



Market Operator Commercial Code



Electricity Market Operator of Pakistan

Introduction

Pursuant to Section 23 B of the Act, the Market Operator is required to prepare a Commercial Code to regulate its operations, standards of practice and business conduct of market participants and their representatives. The Commercial Code shall be submitted to NEPRA for approval along with its licensing application.

The Commercial Code establishes efficient, non-discriminatory, and transparent market mechanisms centrally administered by the Market Operator. It is an essential requirement for the administration of the market. All Market Participants and Service Providers shall enrol with the Market Operator as per provisions defined in this Code and shall abide by the Commercial Code at all times to the extent this Code is applicable to them. Failure to do so may result in an enforcement action being taken against them.

The purpose of Commercial Code is to provide efficient, non-discriminatory, and transparent market mechanisms centrally administered by the Market Operator, including the associated settlement and payment arrangements and procedures and Security Cover. It clearly specifies the rights and obligations of the Market Participants and Service Provider related to the market. This Code sets out the procedures among different market players to exchange information.

The Commercial Code is structured so as to ensure that the market can be established in a transparent and non-discriminatory manner and to promote completion.

For a reader to understand this Code, it is important to highlight the roles of different institutions that will play their part in the CTBCM. The roles of different institutions are explained below. These roles are just summarized here for the understanding of the reader; however, each entity will perform its roles as per its respective rules, regulations, licenses, authorization, registration and codes.

Operators

I. Market Operator

The Market Operator is an entity responsible for establishing and administering the wholesale market and shall perform, *inter alia*, the following functions:

- a) admission and enrolment of Market Participants and Service Providers;
- b) review of compliance of Contracts with the Commercial Code and registration of Contracts;
- c) registration of the Trading Points where commercial transactions may take place among Market Participants;
- d) registration of Metering Points, other than Trading Points, which are necessary for proper implementation of this Code;
- e) establishing of Firm Capacity of Generation Units and issuing of Firm Capacity Certificates;
- f) determination of prices for the Capacity to be used in the Balancing Mechanism for Capacity;
- g) administering a settlement system for the Capacity and Energy Balancing Mechanisms to clear differences between actual and contracted quantities;
- h) administering a payment system for the Imbalances of Market Participants and

other market charges, including the verification and registration of Security Covers; and

- i) administer dispute resolution procedures in accordance to this Code.

The Market Operator will also be in charge to monitor market development and effectiveness and to propose changes for enhancing its efficiency. The Market Operator shall carry out all its activities in accordance with the provisions of the Act, rules, regulations, its License, this Code and any other applicable legal instruments.

2. SYSTEM OPERATOR

The System Operator is an entity responsible for planning, dispatch and secure & reliable operation of the Transmission and relevant segment of Distribution Network as specified in the Grid Code. The duties of the System Operator shall, *inter alia*, include:

- a) Generation scheduling, unit commitment and dispatch;
- b) Transmission scheduling and generation outage coordination including cross border Transmission coordination;
- c) conducting reliable short and medium term operational planning;
- d) implementing the Security Constrained Economic Dispatch (SCED) for secure and economic operation of the system including Transmission Congestion management;
- e) scheduling and dispatching the necessary Ancillary Services;
- f) calculation of the System Marginal Prices for each hour;
- g) keeping the system in permanent balance by considering the security and reliability constraints;
- h) develop indicative long-term generation plans and transmission system expansion plans; when such functions are transferred to the System Operator; and
- i) such other activities as may be required for reliable and efficient system operations.

The System Operator will perform its duties in accordance with the provisions of the Act, rules, regulations, License, the Grid Code, this Code and any other applicable legal instruments. To ensure transparency in its operations, the System Operator will publish planning reports, real time operational decisions, the results of the dispatch on its website.

Market Participants

The Market Participants shall be the entities which buy and / or sell Energy and/or Capacity in the wholesale market. Following Categories of Market Participants shall be entitled to participate in the CTBCM:

- a) Generation Companies
- b) Captive Generators
- c) Electric Power Suppliers.
- d) Electric Power Traders.
- e) Bulk Power Consumers.

I. Generation Companies

A Generation Company shall be an entity which has installed a Generation Unit or a Generation Plant and is engaged in production and selling of electric power. To participate in the CTBCM, a Generator shall abide by the following requirements:

- a) A Generation Plant or a Generation Unit which has been classified as Dispatchable Generation Unit shall be operated in accordance with the centralized Security Constrained Economic Dispatch (SCED).
- b) A Generation Plant or a Generation Unit which has been classified as Non-Dispatchable Generation Unit shall be operated in accordance with the conditions, requirements and procedures specified in the Grid Code.
- c) Within its technical capabilities, it shall provide the Ancillary Services required by the System Operator, as specified in the Grid Code.
- d) It shall enrol as a Market Participant if it sells or plans to sell the Energy and/or Capacity to other Market Participants. However, it is clarified that a small Generator, connected to a Distribution Network at the distribution voltage which does not fall in the scope of the Grid Code, and sells all its Capacity and Energy to a Supplier of Last Resort or an Electric Power Trader, shall not be required to become a Market Participant.

2. Electric Power Suppliers

In the CTBCM, there shall be two types of Electric Power Suppliers Licensed by the Authority namely the Competitive Electric Power Supplier and the Supplier of Last Resort. An Electric Power Supplier (EPS) shall be a Licensed entity as stipulated under the Act, which may involve in the procurement of electric power (Energy and Capacity) and sell it to the end consumers or re-selling it to other Market Participants as specified in the NEPRA regulations.

As Market Participant, the licensed Electric Power Supplier shall register its Contracts with other Market Participants or BPCs with the Market Operator as specified in Chapter 4, provided that the Supplier of Last Resort shall not be required to register with the Market Operator its Contracts with its consumers.

3. Electric Power Trader

An Electric Power Trader shall be a Licensed entity which may carry out the functions of trading of electric power in the CTBCM at the wholesale level and may include:

- a) Import of electric power (Energy and/or Capacity);
- b) purchase of the electric power from a Generator or an Electric Power Trader or an Electric Power Supplier;
- c) sale of electric power to an Electric Power Trader or an Electric Power Supplier;
- d) Export of the electric power.

An Electric Power Trader may enter into an agreement with one or more Generators, which may or may not be Market Participants, and sell the aggregated Generation in the CTBCM through Bilateral Contracts. For Imports and/or Exports, the seller or buyer, as the case may be, will be exempted from enrolment as a Market Participant.

The Market Participant that carries out Imports or Exports will represent the other party in the CTBCM

4. Bulk Power Consumers

A Bulk Power Consumer (BPC) is a consumer who may buy electric power, Energy and/or Capacity, from the wholesale market or from an Electric Power Supplier of its choice through a Bilateral Contract as per applicable NEPRA regulations.

A Bulk Power Consumer may be exempted from enrolling as a Market Participant in case it decides to buy both its Energy and Capacity from the relevant Supplier of Last Resort/DISCO or it decides to sign a Standardized Load Following Supply Contract with a Competitive Electric Power Supplier, as per the conditions stipulated in this Code.

Service Providers

1. Transmission Service Providers

All Transmission Service Providers shall be enrolled with the Market Operator as Service Providers. A Transmission Service Provider (TSP) shall be responsible for providing the Transmission services to enable wholesale buying and selling of electric power (Energy and/or Capacity). TSPs shall include NTDC, which is the largest TSP and Licensed as national grid company by the Authority, the Transmission License activity of K-Electric, Licensed Provincial Grid Companies (PGCs) and Special Purpose Transmission Licensees (SPTLs).

Consistent with the Act, its license conditions and NEPRA regulations, a Transmission Service Provider shall provide Open Access to the Market Participants subject to payment of use of system charges determined by the Authority and signing use of system Agreements. Additionally, the TSP shall sign Connection Agreements with Generation Companies, Captive Generators, Distribution Licensees, network companies from foreign countries or territories where the applicability of the Act is not extended, and BPCs connected directly to transmission that will cover providing access to the Meters and metering values to an authorised Metering Service Provider in order to enable it to comply with its obligations. A TSP shall publish on its website information related to the network availability and its future expansion plans.

A Transmission Licensee shall carry out its operations in accordance with its License, the provisions of the Grid Code, this Code, as applicable, and comply with the Transmission standards set by the Authority.

2. Distribution Network Service Providers

All Distribution Network Service Providers shall be enrolled with the Market Operator as Service Providers. A Distribution Network Service Provider shall be a Licensed entity as defined in the Act which is required to develop and operate the Distribution Network infrastructure to enable the Generators and/ or BPCs connected to such network to participate in the wholesale market.

Consistent with the Act, the condition of its License and NEPRA regulations, a Distribution Network Service Provider shall provide Open Access to its network to enable buying and selling of electric power among Market Participants subject to payment of use of system charges determined by the Authority and signing Use of System Agreements as required in the NEPRA regulations. For information of Market

Participants in relation to their market decisions, a Distribution Network Service Provider shall also publish on its website information related to the network availability and its future expansion plans.

3. Metering Service Providers

All Metering Service Providers shall be enrolled with the Market Operator as Service Providers. Metering Service Provider (MSP), in addition to the metering conditions established in the Grid Code, shall be an entity, responsible:

- a) to collect all metering information required Commercial Code and its operational procedures, for the the Market Operator to perform the settlement functions;
- b) to assess the completeness and consistency of the metering information; and
- c) to transfer the metering information to the Market Operator through electronic means, at such intervals as specified in the relevant operational procedures.

4. The Independent Auction Administrator

The Independent Auction Administrator (IAA) shall be an entity registered with the Authority which shall perform the function of facilitating the EX-WAPDA DISCOs, in their role as Suppliers of Last Resort, to comply with their Capacity Obligations, as stipulated in Chapter 10 and applicable power procurement regulations of NEPRA, through the procurement of new Capacity and/or Energy or existing uncontracted Capacity and/or Energy through Contracts. The IAA will act independently from commercial interest during administration of the auction process.

5. The Special Purpose Trader (CPPA-G)

Prior to CMOD, the CPPA-G was registered by the Authority as the Market Operator under the Market Rules 2015 and performed the functions of the agent of Distribution Licensees (Ex-WAPDA DISCOs and KE in their role as Suppliers of Last Resort) for procuring electric power on their behalf and administers the Legacy Contracts and to perform the role of market development. The Special Purpose Trader is the name assigned to the role of CPPA-G only related to the administration of the Legacy Contracts after CMOD as CPPA-G will no longer be allowed to sign contracts on behalf of Ex-WAPDA DISCOs and KE in their role as Suppliers of Last Resort. For this role, the CPPA-G is registered by the Authority as Special Purpose Trader under section 25A of the Act.

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Acronyms

ARE	Alternative and Renewable Energy
ASC	Ancillary Services Charges
BMC	Balancing mechanism for Capacity
BME	Balancing mechanism for Energy
BPC	Bulk Power Consumer
CCOP	Commercial Code Operating Procedure
CCRP	Commercial Code Review Panel
CCWG	Commercial Code Working Group
CMOD	Competitive Market Operation Date
COD	Commercial operation date
CPPA-G	Central Power Purchasing Agency (Guarantee) Limited
CTBCM	Competitive Trading Bilateral Contract Market (competitive wholesale electricity market of Pakistan)
DISCOs	Distribution Companies
EPA	Energy Purchase Agreement
IAA	Independent Auction Administrator
IGCEP	Indicative Generation Expansion Capacity Plan
KE	K-Electric, formerly known as KESC.
MO	Market Operator
NEPRA	National Electric Power Regulatory Authority
NTDC	National Transmission and Dispatch Company
PPA	Power Purchase Agreement
PPAA	Power Purchase Agency Agreement
SCADA	Supervisory Control and Data Acquisition
SCED	Security Constrained Economic Dispatch
TSP	Transmission Service Provider
WAPDA	Water and Power Development Authority

Commercial Code

Chapter I. GENERAL CONDITIONS

I.1. OBJECTIVES AND SCOPE

I.1.1. TITLE

I.1.1.1. This code shall be called the Commercial Code (the “Code”).

I.1.2. OBJECTIVES

I.1.2.1. The general objectives of the Commercial Code are:

- a) to establish, govern and promote efficient, non-discriminatory and transparent market mechanisms centrally administered by the Market Operator, including the associated Settlement and payment arrangements and procedures and Security Cover;
- b) to govern the terms and conditions to participate in the Market, and the buying and selling among Market Participants and other Market Transactions after the CMOD, promoting the development of competition;
- c) to set out the rights and responsibilities of Market Participants in relation to buying and selling of electric power, settlement and payments of Imbalances and settlement of other service charges;
- d) to set out the rights and responsibilities of the Service Providers with respect to provision of metering service and other allied functions related to the market;
- e) to provide the rights and responsibilities of the Market Operator as well as the market related functions of the System Operator regarding its market related functions;
- f) to provide coordination mechanisms between the Market Operator, the System Operator and other Service Providers in performing their function related to the market;
- g) to ensure adequate information dissemination for protection of transparency in the Market; and
- h) to promote and enable the development of competitive power markets in Pakistan in accordance with the Act, the approved market design and the rules and regulations made thereunder.

I.1.3. APPLICABILITY

I.1.3.1. This Commercial Code shall be applicable from the date of its approval by the Authority except for Market Transactions. On the date of CMOD, the whole Code shall be applicable.

1.1.4. SCOPE

- 1.1.4.1. The scope of the Commercial Code is to establish the procedures and conditions for the Market Operator for administration of the Market, establish the framework for Market Participants to buy and sell Energy and/or Capacity and conditions for provision of market services by Service Providers.

1.2. INTERPRETATION

1.2.1. DEFINITIONS

- 1.2.1.1. Capitalised words and expressions used in this Code, unless the context otherwise requires, shall have the following meaning:

- i. **"Act"** means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997;
- ii. **"Admission Application"** means the document which an Applicant is required to submit when applying for enrolment with the Market Operator, in the form set out in the applicable CCOP or such other form as the Market Operator may from time to time determine;
- iii. **"Allocation Factor"** means a value, expressed in percentage, calculated as per provisions of National Electricity Policy, which is used to commercially allocate all Legacy Contracts to each EX-WAPDA DISCO separately. For KE, the allocation factor shall be a fixed value as per its power purchase agency agreement with the SPT, which may be revised from time to time as per the terms and conditions of the power purchase agency agreement;
- iv. **"Amendment"** means any change, modification or deletion of the existing provisions of this Code or the CCOPs or insertion of any new provisions in this Code or CCOPs.
- v. **"Amendment Submission"** means the requests for review or amendment of this Code, submitted as per provisions of this Code;
- vi. **"Amounts Payable"** means the amount of money, expressed in PKR, that a Market Participant is required to pay in order to discharge its obligations as per the Settlement Statements issued by the Market Operator;
- vii. **"Amounts Receivable"** means the amount of money, expressed in PKR, that a Market Participant is entitled to receive, as per the Settlement Statements issued by the Market Operator;
- viii. **"Ancillary Services"** has the meaning assigned to the term in the Grid Code;
- ix. **"Annual Loss Percentage"** shall have the meaning assigned to the term in Clause 11.2.4.1.
- x. **"Applicable Law"** means the laws of Pakistan including federal, provincial and local laws;
- xi. **"Applicant"** means any person who has initiated the application process to enrol with the Market Operator in accordance with the provisions of Chapter 2;
- xii. **"Adjudication Tribunal"** means the tribunal established under Sub-Section 14.3.4;
- xiii. **"Adjudicator"** means a member of the Adjudication Tribunal to adjudicate a Dispute;
- xiv. **"ARE Producer"** means a Generator which produces electric power through renewable resources;

- xv. **"Authority"** means the National Electric Power Regulatory Authority established under Section 3 of the Act;
- xvi. **"Available Capacity"** means the share of the Installed Net Capacity, which is available for dispatch by the System Operator at any specific period of time;
- xvii. **"Availability Declaration"** has the meaning assigned to the term in the Grid Code.
- xviii. **"Back-feed Energy"** means the Energy consumed by a Generation Plant or Generation Unit, while this plant or unit is not available or not dispatched;
- xix. **"Back-up Meter "** means a meter installed at the Metering Point for checking or backup purposes as prescribed in the Grid Code;
- xx. **"Balancing Mechanism for Energy"** means the mechanism, centrally administered by the Market Operator, to settle the Imbalances between the metered quantities (that measure the real time Energy injected into or extracted from the Transmission or Distribution Network for each Market Participant and the Energy commitments (contracted quantities) registered with the Market Operator of each Market Participant;
- xxi. **"Balancing Mechanism for Capacity"** means the mechanism, centrally administered by the Market Operator, to settle the Imbalances resulting from compliance with the Capacity Obligations as provided for in this Code;
- xxii. **"Balancing Period"** means the period for which the Market Operator determines whether a Market Participant had Imbalances, either in Energy or in Capacity, as the case may be;
- xxiii. **"Bilateral Contract" or "Contract"** means an agreement, executed in accordance with the provisions of this Code, between two parties for the sale and purchase of a defined amount of Energy and/or Capacity for each Energy Settlement Period or Capacity Settlement Period, as the case may be;
- xxiv. **"Bulk-Power Consumer (BPC)"** shall have the meaning assigned to the term in the Act;
- xxv. **"Business Day"** has the meaning assigned to the term in Clause 1.2.4.1;
- xxvi. **"Capacity" or "Electric Capacity"** means a product that Generators offer to the market and it is acquired by Market Participants to comply with their Capacity Obligations in order to guarantee appropriate security of supply in Pakistan;
- xxvii. **"Capacity Balance"** shall have the meaning assigned to the term in Clause 9.2.5.1;
- xxviii. **"Capacity and Associated Energy Supply Contract"** shall have the meaning assigned to the term in Section 3.3.2;
- xxix. **"Capacity Obligations"** shall have the meaning assigned to the term in Chapter 10;
- xxx. **"Capacity Requirement"** shall have the meaning assigned to the term in Clause 9.2.4.1.
- xxxi. **"Captive Generation"** shall have the meaning as assigned to this term in the Act;
- xxxii. **"Category (in relation with a Market Participant)"** shall have the meaning as assigned to the term in Clause 2.1.1.2;
- xxxiii. **"Chapter"** means a chapter of this Code;
- xxxiv. **"Clause"** means a clause of this Code;
- xxxv. **"Clearing Day"** means the Business Day on which the Market Operator pays to the Market Participants the amounts payable to them as per the Final Settlement

