures by the Dispatch Licensee, including voltage reduction;
   d) Reduction or termination of scheduled supply to the User;
   e) Reduction or termination of scheduled export or import;
   f) Load shedding of the customer.
4. In case if undertaking other activities for improving situation is impossible, scheduled supply shall be reduced or terminated, including export and/or import. Before elimination of transmission network overload the Dispatch Licensee shall reduce or terminate scheduled generation or supply to the customers in a non-discriminatory manner and shall ensure transparency of the procedure.

Article 47. Contingency Planning

1. For avoiding partial or total blackouts of electricity system or for prompt and secure restoration of normal functioning after blackouts in the emergency situations, relevant electricity system-wide training shall be conducted.
2. Any training for preparation to the elimination of emergency situations to be conducted by the Dispatch Licensee, Transmission Licensee or User shall be coordinated between them or with any other User who might be affected by abovementioned trainings.
3. Terms and Conditions of contingency planning:

a) All Contingency plans for partial and total blackouts shall encompass measures for quick and secure recovery from the emergency situation with minimum impact on the User;
b) All Contingency Plans shall be periodically verified as far as it is possible by actual tests to the greatest practical extent. If such tests puts User at risk or causes unreasonable costs, the Dispatch Licensee takes abovementioned risk and costs into consideration while making decision on testing. Testing costs are covered by the owner(s) of relevant assets;
c) Users are obliged to comply with requirements of the Dispatch Licensee associated with Contingency Plans;
d) The Dispatch Licensee shall set requirements for changes in electricity supply after consulting with Users. Users are authorized to submit alternative options for coordination.
e) The Dispatch Licensee is responsible for defining the Transmission Network operational margins;
f) The Dispatch Licensee shall regularly conduct necessary investigations of the system for determining impact of failure of various elements on reliability of the transmission network. Based on the requirements of the Dispatch Licensee the Transmission Licensees shall also conduct investigations on their networks and notify results to the Dispatch Licensee.
g) In the emergency situations electricity system participants shall first ensure security of the staff and equipment and then take relevant operations for integrity of the transmission network;
h) Trainings for emergency situations are held at least once a year. Simulation of the realistic situations shall be conducted during the trainings. Hereby, evaluation of trainings shall be performed, deficiencies in procedures shall be identified and corrections to the relevant trainings shall be made;
i) For managing emergency situations within the system the Dispatch Licensee is obliged to prepare Contingency Plans in coordination with electricity system participants and enforce them. These contingency plans should encompass the following:

i[1]) Disconnection of Users (Customers) by reducing frequency;
i[2]) Disconnection of Users (Customers) by reducing voltage;
i[3]) Disasters management (during natural disasters and any other unexpected situations);
i[4]) Possible forced outages at all connection points;
i[5]) Supply restoration.

4. In case of partial or total outage of the transmission network the Dispatch Licensee shall ensure quick and normal mechanisms of supply restoration for all Users, that should include:
   a) Provision of general strategy of system restoration;
   b) Preparation and enforcement of system restoration plan;
   c) Obligation of electricity system participants to cooperate with the Dispatch Licensee in the process of drafting system restoration plan and enforcing it;
   d) Training of relevant staff of the Dispatch Licensee and electricity system participant.

5. Within transmission network restoration process standard limits (normal and post-incidental) of voltage and frequency are not applied.
6. Electricity system restoration plan that is mandatory for all participants shall envisage the following:
   a) Authority of the Dispatch Licensee to give orders on starting up energy units/aggregates having black start capacity;
   b) Obligations of electricity generators with energy units/aggregates having black start capacity;
   c) Authority of the Dispatch Licensee to coordinate provision of additional reserves;
   d) Obligation of the Dispatch Licensee to notify system participants on restoration of the system to normal conditions after completion of relevant procedures and restoration of the system;
   e) Issue of capacity receiving ability of the neighbouring countries coordinated by the Dispatch Licensee.
7. In the event of partial or total blackout general strategy of electricity system restoration shall comprise:
   a) Creation of islanded parts within the electricity system;
   b) Gradual integration of isolated parts of the electricity system into bigger parts;
   c) Full restoration of the electricity system.

Article 48. Operational Testing

1. For operational testing it is necessary to:
   a) Define process of conducting electricity system operational testing by the Dispatch Licensee or other participants of the electricity system, so that security of the staff, electrical equipment/installations and electricity system is maintained as far as it is possible;
   b) Establishing procedures of conducting such testing.
2. In case of testing necessity of the transmission system electricity system participant shall submit application to the Dispatch Licensee. It should encompass the following information:
   a) Aim and nature of scheduled tests;
   b) Extent and condition of electrical equipment/installations involved in testing;
   c) Procedure of scheduled testing, having indication of commutation (switching) sequence and timing.
3. Requirement of operational testing shall envisage reasonable time for planning tests offered by the Dispatch Licensee. The Dispatch Licensee defines time necessary for each test.
4. In case if the application on testing contains insufficient information or planned procedure of testing does not provide security of staff and network the Dispatch Licensee is entitled to request additional information before approving planned tests.

5. The Dispatch Licensee notifies its decision on testing together with the relevant information to test proponent as well as to those electricity system participants who will be affected by scheduled testing.
6. The Dispatch Licensee may initiate operational testing in case if such test is necessary for secure, stabile and reliable functioning of the transmission network.
7. The Dispatch Licensee notifies test proponent and other electricity system participants who might be affected on scheduled testing no later than 1 month after receipt of the application. The notification shall contain following information:
    a) Aim and character of proposed testing, extent and condition of electrical equipment/installations involved in testing, name of test proponent and other participants who will be affected;
    b) The request of submitting candidates to the test group for coordinating testing;
    c) If the test implies working with high-voltage electrical equipment or its testing, persons responsible for security should be informed and security requirements set under this Code shall be fulfilled;
8. The test proponents should submit relevant candidates for test group to the Dispatch Licensee no later than 1 month after receipt of notification on testing.
9. The Dispatch Licensee establishes testing group and appoints test coordinator. Frequency of test group meetings is determined by the coordinator as often as it is necessary.
10. Following issues should be envisaged in test group agenda:
    a) Detailed information on scheduled testing and its character. Other issues included in test application;
    b) Evaluation of test procedure submitted by the test proponent, necessary amendments to it and final version of test procedure;
    c) Possibility of scheduling proposed tests together with other test(s) and equipment repair works, the necessity of which may arise due to the requirements of the Dispatch Licensee or electricity system maintenance plan;
    d) Economic and operational results of scheduled transmission network tests and risks associated with it. Definition of hourly timetables of energy unit/aggregate.
11. Test proponent and relevant participant of the system (including participants who did not have representative in the group) shall provide test group with information upon request.
12. Test group provides the Dispatch Licensee, test proponent and respective system participant with program of scheduled test, that shall comprise:
    a) Test plan;
    b) Testing procedures, including test monitoring;
    c) List of responsible persons, including persons responsible (if necessary) for coordinating security measures and participants of testing;
13. If testing group cannot draft testing program or cannot reach agreement on the enforcement of testing program, the Dispatch Licensee makes decision on conducting testing, making

amendments to test program or refusal of testing taking into consideration importance of testing for security of transmission network.

14. Test proponent prepares operational test report and submits it to the Dispatch Licensee, relevant electricity system participants and test group members within 1 month after the completion of testing in accordance with decision of the test group.

Article 49. Testing to Monitor, Investigate and Operate Performance of User's Unit

1. For secure and economic operation of the transmission network by the Dispatch Licensee relevant testing is required in order to monitor electrical equipment/installations of system participant.
2. Performance Parameters together with other parameters shall comprise:
   a) Primary, secondary and tertiary operational reserve provided by each energy unit/aggregate;
   b) Frequency regulation by each energy unit/aggregate;
   c) Ensuring static and dynamic reactive capacity;
3. The Dispatch Licensee is entitled to carry out investigation where:
   a) The Dispatch Licensee gets information on design and operational data of electrical equipment/installations of the participant and on fulfilment of requirements under this Code and connection agreement;
   b) Upon notification the Dispatch Licensee is entitled to send its representative to relevant User's unit in order to verify procedures associated with any electrical equipment/installation.
4. Testing is carried out and its results are obtained via monitoring User's unit.
5. The Dispatch Licensee is entitled to issue a dispatch order for testing purposes and create such conditions in the electricity system when frequency or voltage regulation will be necessary for deciding whether energy unit/aggregate participates in voltage and frequency regulation in accordance with declared availability.
6. Commissioning test is one of the final activities for testing electrical equipment/installations, protecting mechanisms and other systems in order to verify proper functioning of electrical equipment/installation of the electricity system participant.
7. After carrying out commissioning tests following procedures should be followed:
   a) All tests envisaged in this Code and connection agreement are carried out in accordance with the commissioning test schedules pre-approved by the Dispatch Licensee. Testing should be attended by the representative of the Dispatch Licensee;
   b) Relevant participant prepares commissioning test plan (where testing criteria are defined) in accordance with the form coordinated with the Dispatch Licensee and submits it for discussion and approval to the Dispatch Licensee at least 1 month prior to testing date;

c) Relevant participant is obliged to provide all necessary facilities for testing;
d) Relevant participant is obliged to submit detailed information on staff and equipment designated for commissioning tests to the Dispatch Licensee for discussion and approval;
e) In case of deficiencies during testing the Dispatch Licensee shall require their correction from relevant participant;
f) After completion of commissioning tests the Dispatch Licensee consents to connection or issues instruction on additional testing. In case of consent relevant participant will be connected to the transmission network after it fulfils requirements set for transmission and dispatch services under Georgian legislation.