- Statements or Final Yearly Settlements Statements or Extraordinary Yearly Settlement Statements;
- xxxvi. **“Close of Banking Business”** means [5] p.m., Pakistan Standard Time (PST) or any other time specified by the Federal Government/State Bank of Pakistan;
- xxxvii. **“Commercial Code Operational Procedure”** means an operating procedure, developed by the Market Operator or the System Operator or a Service Provider, as the case may be, for proper implementation of this Code;
- xxxviii. **“Commercial Code Working Group”** means a group organised by the Market Operator which consists of representatives of the Market Operator, System Operator, Market Participants and Service Providers to carry out the functions as assigned to it under this Code;
- xxxix. **“Commercial Metering System”** means the system, established according to the requirements of the Grid Code, to measure the Energy injected into or withdrawn from the Transmission or Distribution Network by a Market Participant and used for settlement purposes by the Market Operator;
- xl. **“Company”** means a company registered under the Laws of Pakistan;
- xli. **“Competitive Market Operation Date” or “CMOD”** means the commencement date of commercial operations of the CTBCM;
- xl.ii. **“Competitive Electric Power Supplier”** means a person which has been granted a Supply License by the Authority, to supply electric power to BPCs at bilaterally agreed rates;
- xl.iii. **“Compliance with Capacity Obligations Report”** shall have the meaning assigned to the term in Sub-Section 10.6.1 of this Code;
- xliv. **“Condition”** means a condition of this Code;
- xliv. **“Confidential Information”** means:
- a) proprietary information of a person or such other information which has been explicitly specified by the disclosing person as confidential, where the disclosure of such information may reasonably be expected to:
 - a.1. prejudice significantly the competitive position of the disclosing person;
 - a.2. result in material loss or gain to the disclosing person or any other person;
 - a.3. compromise the implementation of this Code; or
 - a.4. result in the disclosing person being in breach of a bona fide confidentiality agreement; and
 - b) information required by this Code, the Grid Code or Applicable Law to be kept confidential, provided that information contained in the admission application to become a Market Participant and information required to be published under this Code shall not be treated as Confidential Information;
- xlvi. **“Congested Area”** shall have the meaning assigned to the term in Sub-Section 6.2.1 of this Code;
- xlvii. **“Congested Zone”** shall have the meaning assigned to the term in Sub-Section 6.2.1 of this Code;
- xl.iii. **“Congestion”** means a situation in the Transmission or Distribution Network where the dispatch of Generation Units on least cost basis may result in overload of equipment or unstable voltage levels or violation of the reliability and security criteria provided in the Grid Code;

- xlix. **“Connect”** means a form of physical link to the Transmission or Distribution Network and related terms shall be construed accordingly;
- l. **“Connection Agreement”** means an agreement for the provision of network services between a Transmission Service Provider or a Distribution Network Service Provider, as the case may be, and a Market Participant or a BPC or an agreement between two network Service Providers;
- li. **“Connection Point”** means a point of connection between:
 - a) a Transmission or a Distribution Network and a Generation Plant or Generation Unit;
 - b) A Transmission Licensee or a Distribution Licensee and a BPC; or
 - c) A Transmission Licensee and a Distribution Licensee; or
 - d) Two different Transmission Licensees or Distribution Licensees; or
 - e) A Transmission Licensee or Distribution Licensee and foreign countries or territories where the applicability of the Act is not extended; or
 - f) Two different Market Participants; or
 - g) Any other point within the Transmission or Distribution Networks, which the Market or System Operator considers necessary to be metered for the proper implementation of this Code;
- lii. **“Contract Market”** means the Bilateral Contracts market established under this Code;
- liii. **“Contract Register”** means the record organized and maintained by the Market Operator for the quantity of Energy and/or Capacity bought and sold among Market Participants through Contracts;
- liv. **“Contract Termination Date”** means the termination date of a Bilateral Contract agreed between the parties at the time of registration of the Contract or any other date as approved by the Market Operator;
- lv. **“Credited Capacity”** means the Capacity allocated to a Market Participant in the Balancing Mechanism for Capacity and/or verification of its compliance with the Capacity Obligations;
- lvi. **“Credit Notification”** means a notification issued by the Market Operator to a Market Participant immediately after issuing a Final Settlement Statement, Final Yearly Settlement Statement, Extraordinary Yearly Settlement Statement or on account of any other adjustment or payment regarding the amount it is entitled to receive through the Market Operator on the Clearing Day or any other date as specified by the Market Operator;
- lvii. **“Critical Hours”** are such hours of the previous year when the power system was under maximum stress and as detailed in Sub-Section 9.2.1;
- lviii. **“CTBCM” or “Competitive Trading Bilateral Contract Market”** means the arrangement of competitive wholesale electricity market as approved by the Authority;
- lix. **“Customized Contracts”** shall have the meaning assigned to this term in Clause 3.2.2.4;
- lx. **“Debit Notification”** means a notification, issued by the Market Operator to a Market Participant subsequent to issuing a Final Settlement Statement, Final Yearly Settlement Statement, Extraordinary Yearly Settlement Statement or on account of any other adjustment or payment whereby a Market Participant is required to pay a certain amount to the Market Operator;

- lxi. **“Default Amount”** means any amount a Market Participant has failed to pay on a Payment Due Date;
- lxii. **“Default Interest”** means an amount payable by a Market Participant, at a rate as specified in Clause 18.2.7.1, if it fails to fulfil its payment obligations under this Code;
- lxiii. **“Demand”** means either the Energy supplied to consumers over a period of time (Energy Demand) or the electric power supplied to consumers at a particular instant (Capacity Demand);
- lxiv. **“Demand Forecast”** means an estimate of future Demand typically worked out by using mathematical forecasting techniques and historical Demand data or any other relevant information;
- lxv. **“Designated Account”** means the existing main revenue collection account of the EX-WAPDA DISCO including any other Electric Power Supplier/ DISCO carved out of the Ex-WAPDA DISCOs in the Designated Bank;
- lxvi. **“Designated Bank”** means the bank selected jointly by the Market Operator, and the EX-WAPDA DISCO including any other Electric Power Supplier/ DISCO carved out of the Ex-WAPDA DISCOs to operate the Designated Account as per standard instruction given in Clause 12.1.4.5 and the terms and conditions of the agreement entered into for this purpose.
- lxvii. **“Dispatch”** shall have the meaning assigned to the term in the Grid Code.
- lxviii. **“Dispatch Day”** means a period in the Dispatch process from 00.00 hours to 24.00 hours in the same calendar day;
- lxix. **“Dispatch Instruction”** means the operating instruction issued by the System Operator to a Generation Unit for its Dispatch in accordance with the provisions of the Grid Code;
- lxx. **“Dispatch Period”** means every sixty-minute interval, or such other shorter interval as the System Operator may consider appropriate, during a Dispatch Day;
- lxxi. **“Dispatchable Generation Unit”** means a Generation Unit which is able to be controlled, increasing or decreasing its production following manual or automatic instructions issued by its operator. For the avoidance of doubt, these Generation Units don't include the variable renewable generation technologies such as wind and solar and run of river hydro based Generation Units without any significant storage;
- lxxii. **“Dispute”** means any dispute or disagreement or difference arising under this Code or any provision hereof as specified in Chapter 15;
- lxxiii. **“Distribution Company” or “DISCO”** means a distribution company Licensed by the Authority to engage in the distribution of electric power and also holds a Supply License;
- lxxiv. **“Distribution Network”** for the purposes of this Code, Distribution Network means electrical facilities owned, operated, managed or controlled by a DISCO and used for the movement or delivery of electric power at voltages of 132 KV and below;
- lxxv. **“Distribution Network Service Provider”** means a Distribution Licensee which provides, inter alia, Open Access;
- lxxvi. **“Early Contract Termination”** means the termination of a Contract with the consent of the parties on a date prior to the one recorded in the Contract Register;
- lxxvii. **“Effective Date of Contract”** means the date from which the registered Contract is used in the balancing mechanisms or for verification of the Compliance with Capacity Obligations;

- lxxviii. **“Electric Power Supplier”** means a person Licensed by the Authority or deemed licensee, under Section 23E of the Act;
- lxxix. **“Electric Power Trader”** means a person Licensed by the Authority under section 23C of the Act;
- lxxx. **“Electronic Local Meter Reading”** means obtaining the values of half-hourly Energy, stored in the internal memory of the Meter, by making a physical link between such Meter and a portable electronic equipment capable to download such information;
- lxxxi. **“Embedded Generation”** means a Generation Plant or Generation Unit directly connected to a Distribution Network;
- lxxxii. **“Energy”** means electrical energy produced by Generation Plants or Generation Units, flowing through or supplied by Transmission Network or Distribution Network, measured in units of watt.hours or standard integers or multiples thereof;
- lxxxiii. **“Energy Limited Generation Unit”** means a Generation Unit whose capability to produce Energy is constrained by the availability of the primary energy stored;
- lxxxiv. **“Enrolled Person”** means a person who is enrolled with the Market Operator as per provisions of Section 2.10 of this Code.
- lxxxv. **“Equivalent Availability Factor”** means the fraction of Installed Net Capacity, averaged over a calendar year, that a Generation Unit is able to provide after considering all types of outages and deratings;
- lxxxvi. **“Excess Losses”** means the amount of Transmission losses, expressed in kWh or multiples of kWh, which exceeds the maximum value of losses allowed by the Authority in the relevant Tariff determination;
- lxxxvii. **“Export”** means the selling of Energy and/or Capacity to foreign countries or such territories where the applicability of the Act is not extended;
- lxxxviii. **“Extraordinary Settlement Statement”** shall have the meaning assigned to the term in Sub-Section 7.3.4;
- lxxxix. **“Extraordinary Yearly Settlement Statement”** shall have the meaning assigned to the term in Sub-Section 11.4.4
 - xc. **“EX-WAPDA DISCO”** means a DISCO which has been formed as the result of un-bundling of WAPDA or any subsequent unbundling of the same;
 - xc. **“Final Settlement Statement”** shall have the meaning assigned thereto in Sub-Section 7.3.3;
 - xcii. **“Final Yearly Settlement Statement”** shall have the meaning assigned thereto in Sub-Section 11.4.3;
 - xciii. **“Firm Capacity”** means the portion of the Installed Net Capacity of a Generation Unit or Generation Plant, as the case may be, which is available to be delivered with a high degree of probability at any given time;
 - xciv. **“Firm Capacity Certificate”** means a certificate issued by the Market Operator to a Generator allowing it to sell Capacity under a Bilateral Contract up to the amount provided in the certificate;
 - xcv. **“Firm Export”** means an Export which may not be interrupted even where the total Available Capacity is less than the potential electric power demand in Pakistan;
 - xcvi. **“Generate” or “Generation”** means the production of Energy at a Generation Unit or a Generation Plant and its delivery to the Transmission or Distribution Network;

- xcvii. **“Generation Company”** means a Market Participant which is Licensed or authorised by the Authority to construct, own or operate a Generation facility, including Captive Generation;
- xcviii. **“Generation Following Supply Contract”** shall have the meaning assigned to the term in Section 3.3.1;
- xcix. **“Generation Plant”** means a Generation Unit or group of Generation Units, connected to the Transmission or Distribution Network at a single Connection Point;
 - c. **“Generation Unit”** means a conversion apparatus including auxiliaries and associated equipment, used to produce electric power from some other form of energy, which is dispatched by the System Operator as an indivisible unit;
 - ci. **“Generator”** has the same meaning as a Generation Company;
 - cii. **“GoP”** means the Government of the Islamic Republic of Pakistan;
 - ciii. **“Grid Code”** means the grid code prepared and maintained by the System Operator pursuant to sections 23G and 23H of the Act and approved by the Authority or till the time the same is approved by the Authority, the Grid Code 2005;
 - civ. **“Grid System”** means the Transmission and Distribution Network owned and operated by the Transmission and Distribution Licensees;
 - cv. **“Guarantee Amount”** means an amount, determined by Market Operator, to be deposited by a Market Participant in the Market Operator Settlement Guarantee Fund Account as its contribution to the Settlement Guarantee Fund;
 - cvi. **“Guaranteed Capacity”** shall have the meaning assigned to the term in Clause 3.2.1.5;
 - cvii. **“Identification Code”** is an alphanumeric code which precisely and univocally identifies (i) a Market Participant, or (ii) a Generation Plant or Generation Unit, or (iii) a Metering Point, as the case may be, which will be assigned:
 - a. by the Market Operator to the Market Participants during the enrolment process;
 - b. by the System Operator to the Generation Plants or Generation Units according to the provisions of the Grid Code; and
 - c. by the Metering Service Provider to the Metering Points;
 - cviii. **“Imbalance”**
 - a. If used in relation to Capacity, shall mean either the difference between the Capacity sold through a Contract (registered with the Market Operator) and the actual Available Capacity; or the difference between the Capacity purchased through a Contract (registered with the Market Operator) and the actual Maximum Demand in the relevant period taken from the Transmission or Distribution Network, as the case may be;
 - b. If used in relation to Energy, shall mean the difference between the Energy quantities bought and sold through a Contract (registered with the Market Operator) and the actual quantities injected into or withdrawn from the Transmission or Distribution Network;
 - cix. **“Import”** means procurement of Energy and/or Capacity from foreign countries and from Generation Plants located in the territories where the applicability of the Act is not extended;

- cx. **“Initial Firm Capacity Certificate”** means the Firm Capacity Certificate issued by the Market Operator:
 - a. Before CMOD, for those Generation Units which were existing prior to the CMOD;
 - b. At the time of commissioning, for those Generation Units which are commissioned after CMOD;
- cxii. **“Installed Capacity”** means the amount of electric power that a Generation Unit or a Generation Plant is designed to operate on a continuous basis and determined through the commissioning or any other tests, specifically designed for such purpose, which are performed during the useful life of the Generation Unit or Generation Plant;
- cxiii. **“Installed Net Capacity”** means the share of the Installed Capacity which a Generation Unit or Generation Plant is able to deliver to the Transmission or Distribution Network and is calculated as the Installed Capacity minus the average consumption by the auxiliaries;
- cxiv. **“K-Electric” or “KE”** means the entity Licensed by the Authority to provide generation, transmission, distribution and supply of electric power services within its specified territory;
- cxv. **“Legacy Contract”** means a PPA or EPA which was signed or administered by the CPPA-G before the CMOD;
- cxvi. **“Licence”** shall have the meaning assigned to the term in the Act and the word “Licensee” shall be construed accordingly;
- cxvii. **“Load Facility”** means a facility that consumes Energy;
- cxviii. **“Load Following Supply Contract”** shall have the meaning assigned to the term in Section 3.3.3;
- cxviii. **“Opportunity Cost Compensation”** means a compensation that a Generator is entitled to receive for the reduction in its potential revenue, on account of reduction in the Energy dispatched as per the instructions issued by the System Operator:
 - a. for providing Ancillary Services; or
 - b. allowing the provision of Ancillary Services by other Generation Units;
- cxix. **“Manual Local Meter Reading”** means obtaining the half-hourly, hourly, daily or monthly values of Energy stored in the internal memory of the Meter by visual inspection of the values shown on the Meter display;
- cxx. **“Market”** means the Competitive Trading Bilateral Contract Market (CTBCM) of Pakistan organized for wholesale buying and selling of Energy and/or Capacity mainly through Bilateral Contracts;
- cxxi. **“Market Settlement System”** means a system set up and administered by the Market Operator consisting of IT tools and software in order to perform the functions as provided in Sub-Section 7.2.2;
- cxxii. **“Market Operator”** means the person Licensed by the Authority to perform the functions of the Market Operator;
- cxxiii. **“Market Operator Fee”** means the fee determined by the Authority for the Market Operator;
- cxxiv. **“Market Participant”** means any person who is enrolled with the Market Operator and has also executed a Market Participation Agreement;
- cxxv. **“Market Operator Clearing Account”** means the bank accounts established by the Market Operator pursuant to Clause 12.1.1.3;

- cxxvi. **“Market Operator Miscellaneous Account”** means the bank account, established by the Market Operator, in which the Market Participant shall deposit the amounts associated with fines and/or penalties;
- cxxvii. **“Market Participants Register”** means the register organised and maintained by the Market Operator with the enrolment information of Market Participants, as defined in Chapter 4;
- cxxviii. **“Market Participation Agreement”** means the agreement executed by the Market Operator with another person who had applied to enrol as a Market Participant;
- cxxix. **“Market Transactions”** means those transactions in the Market which shall be applicable only after the CMOD. Such transactions include Balancing Mechanism for Energy and Capacity, compensation for Must Run Generation and Ancillary Services, Operator’s Fee, calculation of Excess Losses and verification of compliance with Capacity Obligations;
- cxxxi. **“Maximum Demand”** means maximum amount of electric power demanded by a Market Participant, averaged over a [30 minutes] period, expressed in Watts or its standard multiples;
- xxxii. **“Meter”** means a device that measures electrical energy as per specifications of the Grid Code;
- xxxiii. **“Metering Incident Report”** means a report prepared by the Metering Service Provider in the cases provided in Clauses 4.3.2.2 and 18.2.3.5 ;
- xxxiv. **“Metering Point”** means a Connection Point, equipped with a Commercial Metering System which is periodically read by an authorised Metering Service Provider;
- xxxv. **“Metering Service Provider” or “MSP”** means an entity responsible for the organization and administration of the Commercial Metering System and performing the functions of meter reading and validation at Metering Points and transferring those values to the Market Operator;
- xxxvi. **“MO Website”** means the website established by the Market Operator on the world-wide web for the exchange of information amongst the System Operator, the Market Operator, the Service Providers, Market Participants, and other interested parties in accordance with such restrictions on access as may be determined from time to time by the Market Operator;
- xxxvii. **“Must Run Generation”** in a particular Dispatch Period means an Out of Merit Generation Unit which has been dispatched by the System Operator in order to alleviate Congestion;
- xxxviii. **“Must Stop Generation”** in a particular Dispatch Period, means a Generation Unit having Variable Generation Cost lower than the System Marginal Price and is not dispatched or is dispatched at a value lower than its Available Capacity in order to alleviate Congestion;
- xxxix. **“National Transmission and Despatch Company Limited” or “NTDC”** means the national grid company Licensed by the Authority;
- xl. **“Non-dispatchable Generation Unit”** means a Generation Unit whose actual production, at a given time, is dependent on the availability of primary energy which is subject to uncontrollable meteorological factors;
- xli. **“Notice of Dispute”** shall have the meaning assigned to the term in Clause 14.3.1.1;

- cxli. **“Open Access”** shall have the meaning as assigned to the term for Transmission in the Transmission License and in the Grid Code; and for Distribution in the Distribution License and the Distribution Code;
- cxlii. **“Operational Reserve Margin”** shall have the meaning assigned to the term in Clause 9.2.4.3;
- cxliii. **“Out of Merit Generation Unit”**, in a particular Dispatch Period, means a Generation Unit having Variable Generation Cost higher than the System Marginal Price and, for such reason, (i) has not been dispatched; or (ii) has been dispatched for alleviating Congestion or for providing Ancillary Services required by the system;
- cxliv. **“Payments Calendar”** means the calendar prepared by the Market Operator indicating the dates for issuing the Preliminary and Final Settlement Statements (monthly and yearly), and the Debit Notifications for the whole fiscal year;
- cxlv. **“Payment Due Date”** means the date of the [2nd] Business Day after the issuance of the Debit Notification or provided otherwise for payment of a specific amount under a Debit Notification;
- cxlvi. **“Permanent Firm Capacity Certificate”** means a Firm Capacity Certificate granted pursuant Clause 8.3.1.7 that can be used to register Contracts with the Market Operator involving Capacity transactions;
- cxlvii. **“Physical Asset”** for the purposes of this Code, means a Generation Unit of a Generation Plant which is clearly identified;
- cxlviii. **“Preliminary Settlement Statement”** shall have the meaning assigned to the term in Sub-Section 7.3.1;
- cxlix. **“Preliminary Yearly Settlement Statement”** shall have the meaning assigned to the term in Sub-Section 11.4.1;
- cli. **“Procurement Acquisition Programme”** means a plan prepared by a Supplier of Last Resort or a joint plan prepared by several Suppliers of Last Resort in coordination with the Independent Auction Administrator, as the case may be, in accordance with the provisions of Power Procurement Regulations issued by the Authority.;
- cli. **“Record”** means an information, data, documents or any similar object in nature, produced or received by the Market Operator which shall be kept in writing or any other permanent form;
- clii. **“Reference Technology”** shall have the meaning assigned to the term in Clause 9.2.6.10;
- cliii. **“Regional Market” or “Regional Pool”** means the electric power market established among different countries for buying and selling electric power;
- cliv. **“Renewed Firm Capacity Certificate”** means a Firm Capacity Certificate which has been re-issued by the Market Operator due to the expiration of a previous Firm Capacity Certificate;
- clv. **“Review Request”** means a request lodged by a Market Participant with the Market Operator for review of the results of the BME, BMC, Preliminary or Final Settlement Statements (monthly or yearly), or the verification of compliance with the Capacity Obligations on the grounds that there exist errors, inaccuracies or wrong interpretations in any of the said documents;
- clvi. **“Section”** means a section of this Code;
- clvii. **“Secured Metering System” or “SMS”** means the IT system, including hardware, software and communication channels, which retrieves information from