8. Energy unit/aggregate capability tests are carried out to confirm the compliance with the following requirements:
   a) Capability of energy unit/aggregate to operate within registered parameters;
   b) Capability of energy unit/aggregate to comply with requirements envisaged under this Code and connection agreement;
   c) Capability of energy unit/aggregate to deliver system service requested from electricity generator.
9. All tests are registered and checked by authorized representatives of the Dispatch Licensee and relevant participant.
10. Electricity producer shall be capable to demonstrate reliability and accuracy of test instruments and equipment to be used during testing to the Dispatch Licensee.
11. The Dispatch Licensee is entitled to request testing of energy unit/aggregate any time. All tests must be carried out at least once a year and also in cases when there is reasonable grounds to carry out testing.
12. If energy unit/aggregate fails the test electricity producer is obliged to correct deficiency in term determined by the Dispatch Licensee.
13. Electricity producer that failed test on its energy unit/aggregate, shall immediately notify the Dispatch Licensee after correcting deficiencies.
14. Testing of energy unit/aggregate comprises the following:
    a) Compliance with reactive capacity requirements registered by the energy unit/aggregate in compliance with these rules is demonstrated through reactive power tests. Results of testing are successful if the measured values fall within ± 5% of delivered capacity registered with the Dispatch Licensee;
    b) Primary response ability of the energy unit/aggregate is demonstrated through primary response test. Energy unit/aggregate shall pass the test if measured response within 5 seconds is within ± 5%;
    c) The ability of the energy unit/aggregate of black start, synchronization with transmission network within ten (10) minutes and being loaded up to its offered capacity is demonstrated through fast start capability test.
    d) The ability of energy unit/aggregate of black start is demonstrated through black start test. The test will be successful if the power plant will have the ability of black start on

its own, synchronization with the network and load feed within limits of voltage and frequency (post accidental).

e) The ability of the energy unit/aggregate to meet the generation schedules and parameters is demonstrated through the dispatch accuracy test. The energy unit/aggregate shall pass the test if:

e[1]) the synchronization takes place within ± five minutes of registered period;

e[2]) generation of energy unit/aggregate is within ±2.5 % of registered capacity;

e[3]) in case of ramp rates the actual ramp rate is within ± 5% of the registered ramp rate;

e[4]) in case of load reduction rates, the actual load reduction rate is within ± 5% of the registered load reduction rate;

e[5]) in case of minimum loading of the energy unit/aggregate actual capacity is within ± 5% of registered capacity;

e[6]) in case of any other parameters actual values are within ± 1.5% of the declared value.

15. If necessary the Dispatch Licensee is entitled to request additional testing of the energy unit/aggregate:
    a) deep voltage transient by short-circuit;
    b) changeover of the energy unit/aggregate to self-consumption condition at least within 1 hour;
    c) response of energy unit voltage and frequency regulators on rapid change of loading;
    d) Overload capacity.

Chapter V - *has been revoked;*

Article 50. ***has been revoked.***

Chapter VI Rule of Scheduling Electricity Readiness and Dispatching

Article 51. Purpose

The aim of this chapter is to define procedures of scheduling electricity readiness and electricity dispatching procedures in order to maintain electricity supply and consumption balance, electricity quality and reliability, hereby electricity producers shall have enough capacity to ensure enforcement of abovementioned purposes.

Article 52. Scheduling Electricity Generation

1. Power plants are submitting applications to the Dispatch Licensee on readiness of the energy units/aggregates and dispatch parameters with periodicity and in a manner established under this Code.
2. The Dispatch Licensee prepares readiness schedules for electricity generation (loading) of the planning day on the basis of the application submitted to it (hereinafter – readiness schedule)

for balance of supply and demand, maximum effective utilization of unused capacities and for ensuring relevant standard of electricity system reliability. After drafting application for the readiness the relevant electricity producer is provided with information on ensuring necessary electricity generation readiness of energy units/aggregates for planning day.

3. For preparation of readiness schedules electricity producer shall submit data necessary for drafting them to the Dispatch Licensee through the readiness application in accordance with this Chapter.
4. Schedule day is a calendar day starting at 00:00 of next day of scheduling and continuing for 24 hours, including 24:00 of the next day and it is the day for which relevant readiness schedules are prepared.
5. The data are supplied to the Dispatch Licensee electronically. If the relevant program of data submission and/or electronic communication system fails and submission of data via other sources is not envisaged in the agreement they may be delivered through fax, voice or other means of communication agreed with the Dispatch Licensee.
6. In case of amendments to the data given in the application (readiness application, dispatch parameters) and submitted to the Dispatch Licensee the Electricity Producer is obliged to notify the Dispatch Licensee immediately.

Article 53. Electricity Producer's Readiness Application

1. Electricity producer having power plant connected to the electricity system (except power plants with 5mw installed capacity) is obliged to prepare readiness application and submit it to the Dispatch Licensee in accordance with requirements of this Article.
2. Electricity Producer is obliged to submit application to the Dispatch Licensee on necessary parameters of Dispatching and any amendments to the parameters periodically.
3. The Dispatch Licensee is obliged to prepare application template on readiness and dispatch parameters that will be located on its website.
4. Readiness application shall comprise:
   a) Information on readiness period of energy unit (date, time);
   b) Following information of energy unit/aggregate(power plant):
      b.a) hourly data of working capacity (mw);
      b.b) available capacity (mw);
      b.c) technical restrictions of energy unit/aggregate (power plant) on schedule day;
   c) Information submitted additionally by HPPs:
      c.a) on expected water inflow;
      c.b) water levels in the water reservoirs (is such).
5. The application on dispatch parameters comprises:
   a) Information on restrictions of energy unit/aggregate capacity (description of restriction, start and end date and time, volume of restricted capacity (mw));
   b) Time (min.) necessary from start-up of energy unit to its synchronization.
   c) Minimum time from scheduled outages of energy unit to its restart;

d) Minimum loading capacity of energy unit/aggregate;
e) Minimum time of disconnecting energy unit/aggregate from the network;
f) Information on synchronization method of energy unit/aggregate;
g) Data on speed of capacity increase of energy unit/aggregate;
h) Data on speed of capacity reduction of the energy unit/aggregate;
i) Data on voltage increase speed (kw/sec);
j) Data on voltage reduction speed (kw/sec);
k) Data on conditions of primary and secondary regulation of energy unit/aggregate;
l) Data on conditions of group regulation of power plant.

6. If necessary electricity producer is obliged to submit the following information on each ready energy unit/aggregate to the Dispatch Licensee:
   a) Details of specific causes that might affect volume of declared capacity of the energy unit/aggregate on schedule day;
   b) On possible changes and duration of energy unit/aggregate capacity in cases envisaged under paragraph 6(a) of this Article.
   c) On temporary limitation of system services (if required) and feasible duration in cases envisaged under paragraph 6(a) of this Article.
7. Electricity producer is obliged to submit readiness application for schedule day(s) to the Dispatch Licensee no later 10:00 of each working day in accordance with this Chapter. If the next day is a holiday readiness application should cover the first working day after the holiday.
8. If electricity producer does not submit (or submits incomplete application) readiness application to the Dispatch Licensee before 10:00 the Dispatch Licensee is entitled to use information available to it for supplementing missing information, including actual data of previous day(s).
9. Electricity producer is entitled to submit amended readiness application to the Dispatch Licensee no later than 13:00 in case of reasonable grounds for amendments. In such case the Dispatch Licensee is entitled to take amended application into consideration in the process of preparing loading schedules or give well-grounded refusal.
10. Until 17:30 of each working day the Dispatch Licensee drafts electricity readiness schedules of schedule day (from 00:00 of the next day until 24:00) on the basis of readiness applications received from electricity producers. If the next day is the holiday readiness schedules cover the first working day after the holiday.
11. The Dispatch Licensee is obliged to send readiness schedules to electricity producers of schedule day no later than 17:45.
12. Readiness Schedule should ensure appropriate compliance with electricity system reliability criteria – adequacy and sustainability through defining (scheduling) optimal value. During selection of readiness applications and preparation of relevant schedules the Dispatch Licensee applies following criteria:
    a) Launching, synchronization and taking necessary capacity of energy unit/aggregate;

b) Speed of energy unit/capacity change;
c) Available, working and free capacities;
d) Minimum loading capacity of energy unit/aggregate;
e) Absolute volume of capacity change in time;
f) Ability to take part in frequency regulation;
g) Point of actual connection to the power plant network;
h) Cost of generated electricity.

13. Electricity producer is obliged to have scheduled capacity in readiness condition. If electricity producer for any reason is not able to ensure readiness established under these rules, it should notify the Dispatch Licensee immediately.
14. After preparing readiness schedules the Dispatch Licensee is authorized to decide to make amendments to loading schedules before start of the schedule day if:
    a) The Dispatch Licensee gets notifications from electricity producer in accordance with paragraph 13 of this Article.
    b) If electricity consumption forecasts drafted by the Dispatch Licensee has changed;
    c) If the information on transmission network (including network for cross-border flow) capacity has changes;
    d) Emergency situation in electricity system took place and necessity of making amendments to the readiness schedules is obvious.
15. The Dispatch Licensee is obliged to provide electricity producers with readiness schedules of respective energy units/aggregates before the date envisaged under paragraph 11 of this Article if any energy unit/aggregate of the producer requires more time for synchronization than it is left before schedule day.
16. Readiness schedule provided to specific electricity producer by the Dispatch Licensee shall comprise information related only to energy unit/aggregate of that electricity producer.
17. Electricity readiness schedule drafted by the Dispatch Licensee is not dispatching order or instruction. It has only indicative character and aims to give information to the producer on volumes of electricity (capacity) expected to be supplied to the electricity system.

Article 54. Dispatching Power Plants

1. For compliance with this Code the Dispatch Licensee gives dispatching orders on operational regimes to electricity producers on the basis of received applications and readiness schedules.
2. The dispatching orders regarding operational regime of energy unit/aggregate on schedule day are issued to the electricity producer any time after submitting readiness schedules. Electricity producers are obliged to have capacities indicated in readiness schedules provided to them in a ready condition.
3. Electricity producers are provided with dispatching orders by the dispatching office through the operational staff.