- the Commercial Metering System and transfers it electronically to the Market Operator, at specified times;
- clviii. **“Security Constrained Economic Dispatch” or “SCED”** shall have the meaning assigned to the term in the Grid Code;
- clix. **“Security Cover”** means a financial security to be provided and maintained by a Market Participant or a Transmission Service Provider in the form and amount specified in Chapter 13;
- clx. **“Self-dispatch”** associated with a Generation Unit, means an operative condition in which the Generator decides, by itself, the amount of Energy that may be produced by the Generation Unit, without a specific instruction of the System Operator in this regard. For the avoidance of doubt, Generators which are exempted for being controlled by the System Operator, as per the provisions of the Grid Code, are not considered as being self-dispatched;
- clxi. **“Service Provider”** for the purpose of this code, means a person who may provide regulated services necessary for proper market or system functioning, and is not enrolled as a Market Participant such as Transmission Service Provider, Distribution Network Service Provider, Metering Service Provider, Independent Auction Administrator and Special Purpose Trader}, excluding the System Operator and Market Operator;
- clxii. **“Service Provider Agreement”** means the agreement executed between the Market Operator and a Service Provider to enrol it as Service Provider with the Market Operator;
- clxiii. **“Settlement”** means the process of calculating charges to be paid by and to Market Participants or Service Providers under this Code;
- clxiv. **“Settlement Period”** means a period of time for calculating the charges of the Imbalances associated with commercial transactions among Market Participants which is specified as one calendar month for Energy, one fiscal year for Capacity or any other shorter period of time as may be determined by the Market Operator. The Settlement Period for Ancillary Services shall be the same as the Settlement Period for Energy;
- clxv. **“Settlement Statement”** means the document prepared by the Market Operator which specifies the amount to be paid to or received by each Market Participant or Service Provider under this Code;
- clxvi. **“Settlement Software”** means the suite of computer programmes used by the Market Operator to calculate the Settlement amounts under this Code;
- clxvii. **“Special Purpose Trader”** means the functions of the CPPA-G, which deals with the administration of the Legacy Contracts as an agent of the Ex-WAPDA DISCOs and KE, in their role as Electric Power Suppliers as per its registration with Authority as Market Operator under the Market Rules 2015 before CMOD or its registration with the Authority under section 25A of the Act. after CMOD;
- clxviii. **“Standardized Contracts”** shall have the meaning assigned to the term in Clause 3.2.2.2;
- clxix. **“Sub-Section”** means a Sub-Section of this Code;
- clxx. **“Supplier of Last Resort”** means a DISCO which has received a Supply License from the Authority, allowing it to supply electricity to the consumers located in the area assigned to the DISCO at the rates established by the Authority;

- clxxi. **“Supply License” or “Electric Power Supply License”** means a License issued by the Authority under section 23E of the Act;
- clxxii. **“Suspension Order”** means an order issue by the Market Operator pursuant to Sub-Section 16.2.2;
- clxxiii. **“Suspended Participant”** is any Market Participant who has received and is the subject of a valid and continuing Suspension Order;
- clxxiv. **“System Marginal Price”** means the Variable Generation Cost of the most expensive Generation Unit which would be dispatched to supply one [1] additional MW of Demand as determined pursuant to:
 - a. the transitory methodology stipulated in Section 19.1 as an interim measure till the development of a CCOP for this purpose.
 - b. the relevant CCOP developed by the System Operator, according to Clause 5.5.1.2;
- clxxv. **“System Operator”** means a person licenced by the Authority under section 23 G of the Act;
- clxxvi. **“System Operator Fee”** means the fee determined by the Authority for the System Operator;
- clxxvii. **“System Peak Hours”** means the hours included in the period from 10 a.m. to 9:00 p.m. for the months of June, July, August, and September;
- clxxviii. **“Tariff Determination”** means a determination whereby the Authority approves tariff, rates, charges and other terms and conditions for provision of electric power services;
- clxxix. **“Temporary Firm Capacity Certificate”** means a Firm Capacity Certificate issued by Market Operator pursuant to Clause 8.3.1.4 that can be used as a proof of commitment during the verification process for compliance with the Capacity Obligations and/or to obtain financing for a project, but cannot be used to back up Capacity transaction in a Bilateral Contracts which has to be registered with the Market Operator;
- clxxx. **“Terminated Market Participant”** means a Market Participant whose enrolment as Market Participant has been revoked and its authorisation to participate in the Market has been terminated pursuant to a Termination Order;
- clxxxi. **“Termination Date”** means the date on which a Market Participation Agreement expires or the same is terminated by the Market Operator;
- clxxxii. **“Termination Order”** means an order issued by the Market Operator pursuant to Clause 16.2.3.1;
- clxxxiii. **“Total Demand”** means the total Demand of the system, calculated pursuant to the provisions of Sub-Section 6.3.2;
- clxxxiv. **“Trading Period”** means the period for which an Energy transaction or a Capacity transaction is allowed as defined in Clause 3.2.1.2;
- clxxxv. **“Trading Point”** means a Metering Point at which commercial transactions (buying or selling of Energy or Capacity) may take place;
- clxxxvi. **“Transmission”** means transportation of electric power over a Transmission Network;
- clxxxvii. **“Transmission Licensee”** means a person Licensed by the Authority under section 17, 18A or 19 of the Act;

- clxxxviii. **“Transmission Network”** for the purposes of this Code, means the electrical transmission facilities including electrical circuits, transformers and substations operating at such voltage as determined by the Authority;
- clxxxix. **“Transmission Service Provider” or “TSP”** means the holder of a Transmission License issued by the Authority and is enrolled with the Market Operator;
- cx. **“Transmitted Energy”** means the Energy which has been transported through the Transmission Network;
- cxci. **“Urgent Amendment”** shall have the meaning as assigned to the term as per Clause 1.3.7.1
- cxcii. **“Validation Checks”** means the set of evaluations, checks or verifications which are performed by a Metering Service Provider to determine the appropriateness of a metered value obtained through the Commercial Metering System;
- cxci. **“Variable Generation Cost”** means the costs which vary with the change of the output of a Generation Unit;
- cxci. **“Variable Generation Cost List”** means the table, prepared by the System Operator, containing list of all Generation Units and Imports associated with specific Generators, organized in ascending order of their Variable Generation Cost or Contract price in case of Imports, as the case may be;

1.2.1.2. The words and expressions used but not defined in this Commercial Code shall have the same meaning as are assigned to them in the Act.

1.2.2. INTERPRETATION

1.2.2.1. In case of any inconsistency or contradiction of the provisions of this Code with the Act, the provisions of the Act shall prevail to the extent of inconsistency or contradiction.

1.2.2.2. In this Code, unless the context otherwise requires:

- a) a reference to a particular Part, Chapter, Section, Sub-Section, Clause, or Appendix is to a Part, Chapter, Section, Sub-Section, Clause or Appendix of this Code;
- b) the table of contents and Chapter, Section or Sub-Section headings are for convenience only and shall be ignored while construing this Code;
- c) references to the masculine include the feminine and references to the singular include plural;
- d) PKR means Pakistani Rupees;
- e) the word “include” shall be construed without limitation;
- f) a reference to a “person” includes any individual, partnership, firm, company, corporation (statutory or otherwise), joint venture, trust, association, organisation or other entity, in each case whether or not having separate legal personality;
- g) a reference to law or act shall be construed to include any modification, extension, re-enactment or replacement thereof; and
- h) a derivative term of any defined or interpreted term or expression shall be construed in accordance with the relevant definition or interpretation.

1.2.3. RIGHT OF INTERPRETATION

1.2.3.1. The Market Operator shall implement, apply, and enforce the provisions of this Code.

1.2.3.2. The Market Operator shall have the right of interpretation of this Code. The Market Operator shall publish all such interpretations on the MO Website.

1.2.4. TIMES AND DATES

1.2.4.1. For the purposes of this Code, “Business Day” means a day on which the Banks in Islamabad are operational.

1.2.4.2. References to times of a day in this Code are to Pakistan Standard Time (PST).

1.3. **AMENDMENTS TO THIS CODE**

1.3.1. COMMERCIAL CODE REVIEW PANEL

1.3.1.1. There shall be a Commercial Code Review Panel (CCRP), to be established by the Market Operator, whose duties in respect of this Code and the CTBCM include reviewing, proposing and recommending amendments to this Code for approval of NEPRA on an on-going basis and making recommendations to the Authority on specific issues related to the operations of the CTBCM.

1.3.1.2. The total strength of CCRP shall consist of [12] members to be appointed as provided in Clause 1.3.1.7.

1.3.1.3. In order to convene a meeting, at least 8 members of the total strength of the CCRP shall constitute a quorum, provided that no act or proceeding of the CCRP shall be invalid by reason only of the existence of a vacancy in or defect in the constitution of the CCRP.

1.3.1.4. Decisions of the CCRP shall be taken by the majority of its members present and in case of a tie, the person presiding the meeting shall have a casting vote.

1.3.1.5. Provided that the member specified as independent representative nominated by the Authority shall not have any vote and shall hold the position as an observer.

1.3.1.6. Members of the CCRP shall:

- a) have a level of technical or commercial knowledge and expertise in the operation of power systems and electricity markets, and shall not be members of the Market Operator or System Operator boards;
- b) in the case of a member representing Market Participants, Transmission Service Providers, the System Operator or the Market Operator, he shall be a member, officer, employee, or agent of a person in the relevant category which such member represents;
- c) in the case of a member representing the Bulk Power Consumers, he shall be a duly authorised representative of registered bodies of such consumers;
- d) in the case of a member representing a Market Participant or a Transmission Service Provider or the System Operator or the Market Operator, he/she shall not be a member, officer, employee or agent of a person in another class of a Market Participant or the Transmission Service Provider or the Market Operator or of an Affiliate of such person; except in the case of NTDC as Transmission Service Provider and System Operator who may be member, officer, employee or agent of each other until the time

the System Operator will be carved out from NTDC, if so decided by the Competent Authorities;

- e) not serve for more than two terms as a member of the CCRP.

I.3.1.7. The CCRP shall consist of the following members:

- a) One representative of ex-WAPDA Generation Companies.
- b) One representative of Independent Power Producers other than ARE Producers.
- c) One representative of ARE Producers.
- d) One representative of WAPDA.
- e) One representative of the Transmission Service Providers.
- f) Two representatives of the EX-WAPDA DISCOs.
- g) One representative of K-Electric.
- h) One representative of the Competitive Electric Power Suppliers.
- i) One representative of the Bulk Power Consumers.
- j) One representative of the Electric Power Traders.
- k) Two representatives of the System Operator.
- l) Two representatives of the Market Operator.
- m) One representative nominated by the Authority as an observer, without voting rights.

I.3.1.8. Nomination of the CCRP members shall be as follows:

- a) The representative of ex-WAPDA Generation Companies shall be nominated by the Ministry of Energy (Power Division).
- b) The representative of Independent Power Producers and ARE Producers shall be appointed by the Association of Generators.
- c) The representative of WAPDA shall be appointed by WAPDA.
- d) The representative of the Transmission Service Providers shall be nominated by NTDC.
- e) The representative of the Ex-WAPDA DISCOs shall be nominated by the Association of Distribution Companies.
- f) The representative of K-Electric shall be nominated by K-Electric.
- g) The representative of the Competitive Electric Power Suppliers shall be nominated by the Association of Competitive Electric Power Suppliers.
- h) The representative of the Bulk Power Consumers shall be appointed by the Association of Bulk Power Consumers.
- i) The representative of the Traders shall be appointed by the Association of Traders.
- j) The representatives of the System Operator shall be appointed by NTDC or by the relevant company, in case the System Operator is carved out from NTDC.
- k) The representatives of the Market Operator shall be appointed by the Market Operator.

- I.3.1.9. Until the Association of Independent Power Producers, the Association of Distribution Companies, the Association of Competitive Electric Power Suppliers, the Association of Bulk Power Consumers and the Association of Traders are constituted and become operative, the Market Operator shall, in consultation with the enrolled Market Participants (who will submit [three names] of the proposed representatives for the respective Market Participant category) nominate the representatives of the initial CCRP.
- I.3.1.10. One of the representatives of the Market Operator shall be nominated by the Market Operator as the chairperson of the CCRP.
- I.3.1.11. The term of each member of the CCRP shall be three years. A member of the CCRP, whose term has expired, shall be eligible for renomination for a further term of three years.

I.3.2. COMMERCIAL CODE REPORT

- I.3.2.1. Every year, the Market Operator shall prepare a Commercial Code Report (CC Report), describing the problems experienced by the Market Operator and/or the System Operator during the implementation of the Commercial Code and the relevant CCOPs, as well as the list and description of interpretations made by the Market Operator. The Market Operator shall submit such report to the Authority as well as publish it on MO Website.
- I.3.2.2. The CC Report shall include:
- a) statistics of transactions in the market;
 - b) problems identified in the implementation of the Commercial Code, and the CCOPs;
 - c) interpretations made for this Code by the Market Operator, and any conflicts of interpretation of this Code with Market Participants or Service Providers;
 - d) any transitional exception granted to a Market Participant in complying with the Commercial Code or the CCOPs, and the reasons thereof, and inform when a transitional exemption has ended; and
 - e) any other relevant matter to identify any problems in the performance, feasibility, efficiency and design of this Code.

I.3.3. COMMERCIAL CODE WORKING GROUP

- I.3.3.1. The Market Operator shall set up a Commercial Code Working Group (CCWG), as a permanent advisory group to assist the CCRP in performing its functions. The Market Operator or the CCRP, as the case may be, may assign tasks to the CCWG to assess any problem or gap in the Commercial Code including the operational procedures.
- I.3.3.2. The CCWG shall include members from the System Operator and the Market Operator or if required, any other technical experts from the market or other organizations.
- I.3.3.3. The CC Working Group may propose to the CCRP:
- a) to accept or review an amendment proposal that has been presented to the CCRP;
 - b) Amendments to correct, complete or improve the Commercial Code; and
 - c) new or updated CCOPs for implementation of the Commercial Code.

- I.3.3.4. The CCRP may delegate to the CC Working Group the power to propose an Urgent Amendment to this Code and submission of the same by the Market Operator for approval of the Authority.

I.3.4. PROCEDURE FOR REVIEW OR AMENDMENT OF COMMERCIAL CODE

- I.3.4.1. The System Operator, a Service Provider, a Market Participant, the MCC Working Group or any other interested person may propose in writing to review or amend a provision of this Code (the “Amendment Submission”) to the Market Operator, accompanied with a statement of reasons.
- I.3.4.2. The Market Operator shall submit to the CCRP the Amendment Submission, with the identification of the person who submitted it. The CCRP may direct the person who submitted the Amendment Submission to provide further information as may be required.
- I.3.4.3. If the Amendment Submission is not proposed by the MCCWG, the CCRP shall refer the Amendment Submission to the MCC Working Group for review and submission of its opinion thereon.
- I.3.4.4. While considering an amendment to this Code, the CCRP shall take into consideration the recommendations of the MCC Working Group.
- I.3.4.5. Within thirty [30] Business Days of receipt of the Amendment Submission, the CCRP shall respond in writing whether the Amendment Submission, in the opinion of the CCRP:
- a) warrants further consideration; or
 - b) requires no consideration in accordance with Clause I.3.4.14.
- I.3.4.6. Where the CCRP decides to process the Amendment Submission further, it shall publish it in the Market Operator website, and give notice to all Market Participants and Service Providers of the contents of the Amendment Submission. The website publication and notice shall invite Market Participants and other interested persons, to make, within such reasonable period as shall be specified in the notice, which shall not be shorter than ten [10] Business Days, written submissions concerning the Amendment Submission. The notice shall also include an electronic address for submission of comments.
- I.3.4.7. The CCRP may, at any time direct the person who made the Amendment Submission, the Market Participants or other interested persons:
- a) to make such additional written submissions within such reasonable time as the CCRP determines appropriate; or
 - b) schedule and hold meetings with the person who made the Amendment Submission, Market Participants and other interested persons who filed a written submission.
- I.3.4.8. The CCRP shall provide notice of meetings to any relevant Market Participant or other interested persons, to participate in the meetings.
- I.3.4.9. The CCRP shall, as soon as reasonably practicable, consequent to any meetings and consultation sessions which may have been held, convene one or more meetings of its members, as may be necessary, to consider and vote on the Amendment Submission. The CCRP shall consider all submissions, received by it within the specified time.

- 1.3.4.10. Following the conclusion of the deliberations and meetings of CCRP, if an Amendment Submission is recommended to be submitted to NEPRA for review and approval, as originally proposed or with any modifications, the CCRP shall prepare a report which includes:
- a) the recommendations of the CCRP regarding the Amendment Submission and the analysis and the reasons thereof;
 - b) where the recommendations of the CCRP include a proposal to amend the Code, a copy of the proposed text of the Amendment, the suggested time of commencement of the Amendment, and a summary of any objections to the Amendment Submission which may have been raised through written submissions or brought to the attention of the CCRP during any meetings;
 - c) a summary of the procedure followed by the CCRP in considering the matter, including list of meetings held with parties, scope and general objectives;
 - d) a record of the vote of each member of the CCRP in respect of each of the recommendations made in the report; and
 - e) a summary of any objections raised by any member of the CCRP to the recommendations, if so requested by the said member.
- 1.3.4.11. Upon completion of the report referred to in Clause 1.3.4.10, the CCRP shall refer the matter to the Market Operator for onward submission to the Authority for approval of the recommendations.
- 1.3.4.12. The Market Operator may publish the recommendations contained in the report referred to in Clause 1.3.4.10 and give notice thereof to all relevant Market Participants, Service Providers and to the person or persons who made the Amendment Submission, provided that Confidential Information will not be disclosed unless authorized by the relevant party.
- 1.3.4.13. The Market Operator shall publish in its website, copies of all submissions received pursuant to Clause 1.3.4.5 or 1.3.4.6, together with the report prepared by the details of any further submissions which were made before the CCRP in accordance to 1.3.4.10.
- 1.3.4.14. The CCRP may reject the proposed Amendment if, in its opinion and with adequate justification, the proposed Amendment:
- a) unfairly discriminates against a Market Participant or class of Market Participants;
 - b) will limit, and not advance, competition, or prevent open entry into the wholesale competitive market;
 - c) may allow one or more Market Participants to possess market power;
 - d) may have a potential for abuse of market power by one or more Market Participants;
 - e) is not conducive to efficient and economic operation of the wholesale competitive market;
 - f) materially alters the framework of the CTBCM; or
 - g) is not consistent with the Applicable Law or policy of the GoP.
- 1.3.4.15. Where the Authority:
- a) approves the proposed Amendment to this Code, the Market Operator, within 5 business days after receiving decision of the Authority, shall publish such decision on the MO Website, together with a copy of the Amendment, and shall give notice of the

decision to all Market Participants, Service Providers and the person who proposed the Amendment Submission. The Market Operator shall update the Code accordingly.