4. Dispatching order issued by the Dispatch Licensee to electricity producer may entail indication on changing capacity of energy unit/aggregate and operational regime of synchronization with the network and disconnecting from network and/or on providing system services.
5. The dispatching order may be later revoked or amended. For reasons of variation of demand on electricity and readiness of energy units/aggregates in real time the Dispatch Licensee makes corrections to capacity loading of energy units/aggregates.
6. For the purpose of ensuring electricity system sustainability the Dispatch Licensee is entitled to change capacity of energy units/aggregates within the frames of readiness schedules.
7. The Dispatch Licensee is obliged to make decision on changing capacity loads ready for loading within readiness schedules in accordance with Article 53. The Dispatch Licensee is obliged to give justifications (in case of such request from interested party) in any period on criteria for making decision on dispatching (capacity change) of specific energy unit/aggregate.
8. Decision on dispatching order is subject to immediate approval of the electricity producer or the latter shall immediately notify the Dispatch Licensee reasons for not complying with such order. Only reason of non-fulfillment can be ecological threat and risk of damage to the staff and/or electrical equipment/installations.
9. The dispatching order shall envisage limits of loading indicated in applications submitted to the Dispatch Licensee, abilities of system service and operational characteristics for the time period the dispatching order relates to.
10. Energy units/aggregates synchronized with electricity system should be able to reduce loading to technical minimum (taking into consideration minimum admissible capacity of energy unit/aggregate below which operation is not recommended) for balancing electricity generation and consumption in case of maximum loading of electricity system (of User) or in case of outage of mostly loaded transmission line. Such condition must be envisaged by the Dispatch Licensee on any stage of electricity dispatch, preparation of relevant schedules and/or during exercising any function conferred upon it on the basis of current legislation.
11. If in the process of drafting relevant schedules for the schedule day or dispatching power plants in real time on a schedule day the Dispatch Licensee observes breach of requirements of paragraph 10 of this Article it is entitled to contact relevant electricity producer and discuss with it possibility of change of relevant energy unit's mobility (feasible minimum loading) or loading (active capacity) declared in relevant application. If those measures cannot ensure compliance with above-mentioned requirements the Dispatch Licensee is entitled to give order on capacity restriction, disconnection and or capacity allocation to various energy units/aggregates of relevant energy unit/aggregate if such order ensures compliance with paragraph 10 of this Article.
12. If electricity producer owns two or more identical energy units/aggregates which are connected to the network at the same point he is entitled to select energy unit aggregate which it prefers to be connected to the network and notify the Dispatch Licensee on it.

13. If in the process of fulfilling the order environmental threat, risk to staff and electrical equipment occurs, electricity producer is obliged to act independently in avoiding such threat or minimizing it and immediately notify the Dispatch Licensee.
14. Electricity producer is obliged to synchronize its energy unit/aggregate with network or disconnect it from the network on the basis of the relevant order (prior permission) of the Dispatch Licensee except the situation were circumstances envisaged in paragraph 13 of this Article take place.
15. If dispatching order on synchronization of energy unit/aggregate with network does not indicate on loading (mw) with specific capacity it is considered that dispatching order requires increase of loading (after synchronization) to technically admissible minimum levels.
16. If electricity producer is not able to synchronize its energy unit/aggregate in accordance with order issued by the Dispatch Licensee it is obliged to give relevant notification to the Dispatch Licensee and indicate new presumable time of synchronization.
17. The Dispatch Licensee is entitled to issue order (including automatically) on changing active capacity loading of energy unit/aggregate in order to maintain electricity system frequency within admissible limits.
18. After making decision on changing capacity loading level of energy unit/aggregate and its approval electricity producer shall change capacity loading to new indicator, which shall be within characteristics given in relevant application of energy unit/aggregate.
19. Dispatching order is considered to be fulfilled if energy unit/aggregate ensures supply (loading) of capacity required under the order within ±1% accuracy.
20. When energy unit/aggregate operates in the frequency regulation regime and frequency differs from nominal value (50 hz), modification of energy unit/aggregate active capacity loading shall be achieved in accordance with registered rate value of regulator statism.
21. The Dispatch Licensee is entitled to issue dispatching order related to reactive capacity in order to maintain voltage regime at transmission network points and reactive capacity reserves.
22. Electricity producer shall comply with dispatching order related to reactive capacity generation within ±2% accuracy or with other accuracy coordinated with the Dispatch Licensee for which it should ensure:
    a) Regulation of rotor power in excitation system of the energy unit/aggregate;
    b) Remote switching of curve adjusters of step-up transformers of the energy unit/aggregate without load shedding (if such);
23. Electricity generator shall comply with voltage volume insurance order within ±1% accuracy or other type of accuracy coordinated with the Dispatch Licensee for which it should ensure:
    a) Energy Unit/aggregate excitation system regulation;
    b) Switching of curve adjusters of step-up transformers of the energy unit/aggregate under loading (if such);
24. In case if the voltage in transmission network is lower than nominal one the Dispatch Licensee is entitled to issue order on increasing reactive capacity of the energy unit/aggregate to

maximum feasible indicator without changing active capacity. Electricity producer is obliged to take all necessary measures for compliance with mentioned order.

25. In case if the voltage in the transmission network is higher than the nominal the Dispatch Licensee is entitled to issue order on reducing reactive capacity of energy unit/aggregate or on increasing consumption of reactive capacity without changing active loading. Electricity producer is obliged to take all necessary measures for complying with mentioned order.
26. If the Dispatch Licensee has not instructed otherwise, during operation of reactive capacity restrictors the excitation system should operate only within regulation of generating bus bar. At that time control of permanent value of reactive loading or control of permanent rate of capacity (should be switched off (except cases when different conditions are agreed with the Dispatch Licensee) and automatic voltage regulator shall not change excitation beyond admissible limits. In case if maintenance of electricity system sustainability becomes necessary excitation regulator should be able to operate in forced regime.
27. The dispatching order related to reactive capacity regulation should be fulfilled by electricity producer immediately or within terms indicated by the Dispatch Licensee.
28. The Dispatch Licensee should give electricity producer instructions related to reactive capacity per each energy unit/aggregate together with dispatching order or synchronization with electricity system or active capacity loading.
29. For maintaining transmission network sustainability in emergency situations the Dispatch Licensee is entitled to give dispatching order to electricity producers to operate within parameters exceeding limits established for nominal regime. In such case the Dispatch Licensee is obliged to notify electricity producer that the reason for issuing dispatching order has been feasible emergency or post-emergency situation. Electricity producer is obliged to comply with such dispatch orders as far as it is possible, taking into consideration paragraphs 8 and 13 of this Article.
30. If electricity producer is synchronized with electricity system or has received synchronization order and has failed to operate its declared capacity has changed, including its readiness and/or Dispatch parameters electricity producer should immediately notify the Dispatch Licensee and wait for a new order complying with new conditions of power plant readiness;
31. Electricity producer shall constantly operate automatic voltage regulators and reactive capacity restrictors (voltage restrictors) during operation of energy unit/aggregate.
32. Every dispatching order, either oral or written (electronically) issued by the Dispatch Licensee should be registered in operational registry.

Chapter VII
Rules for Providing Information

Article 55. Aim

Aim of this chapter is to define list of data and information that Users are requested to submit to the Dispatch Licensee for fulfilling network management and planning obligations conferred upon it.

Article 56. Data and Information Categories

1. User is obliged to register following information and submit it to the Dispatch Licensee within certain time periods:
   a) Standard scheduling data on electrical equipment/installations connected to the network;
   b) Detailed scheduling data on electrical equipment/installations connected to the network;
   c) Operational data on electricity equipment/installations connected to the network.
2. The Transmission Licensee is obliged to provide the Dispatch Licensee with standard and detailed scheduling data within defined time period.

Article 57. Information Maintenance

1. Each user is obliged to submit data given in 1-9 annexes to the Dispatch Licensee within established time periods or upon request of the Dispatch Licensee;
2. The Dispatch Licensee is responsible for maintaining and archiving data given in the paragraph 1 of this Article.
3. Data envisaged in paragraph 1 of this Article should be maintained and archived so that in case of necessity total checking was possible.
4. Electricity system participants are obliged to keep each document related to electricity system planning and operational management in original copy for minimum 5 years after their preparation.
5. Electricity system participants are obliged to secure data and informational bases from unauthorized access or from loss.
6. The Dispatch Licensee is obliged to archive every document related to electricity system planning and operational management after expiration of time envisaged in paragraph 4 of this Article.
7. User is obliged to provide the Dispatch Licensee with standard scheduling and detailed scheduling data in relevant templates given in annexes 1-9 in accordance with paragraph 6 and 7 of Article 32 and operational scheduling data within time periods established by the Dispatch Licensee.
8. Standard and detailed scheduling data supplied to the Dispatch Licensee in templates given in annexes 1-9 are automatically registered data in accordance with conditions envisaged under paragraph 8(c) of the Article 32.
9. Electricity producer is obliged to submit data of 1, 2, and 3 annexes to the Dispatch Licensee.
10. User (except producer) is obliged to submit data of 4, 5, 6, 7, 8 and 9 annexes (8 and 9 only in case of distribution Licensees) to the Dispatch Licensee.

11. The Transmission Licensee is responsible for submission of the data envisaged in annex 5 to the Dispatch Licensee.

Chapter VIII
Metering Rules

Article 59. Scope and Aims

1. Requirements of this rule apply to all electricity system participants and applicants including wholesale trade participants (except importers and exporters).
2. Aim of the metering rule is to:
   a) Provide metering equipment and capacity control producers and technical requirements;
   b) Provide uniform methodological principles and procedures necessary for precise and reliable information on electricity generation, transmission, supply and consumption by electricity system participants;
   c) Creation of metering database through electricity (capacity) control and automatic system metering, which should ensure actual balances of electricity (capacity) in the transmission network and establishing electricity (capacity) expenditures (including losses) according to voltage levels.
3. Metering rule includes:
   a) Obligations and responsibilities of electricity system participants in electricity metering issues;
   b) Rules for equipping electricity metering points, reflecting metering data, summing up, transmitting and formulating them.
   c) Technical and operational requirements of metering equipment;
   d) Confirmation, testing and inspection requirements of metering equipment.
   e) Installing and administrating requirements for ASECCM system;
   f) Requirements for installing and administering ASCM system.