- b) rejects the proposed Amendment this Code, the Market Operator shall publish such decision on the MO Website and disseminate it to all Market Participants, Service Providers and the person who proposed the Amendment Submission.
- c) reverts back the proposed Amendment with comments, the CCRP shall assess the comments and revise the Amendment accordingly to resubmit it to the Authority for approval.

1.3.5. AMENDMENTS INITIATED BY THE CCRP

1.3.5.1. Where the CCRP on its own motion or recommendations of the MCC Working, Group determines at any time that an Amendment to or a review of the Commercial Code is necessary, it shall issue a notice (the "Review Notice") in this respect together with the reasons thereof to the Market Participants and other interested persons to make written submissions within a specified period. Such Notice shall also be published on MO Website and shall contain an electronic address to submit comments.

1.3.5.2. The procedure set out in Clauses 1.3.4.6 to 1.3.4.15 shall, *mutatis mutandis*, apply to the Review Notice.

1.3.6. AMENDMENTS INSTRUCTED BY THE AUTHORITY

1.3.6.1. Where the Authority under section 23B (3) of the Act directs the Market Operator to make an Amendment in the Commercial Code, the Market Operator shall refer the said Amendment to the CCRP immediately.

1.3.6.2. The CCRP shall analyse the proposed Amendment and in case there is no cause to object the Amendment, it will introduce an Amendment to the Commercial Code as directed by the Authority and direct the Market Operator to submit the same for final approval of the Authority. Once approved by the Authority, the Market Operator shall publish the Amendment on its website and implement the same.

1.3.6.3. Where the CCRP considers that there is a just cause not to adopt the Amendment as directed by the Authority, it shall prepare its recommendations within 30 days in this respect and instruct the Market Operator to submit the same to the Authority.

1.3.6.4. In case the Authority does not agree with the cause provided by the Market Operator under Clause 1.3.6.3 and direct the Market Operator to implement the Amendment as initially instructed or with modification, the Market Operator shall implement the Amendment as per procedure in Clause 1.3.6.2 above.

1.3.7. URGENT AMENDMENTS

1.3.7.1. An Urgent Amendment may be proposed by the CCRP or recommended by the CC Working Group to the CCRP, with adequate justification, in the following cases:

- a) to avoid, reduce or mitigate the risks of abusing market power;
- b) to correct errors in formula and/or detailed data;
- c) to modify the provisions of this Code which are contradictory or inconsistent with the new rules or regulations framed under the Act where it is impossible to comply with such rules and regulations by following the normal procedure;

d) to avoid, reduce or mitigate unintended adverse effects of a provision of this Code.

I.3.7.2. Where the MCC Working Group submits a document recommending and justifying an Urgent Amendment to the CCRP, the CCRPCR shall convene, within 20 Business Days, a meeting to consider the proposed Amendment and either:

- a) recommend the Urgent Amendment, in the form proposed by the CC Working Group or with necessary modifications, in a document with the assessment and justification; or
- b) reject the proposed Urgent Amendment.

I.3.7.3. Where an Urgent Amendment is recommended by the CCRP, it shall instruct the Market Operator to submit the document with the proposed Urgent Amendment and its justification, for consideration and approval of the Authority.

I.3.7.4. Where an Urgent Amendment is approved by the Authority, the Market Operator shall forthwith publish such Urgent Amendment on the MO Website and shall also inform all the Market Participants and Service Providers. The Market Operator shall update the Code accordingly.

I.3.8. PREPARATION AND AMENDMENT OF THE CCOPS

I.3.8.1. Any new CCOP prepared under the provisions of this Code shall be submitted to the Authority for its review and information before implementation.

I.3.8.2. Any CCOP prepared under the provisions of this Code shall be consistent with this Code. If there is any inconsistency, the Code shall prevail to the extent of the inconsistency.

I.3.8.3. If an Amendment is required to an existing CCOP, the same shall be prepared by the Market Operator, or by the System Operator or the Metering Service Provider in collaboration with the Market Operator, as the case may be.

I.3.8.4. Any Amendment to an existing CCOP pursuant to Clause I.3.8.3, shall be approved by the CCRP before implementation.

Chapter 2. ENROLMENT OF MARKET PARTICIPANTS AND SERVICE PROVIDERS

2.1. MARKET PARTICIPANT ELIGIBILITY REQUIREMENTS FOR ENROLMENT

- 2.1.1.1. Any person who intends to buy or sell electric power (Energy and/or Capacity), or to participate in the CTBCM, unless exempted under this Code, shall enrol as a Market Participant with the Market Operator, in accordance with the provisions of this Chapter.
- 2.1.1.2. Following Categories of Market Participants shall be entitled to participate in the CTBCM:
- a) Generation Companies
 - b) Captive Generators
 - c) Electric Power Suppliers
 - d) Electric Power Traders
 - e) Bulk Power Consumers
- 2.1.1.3. Following persons are exempted to enrol as Market Participants to participate in the CTBCM:
- a) A small Generator, connected to a Distribution Network at the distribution voltage which does not fall in the scope of the Grid Code, and sells all its Capacity and Energy to a Supplier of Last Resort or an Electric Power Trade;
 - b) A Generator selling its Energy and/or Capacity through a Legacy Contract;
 - c) In case of Imports, the seller in the Contract;
 - d) In case of Exports the buyer in the Contract;
 - e) A Bulk Power Consumer in case it decides to buy both its Energy and Capacity from the relevant DISCO/Supplier of Last Resort or it decides to sign a Standardized Load Following Supply Contract with a Competitive Electric Power Supplier, as per the conditions stipulated in Sub-Section 3.3.3.
- 2.1.1.4. Any person who has been granted an exemption to enrol as a Market Participant as per Clause 2.1.1.3 above, may enrol as a Market Participant if it wishes to do so.
- 2.1.1.5. A person desirous to enrol as a Market Participant to participate in the Market shall fulfil the following requirements:
- a) the person:
 - a.1. if the application is as Generator, shall have a generation License or an authorization, concurrence or permission has been issued by the auth Authority to this effect;
 - a.2. if the application is as Electric Power Supplier, shall have an Electric Power Supplier License;
 - a.3. if the application is as Electric Power Trader, shall have an Electric Power Trader License; or
 - a.4. the person owns and operates Captive Generation; or
 - a.5. the person is a BPC;
 - b) in case of enrolling as a Generator or a BPC, the person has installed a Commercial

Metering System in each Connection Point, in accordance with the provisions of the Grid Code or the Distribution Code, as applicable, and has a valid Connection Agreement with the Transmission or Distribution Network Service Provider to which it is connected, provided that at the start of the Market, the person that is already connected without a Connection Agreement will be enrolled and will be obligated to submit the Connection Agreement within the next [6] months after its enrolment date.

- c) the person shall submit an Admission Application to the Market Operator which shall be processed as per provisions of this Code.

2.1.1.6. If at any time, a Market Participant ceases to be eligible to be enrolled as a Market Participant in accordance with this Code, the Market Participant shall immediately inform the Market Operator and, as soon as practicable, the Market Operator shall issue a Suspension Order in accordance with this Code.

2.2. RIGHTS AND OBLIGATIONS OF THE MARKET PARTICIPANTS

2.2.1.1. A Market Participant generally shall have, *inter alia*, the following obligations:

- a) If the Market Participant is a Generator, Captive Generator or a Trader representing a Generator, provide the Ancillary Services as provided in the Grid Code;
- b) submit to the Market Operator, in a timely manner and to the best of its knowledge, the information stipulated in this Code or as may be required by under the CCOPs and necessary for the Market Operator to perform its functions, and inform, as soon as possible, any change in such information;
- c) pay in time any Amounts Payable to the Market Operator;
- d) maintain a Security Cover and Guarantee Amount as required by the Market Operator as specified in this Code; and
- e) maintain a bank account for the administration of the market payment system;
- f) abide fully with this Code, as applicable.

2.2.1.2. Each Market Participant shall have, *inter alia*, the following rights:

- a) non-discriminatory Open Access to the Transmission and Distribution services in accordance with the Grid Code and the Distribution Code;
- b) participation in the Balancing Mechanisms for Energy and Capacity;
- c) if applicable, eligible for compensation for providing Ancillary Services or Must Run Generation, as provided in this Code;
- d) access to the reports and Non-Confidential Information on the website of the Market Operator, that this Code requires to be published as non-confidential;
- e) access to the secured portion of the Market Operator website which is exclusive for Market Participants;
- f) submission of complaints to the System Operator regarding a function assigned to it under this Code or to the Market Operator in accordance with the procedures provided in this Code.

2.3. PROCEDURES TO BECOME MARKET PARTICIPANT

2.3.1. APPLICATION TO BECOME A MARKET PARTICIPANT

2.3.1.1. The Market Operator shall develop a CCOP which shall include the following:

- a) to describe in detail the requirements to enrol as Market Participant and maintain such enrolment;
- b) The requisite information and documents to be furnished by the Applicant for each Category of Market Participants;
- c) An Admission Application;
- d) Detailed procedure for approval and rejection of the Admission Application; and
- e) Procedure for modification of the information already submitted by a Market Participant.

2.3.1.2. The Market Operator shall make available on its website the following documents and information in most updated form:

- a) the Admission Application form;
- b) the Commercial Code along with CCOPs;
- c) draft Standard Market Participation Agreement; and
- d) the schedule of fees for processing an Admission Application.

2.3.1.3. Any person interested to become a Market Participant shall submit to the Market Operator:

- a) a complete Admission Application;
- b) the information required in the CCOP relevant to the admission process;
- c) a non-refundable application processing fee as determined by the Market Operator; and
- d) where applicable, if the person has facilities γ already connected to the Grid System, the Transmission or Distribution Connection Agreement or the details thereof, provided that at the start of the CTBCM. the person that is already connected without a Connection Agreement shall be enrolled and will be required to submit the Connection Agreement within the next [six (6)] months from the date of its enrolment with the Market Operator, or in case the relevant facility is yet to be connected to the Grid System, the draft Transmission or Distribution Connection Agreement or a declaration that the involved facility of the Applicant shall be connected to the Transmission or Distribution Network.

2.3.1.4. An Applicant who wants to be enrolled in more than one of the Categories defined in Clause 2.1.1.2 shall submit separate application for each Category.

2.3.2. APPLICATION PROCESS

2.3.2.1. Within five [5] Business Days of receipt of an Admission Application along with the supporting information, the Market Operator shall acknowledge the receipt of the Applicant in writing:

- a) that it has received the Admission Application, any other documents as required in 2.3.1.3 and the admission CCOP, if any, and the non-refundable processing fee; and
- b) if applicable, notifying the amount of the Security Cover and Guarantee Amount pursuant to the provisions stated in Chapter 13.

- 2.3.2.2. Within 5 Business Days of receipt of notification from the Market Operator pursuant to Clause 2.3.2.1.b), specifying the amount of Security Cover and Guarantee Amount required to be furnished by the Applicant, the Applicant shall furnish to the Market Operator a proposal for a provision of the Security Cover and the Guarantee Amount.
- 2.3.2.3. Within seven [7] Business Days after receipt of the proposal of the Applicant pursuant to Clause 2.3.2.2, the Market Operator shall inform the Applicant:
- a) the Admission Application is deficient, and the Applicant is required to provide certain information or documents and return the application; and/or
 - b) that it is required to supply such additional information or documents; and/or
 - c) if applicable, the metering system installed by the Applicant is not in accordance with the provisions of this Code or the Grid Code, and if required, the Applicant has to install additional Commercial Metering System at one or more identified points; and/or
 - d) the Applicant's proposal regarding Security Cover and Guarantee Amount is not in accordance with Clause 13.1.2.1.
- 2.3.2.4. If the Market Operator requests additional information or documents pursuant to Clause 2.3.2.3 or informs the Applicant that it has to install additional Commercial Metering Systems or that the proposal for the Security Cover and Guarantee Amount is not acceptable, the Applicant shall provide such additional information, documents, or install the additional Commercial Metering Systems or submit a revised proposal for the Security Cover or Guarantee Amount or re-submit the Admission Application after remedying the deficiencies, as the case may be, at the earliest possible date.
- 2.3.2.5. Where an Applicant does not comply with the request of the Market Operator as required in Clause 2.3.2.4 within 3 months, the Admission Application shall automatically lapse, however, the Applicant may reapply to the Market Operator after fulfilling all the requirements.

2.3.3. PROCEDURES FOR APPROVAL / REJECTION OF AN ADMISSION APPLICATION

- 2.3.3.1. If the Applicant fulfils the requirement specified in this Code and the relevant CCOP, the Market Operator shall accept the Admission Application and provide the Applicant the standardized Market Participation Agreement for execution.
- 2.3.3.2. If applicable, the Market Operator shall also inform the approved form in which Security Cover and Guarantee Amount must be furnished by the Applicant and copies of such other agreements, if any, submitted by the Applicant, as the Market Operator agrees to enter into, in final form for the Applicant to sign and return to the Market Operator.
- 2.3.3.3. The Market Operator may reject an Admission Application for one or more of the following reasons:
- a) the Applicant does not possess the requisite Licence or regulatory authorization/permission/concurrence or other regulatory documents required under this Code;
 - b) the Applicant doesn't comply with any applicable regulations;
 - c) the Applicant has not supplied the requisite information or has not installed the requisite Commercial Metering System;
 - d) in the Market Operator's sole discretion, the proposal of the Applicant for the provision of the Security Cover and Guarantee Amount is not in accordance with the provisions

of Sub-Section 13.1.2;

- e) the Applicant previously defaulted on its obligations as a Market Participant and its enrolment was terminated and has not yet remedied the cause of such default.

2.3.4. FINAL STEPS TO BECOME A MARKET PARTICIPANT

2.3.4.1. Upon receipt of the Market Participation Agreement and the approved form and amount of the Security Cover and Guarantee Amount, forwarded by the Market Operator pursuant to Clause 2.3.3.2, the Applicant shall:

- a) execute the Market Participation Agreement, and return it to the Market Operator; and
- b) if applicable, furnish to the Market Operator the required Security Cover and Guarantee Amount.

2.3.4.2. After receipt of the Market Participation Agreement, duly executed by an authorised official of the Applicant, and the required Security Cover and Guarantee Amount, the Market Operator shall enrol the Applicant as a Market Participant by giving it a unique identification number within five [5] Business Days of the receipt of the aforesaid documents, and inform the Market Participant accordingly.

2.3.4.3. The Applicant shall be a Market Participant with effect from the date of enrolment and shall be provided access to the secured Section of the MO Website.

2.3.4.4. The Market Operator shall:

- a) provide to the newly enrolled Market Participant the names of all other Market Participants and their requisite details;
- b) inform all other Market Participants the details of newly enrolled Market Participant.

2.3.5. RIGHTS FOR APPEAL AND RECONSIDERATION

2.3.5.1. Any person whose Admission Application has been rejected may challenge the decision of the Market Operator in accordance with the Dispute resolution procedure set out in Chapter 14.

2.4. MARKET PARTICIPANT ENROLMENT

2.4.1. MARKET PARTICIPANTS REGISTER

2.4.1.1. The Market Operator shall organise, maintain, and place on its website a register of Market Participants called the Market Participants Register. The Market Participants Register shall identify the status of each Market Participant, namely: active, suspended, terminated, withdrawn or notified for withdrawal.

2.4.1.2. Upon admission of a Market Participant in one or more Categories of Market Participants, the Market Operator shall record the relevant information in the Market Participants Register.

2.4.1.3. The Market Participants Register shall clearly indicate the Categories in which a Market Participant is enrolled.

2.4.1.4. The Market Operator shall update the Market Participants Register upon:

- a) enrolment of a new Market Participant;
- b) issuance of a Suspension Order;
- c) termination or withdrawal;
- d) receipt of new information as per Clause 2.4.2.1.

2.4.2. MARKET PARTICIPANT'S ONGOING REPORTING OBLIGATIONS

- 2.4.2.1. Each Market Participant shall have an ongoing obligation to inform the Market Operator of any material change related to its business and to the information included in its Admission Application, including any modification in the technical or operational characteristics of the equipment it owns and is connected to the Grid System.
- 2.4.2.2. If a Market Participant fails to comply with the requirements of Clause 2.4.2.1, which may have a materially adverse effect on the buying and selling obligations of other Market Participants, the Market Operator, may suspend or terminate the Market Participant's rights in accordance with Chapter 16 of this Code.

2.5. WITHDRAWAL OR TERMINATION OF ENROLMENT OF A MARKET PARTICIPANT

2.5.1. WITHDRAWAL BY A MARKET PARTICIPANT

- 2.5.1.1. A Market Participant may withdraw as a Market Participant at any time subject to fulfilment of the following conditions:
- a) by giving notice of not less than two [2] months in writing to the Market Operator;
 - b) the Market Operator shall examine the withdrawal notice and verify compliance of the Market Participant with the requirement of Clause 2.5.1.2 below;
 - c) thereafter, deregister all its Bilateral Contracts with other Market Participants, as stipulated in Sub-Section 3.6;
 - d) obtaining the prior written consent of the Authority or from another competent forum to its ceasing to be a Market Participant, in cases this consent is required by the existing policy or regulation or the conditions of its License. Its withdrawal shall take effect only on such terms and conditions as the Authority may determine.
- 2.5.1.2. The requirements to be fulfilled by the Market Participant prior to its withdrawal, pursuant to Clause 2.5.1.1 above are:
- a) all amounts due and payable by the Market Participant under or pursuant to this Code have been paid in full prior to the Termination Date;
 - b) the Market Participant is not in breach of any legal, policy or regulatory requirement, including any required consent from the Authority, by ceasing to be a Market Participant; and
 - c) the Market Participants has remedied any breach which is capable of remedy prior to the withdrawal notice.
- 2.5.1.3. Notwithstanding compliance with Clause 2.5.1.2 above, the Market Participant shall remain liable for all obligations and liabilities which were incurred or arose prior to the Termination Date regardless the date on which such claim relating thereto may be made.

- 2.5.1.4. The acceptance of the withdrawal notice by the Market Operator and subsequent deregistration of the Contracts shall result in the automatic termination of the Market Participation Agreement.

2.5.2. TERMINATION DECIDED BY THE MARKET OPERATOR

- 2.5.2.1. The Market Operator may decide to revoke the enrolment of a Market Participant in accordance with the provisions of Chapter 16.

2.6. ENROLMENT OF SERVICE PROVIDERS

- 2.6.1.1. Any person holding a Transmission License, Distribution License or registered by the Authority as Metering Service Provider, shall enrol as a Service Provider with the Market Operator, in accordance with the provisions of this Chapter.
- 2.6.1.2. If at any time, a Service Provider ceases to be eligible to be enrolled as a Service Provider in accordance with this Code, the Service Provider shall immediately inform the Market Operator and, as soon as practicable, the Market Operator shall inform the Authority.

2.7. RIGHTS AND OBLIGATIONS OF THE SERVICE PROVIDERS

- 2.7.1.1. A Service Provider shall have, *inter alia*, the following obligations relevant to this Code:
- a) submit to the System Operator and the Market Operator, in a timely manner and to the best of its knowledge, the information stipulated in this Code or as may be required by the System Operator and the Market Operator in accordance with this Code, and inform, as soon as possible, any change in such information;
 - b) pay in time any Amounts Payable to the Market Operator;
 - c) if required, maintain a Security Cover as required by the Market Operator as provided in this Code; and
 - d) if applicable, maintain a bank account for the administration of the market payment system;
 - e) abide fully with this Code as applicable.
- 2.7.1.2. . In the Market, each Service Provider shall have, *inter alia*, the following rights:
- a) undertake the market related activities for which it has been enrolled by the Market Operator;
 - b) access to the reports and Non-Confidential Information on the website of the Market Operator, which are defined as non-confidential in this Code;
 - c) submission of complaints to the System Operator regarding a function assigned to it under this Code or to the Market Operator in accordance with the procedures provided in this Code.

2.8. PROCEDURE TO ENROL AS A SERVICE PROVIDER

2.8.1. APPLICATION TO ENROL AS SERVICE PROVIDER

- 2.8.1.1. The Market Operator shall develop a CCOP which shall include the following:
- a) to describe in detail the requirements to enrol as Service Provider and maintain such

enrolment;

- b) The requisite information and documents to be furnished by the Applicant for each type of service;
- c) An Admission Application;
- d) Detailed procedure for approval and rejection of the Admission Application; and
- e) Procedure for modification of the information already submitted by a Service Provider.

2.8.1.2. The Market Operator shall make available on its website the following documents information in updated form:

- a) the Admission Application form for enrolment of Service Providers;
- b) the Commercial Code along with CCOPs;
- c) draft Standard Service Provider Agreement; and
- d) if applicable, the schedule of fees for processing an Admission Application.

2.8.1.3. Any person interested to become a Service Provider shall submit to the Market Operator:

- a) a complete Admission Application;
- b) the information required in the CCOP relevant to the admission process;
- c) if applicable, a non-refundable application processing fee as determined by the Market Operator.

2.8.1.4. An Applicant who wants to be enrolled for more than one type of services shall submit separate application for each type of service.

2.8.2. APPLICATION PROCESS

2.8.2.1. The process defined under Sub-section 2.3.2 shall, *mutatis mutandis*, apply to enrol a person as a Service Provider.

2.8.3. PROCEDURE FOR APPROVAL / REJECTION OF AN ADMISSION APPLICATION

2.8.3.1. If the Applicant fulfils the requirement specified in this Code and the relevant CCOP, the Market Operator shall accept the Admission Application and provide the Applicant the standardized Service Provider Agreement for execution.

2.8.3.2. The Market Operator may reject an Admission Application for enrolment as a Service Provider for one or more of the following reasons:

- a) the Applicant does not possess the requisite Licence or registration with the Authority;
- b) the Applicant has not supplied the requisite information.

2.8.4. FINAL STEPS TO ENROL AS A SERVICE PROVIDER

2.8.4.1. Upon receipt of the Service Provider Agreement forwarded by the Market Operator pursuant to Clause 2.8.3.1, the Applicant shall execute the Service Provider Agreement, and return it to the Market Operator.

2.8.4.2. After receipt of the Service Provider Agreement, duly executed by an authorised official of the Applicant, the Market Operator shall enrol the Applicant as a Service Provider by giving it a unique identification number within five [5] Business Days of the receipt of the aforesaid documents and inform the Service Provider accordingly.

2.8.4.3. The Market Operator shall inform all Market Participants and Service Providers the details of newly enrolled Service Provider.

2.8.5. DISPUTE RESOLUTION

2.8.5.1. Any person whose Admission Application has been rejected may challenge the decision of the Market Operator in accordance with the Dispute resolution procedure set out in Chapter 14.

2.8.6. SERVICE PROVIDER REGISTER

2.8.6.1. The Market Operator shall organise, maintain, and place on its website a register of Service Providers called the Service Providers Register.

2.8.6.2. Upon enrolment as a Service Provider for one or more type of services, the Market Operator shall record the relevant information in the Service Providers Register.

2.8.6.3. The Service Providers Register shall clearly indicate the type of services for which a Service Provider is enrolled.

2.8.6.4. The Market Operator shall update the Service Providers Register upon:

- a) enrolment of a new Service Provider;
- b) termination or withdrawal of a Service Provider;
- c) receipt of new information as per Clause 2.8.7.1.

2.8.7. SERVICE PROVIDER'S ONGOING REPORTING OBLIGATIONS

2.8.7.1. Each Service Provider shall have an ongoing obligation to inform the Market Operator of any material change related to its business and to the information included in its Admission Application, including any modification in the technical or operational characteristics of the equipment it owns and is connected to the Grid System.

2.8.7.2. If a Service Provider fails to comply with the requirements of Clause 2.8.7.1, which may have a materially adverse effect on the Market, the Market Operator may take an enforcement action in accordance with Chapter 16 of this Code.

2.9. WITHDRAWAL OR TERMINATION OF ENROLMENT AS A SERVICE PROVIDER

2.9.1. WITHDRAWAL BY A SERVICE PROVIDER

2.9.1.1. A Service Provider may withdraw its enrolment with the Market Operator at any time subject to fulfilment of the following conditions:

- a) by giving notice of not less than two [2] months in writing to the Market Operator;
- b) the Market Operator shall examine the withdrawal notice and verify compliance of the Market Participant with the requirement of Clause 2.5.1.2 above;

- c) obtaining the prior written consent of the Authority.

2.9.1.2. The requirements to be fulfilled by the Service Provider prior to its withdrawal, pursuant to Clause 2.9.1.1 above are:

- a) all amounts due and payable by the Service Provider under or pursuant to this Code have been paid in full prior to the withdrawal;
- b) the Service Provider is not in breach of any legal, policy or regulatory requirement, including any required consent from the Authority, by ceasing to be a Market Participant; and
- c) the Service Provider has remedied any breach which is capable of remedy prior to the withdrawal notice.

2.9.1.3. Notwithstanding compliance with Clause 2.9.1.2 above, the Service Provider shall remain liable for all obligations and liabilities which were incurred or arose prior to the withdrawal regardless the date on which such claim relating thereto may be made.

2.9.1.4. The acceptance of the withdrawal notice by the Market Operator shall result in the automatic termination of the Service Provider Agreement.

2.9.2. TERMINATION DECIDED BY THE MARKET OPERATOR

2.9.2.1. The Market Operator may decide to expel a Service Provider in accordance with the provisions of Chapter 16.

2.10. ENROLMENT OF OTHER PERSONS

2.10.1. REQUIREMENT BE BECOME AN ENROLLED PERSON

2.10.1.1. The following persons shall enrol with the Market Operator to become Enrolled Persons:

- a) A person who is not enrolled as Market Participant and intends to obtain Firm Capacity Certificates for a Generation Unit or a Generation Plant;
- b) A person who is a BPC and is not registered as Market Participant and intends to sign a Standardized Load Following Contract with a Competitive Electric Power Supplier.

2.10.2. PROCEDURE TO BECOME AN ENROLLED PERSON

2.10.2.1. The process defined under Section 2.8 shall, *mutatis mutandis*, apply to become a Enrolled Person.

2.10.3. RIGHTS AND OBLIGATIONS OF ENROLLED PERSONS

2.10.3.1. An Enrolled Person shall have, *inter alia*, the following obligations:

- a) comply with the provisions of this Code;
- b) timely submit any information required by the Market Operator;
- c) any other obligations as required under this Code.

2.10.3.2. Each Enrolled Person shall have, *inter alia*, the following rights:

- a) obtain the Firm Capacity Certificate or be a party to a Standardized Load Following Contract, as the case may be;
- b) become a Market Participant subject to fulfilling the eligibility requirements as provided in this Code;
- c) access to the reports and Non-Confidential Information on the website the Market Operator, which are defined as non-confidential in this Code;
- d) submission of complaints to the Market Operator in accordance with the procedures provided in this Code.

2.11. ENROLMENT FEE

2.11.1. REQUIREMENT OF ENROLMENT FEE

- 2.11.1.1. The Market Operator may charge a fee on any person who submits an application to the Market Operator for enrolment as Market Participant or Service Provider or Enrolled Person.
- 2.11.1.2. The amount of fee as referred to in Clause 2.11.1.1 above shall be approved by the Board of Market Operator for each Category of Market Participants, Service Providers or Enrolled Persons and shall be published on MO Website.

Chapter 3. CONTRACTS AND CONTRACT REGISTRATION

3.1. CONTRACT MARKET

3.1.1. TRADING OF ENERGY AND CAPACITY

3.1.1.1. In the CTBCM, Energy and Capacity buying and selling among Market Participants shall be primarily carried out through Contracts which shall be registered with the Market Operator. The Contract Market shall include:

- a) bilateral buying and selling among Market Participants; or
- b) bilateral buying and selling between a Market Participant and entities located in foreign countries; or
- c) bilateral buying and selling between a Market Participant and a person which operate under a special regime in areas where the applicability of Act is not extended.

3.1.2. MANDATORY CLAUSES

3.1.2.1. All Market Participants shall ensure that the Contracts are designed in such a way that all Energy and Capacity is bought or sold through these Contracts or through the Balancing Mechanism for Energy and Capacity provided in this Code.

3.1.2.2. All Contracts, to be registered with the Market Operator, must include a clause whereby both parties agree to abide by this Code, the Grid Code and, , the Distribution Code, as these codes are applicable.

3.1.2.3. All Contracts, as referred to in Clause 3.1.2.2, where the seller is a Generator or the seller is an Electric Power Trader which is representing Generators shall include conditions establishing that the seller in the Contract agrees to provide all Ancillary Services as stipulated in the Grid Code, if the contracted generation has the technical capability and equipment to do so, without any additional payment other than those explicitly provided in Chapter 6.

3.1.2.4. All Contracts must include a clause whereby both parties agree to use the quantities, for their bilateral settlement purposes, as included in the Settlement Statements issued by the Market Operator in accordance with this Code and the relevant CCOPs. The review of the quantities and Settlement Statements or in case there is a dispute, shall be dealt with in accordance with this Code.

3.2. CONTRACT FORMATS

3.2.1. GENERAL REQUIREMENTS FOR CONTRACTS

3.2.1.1. A Contract in the CTBCM shall be bilaterally agreed between a seller and a buyer and it may include Energy, Capacity or both products simultaneously. The transactions for each of these two products shall be explicitly specified in the Contract for each Trading Period. The Contracts shall also specifically include provisions regarding allocation of compensations related to Must Run Generation and Ancillary Service to the seller or the buyer.

3.2.1.2. For the application of this Code:

- a) the Energy Trading Period is defined as one hour.
- b) the Capacity Trading Period is defined as one day, starting at 0:00 and ending at 23:59 of the same day.

3.2.1.3. The contracted Energy quantities as agreed in the registered Contracts, will be used for Settlement of the Imbalances of Energy.

3.2.1.4. The contracted Capacity quantities as agreed in the registered Contracts will be used for:

- a) verifying compliance with the ex-ante Capacity Obligations of the Market Participants; and
- b) calculating the Capacity Balances of the Market Participants in the Balancing Mechanism for Capacity and verification of ex-post Capacity Obligations.

3.2.1.5. Capacity transactions in a registered Contract may be agreed as following:

- a) **Guaranteed Capacity:** Where the seller assumes complete responsibility for the Capacity Imbalances, which may arise in the Balancing Mechanism for Capacity, linked with the value of Capacity sold by the seller, as provided in Chapter 9.
- b) **Non-guaranteed Capacity:** Where the buyer assumes complete responsibility for the Capacity Imbalances, which may arise in the Balancing Mechanism for Capacity, linked with the value of Capacity bought by the buyer, as provided in Chapter 9.

For the avoidance of doubt, Capacity transactions, either Guaranteed or Non-guaranteed shall be credited to the buyer for compliance with the ex-ante Capacity Obligations of the buyer, as specified in Chapter 10.

3.2.2. TYPES OF CONTRACTS

3.2.2.1. A Contract agreed between a seller and a buyer may be classified as under:

- a) Standardized Contract
- b) Customized Contract

3.2.2.2. A Standardized Contract is a Contract in which the amount of Energy and Capacity is bought and sold according to the pre-defined terms and conditions. These types of Contracts are further explained in Section 3.3.

3.2.2.3. In case a Standardized Contract has been executed, and the parties formally declare this during the Contract registration process, it will not be necessary to disclose the signed Bilateral Contract to the Market Operator, and it would be sufficient to provide information required in this Code to proceed with the registration of the Contract.

3.2.2.4. A Customized Contracts is a Contract that may not be classified as a Standardized Contract. In case a Customized Contract has been executed, the Market Operator may require the parties to provide any information it deems necessary to ensure proper settlement of the contracted quantities in the Balancing Mechanism for Energy and Capacity.

For the avoidance of doubt:

- a) the Market Operator, if adequately justified, may review the original Contract signed between the parties only in order to assess the implication of certain clauses or provisions in the balancing mechanisms settlement process and Capacity Obligations;

- b) the Market Operator shall not review the prices or other commercially sensitive information agreed between the parties to the extent that such information is not necessary to take a decision, provided that it will be decided by the Market Operator whether certain information, excluding the prices, is commercially sensitive or not subject to the Market Operator providing the justification; and
- c) all the information received by the Market Operator, other than the information to be incorporated into the Contract Register shall be considered Confidential Information and shall be handled as per provisions of Chapter 17.

3.2.2.5. Following types of Contracts shall be considered Standardized Contracts:

- a) Generation Following Supply Contract
- b) Capacity and Associated Energy Supply Contract
- c) Load Following Supply Contract
- d) Financial Supply Contract with Fixed Quantities

3.3. CHARACTERISTICS OF STANDARDIZED CONTRACTS

3.3.1. GENERATION FOLLOWING SUPPLY CONTRACT

3.3.1.1. In a Standardized Generation Following Supply Contract, the seller may sell:

- a) a defined percentage of the Capacity associated with the Physical Asset or assets; and
- b) a defined percentage of the Energy injected into the Grid System.

3.3.1.2. This Contract shall have, *inter alia*, the following characteristics:

- a) the seller either may be a Generator or an Electric Power Trader and the buyer either may be an Electric Power Supplier or an Electric Power Trader;
- b) the Contract shall be associated with a Physical Asset or group of Physical Assets, clearly identified;
- c) the amount of Energy bought and sold shall be a defined percentage of all the Energy injected into the Grid System by the associated Generation Plant at each Trading Period;
- d) the amount of Capacity bought and sold shall be a defined percentage of the Firm Capacity Certificates issued by the Market Operator, associated with the Physical Asset;
- e) the percentages used for the Capacity and the Energy may be different ranging from zero [0%] to one hundred [100%];
- f) the Capacity bought and sold is Non-Guaranteed;
- g) the revenues that a Generator may be eligible to receive for the provision of Ancillary Services and Must Run Generation shall be assigned to the buyer; and
- h) the duration of the Contract shall be at least, two (2) years starting from the Effective Date of the Contract.

3.3.1.3. Following information shall be provided by the parties during the Contract registration process:

- a) identification of the buyer and seller;
- b) identification of the Physical Asset or assets and the corresponding Trading Points for the commercial transactions;

- c) a defined percentage of the total Energy injected into the Grid System by the seller which shall be considered to calculate the contracted quantities;
- d) number of Firm Capacity Certificates, associated with the Physical Asset involved in the Contract;
- e) declaration of percentage of the total Capacity, backed by Firm Capacity Certificates, that the Generator is selling to the buyer; and
- f) the Effective Date of the Contract and the duration of the Contract.

3.3.2. CAPACITY AND ASSOCIATED ENERGY SUPPLY CONTRACTS

3.3.2.1. The Standardized Capacity and Associated Energy Supply Contract is relatively similar to the Generation Following Supply Contracts, but it may also be used by BPCs. In a Standardized Capacity and Associated Energy Supply Contract, the seller may sell:

- a) a defined percentage of the Capacity of the Physical Asset or assets; and
- b) a defined percentage of the Energy injected into the Grid System.

3.3.2.2. This Contract shall have, *inter alia*, the following characteristics:

- a) the seller either may be a Generator or an Electric Power Trader and the buyer either may be an Electric Power Supplier, an Electric Power Trader or a BPC;
- b) the Contract shall be associated with a Physical Asset or group of Physical Assets, clearly identified;
- c) the amount of Energy bought and sold shall be a defined percentage of all the Energy injected into the Grid System by the associated Generation Plant at each Trading Period;
- d) the amount of Capacity bought and sold shall be a defined percentage of the Firm Capacity Certificates issued by the Market Operator, associated with the Physical Asset;
- e) the percentages used for the Capacity and the Energy may be different ranging from zero [0%] to one hundred [100%];
- f) the Capacity bought and sold can be Guaranteed or Non-Guaranteed, as agreed by the parties;
- g) the revenues that the Generator may be eligible to receive for the provision of Ancillary Services and Must Run Generation may be assigned to the buyer or the seller, as per information provided by the parties to the Market Operator during Contract registration process; and
- h) the duration of the Contract shall be, at least, two (2) years starting from the Effective Date of the Contract.

3.3.2.3. Following information shall be provided by the parties during the Contract registration process:

- a) identification of the buyer and seller;
- b) identification of the Physical Asset or assets and the corresponding Trading Points for the commercial transactions;
- c) a defined percentage of the total Energy injected into the Grid System by the seller which shall be considered to calculate the contracted quantities;
- d) number of Firm Capacity Certificates, associated with the Physical Asset involved in the commercial transaction;

- e) declaration of percentage of the total Capacity, backed by Firm Capacity Certificates, that the Generator is selling to the buyer; and
- f) declaration whether the Capacity sold and bought shall be considered as Guaranteed or Non-Guaranteed;
- g) declaration regarding assigning the revenues that the Generator may be eligible to receive for the provision of Ancillary Services and Must Run Generation to the buyer or the seller; and
- h) the Effective Date of the Contract and the duration of the Contract.

3.3.3. LOAD FOLLOWING SUPPLY CONTRACTS

3.3.3.1. In a Standardized Load Following Supply Contract, the seller may sell all the Energy and Capacity which may be withdrawn by the buyer at a set of pre-defined Trading Points. The seller shall assume complete responsibility for the obligations of the buyer in the Balancing Mechanisms for Energy and Capacity, as well as for the Capacity Obligations imposed on the buyer.