Article 60. General Provisions

1. Each User and Transmission Licensee is obliged to meter electricity it has generated, received, supplied, transmitted, passed through and consumed (including self-consumption and household consumption of power plants and substations) in accordance with this code and current legislation.
2. Meters used by participants envisaged in paragraph 1 of Article 60 in wholesale trade shall meet requirements of this Code and current legislation and shall be included in the registry of legal metering facility types.

3. Metering equipment should meet all technical requirements and standards given in this Chapter. Consistency confirmation obligation of metering equipment with established standards and requirements is conferred upon the Transmission Licensee or User owning relevant equipment.

Article 61. Responsibility of Electricity (capacity) Metering

1. In case of new connection to the transmission network or modification of existing connection the Transmission Licensee is responsible for metering point installation, testing, confirmation and putting into operation on its territory. The same responsibility applies to relevant Users owning electrical network when other Users are connected to their networks or modification of existing connection takes place if current legislation or agreement between the parties does not state otherwise.
2. In case of providing installing metering point on Declarant's territory responsibility envisaged in paragraph 1 of this Article is conferred upon the Declarant.
3. Relevant Licensee or User owning network is fully responsible for quality and perfection of installation works in compliance with this Code.
4. Applicant for a new connection to the network or User requesting modification of existing connection shall bear all costs related with provision of metering point in compliance with current legislation and this shall be envisaged in connection agreement.
5. In case of connecting different User to the network of the User connected to the transmission network expenses related to metering point are covered on the basis of mutual agreement between the parties.
6. The Dispatch Licensee is responsible for the operation of central metering /calculation complex of ASECCM, obtaining metering data through it, creation of relevant metering database and its management.
7. Market operator is responsible for the creation and administration of commercial metering automatic system.
8. The Dispatch Licensee, Transmission Licensees and Users are obliged to ensure full access of the Market Operator to relevant level of metering data of ASECCM system.
9. User is entitled to have access to the metering data obtained from metering points of its network.
10. In compliance with this Code the Transmission Licensee should have access to high level ASECCM system metering database with condition to receive complete information on all metering data of all calculation metering points of the Transmission Network.
11. Georgian National Energy and Water Supply Regulatory Commission (GNERC) should have restricted access to high level ASECCM system and commercial metering automatic system of the Market Operator in order to fulfill obligations conferred upon it under current legislation.

12. Market Operator in compliance with current legislation is responsible for the creation of uniform metering registry that comprises full information on wholesale metering points. The registry should comprise:
    a) Metering point identification number, substation and connection (electricity transmission line, feeder, transformer) name;
    b) Name, type, fabric number and accuracy class of the metering equipment;
    c) Information on owner of metering point and his contact details;
    d) Name of those Licensees and Users in whose calculation the metering point participates;
    e) Verification and technical service documents of metering point;
    f) Document of connecting metering point with ASECCM system;
    g) Technical document of connection to the network (if such);
    h) All confirmation documents (minutes, certificates) of metering point issued by the relevant accredited body;
    i) Single-line electrical schemes.
13. The Dispatch Licensee is responsible for the creation of metering equipment database and its administration. Database shall comprise following information:
    a) Name of metering equipment, type/modification, factory number, accuracy class and identification code;
    b) Installation date of each metering equipment;
    c) Date of putting each metering equipment into operation and relevant documents;
    d) Name of the Licensee and User in whose calculation the metering point participates;
    e) History of damage, repair and technical service of each metering equipment;
    f) Communication facilities (Telephone numbers, IP and/or other) used for communication of metering equipment with automatic metering system.
    g) All confirmation/verification minutes of the metering point issued by the relevant accredited body;
    h) Metering point verification/inspection acts.
14. Before installing metering point at the connection point person/entity responsible for metering point installation shall submit meters for primary recognition or confirmation to the relevant accredited bodies in accordance with Georgian legislation.
15. In accordance with this Code after complete arrangement of metering points all meters and all related meters become ownership of the transmission Licensee or of the User owning network.
16. The Licensee or User owning/managing relevant equipment and circuit are responsible for technical readiness (repair, change) of metering point, communication equipment of meter and circuit, inaccessibility of seals, damages and abrogation of metering and communication integrity caused by unauthorized interference.
17. In case if metering point is located outside the territory of the relevant Licensee or the User (under whose ownership/management mentioned metering point is) what makes it impossible to comply with requirements of metering point, metering communication

equipment and circuit security, inaccessibility of seals and securing from unauthorized interference conferred to them under paragraph 16 of this Article, such responsibility is born by the User at whose territory relevant metering equipment and circuits are located. In such case parties should conclude written agreement on control and management of the metering point.

18. Calculation and technical meter read registries should be kept at power plants and substations that should be confirmed by the interested parties, the Dispatch Licensee and electricity Market Operator. Meter reads are registered daily reflecting situation at 24:00 of each day and in case of the Power Plant outage and launch meter reads (including self-consumption meter reads) shall be registered additionally for separate moments of the Power Plant generation and consumption regimes.
19. Managers of Users and the Transmission Licensee shall appoint the person responsible for control of proper operation and inaccessibility of metering points falling within their ownership/management. In case of appointment of the person responsible for metering and in case of change of such person relevant utility is obliged to give notification to the Dispatch Licensee about it together with contact information of that person. The Person responsible for the proper functioning of metering system is obliged to:
    a) Monitor registration and trustworthiness of metering registry;
    b) Notify the Dispatch Licensee on any kind of breach.
20. The User or the Transmission Licensee is obliged to notify the Dispatch Licensee and Market Operator immediately on damaged metering point under its ownership /management and relevant measures and time necessary for its restoration.

Article 62. Defining Metering Point

1. Main metering point shall coincide with connection point (balance division point), that shall be defined under relevant connection agreement. In case if the relevant connection agreement does not exist connection point is deemed to be the balance division point.
2. In exceptional cases when installation of metering point at connection point is not technically and economically recommended actual location of main metering point (meter) shall differ from the connection point on the basis of the relevant agreement between the Dispatch Licensee, Market Operator, relevant Transmission Licensee and User or Applicant. In such case actual metering point of electricity and rules of calculating metered electricity, including electricity losses on certain network region, should be defined under relevant connection agreement.
3. Metering equipment should be installed at Power Plants:
    a) At the connection points of power plant transmission/distribution network and/or connection point of other User;
    b) On every switch of the abiding bus bar or inter bus bar(intersection), that shall be feasibly used for any connection defined under sub-paragraph “a” of this paragraph.

4. Electricity generated by power plants, also electricity used for self-consumption and household needs shall be metered separately with accuracy for payment. For these purposes meters should be installed on :
   a) Generator;
   b) Transformers of self-consumption;
   c) Excitation systems if they are not fed by self-consumption transformers;
   d) Lines and transformers through which electricity is obtained for household needs.
5. Main and control meters shall be installed at both ends of lines for electricity intersystem transit.

Article 63. Basic Technical Requirements for Metering Point Installation

1. Electricity meters should be located in cabinets at easily accessible and convenient place.
2. Meters, terminal boards, mid shutter collectors and secondary leads of metering transformers that might affect electricity metering shall be sealed.
3. Characteristics of cabinets shall meet parameters indicated by meter producers and shall secure cabinets from damage, temperature regime, humidity, dust and other unfavorable effects. Meter Cabinets and cable screens in it should be grounded.
4. Meter cabinet shall have lock and the front part of meter cabinet should be transparent.
5. In the process of installing voltage and power circuits, cables with colored isolation wires should be used without combining them to other colors, except 0 wires.
6. All metering point should be given relevant identification number (code).
7. For changing metering point parameters and schemes it is mandatory to:
   a) Confirm necessity of amendments in writing, with indication of well-reasoned causes, that is sent (before modification of the metering equipment and schemes) to all interested parties (including the Dispatch Licensee, Market Operator);
   b) Amendments are carried out with participation of representatives of all relevant parties;
   c) For making amendments participation of the Dispatch Licensee is mandatory. Relevant act on amendments is prepared by the relevant parties. Records on carried out works must be made in metering registry and confirmed with signature by the person responsible for registration.
8. For changing communication facility parameters the Dispatch Licensee and the Market Operator should be informed in advance.
9. Electricity meters, communication metering equipment and circuits shall be equipped with unlimited alternative and stabile sources (that will maintain supply of meters and communication metering equipment for certain time period, but not less than 1.5 hours and will ensure obtaining information from meters). Meters that do not have shutter collectors of alternative sources shall be substituted with meters having such function.