3.3.3.2. This Contract shall have, *inter alia*, the following characteristics:

- a) the seller may be a Generator, a Supplier of Last Resort, a Competitive Electric Power Supplier or an Electric Power Trader;
- b) the buyer may be a Competitive Electric Power Supplier, an Electric Power Trader or a BPC, and the Trading Points in such a Contract shall be demand points where the Energy always flow from the seller side to the buyer side;
- c) The Contract shall be associated with a set of clearly identified Trading Points. This type of Contract shall not necessarily be associated with a Physical Asset or group of Physical Assets;
- d) the amount of Energy bought and sold is the total Energy taken by the buyer, at each Energy Trading Period, at all the identified Trading Points;
- e) the amount of Capacity bought and sold is the total Capacity used by the buyer, at any Capacity Trading Period, aggregated over all the identified Trading Points;
- f) the Capacity bought and sold is Guaranteed Capacity;
- g) the revenues that the seller may be eligible to receive for the provision of Ancillary Services and Must Run Generation, shall be retained by the seller; and
- h) the duration of the Contract is, at least, two (2) years starting from the Effective Date of the Contract.

3.3.3.3. Following information shall be provided by the parties during the Contract registration process:

- a) identification of the buyer and seller;
- b) the effective date and duration of the Contract;
- c) identification of the Trading Points involved in the transactions;
- d) number of Firm Capacity Certificates that the seller may assign to the buyer to back the contracted quantities, which shall not be lower than the value indicated in 3.3.3.3.e). The Status of these Firm Capacity Certificates will be changed to “Blocked” and they cannot be used for by the seller to back any other Capacity transaction until such certificates are unblocked in accordance with the provisions of this Code.

- e) maximum value of the demand aggregated over all the Trading Points of the buyer in the System Peak Hours of the last year. This value shall be:
 - e.1. certified by the Metering Service provider; or
 - e.2. certified by the Distribution Licensee, in case the Metering Service Provider does not have historical values at one or more Trading Points; or
 - e.3. a formal declaration of the buyer, stating its best estimate of the maximum value of the aggregated demand, in case neither the Metering Service Provider nor the Distribution Licensee are able to certify such value or do not provide the certified values within a reasonable time.

3.3.4. FINANCIAL SUPPLY CONTRACT WITH FIXED QUANTITIES

3.3.4.1. In a Standardized Financial Supply Contract with Fixed Quantities, the seller may sell defined quantities of Energy and/or Capacity at each Energy and/or Capacity Trading Period.

3.3.4.2. This Contract shall have, *inter alia*, the following characteristics:

- a) the seller and buyer shall be enrolled as Market Participants;
- b) all or a specific group of Trading Points of each Market Participant are involved in the commercial transaction;
- c) the amount of Energy bought and sold at each Energy Trading Period shall be a fixed value, expressed in MWh. The fixed values for the Energy bought and sold may be modified during the duration of the Contract, according to the procedure specified in Section 3.5.6;
- d) for Settlement of Imbalances in the Balancing Mechanism for Energy, the Energy bought and sold at each Energy Trading Period shall be:
 - d.1. considered to be sold by the seller, regardless it has been produced by the seller or not;
 - d.2. considered to be bought by the buyer, regardless it has been used (consumed) by the buyer or not;
- e) the amount of Capacity bought and sold at each Capacity Trading Period shall be a fixed value, expressed in MW, backed by Firm Capacity Certificates. The fixed values for the Capacity bought and sold shall not be modified during the duration of the Contract except where the number of Firm Capacity Certificates of the seller are reduced after review or renewal of the Firm Capacity Certificate;
- f) the Capacity bought and sold may be “Guaranteed Capacity” or “Non-guaranteed Capacity”, as may be agreed between the parties;
- g) for settlement of Imbalances in the Balancing Mechanism for Capacity, the Capacity bought and sold at each Capacity Trading Period shall be:
 - g.1. Considered to be sold by the seller and procured by the buyer in full, regardless the actual availability of the Physical Assets involved in the Firm Capacity Certification if the transaction has been informed as “Guaranteed Capacity”; or
 - g.2. Considered to be sold by the seller and procured by the buyer, conditional to the actual availability of the Physical Assets involved in the Firm Capacity Certification, if the transaction has been informed as “Non-guaranteed Capacity”;
- h) the revenues that the seller may be eligible to receive for the provision of Ancillary Services and Must Run Generation, shall be retained by the seller; and

- i) the duration of the Contract shall be at least, two (2) years starting from the Effective Date of the Contract.

For the avoidance of doubt, in the case the seller is a Generator, the registration of a Financial Supply with Fixed Quantities Standardized Contract with the Market Operator does not grant any Self-dispatch prerogative to the involved Generator.

3.3.4.3. Following information shall be provided by the parties during the Contract registration process:

- a) identification of the buyer and seller;
- b) Effective Date of the Contract and total duration of the Contract
- c) amount of the Energy sold and bought by the parties, at each Energy Trading Period, for the complete duration of the Contract;
- d) amount of the Capacity sold and bought by the parties, at each Capacity Trading Period, for the complete duration of the Contract;
- e) identification of the Firm Capacity Certificates that the seller sells to the buyer to back the Capacity transaction, at each Capacity Trading Period;
- f) explicit indication that the bought and sold Capacity shall be considered Guaranteed or Non-Guaranteed; and
- g) a declaration whether the amounts of Energy bought and sold, as per clause 3.3.4.3.c) shall be considered for the whole duration of the Contract or they can be periodically adjusted according to the provisions of Section 3.5.6.

3.4. CUSTOMIZED CONTRACTS

3.4.1.1. A Customized Contract may be bilaterally agreed between a buyer and a seller for buying and selling of Energy and/or Capacity as per terms and conditions agreed between the parties.

3.4.1.2. For registration of a Customized Contract with the Market Operator, the following requirements shall be fulfilled:

- a) the duration of the Contract is, at least, two (2) years starting from the effective date of the Contract.
- b) the Contract incorporates the mandatory clauses as provided in Sub-Section 3.1.2 or, alternatively, a signed declaration is provided by both parties to the Market Operator stating that such clauses have been incorporated into the Contract;
- c) the Energy bought and sold between the parties is in accordance with the requirements of Sub-Section 3.4.2;
- d) the Capacity bought and sold between the parties is in accordance with the requirements of Sub-Section 3.4.3; and
- e) the parties shall provide all the information required by the Market Operator to ensure that the contracted quantities can be properly settled in both the Energy and Capacity Balancing Mechanisms.

3.4.2. CONTRACTS INVOLVING ENERGY TRANSACTIONS

3.4.2.1. The contracted quantities of Energy agreed between the Market Participants through a Customized Contract shall be clearly specified for each Energy Trading Period.

3.4.2.2. The contracted quantities of Energy shall be specified as:

- a) a fixed quantity, expressed MWh, for each Energy Trading Period; or
- b) a percentage of Energy, injected or withdrawn at a registered Trading Point (either purchased or sold), for each Energy Trading Period; or
- c) other formula that clearly specifies the calculation of the contracted quantities and the Market Operator is provided with, before the Settlement, all the necessary data for the calculation of the contracted quantities.

3.4.2.3. The contracted quantities of Energy shall not be conditional upon any event or parameters which are not explicitly provided for in this Code.

3.4.2.4. For the avoidance of doubt, Energy transactions which involves a fixed quantity of Energy which should be produced by a pre-defined Physical Asset or group of Physical Assets (Self-dispatch), are not allowed in the CTBCM, unless explicitly permitted in this Code.

3.4.3. CONTRACTS INVOLVING CAPACITY TRANSACTIONS

3.4.3.1. The contracted quantities of Capacity agreed between the Market Participants through a Customized Contract shall be clearly specified for each Capacity Trading Period.

3.4.3.2. All Capacity transactions in the CTBCM shall be backed by Firm Capacity Certificates issued by the Market Operator.

3.4.3.3. The Capacity transactions shall be specified as:

- a) a fixed quantity, expressed in MW for each Capacity Trading Period; or
- b) a defined percentage of the number of Firm Capacity Certificates or Capacity associated with a clear identification of the Physical Assets involved or a formula to calculate such percentage/quantity:

3.4.3.4. The Firm Capacity Certificates used to back the Capacity transaction shall be either:

- a) transferred from the seller to the buyer; or
- b) changed their status to “Blocked”;

3.4.3.5. depending on the type of Contract agreed in the transaction and its specific provisions, which shall be verified by the Market Operator.

3.4.3.6. The contracted quantities of Capacity shall not be conditional upon any event or parameters which are not explicitly provided for in this Code.

3.4.4. INFORMATION TO BE PROVIDED FOR CUSTOMIZED CONTRACTS

3.4.4.1. Following information shall be provided by the parties during the registration process of a Customized Contract:

- a) identification of the buyer and seller;
- b) the effective date and total duration of the Contract;
- c) identification of Trading Points;
- d) amount of the Energy sold and bought by the parties, during each Energy Trading Period, for the complete duration of the Contract, or provide a formula along with relevant information that clearly specifies the calculation of the contracted quantities;

- e) amount of the Capacity sold and bought by the parties, during each Capacity Trading Period, for the complete duration of the Contract, or provide a formula along with relevant information that clearly specifies the calculation of the contracted quantities;
 - f) identification of the Firm Capacity Certificates that the seller sells to the buyer to back the Capacity transaction, during each Capacity Trading Period.
 - g) explicit declaration that the bought and sold Capacity shall be considered Guaranteed or Non-Guaranteed;
 - h) if applicable, explicit declaration who will be eligible for revenues associated with provision of Must Run Generation and Ancillary Services;
 - i) a declaration whether the amounts of Energy bought and sold, as per clause 3.3.4.3.c) shall be considered for the whole duration of the Contract or these amounts may be periodically adjusted as per provisions of Sub-Section 3.5.6.
- 3.4.4.2. During the registration process, the Market Operator may require any other information it deems necessary, with adequate justification, in order to assess conformity of the Contract with the provisions of this Code. Such information may include copies of parts, sections or clauses of the signed Bilateral Contract, excluding price or other commercially sensitive information provided however that it will be decided solely by the Market Operator whether certain information is commercially sensitive or not.

3.5. CONTRACT REGISTRATION

3.5.1. THE CONTRACT REGISTER

- 3.5.1.1. The Market Operator shall organize and maintain a register of the Energy and Capacity sold and purchased in Contracts, along with the information submitted by the Market Participants provided that the Contract Register shall not contain any price or commercially sensitive information of the Market Participants. The purpose of the Contract Register shall be:
- a) determination of quantities purchased and sold in the Balancing Mechanisms for Energy and Capacity;
 - b) keeping record of contracted quantities of Energy and Capacity in order to perform the Settlement process;
 - c) verification of compliance with the Capacity Obligations.
- 3.5.1.2. The Contract Register shall record the following information for each Contract:
- a) details of the contracting parties;
 - b) duration and effective date of the Contract;
 - c) type of Contract (Standardized or Customized);
 - d) for Standardized Contracts:
 - d.1. the type of Standardized Contract; and
 - d.2. the information required in sub-Sections 3.3.1, 3.3.2, 3.3.3, or 3.3.4, as the case may be.
 - e) For Customized Contracts, the information required in sub-Section 3.4.4.
- 3.5.1.3. The Market Operator shall update the Contract Register in case of:

- a) revision of amount of the contracted Energy under sub-Section 3.5.6;
- b) modification of a registered Contract; or
- c) termination of a registered Contract.

3.5.2. APPLICATION FOR CONTRACT REGISTRATION

- 3.5.2.1. Each Market Participant shall request the Market Operator for registration of each Contract it has signed for buying and selling of Energy and/or Capacity as per mechanism defined in this Code.
- 3.5.2.2. The Market Operator shall prepare and publish on its Website a form for Contract Registration specifying the requisite information for registration of a new Contract or modifications of a registered Contract, in accordance to this Code.
- 3.5.2.3. The Market Operator shall make a CCOP specifying the following for registration of a Contract in accordance to this Code :
 - a) The detailed information to be provided by the Market Participants for all types of Contracts
 - b) and the documents to be furnished by the Market Participants for all types of Contracts
 - c) Specific information and documents required for each type of Contract;
 - d) The Contract Registration application form;
 - e) The checks and verifications to be performed;
 - f) The Contract registration, modification and de-registration procedure; and
 - g) Detailed procedure for registration of the Legacy Contracts after its commercial allocation.

3.5.3. PROCESSING THE CONTRACT REGISTRATION APPLICATION

- 3.5.3.1. The parties to a Contract may submit a joint application for registration of a new Contract, or modification thereof, duly signed by the authorized representatives of both the parties.
- 3.5.3.2. Within three [3] Business Days of receipt of application for Contract Registration, the Market Operator shall provide acknowledgement thereof.
- 3.5.3.3. The Market Operator shall review the application for Contract registration and verify whether it is in accordance with this Code and the relevant CCOP, performing the checks and verifications it deems appropriate. The Market Operator may request the applicants for additional information during the verification process and the applicants shall be required to submit the information within the specified time.
- 3.5.3.4. Within fifteen [15] Business Days of receipt of an application and subject to provision of requisite additional information pursuant to Clause 3.5.3.3 above, the Market Operator shall inform the applicants, whether:
 - a) the application for Contract registration is not in accordance with any of the requirements of this Code as provided in Clause 3.5.3.6 below or the relevant CCOP and the Contract may not be registered; or
 - b) the application for Contract Registration complies with the requirements of this Code and the Contract may be registered subject to provision of the requisite Security Cover

and Guarantee Amount according to the provisions of Chapter 13.

3.5.3.5. Where an applicant fails to provide additional information or the requisite Security Cover and Guarantee Amount within the specified time or a maximum of 3 months, the application shall automatically lapse, however, the applicants may reapply to the Market Operator after fulfilling all the requirements.

3.5.3.6. The Market Operator may reject an application for registration of a Contract, where:

- a) any of the parties to the Contract is not a Market Participant, except explicitly exempted from enrolment as Market Participant as per Clause 2.1.1.3.
- b) The application contains discrepancies or conflicting information, and the parties have failed to rectify such discrepancies as required by the Market Operator, pursuant to Clause 3.5.3.3;
- c) the Contract is in conflict with another registered Contract by one or both of the parties;
- d) the Contract is a Customized Contract and is not in accordance with the requirements set out in this Code;
- e) the Contract deals with a Capacity transaction and the seller does not own the necessary Firm Capacity Certificates to support the transaction; or
- f) the Contract does not pass one or more of the verifications and checks provided in the relevant CCOP.

3.5.4. CONTRACT REGISTRATION

3.5.4.1. After receipt of the approved form and amount of the Security Cover and Guarantee Amount, the Market Operator shall:

- a) register the Contract into the Contract Register, within two [2] Business Days;
- b) inform both parties that the Contract has been registered, and the date thereof.

3.5.4.2. For settlement purposes, the Contract shall become effective:

- a) at the date provided by the parties; or
- b) At 0:00 a.m. of the day following the registration date of the Contract in the Contract Register,
whichever is later.

3.5.5. DISPUTE RESOLUTION

3.5.5.1. Any party of the Contract requested to be registered may challenge a decision by the Market Operator to reject the registration of its Contract pursuant to Clause 3.5.3.6, and may use the Dispute resolution procedures set out in Chapter 14 for this purpose.

3.5.6. MODIFICATION OF THE CONTRACT AND THE CONTRACT REGISTER

3.5.6.1. The Market Participants may modify a registered Contract without requiring de-registration of a Contract, however, such modification shall be limited only to the extent of contracted quantities of Energy or Capacity; or allocation of Must Run Generation or Ancillary Service revenues; or adding or deleting Trading Points. It is clarified that the contract type shall remain the same.

- 3.5.6.2. In case of a modification of a registered Contract as provided above, the parties shall inform the Market Operator on a form prepared for this purpose within five business days of modification and not later than five Business Days prior to the date when the Market Operator shall initiate the calculation for the Monthly or Yearly Settlement process. For the avoidance of doubt, the Contract shall be enforceable for the purposes of settlement by the Market Operator from the date of registration of modification with the Market Operator or any other later date as agreed in the Contract modification.
- 3.5.6.3. Within two [2] Business Days of receipt of a request for modification of a registered Contract, the Market Operator shall send a written acknowledgement thereof.
- 3.5.6.4. The Market Operator shall review the modification and verify whether it conforms with the provisions of this Code and the relevant CCOP.
- 3.5.6.5. The Market Operator may reject a request for modification, where:
- a) if applicable, any of the involved Market Participant or other party to the Contract does not own the Firm Capacity Certificates to support the required modification;
 - b) allowing the modification, may result in non-compliance with the Capacity Obligations of one or both Market Participants;
 - c) the registered Security Cover and Guarantee Amount of one or both involved Market Participants is not sufficient to guarantee the eventual transactions in the BME or BMC, as applicable;
 - d) the requested modification in the registered Contract conflicts with other Contracts, already registered, by one or both of the parties.
- 3.5.6.6. In the case the Market Operators accepts the modification in the registered Contract, it shall:
- a) record the modification in the Contract Register and if applicable, also adjust the Firm Capacity Register accordingly;
 - b) immediately inform the parties about the modification in the Contract Register.
- 3.5.6.7. For the Settlement purposes, the modification in the registered Contract shall become effective:
- a) at the date provided by the parties; or
 - b) At 0:00 a.m. of the day following the registration of the modification in the Contract Register pursuant to Clause 3.5.6.6;
- whichever is later.

3.6. CONTRACTS DEREGISTRATION OR SUSPENSION

3.6.1. REASONS FOR DEREGISTRATION AND SUSPENSION

- 3.6.1.1. The Market Operator may deregister a Bilateral Contract from the Contract Register in the following cases:
- a) a Bilateral Contract has reached Contract Termination Date; or
 - b) both parties agree on earlier termination of the Contract, subject to approval of the Market Operator; or
 - c) one of the parties for which it is mandatory to be a Market Participant ceases to be a

Market Participant, as per Termination Order issued by the Market Operator, according to the provisions of sub-Section 16.2.3.

- 3.6.1.2. The Market Operator may suspend the Bilateral Contract if one of the parties for which it is mandatory to be a Market Participant is suspended as Market Participant, according to the provisions of Sub-Section 16.2.2, in cases the remedial action taken by the Market Operator is to suspend a Contract.

3.6.2. DEREGISTRATION DUE TO CONTRACT TERMINATION

- 3.6.2.1. Where a Contract is about to reach its agreed Termination Date, the Market Operator shall require the parties to take necessary actions as detailed below as well as inform them about the actions the Market Operator is going to take. The parties shall be informed:

- a) at least six (6) months prior to the Contract Termination Date, in case one of the parties is a BPC; or
- b) at least three (3) months prior to the Contract Termination Date in all other cases.