Article 64. Basic Technical Requirements for Current and Voltage Transformers

1. Current and voltage transformers used in metering shall comply with relevant standards of metering. Their accuracy class shall not be lower than 0.5 (no less than 0.2 accuracy class in case of cross-border electricity transmission lines, except the cases when agreement between the Dispatch/Transmission Licensee and Electricity System Technical Operator of the neighboring country states otherwise).
2. During three-phase metering three-phase voltage transformer or the group comprising single-phase transformers in each phase shall be applied.
3. In case of semi-oblique and oblique start-up of the meters current transformers are to be installed in every phase and in case of 6-10 KW voltage current transformers are to be installed at two phases (except generators) in the process of metering.
4. Nominal secondary values of current transformers should coincide with nominal current values of meters.
5. During selection process of installation place or method ability of reading all data from current and voltage transformer boards without switching off the equipment or demolishing it should be considered.
6. Possibility of sealing should be envisaged on excitation switch handles of voltage transformer. In case if sealing of cells is not possible, transformer leads are sealed.
7. On each phase of voltage transformers in secondary circuits voltage decrease shall not exceed 0.25% of secondary nominal voltage (0.5 in case of accuracy class metering transformers), that should be confirmed by relevant calculation. Secondary voltage circuit should be singled and connected only to meter. Where there is significant impact of electromagnetic field screened cables should be used in secondary circuits. Hereby, cable screen of voltage circuits (null transmitter) shall be grounded at the single place, and in case of utilizing bulk voltage transformer it should be grounded from both sides.
8. In case of several bus bar systems, when voltage transformers are connected only to their bus bar system (fixed scheme) automatic voltage (metering) circuit breakers on any bus bar system for each metering point shall be applied in order to maintain metering process (before restoring fixed scheme).
9. Voltage circuit shutters shall be installed in a manner to enable voltage circuit blackout during changing meters on each phase, improving schemes and checking them, also connection of etalon meters shall be possible without disconnecting cables and leads.
10. Nominal secondary current of current transformer shall be 1 or 5 amperes, current circuit shall be singled and connected only to the meter. Hereby, current cable screen should be grounded to a single place.
11. Utilization of current transformers with increased rate (due to the conditions of thermal and electro dynamical sustainability or securing bus bar) of transformer is admissible, if in the process of maximum loading of the connection current in secondary winding of the current

transformer will be no less than 40% of nominal current of meter and in case of minimum loading no less than 5%.

12. In case of more than one connection scheme of electricity line if there exists line transformer or technical ability of equipping it (taking into consideration reliable operation of line) calculation meter should be connected to current line transformer circuit.
13. Current circuit shutters shall be installed in a manner to enable shortening secondary circuits of current transformers and/or their disconnection during changing/verifying meters on each phase, also connection of gauge transformers without disconnecting cables and leads.
14. Wirings used for metering electricity in current and voltage transformers and circuits connecting them to calculation/control meters shall be used only for metering purposes. Except the cases when circuits are used for feeding electrical equipment providing dispatch management in order to ensure compliance with requirements of this code related to metering accuracy.
15. In case if connection of current circuits requires additional current transformers, connection of other equipment after connecting meters to the current circuit is permissible, if it does not cause reduction of accuracy class of voltage reliability and current circuits.
16. For operation within defined accuracy class loading of secondary circuit of current transformer shall not be less than 25% of nominal value in volt amperes (oms) and shall not exceed 100% of nominal value given on its board.
17. For operation within defined accuracy class secondary circuit loading of current transformer shall not exceed nominal value in volt amperes (oms) given on its board.
18. Connection of calculation meters through mid-current transformers is not allowed.

Article 65. Main Technical Requirements for the Electricity Meter

1. Three phase meters shall come with three elements (considering the Paragraph 3 of the Article 64), comply with existing standards of Georgia and be registered in the state register of measuring instruments legalized in Georgia. Their accuracy class shall not be less than 0.5 (at cross-border electricity lines - no less than 0.2 off accuracy class, except for the case when otherwise specified in the terms of agreement between the Dispatch/Transmission Licensee and electricity system technical operator of the neighboring country.
2. The design of the meter shall not enable unauthorized interference on measurement results.
3. Main and check meter shall be electric and compatible with medium and/or lower level ASECCM Systems, which shall be compatible with upper level ASECCM and ASCM systems. The electricity meter shall enable to deliver data electronically in automatic mode.
4. The electricity meter used in clearing and control metering shall meter and indicate the cumulative information of current values of active capacity (KW), active energy (kWh), reactive capacity (kVar) and reactive energy (kVarh) in specified time. In addition, the meter must be programmed in a way that:

a. in case of considering the metering coefficient the meter reading displayed on the meter screen shall be indicated with accuracy of no less than 1 kWh(kVarh);
b. in case of non-considering the metering coefficient, by multiplying the meter readings displayed on the meter screens by metering coefficient shall be indicated with accuracy of no less than 1 kWh(kVarh);

5. In each point of network connection the meter shall meter and indicate active and reactive energy separately in input and output modes.
6. The meter shall have the following characteristics:
   a. it shall maintain all indicators and their accuracy in the case of electricity outage;
   b. in case of long-term electricity outage the hour, calendar and all data shall be provided with power within fifteen days without additional power source for the purpose of protecting saved information;
   c. no operation related to meter reading shall cause deletion or change of already metered or saved data.
7. Meters shall meter and save total data of half-hour periods for at least one calendar month.
8. Every meter shall indicate time according to Georgian standard time.
9. The meter shall indicate the impediment of voltage supply, voltage (phase) interruption, the change of current direction, all kinds of program change or impediment in order the data collection system to identify imperfect (wrong) data.

Article 66. Main and Check Metering

1. Main metering shall be carried out in each point of network connection and shall meet the requirements under this Code.
2. The check metering (meter) shall be used on electricity transmission lines (including cross-border electricity transmission lines) apart from main metering (meter). The check meter shall comply with that accuracy class which is envisaged for main meter.
3. check meter may be set on the other end of the line or in the same point of main meter on electricity transmission lines.
4. Controlling shall be set in the point of main metering on the cross-border electricity transmission lines. Separate metering devices or independent lines of the same class of same device is necessary for this purpose.
5. The protection (sealing) of check metering devices is carried out based on the same principles as the protection of main metering system.
6. Electricity shall be metered in transmission licensees' substations and power plants that shall ensure calculation of electricity balance in substations and power plants (according to the voltage levels).

Article 67. Automatic Systems for Electricity and Capacity Control and Metering ASECCM

1. ASECCM system shall ensure automatic reception of metered electricity and medium capacity values from metering point in half-hour periods and for any time (day, week, month, etc).
2. ASECCM system includes:
    a. measuring and calculating system of electricity;
    b. data collection and transmission devices;
    c. communication devices of electricity metering;
    d. communication circuits of electricity metering;
    e. electricity electronic meters.
3. Measuring and calculating system of electricity receives electricity metering data from:
    a. User's measuring and calculating system of electricity;
    b. User's data collection and transmission devices;
    c. electricity meters.
4. Automatic Systems for Electricity and Capacity Control and Metering shall be equipped with exact astronomical time system and guaranteed power feeding.
5. ASECCM system shall be protected from unauthorized interference and changes at all levels by sealing of separate elements and software.
6. Programing (configuration) of electricity meters is carried out by Transmission Licensee responsible for organizing of metering point or the electricity network owner taking into account main requirements set by the Dispatch Licensee.
7. Users and Transmission Licensees are obliged to ensure the compliance and connection of metering systems with upper level ASECCM system with their own resources.

Article 68. Automatic System for Commercial Metering ASCM

1. ASCM carries out data receiving, collection and processing in automatic mode from main and check meters used in wholesale trade of electricity capacity for the purpose of unified settlement of wholesale trade.
2. For Automatic System of Commercial Metering of market operator in automatic mode the Dispatch Licensee, the Transmission Licensee and Users are obliged to ensure complete and uninterrupted access to the meters used in the wholesale trade reflected in ASECCM system database in their ownership.
3. With Automatic System for Commercial Metering the Market Operator creates and processes the Market Operator Metering Database which includes for each metering point at least the following information:
    a. identification data of metering point;
    b. primary data of active and reactive energy (taken directly from the meters) for each calculating period;

c. processed and calculated data for each User by the Market Operator which are calculated based on primary metering data;
d. calculated, corrected or replaced data by authorized parties under this Code in case of non-existence or incorrect data.

4. Security and confidentiality of metering data shall be protected in ASCM system. The data shall be kept in metering data base within 13 month in reading format and within 6 years – archived.
5. Upon writing request the User is authorized to get information in metering database for his own metering point and request the correction of any inaccuracy.
6. The Market Operator is entitled to control completeness and accuracy of the data to be received by ASECCM systems, in case of undelivered information, to request the reason for impediment and its correction. The owner of ESCA system is authorized to restore data delivery in a very short time. Upon revealing inaccurate date the Market Operator is authorized to require checking of metering point according to set rule.

Article 69. Receiving, keeping and accessing of Meter reading

1. The participants of electricity system owning the ASECCM systems are obliged to keep the metering data received with ASECCM system within 13 month in available format.
2. The participants of electricity system owning the ASECCM systems are obliged to process the archive metering database within 6 years which shall include a metering data of every meter.
3. In case of request of automated access to the specific metering data used in settlement by the Transmission Licensee and/or User, the Dispatch Licensee is obliged to meet the abovementioned requirement by using special web platform of Dispatch Licensee. The requiring party is responsible for ensuring network security devices necessary for the access to the web platform.
4. In case when the metering data does not transfer to the upper level ASECCM system the meter reading shall be carried out by the owner of the relevant network and/or the Dispatch Licensee and/or that User where the metering is used. The Dispatch Licensee sets the rule for receiving and transferring metering data from electricity meters.
5. In case of the long-term communication problem the meter reading shall be done on the spot by using safe procedures when the data is received directly from the meter or recording device.

Article 70. Entry into service, testing, inspection of Main Metering Unit

1. For the purpose of entering metering unit into service in the new point of network connection (in case of Applicant and/or User):

a. the Applicant and/or User is obliged to submit written request to the Market Operator and Dispatch Licensee with attached documentation (technical condition for the network connection, document confirming its execution and technical document proving its connection to upper level of ASECCM system) about inspection of metering unit;
b. the Market Operator and Dispatch Licensee together with interested parties inspect the metering unit and draw up inspection act of metering point in commission format;
c. if metering unit is proved to function properly from the moment of inspection is used in electricity wholesale trade. If it does not function properly the Market Operator and Dispatch Licensee are authorized to stop the metering unit from entering into service until elimination of its malfunctioning;
d. the Market Operator and Dispatch Licensee approves the template of inspection act for the new metering unit.