- 3.6.2.2. Where one of the parties to the registered Contract is a BPC, regardless such BPC is a Market Participants or not, the Market Operator shall require such BPC to inform the Market Operator, at least 60 days prior to the Contract Termination Date, about its intention to:

- a) Continue or renew the existing registered Contract, if it is decided by the BPC to continue the existing registered Contract, it shall inform the Market Operator in the following manner:
 - a.1. submit jointly with the selling party an application for extension in the term of the Contract and to make requisite changes in the Contract Register at least five (5) Business Days prior to the Contract Termination Date by following the procedures set out in sub--Section 3.5.6; and
 - a.2. in case an application referred to in paragraph a.1 above is not received prior to the stated date, it shall be presumed that one or both of the parties have decided not to continue the Contract and on the Contract Termination Date the Contract will be deregistered and the Market Operator will request will be issued to the relevant Transmission or Distribution Network Service Provider, to temporarily or permanently, as the case may be, disconnect such BPC.
- b) Sign a new Bilateral Contract with another Market Participant, in which case the BPC is required to inform the Market Operator in the following manner:
 - b.1. submit an application jointly with the selling party for Contract Registration at least fifteen (15) Business days prior to the Contract Termination Date by following the procedure set out in Section 3.5; and
 - b.2. in case an application referred to in paragraph b.1 above is not received prior to the stated date, it shall be presumed that the BPC has decided not to sign the Contract and on the Contract Termination Date, the Contract will be deregistered and the Market Operator will issue a request to the relevant Transmission or Distribution Network Service Provider, to temporarily or permanently, as the case may be, disconnect such BPC.
- c) Not to sign a new Bilateral Contract and start receiving its supply from the Supplier of Last Resort from the Contract Termination Date, in which case the BPC is required to inform the Market Operator-in the following manner:

- c.1. it shall enter into an agreement with the relevant Supplier of Last Resort;
- c.2. a copy of the agreement with the Last Resort Supplier shall be received by the Market Operator at least five (5) Business days prior to the Contract Termination Date and the Market Operator shall make the necessary modifications in the Contract Register and other databases; and
- c.3. the Market Operator will inform the corresponding Supplier of Last Resort and in case the copy of the agreement stated in paragraph c.2 above is not received before the stated date, it shall be presumed that the BPC has decided not to receive the electric power and on the Contract Termination Date, a request shall be issued by the Market Operator to the relevant Transmission or Distribution Network Service Provider, to temporarily or permanently, as the case may be, disconnect such BPC.

3.6.3. DEREGISTRATION DUE TO EARLY CONTRACT TERMINATION

- 3.6.3.1. Where both parties have mutually agreed to terminate a Contract at an earlier date than the date communicated to the Market Operator during the registration of the Contract (Early Contract Termination), they shall inform the Market Operator accordingly, at least 20 Business Days prior to the agreed termination date, requesting deregistration of the Contract.
- 3.6.3.2. The Market Operator shall prepare and publish on its website a form for the purposes of deregistration of a Contract due to Early Contract Termination specifying the relevant information to be provided by the parties. The application for Contract deregistration shall be signed by both the parties to the Contract.
- 3.6.3.3. Within three [3] Business Days of receipt of an application, the Market Operator shall acknowledge the receipt thereof and, in case one of the part is a BPC, the Market Operator shall require the BPC to register a new Contract, failing which the BPC shall be transferred to the Supplier of Last Resort as per Clause 3.6.5.1.
- 3.6.3.4. The Market Operator shall assess whether the application for deregistration of the Contract is in accordance with this Code and the relevant CCOP including the consequences set out in Sub-Section 3.6.5.
- 3.6.3.5. Within ten [10] Business Days of receipt of the application for, the Market Operator shall inform the parties whether:
 - a) the application is in accordance with the provisions of this Code and the relevant CCOP and the Contract may be deregistered at the agreed date; or
 - b) the application is in accordance with the provisions of this Code and the relevant CCOP and the Contract may be deregistered subject to fulfilment of certain additional requirements by one or both of the parties as per Sub-Section 3.6.5; or
 - c) the application is not in accordance with provisions of this Code and the relevant CCOP, therefore, the Contract may not be deregistered accompanied with reasons thereof.
- 3.6.3.6. The Market Operator may reject an application for deregistration, where:
 - a) the application was submitted, without the consent of one of the parties.
 - b) the application contains discrepancies or conflicting information;
 - c) the Contract requested to be deregistered conflicts with other Contracts, already

- registered, by one or both of the parties;
- d) the request does not pass one or more of the verifications and provided in the relevant CCOP.

3.6.4. DEREGISTRATION OR SUSPENSION DUE TO MARKET PARTICIPANT TERMINATION OR SUSPENSION

- 3.6.4.1. Where the Market Operator decides to terminate a Market Participant after following the procedure set out in Sub-Section 16.2.3, and issues a Termination Order, all the registered Contracts of such Market Participant shall be deregistered with effect from the date of the Termination Order.
- 3.6.4.2. Where the Market Operator decides to suspend a Market Participant after following the procedure set out in Sub-Section 16.2.2 and issues a Suspension Order, the Market Operator may also suspend or deregister the relevant registered Contracts for such period as specified in the Suspension Order.
- 3.6.4.3. If applicable, within the next three (3) Business Days after deregistration or suspension of the Contracts referred to in Clauses 3.6.4.1 or 3.6.4.2, the Market Operator may inform one or more parties to the relevant Contracts about their obligations which they are required to fulfil as a result of deregistration or suspension of the Contracts and the timeframe thereof.

3.6.5. ACTIONS TAKEN AFTER CONTRACT DEREGISTRATION OR SUSPENSION

- 3.6.5.1. Where supply of electric power to a BPC is stopped, either partial or full, due to deregistration or suspension of a Contract, excluding the cases as given in Sub-Sections 3.6.2 and 3.6.3 above, the Market Operator shall:
- a) for all BPCs which are not enrolled as Market Participants:
- a.1. inform the BPC to arrange its supply of electric power from another Competitive Electric Power Supplier or Supplier of Last Resort-within [10] days and the Energy withdrawn during the interim period shall be considered to be supplied by the Supplier of Last Resort;
 - a.2. inform the Supplier of Last Resort accordingly; and
 - a.3. in case of suspension of a Contract, then upon withdrawal of the Suspension Order, transfer the supply of the BPC to the respective Competitive Electric Power Supplier on the date of lifting of the Suspension Order.
- b) for all BPCs which are Market Participants:
- b.1. inform the BPC and require it to register new Contracts for purchase of electric power in order to comply with its Capacity Obligations within a specified timeframe;
 - b.2. inform the BPC that the Energy withdrawn during the interim period will be settled in the Balancing Mechanism for Energy and it has to provide the required amount of Security Cover within a specified timeframe.
- 3.6.5.2. Failure of a BPC to register a new Contract or to provide the requisite Security Cover, pursuant to Clause 3.6.5.1.b), shall constitute an Event of Default and shall be dealt with under Sub-Section 16.2.1.

- 3.6.5.3. The BPC shall be liable to pay all applicable charges for the supply of electric power by the Supplier of Last Resort under Clause 3.6.5.1, with effect from the date of deregistration or suspension of the Contract.
- 3.6.5.4. After deregistration of a Contract, the Market Operator shall update the Firm Capacity Register accordingly.
- 3.6.5.5. Immediately after the Firm Capacity Register update, the Market Operator shall verify compliance with the Capacity Obligations by all relevant Market Participants. In case a Market Participant, due to the re-assignment of the Firm Capacity Certificates, is not complying with its Capacity Obligations, the Market Operator shall require such Market Participants to resolve the non-compliance situation by contracting additional Capacity or installing additional Generation, within a specified timeframe. The Market Operator may not register any new Contract, other than Contracts for purchase of Capacity of the relevant Market Participant or BPC, till the time non-compliance situation is resolved.
- 3.6.5.6. Prior to deregistration of a Contract, at the time of evaluation of the consequences of such deregistration, the Market Operator shall recalculate the amount of Security Cover and Guarantee Amount which shall be provided by any of the parties to the Contract or other Market Participants affected by such deregistration. In case, the recalculated amount is higher than the amount registered in the Security Cover Register or the Settlement Guarantee Fund, the Market Operator shall require the relevant Market Participants to increase the amount of Security Cover and Guarantee Amount within a specified time pursuant to the provisions of Chapter 13. The Market Operator may delay the deregistration of a Contract until the recalculated Security Cover and Guarantee Amount is actually received.
- 3.6.5.7. Regardless of deregistration of a Contract, the parties shall remain liable for any outstanding obligations which accrued prior to such deregistration.

3.7. COMMERCIAL ALLOCATION OF LEGACY CONTRACTS

3.7.1. COMMERCIAL ALLOCATION OF LEGACY CONTRACTS

- 3.7.1.1. All the rights and obligations arising from the Legacy Contracts, including the payments to or by the Generators, shall be commercially allocated to EX-WAPDA DISCOs or to K-Electric in their activity as Suppliers of Last Resort.
- 3.7.1.2. All the Energy provided under the Legacy Contracts, the relevant Firm Capacity Certificates, the Available Capacity of each Generator and any amounts payable for the provisions of Ancillary Services or Must Run Generation shall be commercially allocated to the EX-WAPDA DISCOs or to K-Electric as Suppliers of Last Resort as per the Allocation Factors set out in Table 8 in Clause 18.2.5.1.
- 3.7.1.3. The Allocation Factors shall be revised as per mechanism provided in the National Electricity Plan and the same shall be used by the Market Operator for Settlement purposes and verification of compliance with Capacity Obligations.

3.7.2. REGISTRATION OF COMMERCIALY ALLOCATED LEGACY CONTRACTS

- 3.7.2.1. Before CMOD, the Market Operator shall register all Legacy Contracts in the following manner:
- a) each Legacy Contract shall be classified according to the types of Contracts as set out in

Sub-Section 3.2.2 and Section 3.3.

- b) each Legacy Contract shall be registered with the Market Operator as if there were different Contracts with each EX-WAPDA DISCO and K-Electric as Suppliers of Last Resort.
- c) When it is approved to modify the Allocation Factors, the Contract Register and Table 8 in Clause 18.2.5.1 shall be updated accordingly.

3.7.3. OTHER EXISTING CONTRACTS AT CMOD

- 3.7.3.1. The bilateral contracts, other than Legacy Contracts, which were executed by the Market Participants before CMOD shall be registered with the Market Operator according to the provisions of Section 3.5 within [1] year after the CMOD.

Chapter 4. COMMERCIAL METERING SYSTEM

4.1. COMMERCIAL METERING REQUIREMENTS

4.1.1. GENERAL REQUIREMENTS

4.1.1.1. All Metering Points shall be equipped with a Commercial Metering System which complies with the provisions of this Code, the Grid or Distribution Code, as applicable.

4.1.1.2. Metering Points shall, *inter alia*, include:

- a) interface between a Market Participant and a Transmission Licensee;
- b) interface between a Market Participant and a Distribution Licensee;
- c) interface between two different Market Participants;
- d) interface between a Transmission Licensee and a Distribution Licensee;
- e) interface between two different Transmission Licensees;
- f) interface between two different Distribution Licensees;
- g) interface between a Transmission Licensee or Distribution Licensee, and authorized entities from other countries, involved in international power trade;
- h) interface between a Transmission Licensee or Distribution Licensee, and companies or entities located in territories where the applicability of the Act is not extended;
- i) interfaces between a Distribution Licensee and Embedded Generation; and
- j) an interface of a Generator with the Transmission or Distribution Network where the Generator is selling electric power through a Legacy Contract or is owned by a Market Participant, who also owns the Transmission or Distribution Network, and the Energy or Capacity needs to be measured at such point for proper implementation of this Code.

4.1.2. RESPONSIBILITIES OF METERING SERVICE PROVIDERS

4.1.2.1. The responsibility for performing the meter reading at each Metering Point, performing the validity checks and transferring the information thereof to the Market Operator shall be assigned to the Metering Service Providers.

4.1.2.2. Each Metering Point shall be assigned to only one Metering Service Provider.

4.1.2.3. Every Metering Service Providers shall be enrolled with the Market Operator as a Service Provider.

4.1.2.4. A Metering Service Provider authorised/permitted or registered by the Authority , in addition to its responsibilities assigned under the Grid Code, shall:

- a) install Secured Metering System at all Metering Points assigned to it;
- b) create and maintain a central register and ensure proper functioning of all the Metering Points for which it is responsible;
- c) ensure timely execution of verification, calibration, and technical inspection of the Commercial Metering System;
- d) collect metering results from all the meters for which it is responsible.
- e) perform the central aggregation of metering data and determine the accuracy thereof;

- f) develop procedures for restoration, validation or replacement of the metering data;
- g) set up communication channels for providing remote reading of the metering data;
- h) submit the aggregated and validated metering data to the Market Operator in accordance with this Code;
- i) create, maintain and ensure proper functioning of the electronic database of the metering data;
- j) ensure the storage and archiving of the metering data and the data regarding technical conditions of the Commercial Metering System, in appropriate electronic databases.

4.1.3. REGISTRATION OF METERING SERVICE PROVIDERS WITH THE AUTHORITY

- 4.1.3.1. If required under the provisions of the Act and applicable regulations of the Authority, each Metering Service Provider shall be registered with the Authority. However, the existing Transmission Licensees shall not require additional registration if they have already been granted this function under their Transmission License.

4.2. **METER READING AND DATA COLLECTION**

4.2.1. GENERAL

- 4.2.1.1. Capacity taken from the Grid and Energy values used for Settlement of the Market shall be measured through the Commercial Metering System, operated by the Metering Service Provider.

- 4.2.1.2. Collection of metering data from the Metering Points shall be carried out:

- a) on daily basis, through the Secured Metering System (SMS);
- b) in case of failure of the Secured Metering System, on a weekly basis, on the first Business Day of each week for values of the previous week, as provided under Sub-Section 18.2.3.

- 4.2.1.3. NTDC, appointed as MSP under Clause 18.2.1.1, shall develop and submit to the Market Operator for approval, a CCOP for meter reading and data collection, in accordance with the Grid Code and this Code. The CCOP may include:

- a) The details of the metering system
- b) Details of communication channels between the meters and the database of the MSP and the transfer of such data to the Market Operator
- c) Procedure for addition, deletion and updating of the Metering Points
- d) Metering data collection, intervals, and processing
- e) Collecting various labels attached to the data being collected and marking it as per the labels
- f) Procedure for verification of the collected information
- g) Detailed actions in case of invalidation of data, substitutions and estimations
- h) Determination of best value for metering
- i) Transferring of data to the Market Operator

- 4.2.1.4. The CCOP made by NTDC in accordance with Clause 4.2.1.3 above shall be applicable on all Metering Service Providers

- 4.2.1.5. The Metering Service Provider shall submit a certificate to the Market Operator to the effect that the Commercial Metering System installed at the Metering Points complies with the requirements of this Code and the Grid Code. The Metering Service Provider shall organize and keep complete and accurate record containing all the information regarding the installation, commissioning and testing of the metering systems.

4.2.2. READING AND COLLECTION OF DATA THROUGH THE SECURED METERING SYSTEM

- 4.2.2.1. The Metering Service Provider shall implement a Secured Metering System, to collect and process all the commercial metering data from the relevant Metering Points, and electronically transfer the metering information to the Market Operator.
- 4.2.2.2. The Metering Service Provider shall perform Automatic Meter Reading of the values registered at all the Metering Points integrated into its Secured Metering System, every day, between 00:00:00 and 23:59:59 on the following day (D+1), or any other shorter period that may be provided in the CCOP.
- 4.2.2.3. The Secured Metering System shall collect information from all Meters located at a Metering Point, including the Main Meter and, if applicable, the Back-up Meter, according to the provisions of the Grid Code.
- 4.2.2.4. The information collected by the Secure Metering System shall include, *inter alia*, the following:
- a) half-hourly values of active Energy and, if required, the reactive Energy, along with time stamps;
 - b) accumulated values of active Energy and, if required, the reactive Energy, for the previous day;
 - c) alarms and event logs generated by the Meters;
 - d) accuracy and other qualifcators of the values recorded if the Meter generate such kind of information;
 - e) necessary time and date stamps.
- 4.2.2.5. After analysing and verification of the completeness and reliability of the values obtained, the Metering Service Provider shall determine accuracy and completeness of such values and shall mark these values either as “complete and accurate”, “incomplete but accurate”, “inaccurate” or “no data” according to the procedure set out in the relevant CCOP.

4.2.3. ACTIONS IN CASE OF FAILURE TO OBTAIN DATA

- 4.2.3.1. In case of failure to obtain the complete metering data from a Metering Point, the Metering Service Provider must promptly take all necessary steps to obtain such data, in particular identifying and removing the causes of failure to obtain data and get all the requisite information.
- 4.2.3.2. In case of failure of the data collection and transmission equipment or the communication channels, the Metering Service Provider shall perform Electronic Local Meter Reading or Manual Local Meter Reading to obtain the values from the Metering Point as per provisions of Sub-Section 18.2.3 and the information obtained shall be marked as “complete and accurate” or “incomplete but accurate”, as the case may be.

- 4.2.3.3. In case of failure of the Main Meter or the Back-Up Meter, the Metering Service Provider shall retrieve all the data from any other functional meter located at the Metering Point and mark it accordingly. The information obtained from the failed meter shall be marked as “no data”.

4.3. METER READING VERIFICATIONS

4.3.1. VERIFICATIONS PERFORMED BY THE METERING SERVICE PROVIDER

- 4.3.1.1. The Metering Service Provider shall be responsible for checking the accuracy of the values obtained and shall process and validate such values, in order to:

- a) refer the values obtained from the Meter to the Metering Point by making necessary adjustments, where the Commercial Metering System is installed at a location different than the Metering Point.
- b) perform validity checks to determine the accuracy of the values obtained from the Meters. The Metering Service Provider shall perform the validation of metering data through a series of Validation Checks which are designed to determine the coherence and plausibility of each metered value or group of metered values regardless the way such values are obtained: Automatic Meter Reading, Electronic Local Meter Reading or Manual Local Meter Reading.

- 4.3.1.2. After the verification and validation of the metering data, the Metering Service Provider shall classify each value as following:

- a) Valid: It is the value, or group of values, which pass all the Validation Checks. A Valid metered value may eventually become Invalid as a result of the analysis and evaluation of an incident, having additional information about the Metering Point or due to verifications or validations performed, at a later date.
- b) Invalid: It is a value, or group of values, which does not pass one or more of the Validation Checks. An Invalid metered value or group of metered values may eventually become Valid as a result of further analysis performed by the Metering Service Provider.

- 4.3.1.3. The CCOP prepared under Clause 4.2.1.3 above shall also include:

- a) formulas for performing the necessary calculations to refer the values to the Metering Point pursuant to Clause 4.3.1.1.a);
- b) the minimum set of Validation Checks that shall be performed to determine the accuracy of the metered data;
- c) the verification and tests to classify a metered value as Valid or Invalid pursuant to Clause 4.3.1.2.

4.3.2. ACTIONS TO BE TAKEN AFTER INVALIDATION OF DATA

- 4.3.2.1. When any metered value or group of metered values is classified as “Invalid”, the Metering Service Provider shall obtain new values from the Metering Point including, if required, performing Local Meter Reading.

- 4.3.2.2. Where the new values obtained confirms the inadequacy of the data originally obtained or the new data still does not pass any of the Validation Checks, the Metering Service Provider shall open a Metering Incident Report and it shall proceed to test the Commercial Metering System of the relevant Metering Point.

4.3.2.3. If a metering problem or a failure is identified in a Main Meter during the validation process, the MSP shall forward to the Market Operator the following values for the settlement purposes:

- a) if the Metering Point has a Back-up Meter, the data obtained from the Back-up Meter and duly validated;
- b) if the Metering Point does not have a Back-up Meter, the Energy estimated by the System Operator based on the records stored in the SCADA system and the Metering Service Provider shall request the System Operator to provide the necessary information; or
- c) if the Metering Point does not have back-up meter and no information is available with the System Operator, an estimation of the required quantities by the Metering Service Provider, taking due consideration of any additional metering information that may be available.