2. The testing of measuring transformer for its compliance of accuracy class with passport specification is carried out by the Transmission Licensee and the interested parties. Testing may be carried out with incomplete participation of interested parties, with the agreement between the Dispatch/relevant Transmission Licensees and other authorized parties, which is confirmed with relevant act:
    a. before new metering units enter into service on its location;
    b. while new connection or modifying of existing connection by participating of the Dispatch Licensee;
    c. after completing restoration works on the damaged metering units or installing new metering units by participating of the Dispatch Licensee;
    d. according to the plan, with 6-year periods, by participating of the Dispatch Licensee.
3. The owner of metering unit devices shall carry out testing and reimburse expenses. The positive test results prove proper functioning of the metering unit. These results are drawn up in the relevant act.
4. In there is any doubt in accuracy of the metering unit the interested party is authorized to request laboratory inspection of the metering unit by accredited organization.
5. In case the doubts are confirmed as the result of carrying out specific actions under Paragraph 4 of this Article the laboratory costs are covered by the owner of metering unit, in other case – the initiator of the inspection.
6. The interested parties, the Market Operator and Dispatch Licensee shall be preliminary informed about the test dates and venue prior in 3 business days.
7. The testing of meting unit shall not cause electricity outage. If it is impossible to follow the abovementioned conditions the metering disruption shall be minimized, and unmetered electricity shall be calculated according to the relevant rule.
8. In case of damage of metering unit in the ownership of the Transmission Licensee and/or the User, they are obliged to inform immediately to the Dispatch Licensee with its

communication facilities and then notify in very short time in writing the Dispatch Licensee and Market Operator.

9. The Dispatch Licensee inspects the damaged metering unit together with interested parties and draws up an inspection act.
10. The network owner in the time agreed with the interested parties restores the damage and notifies about it to every interested party, the Dispatch Licensee and Market Operator.
11. After damage are restored the Dispatch Licensee together with the interested parties inspect the metering unit and draws up relevant inspection act.
12. Proper functioning of damaged metering unit shall be restored as quickly as possible (in reasonable timeframe). The protocols of conducted work shall be kept for no less than three years.
13. The Market Operator and Dispatch Licensee are authorized to inspect metering devices located in wholesale metering unit at any time, which does not envisage unsealing. If, while inspection, any doubts arise related to the accuracy of organizing of metering unit, the Market Operator/Dispatch Licensee, relevant Transmission Licensee and/or the owner of metering unit shall be immediately informed about the case.
14. The following works shall be carried out while inspecting the metering unit:
    a. visual inspection of metering unit;
    b. the inspection of meter case integrity;
    c. the inspection of wholeness of the seals on the meter and clamps
    d. the inspection of records of transformation coefficients of current and voltage transformers without disconnecting the connections at the transformer tags (where applicable) and their comparison with metering coefficient records.
    e. the inspection of meter connection scheme (by software, without unsealing);
    f. drawing up the inspection act of metering unit by signing of every interested party;
    g. the inspection of existence measurement protocols and passports of meters, current and voltage measuring transformers;
    h. the inspection of metering register.
15. The Dispatch Licensee sets the rules and procedures for organization technical metering of transmission network (for the purpose of calculating electricity balance in transmission licensees' substations), entry into force and inspection.

Article 71. The access to the Metering Devices and Sealing

1. The User and the Transmission Licensee shall give unimpeded access to the authorized representatives of the Dispatch Licensee, Market Operator and relevant Transmission Licensee to examine metering unit any time. Upon necessity of maintenance that shall at the same time apply the input of vehicles, equipment, installations and necessary material for the maintenance, the User or the Dispatch Licensee is obliged to give unimpeded access to

the owner of metering device to his territory for the purpose of carrying out the relevant works.

2. In case the metering unit functions properly the metering devices are sealed by the Dispatch Licensee and upon request by the owner of the metering devices.
3. Before metering devices are tested or any other operations are conducted on them, before unsealing, the parties shall inspect their integrity and compare serial number of each seal to the existing recorded numbers.
4. The following devices shall be sealed in the metering unit:
    a. the meter;
    b. the cap of voltage switching device;
    c. meter reading reset mechanism;
    d. cap of meter clamp;
    e. interim clamps of current and voltage circuits;
    f. commutation circuits and breakers of reserve feeding source;
    g. another place of metering unit where unauthorized access at the metering unit is possible.
5. Putting or removal of the seal shall be carried out with the presence of the Dispatch Licensee and all authorized parties (according to the Article 71) after which metering unit inspection act shall be drawn up with explaining the reason of seal removal. Each party shall have the copy of the act which includes:
    a. numeration of seal;
    b. date of the putting of the seal;
    c. identity of the facility and connection;
    d. identity of the metering unit component;
    e. place of the sealing;
    f. identities and positions of the persons participating in the process of the sealing.
6. The Dispatch Licensee is obliged to provide sealing of all metering devices (meter lower cap, caps of current and voltage clamps, secondary circuit breakers of voltage transformer, their cases and etc.) at metering point.
7. The Transmission Licensee or User is responsible for the protection of the wholeness of the seal who owns /operates the meter.

Article 72. Comparison and Formation of Metering Data

1. If at any stage, in the records of Transmission Licensee and the User's metering register the difference between the same period data in the database of metering data and upper level ASECCM system is revealed, the preference is given to the metering data of upper ASECCM system.

2. The relevant Transmission Licensee and/or that User who owns/operates the metering unit, is obliged to take measures in order to enable remote reading of electricity indicators at specified intervals.
3. In case of damage of main meter or other devices of the relevant metering unit, metering data may be replaced with the data of relevant check meter. In case the check meter data does not exist or is incomplete, adjusted values of main metering data shall be prepared pursuant to the requirements of Paragraphs 4 and 5 of this Article.
4. For the purpose of determining the volume of unregistered electricity, the recalculation period shall be indicated that is defined:
    a. from the moment of malfunctioning the electricity metering up to the moment it is eliminated;
    b. In case it is impossible to determine the starting point of the malfunctioning in the electricity metering, from the last inspection of the metering unit up to the moment it is eliminated.
5. In case of revealing unmetered electricity, the calculation shall be carried out using the following methods:
    a. calculation with the electricity meter in the other end of the connection - in case, electricity meter(s) in the other end of the connection registers the electricity delivered in this connection and metering is proved to function properly after it is inspected according to a relevant rule (commission format), its indicators shall be used for settlement by the period of termination of metering of the main electricity meter considering the losses in the connection,;
    b. calculation with the electricity meters in generators and private consumption meters - in case of the damage of the metering unit(s) registering the delivered electricity on the bus bar by the power plant the volume of delivered electricity on the bus bar is impossible to determine, the calculation shall be carried out by the electricity meters in generators and private consumption meters and considering the power plant losses;
    c. calculation with a correction coefficient – in case of the damage of the metering unit(s) is caused from the damage of the voltage and/or current lines (damage of clamp contacts, cable break, burning and etc.) or change in circuit polarity, the correction coefficient is used for the calculation of unmetered electricity, which value depends on the type of damaged circuit (current or voltage) , type of damaged phase (A, B or C phase), amount of phase (1 phase or 2 phase) and meter connection circuit (3-phase with 2-elements – Aron circuit, or 3-phase with 3 elements);
    d. calculation with average capacity method – once the period of incorrect registration of the electricity is determined, the volume of unmetered electricity is calculated with a average capacity method considering the period before it was damaged or metering was restored;

e. calculation with the other method agreed between the parties or using decisions based on the measurement data of automatic metering system.

6. The disruption in the process of delivering the electricity metering data from metering device by ASECCM system shall not be considered as revealing of unmetered electricity and accordingly, the requirements envisaged in Paragraph 5 of this Article shall not be applied provided that full reception of the electricity metering data is possible from the meter on the spot.

Chapter 9
Transitional Provisions

Article 73. Arrangements for enforcement of these Rules

1. These rules apply to the electricity system participants existing before its entering into the force.
2. The particular requirement of these rules for the electricity system participants may be postponed by the decision of the Georgian National Energy and Water Supply Regulatory Commission, taking into the consideration the Paragraphs 3, 4, 5 and 6 of this Article.
3. The existing Users (among them, the Dispatch Licensee) are authorized to apply to the commission with the request for postponing particular requirement before July 1, 2015. The request shall describe in detail the reason of postponing, postponing period and investment required for the execution of the request.
4. The Commission sends the request envisaged in Paragraph 3 of this Article for the study to the Dispatch Licensee (except the request of Dispatch Licensee). The Dispatch Licensee is obliged to study the circumstances envisaged in the request and in no less than 2 month submit justified position (positive or negative) to the Commission regarding the postponement of the request.
5. After receiving of the written justification from the Dispatch Licensee, the Commission starts administrative proceeding and the Commission adopts the decision regarding the postponing or refusal on postponement of the requirements of this Code in the timeframe determined in the General Administrative Code of Georgia.
6. If the Dispatch Licensee submits the request for postponing the execution of particular requirement, the administrative proceeding starts upon reception and Commission adopts the decision regarding the postponing or refusal on postponement of the requirements of this Code for the Dispatch Licensee in the timeframe determined in the General Administrative Code of Georgia.

Annex 1

Technical Parameters of Energy Unit/Aggregate

Company Name:							
Name/Number of Energy Unit/Aggregate:							
Phone:	Address:						
Fax:	Email:						
Data Description	Data Category	Unit	Year 1	Year 2	Year 3	Year 4	Year 5
Maximum Capacity of power plant	Standard	MW					
		Mvar					
Power Plant Capacity at the time of electricity System Peak Load	Detailed	MW					
		Mvar					
Power Plant Capacity at the time of electricity System minimum load	Detailed	MW					
		Mvar					
Capacity supplied to the network at power plant nominal load	Detailed	MW					
		Mvar					
Available Capacity	Standard	MW					
Data Description	Data Category	Unit	Energy Unit/Aggregate				
			U_1	U_2	U_3	…	U_n
Maximum continuous load	Standard	MW					
Nominal Voltage of Generator	Standard	kV					
Minimum continuous load	Standard	MW					
Rotation Number	Standard	RPM					
Type of Generating Unit and expected running mode(s)		Text					
Short-circuit ratio	Standard						
Detail of Connection Points (Geographical and electrical location) and System voltage	Standard	Text					
Inertia constant of Generator	Detailed	sec					
Nominal current of rotor	Detailed	A					

Characteristics of Generator's Capacity	Detailed	Diagram					
Characteristics of short-circuit and no-load	Detailed	Diagram					
Impedances							
Direct axis synchronous reactance Xd	Detailed	Relative Unit (%)					
Direct axis transient reactance Xd'	Detailed	Relative Unit (%)					
Direct axis sub-transient reactance Xd''	Detailed	Relative Unit (%)					
Quadrature axis synchronous reactance Xq	Detailed	Relative Unit (%)					
Quadrature axis transient reactance Xq'	Detailed	Relative Unit (%)					
Quadrature axis sub-transient reactance Xq''	Detailed	Relative Unit (%)					
Time Constants							
Direct axis transient time constant Td'	Detailed	sec					
Direct axis sub-transient time constant Td''	Detailed	sec					
Quadrature axis transient time constant Tq'	Detailed	sec					
Quadrature axis sub-transient time constant Tq''	Detailed	sec					
Generating Unit step-up transformer							
Nominal Capacity	Standard	MVA					
Nominal voltage	Standard	kV					
Short circuit voltage $U_{S.C.}$	Standard	%					
Number of windings	Standard	Text					
Voltage ratio	Standard						
Tap changer type	Standard	On-/Off-load					
Tap changer location	Standard	At HV/LV					
Tap changer range	Standard	±%					
Tap changer step size	Standard	%					

Positive sequence reactance (Short circuit voltage) at max. tap	Standard	Ohm (%)					
Positive sequence reactance (Short circuit voltage) at min. tap	Standard	Ohm (%)					
Positive sequence reactance (Short circuit voltage) at zero-level tap	Standard	Ohm (%)					
Positive sequence resistance at maximum tap	Standard	Ohm					
Positive sequence resistance at minimum tap	Standard	Ohm					
Positive sequence reactance at nominal tap	Standard	Ohm					
No-load Current ($I_{N.L.}$)	Standard	%					
No-load active power losses ($\Delta P_{N.L.}$)	Standard	kW					
Active power losses of short Circuit ($\Delta P_{S.C.}$)	Standard	kW					
Basic lightning impulse insulation level	Standard	kV					
Power frequency withstand voltage, for all (E)HV transformers	Standard	kV					
Chopped impulse withstand voltage, for all transformers rated 230 kV and above	Standard	kV					
Switching impulse withstand voltage, for all transformers rated 230 kV and above	Standard	kV					
Excitation System							
Type (e.g. static or rotating)	Detailed	Text					
Producer and model	Detailed	Text					
DC gain of Excitation loop	Detailed						

Rating (peak voltage)	Detailed	V					
Rating (peak current)	Detailed	A					
Maximum field voltage	Detailed	V					
Minimum field voltage	Detailed	V					
Maximum rate of change of field voltage(rising)	Detailed	V/s					
Minimum rate of change of field voltage(falling)	Detailed	V/s					
Dynamic characteristics of over Excitation limiter	Detailed	V					
Dynamic characteristics of under Excitation limiter	Detailed	V					
Operational data of Power Plant							
Load of block after synchronizing	Detailed	MW					
Load reduction level compared to normal load	Detailed	MW/s					
Area of regulation	Detailed	MW					
Load removing ability	Detailed	MW					
Own-consumption data							
Own-consumption capacity during normal load for each generator	Detailed	MW					
Own-consumption capacity for each generator start	Detailed	MW					
Total capacity for own-consumption	Detailed	MW					
Description of own-consumption diagram	Detailed	Text					

Annex 2

Energy Unit/Aggregate Planned Outage Data

Company Name:					
Name/Number of Energy Unit/Aggregate					
Phone:	Address:				
Fax:	Email:				
Data Description	Data Category	Unit	Year 1	Year 2	Year n

Power not available due to Outage	Operative	MW			
Remaining Active Power of the Plant	Operative	MW			
Duration of Outage	Operative	Days			
Start date and time	Operative	Date/time			
Flexible or Inflexible Planned Outage	Operative	Flexible/ Fixed			
Flexible Planned Outage Period	Operative	Days			

Annex 3

Operational Planning Data of Power Plants

Company Name:					
Name of Energy Unit/Aggregate or Power Plant (Identification number)					
Phone:	Address				
Fax:	Email:				
Data Description	Data Category	Unit	Generating Unit/Aggregate		
			U_1	U_2	U_n
Steam Turbine Generating Units					
Minimum Notice to Synchronize under:					
Hot start	Operative	min			
Warm start	Operative	min			
Cold start	Operative	min			
Minimum load after Synchronizing	Operative	MW			
Loading change speed					
Hot start	Operative	MW/min			
Warm start	Operative	MW/min			
Cold start	Operative	MW/min			
Maximum de-loading rate	Operative	MW/min			
Minimum time between De-synchronizing and Synchronizing	Operative	min			
Gas Turbine Generating Units					
Minimum notice required to Synchronize	Operative	min			
Minimum time between Synchronizing	Operative	min			
Minimum load required on Synchronizing	Operative	MW			
Loading change speed					
Hot start	Operative	MW/min			

Warm start	Operative	MW/min			
Cold start	Operative	MW/min			
Maximum de-loading rate	Operative	MW/min			
Minimum time between De-synch./ Synchronizing	Operative	min			
Hydro Generating Aggregates					
Minimum notice required to Synchronize	Operative	min			
Minimum notice required to switch between modes (from Synchronous Compensator to Generation or vice versa)	Operative	min			
Minimum time between Synchronizing	Operative	min			
Minimum load required on Synchronizing	Operative	MW			
Cavitation (from MW to MW)	Operative	MW			
Maximum loading rate from Synchronizing	Operative	MW/min			
Maximum de-loading rate	Operative	MW/min			
Minimum time between De-synch./ Synchronizing	Operative	min			
Other Generating Units/Aggregates (e.g. Wind)					
Please Specify similar to above	Operative				

Annex 4

Setting of Electrical Equipment/installations of User

Company Name:			
Name of Electrical Equipment/installations (Identification number)			
Phone:	Address:		
Fax:	Email:		
Data Description		Data Category	Unit
Parameters of the overhead lines and/or underground cables from the User System Substation to the Connection Point in the Network			
Nominal and operating voltage		Standard	kV
Positive sequence resistance and reactance		Standard	Ohm
Positive sequence shunt susceptance		Standard	Siemens
Zero sequence resistance and reactance		Standard	Ohm
Zero sequence susceptance		Standard	Siemens
Transformers between Transmission Network and the User System			
Nominal Capacity		Standard	MVA
Nominal voltage		Standard	kV
Cooling stages and Nominal MVA at each stage		Standard	Text
Number of windings and winding arrangement		Standard	Text

Voltage ratio	Standard	
Tap changer type (on-load or off-load)	Standard	On-/Off
Tap changer location (at HV or LV winding)	Standard	HV/LV
Tap changer range	Standard	±%
Tap changer step size	Standard	%
Grounding arrangement	Standard	Text
Positive sequence reactance at maximum and normal tap	Standard	%
Positive sequence resistance at maximum and normal tap	Standard	%
Basic lightning impulse insulation level	Standard	kV
Power frequency withstand voltage, required for all (E)HV transformers	Standard	kV
Chopped impulse withstand voltage, required for all transformers rated 230 kV and above	Standard	kV
Switching impulse withstand voltage, required for all transformers rated 230 kV and above	Standard	kV
Switchgears (i.e. circuit breakers, Disconnectors and isolators)		
Nominal voltage	Standard	kV
Nominal current	Standard	A
Rated symmetrical RMS short-circuit current	Standard	kA
Rated unsymmetrical RMS short-circuit current	Standard	kA
Rated Interruption time	Standard	ms
Basic lightning impulse insulation level	Standard	kV
Interrupting current for all circuit breakers	Standard	kA
Interrupting time for all circuit breakers	Standard	s
Symmetrical short-circuit current withstand time, required for all circuit breakers	Standard	s
Power frequency withstand voltage, required for all circuit breakers	Standard	kV
Chopped impulse withstand voltage, required for all circuit breakers and Disconnect Switches rated 230 kV and above	Standard	kV
Switching impulse withstand voltage, required for all circuit breakers and Disconnect Switches rated 230 kV and above	Standard	kV
Details of User System Grounding		
The rated short time withstand current	Standard	kA
Zero sequence impedance	Standard	Ohm
Short time rating of the Grounding Equipment	Standard	s
Data on independently-switched Reactive Power compensation Equipment at the Connection Point and/or at the Substation of the User System.		
Nominal Capacity	Standard	Mvar
Nominal voltage	Standard	kV

Type (shunt reactor, shunt capacitor, static compensator)	Standard	Text
Operation and control details (*e.g.* fixed or variable, automatic, or manual)	Standard	Text
If a significant portion of the User Demand may be supplied from alternative Connection Point(s), the relevant information on the Demand transfer capability shall be provided including the following:		
The alternative Connection Point(s)	Standard	Text
The Demand normally supplied from each alternative Connection Point	Standard	MW
The Demand which may be transferred from or to each alternative Connection Point	Standard	MW
The control (manual or automatic) arrangements for transfer including the time required to effect the transfer for Forced Outage and planned maintenance conditions	Standard	Text
If a User System has Embedded/Captive Generating Units and significantly large-sized motors**,** the short circuit contribution of the Embedded/Captive Generating Units and the large motors at the Connection Point shall be provided by the Distribution Entities (or the other Users).	Standard	kA
If a User System has fluctuating loads, the following information shall be provided		
Cyclic variation of Active Power over time	Standard	MW/time
Cyclic variation of Reactive Power over time	Standard	Mvar/time
Maximum rate of change of Active Power	Standard	MW/s
Maximum rate of change of Reactive Power	Standard	Mvar/s
Largest step change of Active Power	Standard	MW
Largest step change of Reactive Power	Standard	Mvar
If the User System has commutating Power electronic loads**,** detail such as no. of pulses, max. voltage notch.	Standard	Text
For each HV motor		
Type	Detailed	Text
Available capacity	Detailed	MW
Power Factor	Detailed	
Full-load current rating	Detailed	A
Starting method and starting current	Detailed	Text, A
Number of start ups per day	Detailed	Text
Torque/speed characteristics for the motor	Detailed	Diagram
Torque/speed characteristics for the relevant load	Detailed	Diagram
Inertia constant for the motor and the driven load	Detailed	s
Dynamic parameters(for synchronous motors)	Detailed	% MVA
Transient over-voltage assessment data for undertaking insulation coordination studies		
Busbar layout, including dimensions and geometry and electrical parameters of any associated Current Transformers, Voltage Transformers, wall bushings, and support insulators	Detailed	Diagram

Physical and electrical parameters of lines, cables, transformers, reactors and shunt compensators connected at that Busbar or by lines or cables to that Busbar	Detailed	Text
Specification of all Apparatus connected directly or by lines and cables to the Busbar including basic insulation levels	Detailed	Text
Characteristics of over voltage protection at the Busbar and at the termination of lines and cables connected at the Busbar	Detailed	Text
The Generating Unit /Station transformer data is required: three or five limb cores or single phase units to be specified, and operating peak flux density at nominal voltage	Detailed	Text
User Protection System data which can trip, inter-trip or close any Connection Point circuit breaker		
Full description and estimated settings, of all relays/Protection systems installed or to be installed on the User System	Detailed	Text
Generating Unit fault time during electrical Faults	Detailed	ms
The most probable Fault clearance time for electrical Faults on User System directly connected to the Transmission Network	Detailed	ms

Annex 5

Network Data

Company Name:			
Name/number of Electrical Equipment/Installations			
Phone:	Address:		
Fax:	Email:		
Data Description		Data Category	Unit
Parameters of the overhead lines and/or underground cables			
Nominal and operating voltage		Standard	kV
Positive sequence resistance and reactance		Standard	Ohm
Positive sequence shunt susceptance		Standard	Siemens
Zero sequence resistance and reactance		Standard	Ohm
Zero sequence susceptance		Standard	Siemens
Transformers and autotransformers of substation			
Nominal Capacity		Standard	MVA
Nominal voltage		Standard	kV
Short Circuit Current $U_{S.C.}$		Standard	%
Cooling stages and Nominal MVA at each stage		Standard	Text
Number of windings and winding arrangement		Standard	Text
Voltage ratio		Standard	

Tap changer type (on-load or off-load)	Standard	On-/Off
Tap changer location (at HV or LV winding)	Standard	HV/LV
Tap changer range	Standard	±%
Tap changer step size	Standard	%
Positive sequence reactance (Short circuit voltage) at max. tap	Standard	Ohm (%)
Positive sequence reactance (Short circuit voltage) at min. tap	Standard	Ohm (%)
Positive sequence reactance (Short circuit voltage) at zero-level tap	Standard	Ohm (%)
Positive sequence resistance at maximum tap	Standard	Ohm
Positive sequence resistance at minimum tap	Standard	Ohm
Positive sequence reactance at nominal tap	Standard	Ohm
No-load Current ($I_{N.L.}$)	Standard	%
No-load active power losses ($\Delta P_{N.L.}$)	Standard	kW
Active power losses of short Circuit ($\Delta P_{S.C.}$)	Standard	kW
Basic lightning impulse insulation level	Standard	kV
Power frequency withstand voltage, for all (E)HV transformers	Standard	kV
Chopped impulse withstand voltage, for all transformers rated 230 kV and above	Standard	kV
Switching impulse withstand voltage, for all transformers rated 230 kV and above	Standard	kV
Switchgears (i.e. circuit breakers, Disconnectors and isolators)		
Nominal voltage	Standard	kV
Nominal current	Standard	A
Rated symmetrical RMS short-circuit current	Standard	kA
Rated unsymmetrical RMS short-circuit current	Standard	kA
Rated Interruption time	Standard	ms
Basic lightning impulse insulation level	Standard	kV
Interrupting current for all circuit breakers	Standard	kA
Interrupting time for all circuit breakers	Standard	s
Symmetrical short-circuit current withstand time, required for all circuit breakers	Standard	s
Power frequency withstand voltage, required for all circuit breakers	Standard	kV
Chopped impulse withstand voltage, required for all circuit breakers and Disconnect Switches rated 230 kV and above	Standard	kV
Switching impulse withstand voltage, required for all circuit breakers and Disconnect Switches rated 230 kV and above	Standard	kV
Details of System Grounding		
The rated short time withstand current	Standard	kA
Zero sequence impedance	Standard	Ohm

Short time rating of the Grounding Equipment	Standard	s
Data on independently-switched Reactive Power compensation Equipment at the Connection Point and/or at the Substation of the System.		
Nominal Capacity	Standard	Mvar
Nominal voltage	Standard	kV
Type (shunt reactor, shunt capacitor, static compensator)	Standard	Text
Operation and control details (*e.g.* fixed or variable, automatic, or manual)	Standard	Text
If a User System has fluctuating loads, the following information shall be provided		
Cyclic variation of Active Power over time	Standard	MW/time
Cyclic variation of Reactive Power over time	Standard	Mvar/time
Maximum rate of change of Active Power	Standard	MW/s
Maximum rate of change of Reactive Power	Standard	Mvar/s
Largest step change of Active Power	Standard	MW
Largest step change of Reactive Power	Standard	Mvar
Transient over-voltage assessment data for undertaking insulation coordination studies		
Busbar layout, including dimensions and geometry and electrical parameters of any associated Current Transformers, Voltage Transformers, wall bushings, and support insulators	Detailed	Diagram
Physical and electrical parameters of lines, cables, transformers, reactors and shunt compensators connected at that Busbar or by lines or cables to that Busbar	Detailed	Text
Specification of all Apparatus connected directly or by lines and cables to the Busbar including basic insulation levels	Detailed	Text
Characteristics of over voltage protection at the Busbar and at the termination of lines and cables connected at the Busbar	Detailed	Text
The Generating Unit /Station transformer data is required: three or five limb cores or single phase units to be specified, and operating peak flux density at nominal voltage	Detailed	Text
Relay Protection and Automatics Data of Electrical Equipment/Installations of Power Plant		
Full description and estimated settings, of all relays/Protection systems installed or to be installed on the User System	Detailed	Text
Generating Unit fault time during electrical Faults	Detailed	ms
The most probable Fault clearance time for electrical Faults on User System directly connected to the Transmission Network	Detailed	ms

Annex 6

Connection Point Data

Company Name:							
Name/Number of Electrical Equipment/Installations:							
Phone:	Address:						
Fax:	Email:						
Data Description	**Data Category**	**Unit**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
User load at Annual System Maximum Demand Conditions	Standard	MW					
	Standard	Mvar					
User load at Annual System Minimum Demand Conditions	Standard	MW					
	Standard	Mvar					
Demand transfer capability data							
Name of the alternative Connection Point(s)	Standard	Text					
Demand transferable	Standard	MW					
	Standard	Mvar					
Transfer arrangement (e.g. manual or automatic)	Standard	Man./ Auto.					
Time to effect transfer	Standard	hour					

Annex 7

Load Characteristics

Company Name:		
Name of Energy Unit/Aggregate or Power Plant (Identification number)		
Phone:	Address:	
Fax:	Email:	
Data Description	**Data Category**	**Unit**
Demand sensitivity to voltage variation at peak Connection Point Demand	Detailed	MW/kV
	Detailed	Mvar/kV
Demand sensitivity to frequency variation at peak Connection Point Demand	Detailed	MW/Hz
	Detailed	Mvar/Hz
Maximum expected phase unbalance imposed on the System	Detailed	%
Average expected phase unbalance imposed on the System	Detailed	%
Maximum expected Harmonic content imposed on the System	Detailed	%

Loads which may cause Demand fluctuations greater than 5 MW at a Connection Point	Detailed	MW
Load criticality High Priority Medium Priority Low Priority	Detailed	MW

Annex 8

Fault Infeed Data

Company Name:		
Name of Energy Unit/Aggregate or Power Plant (Identification number)		
Phone:		Address:
Fax:		Email:
Data Description	Data Category	Unit
Short circuit infeed to the System from the User System at a Connection Point		
Symmetrical three-phase short circuit current infeed at instant of Fault	Detailed	kA
Symmetrical single-phase short circuit current infeed at instant of Fault	Detailed	kA
Symmetrical three-phase short circuit current infeed after sub-transient Fault current contribution has substantially decayed	Detailed	kA
Zero sequence source impedance values as seen from the Connection Point consistent with the maximum infeed above	Detailed	Ohm
Positive sequence X/R ratio at instance of Fault	Detailed	

Annex 9

Demand Structure of the Distribution Licenses

Company Name:							
Phone:			Address:				
Fax:			Email:				
Annual MWh requirements (summed over all Connection Points) for Distribution Entities at Average Conditions							
Consumption Sectors	Data Category	Unit	Year 1	Year 2	Year 3	Year 4	Year 5

Residential	Standard	MWh					
Agricultural	Standard	MWh					
Commercial	Standard	MWh					
Transport	Standard	MWh					
Government	Standard	MWh					
Industrial	Standard	MWh					
Street Lighting	Standard	MWh					
Other Consumers	Standard	MWh					
Forecasted losses	Standard	MWh					