4.3.2.4. The Metering Service Provider may substitute the metering data with estimated values, in the following cases:

- a) when a metered value, or group of metered values, have been marked as “Invalid”, and it is not possible to obtain metered values which pass all the Validation Checks before the issuance date of the Preliminary Settlement Statement (temporarily substitution);
- b) when a metered value, or group of metered values, have been labelled as “Invalid” and it is not possible, to obtain metered values which pass all the Validation Checks before the issuance date of the Final Settlement Statement (final substitution);
- c) when the resolution of a Metering Incident Report indicates a fault in the equipment of the Commercial Metering System and it is not possible to retrieve accurate data unless the faulty equipment is replaced or repaired; and
- d) when it is impossible to obtain data from the Commercial Metering System.

4.3.3. DATA VERIFICATION BY THE MARKET OPERATOR AND ITS SUBSTITUTION

4.3.3.1. The Market Operator may perform additional validation or plausibility checks on the metering information provided by the Metering Service Provider before using it for settlement purposes.

4.3.3.2. The Market Operator shall include in the Settlement Statements information regarding any issues, errors or failures identified during the verification and validation process and the substituted values used to calculate the Energy for the Settlement Statement.

4.3.3.3. The Market Operator shall require the Metering Service Provider to take all necessary measures to rectify the causes which led to the substitution of the metered data.

4.4. STORAGE AND CUSTODY OF COMMERCIAL METERING DATA

4.4.1.1. The Metering Service Provider shall store commercial metering data in a secured manner for at least 5 years or any other longer period required to resolve any disputes among the Market Participants.

4.4.1.2. While storing the commercial metering data, the Metering Service Provider shall consider the following aspects:

- a) Completeness of the stored data: The stored metering data shall contain all important

information which may be required to restore the primary metering data.

- b) Protection of data: The stored metering data shall be protected against accidental, intentional or unintentional changes.
- c) Confidentiality of keys: Digital signature keys shall be used, kept secret and secured against any malware attacks or gaining unauthorized access.
- d) Capacity of the storage database: Enough storage capacity shall be maintained for the metering data.

4.5. COMMERCIAL METERING REPORT

4.5.1.1. Every year, a Metering Service Provider shall prepare, and submit to the Market Operator, a Commercial Metering Report.

4.5.1.2. All relevant Market Participants and Service Providers shall assist the Metering Service Provider in the preparation of the Commercial Metering Report by providing accurate information in a timely manner in relation to the relevant Metering Points.

4.5.1.3. The Commercial Metering Report shall, *inter alia*, include:

- a) list of all Metering Points which are not equipped with the requisite Commercial Metering System according to the provisions of this Code, the Grid Code or the Distribution Code, along with plans or measures to rectify this situation;
- b) problems identified in the implementation of certain metering related provisions of this Code, the Grid Code or the Distribution Code;
- c) conflicts among the Market Operator, the Metering Service Provider or Market Participants related to interpretation of provisions of this Code, the Grid Code or the Distribution Code, and the relevant CCOP;
- d) compilation of all proposals which were submitted for Amendment in this Code, the Grid Code or the Distribution Code regarding metering;
- e) any other relevant matter to identify any problems in the performance, feasibility, efficiency and design of the Commercial Metering System.

Chapter 5. BALANCING MECHANISM FOR ENERGY

5.1. BALANCING MECHANISM FOR ENERGY

5.1.1. PURPOSE

- 5.1.1.1. The purpose of the Balancing Mechanism for Energy shall be to determine, for each Market Participant, the Imbalance of Energy calculated as the difference between the Energy actually injected into or withdrawn from the Grid System at the relevant Trading Points duly adjusted for the losses in the network and the contracted quantities registered in the Contract Register of the Market Operator.

5.1.2. BALANCING PERIOD AND SETTLEMENT PERIOD

- 5.1.2.1. The Market Operator shall calculate the Imbalance of Energy on hourly basis (the Energy Balancing Period) and the results thereof shall be consolidated on monthly basis for settlement purposes (the Settlement Period).

5.1.3. REQUIRED INFORMATION

- 5.1.3.1. Every month, the Market Operator shall use the following information for administration of the Balancing Mechanism for Energy:
- a) information provided by the Metering Service Provider for all Metering Points;
 - b) if applicable, the substituted or estimated values as per Sub-Section 4.3.3;
 - c) information related to contracted quantities of each Market Participant from the Contracts Register; and
 - d) System Marginal Prices provided by the System Operator for of each hour of the month.
- 5.1.3.2. The Market Operator shall collect, properly organize, maintain, and keep custody of all the information used for the administration of the Balancing Mechanism for Energy, which shall be kept for at least five [5] years or any other longer period as may be required.

5.2. CONSIDERATION OF DISTRIBUTION LOSSES

- 5.2.1.1. For calculation of the Imbalances of Energy, it shall be considered that all transactions take place at the Transmission Network. However, if a Trading Point is located in the Distribution Network, the values obtained from such Trading Point shall be adjusted to take into account the losses in such network.
- 5.2.1.2. The adjustment, referred to in Clause 5.2.1.1 above, shall be performed at all Trading Points located in the Distribution Network where Energy is withdrawn, which shall include:
- a) BPCs enrolled as Market Participants or supplied electric power by Competitive Electric Power Suppliers;
 - b) Distribution Networks connected to another Distribution Network;
 - c) Export points located in the Distribution Network; and
 - d) A Generator receiving back-feed Energy which is not supplied by a Supplier of Last

Resort.

5.2.1.3. The adjustment provided in Clause 5.2.1.2 above shall be calculated as:

- a) Where the Trading Point is an interface of a BPC, an Export or a Generator receiving back-feed Energy which is not supplied by a Supplier of Last Resort, where the Energy is withdrawn from the network, the adjustment shall be calculated as following:

$$Adj_E_{i,d,h} = E_{MP_{i,d,h}} / (1 - DistLoss_{d,p})$$

Where:

- $Adj_E_{i,d,h}$ is the Energy at the Trading Point “i”, at hour “h”, located in the network of Distribution Licensee “d”, adjusted to take into account losses in the Distribution Network.
 - $E_{MP_{i,d,h}}$ is the value of Energy, as considered by the Market Operator as per provisions of Chapter 4, at the Trading Point “i”, located in the network of Distribution Licensee “d” at hour “h”.
 - $DistLoss_{d,p}$ is a standard distribution loss coefficient of Distribution Licensee “d” for the period “p” to which the hour “h” belongs, as determined by the Authority, as per the latest Tariff Determination for the relevant Distribution Licensee.
- b) Where the Trading Point is an interconnection between two Distribution Licensees, the adjustment shall be calculated as following:

$$Adj_E_{i,d,h} = E_{MP_{i,d,h}} / (1 - DistLoss_{d,p})$$

Where:

- $Adj_E_{i,d,h}$ is the Energy at the Trading Point “i”, at hour “h”, located in the network of Distribution Licensee “d”, adjusted to take into account losses in the Distribution Network.
 - $E_{MP_{i,d,h}}$ is the value of Energy as considered by the Market Operator, as per provisions of Chapter 4, at the Trading Point “i”, located in the network of Distribution Licensee “d” at hour “h”.
 - $DistLoss_{d,p}$ is a standard distribution loss coefficient of Distribution Licensee “d” for the period “p” to which the hour “h” belongs, as determined by the Authority for the relevant Distribution Licensee.
- c) For all other Trading Points, there will be no adjustment.

$$Adj_E_{i,d,h} = E_{MP_{i,d,h}}$$

Where:

- $Adj_E_{i,d,h}$ is the Energy at the Trading Point “i”, at hour “h”, located in the network of Distribution Licensee “d”, adjusted to take into account losses in the Distribution Network.
- $E_{MP_{i,d,h}}$ is the value of Energy, as considered by the Market Operator as per provisions of Chapter 4, at the Trading Point “i”, located in the network of Distribution Licensee “d” at hour “h”.

5.3. CONSIDERATION OF THE TRANSMISSION LOSSES

5.3.1. CALCULATION OF THE TRANSMISSION LOSSES

5.3.1.1. The Market Operator shall determine, on hourly basis, the quantum of losses in the Transmission Network by utilizing the metering information in accordance with Chapter 4.

5.3.1.2. The quantum of the losses in the Transmission Network shall be calculated individually for each Transmission Licensee as the difference between the total Energy injected into and withdrawn from its Transmission Network.

5.3.1.3. The quantum of the losses in the Transmission Network shall be calculated as:

$$TransLoss_{k,h}[MWh] = \sum_{\forall i \in MP_k} E_{MP_{i,k,h}}$$

Where:

- $TransLoss_{k,h}$ is the quantum of the losses in the Transmission Network of the Transmission Licensee “k” in the hour “h”, expressed in MWh
- $E_{MP_{i,k,h}}$ is the value of Energy, as considered by the Market Operator according to the provisions of Chapter 4, at the Metering Point i , corresponding to the Transmission Service Provider k in the hour “h”,
- $\forall i \in MP_k$ means all those Metering Points located at the boundaries of the Transmission Licensee k

5.3.1.4. Sign convention: For the application of the formula provided in Clause 5.3.1.3, the Energy recorded at each Metering Point at each particular hour shall be considered positive if it is injected into the Transmission Network of Transmission Licensee “k” and negative if it is withdrawn from such Transmission Network,. In case a Metering Point records separate values for Energy injected and withdrawn, the sign convention shall apply accordingly for each recorded value at the particular hour.

5.3.2. CALCULATION OF TOTAL DEMAND

5.3.2.1. The Market Operator shall determine, on hourly basis, the Total Demand by adding the total Energy withdrawn from the Transmission Network of all Transmission Licensees and the total Energy generated by Generation Units or Generation Plants or Imports connected at Distribution Network by utilizing the metering information considered by the Market Operator according to the provisions of Chapter 4.

5.3.2.2. The Total Demand for the whole system shall be calculated as:

5.3.2.3.

$$TotDem_h[MWh] = \left(- \sum_{\forall i \in MP_{T \rightarrow D(-)}} E_{MP_{i,h}} \right) + \sum_{\forall j \in MP_{G \rightarrow D(+)}} E_{MP_{j,h}}$$

Where:

- $TotDem_h$ is the total Energy withdrawn by Market Participants in hour “h” which shall be liable to cover the losses in the Transmission Network.

- $E_{MP_i,h}$ is the Energy withdrawn (negative) from the Transmission Network, at the Metering Point “i” located at the boundary of the Transmission Network in the hour “h”.
- $E_{MP_j,h}$ is the Energy injected (positive) into the Distribution Network by Embedded Generation or Imports, at the Metering Point located at the boundary point “j” in the hour “h”.
- $\forall i \in MP_{T \rightarrow D} (-)$ means all those Metering Points at the boundary between a Transmission Network and
 - a Distribution Network;
 - a BPC;
 - an Export; or
 - A Generation Plant which is receiving Back-feed Energy.
 where the Energy is withdrawn from the Transmission Network (negative value according to the sign convention provided in Clause 5.3.1.4 above), during hour “h”.
- $\forall i \in MP_{G \rightarrow D} (+)$ means all those Metering Points located at the boundary between the Distribution Network and Embedded Generation or Imports where Energy is injected into the Distribution Network during the hour “h”.

5.3.2.4. While applying the formula given in Clause 5.3.2.2 above, the net value shall be used in case the Energy injected and withdrawn is recorded separately by the Commercial Metering System.

5.3.3. UPLIFT COEFFICIENT

5.3.3.1. An Uplift Coefficient shall be applied to the Energy supplied to Market Participants supplying the demand which shall be calculated as.

$$Uplift_{TransLoss,h} = \frac{\sum_k TransLoss_{k,h}[MWh]}{TotDem_h[MWh]}$$

Where:

- \sum_k means the addition over all Transmission Licensees
- All other terms have the same meaning as defined above

5.3.4. ASSIGN METERED VALUES TO MARKET PARTICIPANTS

5.3.4.1. The calculation of the Energy withdrawn by a Market Participant enrolled as Electric Power Supplier or withdrawn by a BPC which is a Market Participant or an Electric Power Trader involved in Export shall be done as following:

- a) For a BPC which is a Market Participant, the Energy withdrawn values shall be calculated as follows:

$$Act_E_{mp,h} = \sum_{\forall i \in MP} Adj_E_{i,h}$$

Where:

- $Act_E_{mp,h}$ is the total Energy withdrawn by a BPC “mp”, in hour “h”.

- $Adj_E_{i,h}$ is the Energy, withdrawn at a Metering Point “i” by a BPC “mp”, in hour “h”, calculated pursuant to Clause 5.2.1.3.
 - $\forall i \in MP$ means all those Metering Points through which the “BPC” has withdrawn Energy form the Grid.
- b) For a Competitive Electric Power Supplier, the Energy withdrawn values shall be calculated as the addition of the Energy withdrawn at the corresponding Metering Point of each BPC which is not a Market Participant and served by the Competitive Electric Power Supplier through a Standardized Load Following Supply Contract:

$$Act_E_{mp,h}[MWh] = \sum_{\forall BPC_i \in MP} Adj_E_{i,h}$$

Where:

$Act_E_{mp,h}$ is the total Energy supplied by the Competitive Electric Power Supplier “mp” to its BPCs, which are not Market Participants, in hour “h”, in MWh;

$Adj_E_{i,h}$ is the Energy withdrawn by BPC “i”, which is not a Market Participant and has a Standardized Load Following Supply Contract with the Competitive Electric Power Supplier “mp” in hour “h”, calculated pursuant to Clause 5.2.1.3.

$\sum_{\forall BPC_i \in MP}$ means the addition over all BPCs “i” which are not Market Participants and supplied by the Competitive Electric Power Supplier “mp” through a Standardized Load Following Contract

- c) For Suppliers of Last Resort, the Energy withdrawn, shall be calculated through an appropriate balance of the total Energy taken by the Supplier of Last Resort from the Transmission Network or Imports minus the Energy withdrawn in its service territory by the Competitive Electric Power Suppliers, Energy withdrawn in its service territory by BPCs which are Market Participant and Energy supplied to other Default Suppliers (calculated pursuant to Clause 5.2.1.3), plus the Energy injected by Embedded Generation owned by the Supplier of Last Resort into the Distribution Network.

$$5.3.4.2. Act_E_{mp,h}[MWh] = \sum_{\forall i \in mp} Adj_E_{i,h} + \sum_{\forall j \in mp} EMP_{j,h}$$

Where:

$Act_E_{mp,h}$ is the total Energy withdrawn by the Supplier of Last Resort “k”, in hour “h”, in MWh;

$Adj_E_{i,h}$ is the Energy Injected/withdrawn at the Trading Point “i”, which is a boundary of Supplier of Last Resort “k”, in hour “h”, calculated pursuant to Clause 5.2.1.3.

The Energy injected into the Distribution Network in the service territory of the Supplier of Last Resort “k” shall be considered positive and Energy withdrawn from such network shall be considered negative.

$EMP_{j,h}$ is the Energy injected/withdrawn at the Metering Point “j”, which is not a Trading Point, belonging to the Supplier of Last Resort “k”, in hour “h”, considered by the Market Operator in accordance with the Provisions of Chapter 4.

The Energy injected into the Distribution Network in the service territory of the Supplier of Last Resort “k” shall be considered positive and the Energy withdrawn from such network shall be considered negative. Only positive values shall be used in the calculation.

$\sum_{\forall i \in mp}$ means the addition over all Trading Points “i” which are located at the boundaries of the Supplier of Last Resort “mp”.

$\sum_{\forall j \in mp}$ means the addition over all Metering Points which are not Trading Points, which are located in the service territory of the Supplier of Last Resort “mp”.

- a) For Electric Power Trader involved in Exports, the Energy withdrawn shall be calculated as following:

$$Act_E_{mp,h} = \sum_{\forall i \in MP} Adj_E_{i,h}$$

Where:

- $Act_E_{mp,h}$ is the total Energy withdrawn by a Trader “mp” involved in Exports in hour “h”.
- $Adj_E_{i,h}$ is the Energy, withdrawn at Each Trading Point “i” belong to the Trader “mp” in hour “h”, calculated pursuant to Clause 5.2.1.3.
- $\forall i \in MP_{mp}$ means all those Metering Points through which Trader involved in Export is Exporting Energy from the Grid.

5.3.5. CALCULATION OF THE ENERGY SUPPLIED BY EACH MARKET PARTICIPANT

- 5.3.5.1. The calculation of the Energy supplied by a Market Participant, which will be used for calculation of the Imbalance, shall be done as following:

$$ES_{i,h}[MWh] = Act_E_{i,h} * (1 + Uplift_{TrasnLoss,h})$$

Where:

- $ES_{i,h}$ is the total Energy supplied by a Market Participant “i”, in hour “h”, which will be used for calculation of the Imbalance;
- $Act_E_{i,h}$ is the Energy, withdrawn by a Market Participant “i”, in hour “h”, calculated pursuant to Clause 5.3.4.1
- $Uplift_{TrasnLoss,h}$ is the Uplift Coefficient for hour “h”, calculated as pursuant to Clause 5.3.3.1.

5.4. DETERMINATION OF THE IMBALANCE AMOUNTS

5.4.1. DETERMINATION OF MARKET PARTICIPANTS’ CONTRACTED QUANTITIES

- 5.4.1.1. The Market Operator shall calculate the energy bought and sold through registered Contracts among Market Participant at each Energy Balancing Period (one hour) using the information contained in the Contracts Register.

5.4.1.2. For each Market Participant, the Market Operator shall determine the Energy bought and sold through Contracts from/to other Market Participants on hourly basis as:

$$ET_{mp,h} = \sum_{\forall k \in C_{mp}} ETC_{mp,k,h}$$

Where:

- $ET_{mp,h}$ is the Energy bought and sold by the Market Participant “mp” through Contracts with other Market Participants during hour h
- $ETC_{mp,k,h}$ is the Energy purchased or sold by the Market Participant “mp” through the Contract “k” during hour “h”
- $\forall k \in C_{mp}$ means all the Contracts of the Market Participant “mp” with other Market Participants through which it has bought or sold Energy.

5.4.1.3. Sign convention: For the application of the formula provided in Clause 5.4.1.2, the Energy bought and sold in each registered Contract shall be considered positive if the Market Participant is the buyer of such Energy and negative if the Market Participant is a seller.

5.4.2. DETERMINATION OF MARKET PARTICIPANTS’ ENERGY IMBALANCES

5.4.2.1. The Market Operator shall calculate the Imbalance of Energy of each Market Participant on hourly basis as the difference between the Energy injected by the Market Participant into the Grid System plus the Energy bought and sold through registered Contracts and the Energy supplied by such Market Participant which shall be calculated as:

$$\begin{aligned} Imb_E_{mp,h} [MWh] \\ = Gen_{mp,h} [MWh] + Imp_{mp,h} [MWh] + ET_{mp,h} [MWh] \\ - ES_{mp,h} [MWh] \end{aligned}$$

Where:

- $Imb_E_{mp,h}$ is the Imbalance of Energy of Market Participant “mp” during hour “h” in MWh
- $Gen_{mp,h}$ is the Energy injected into the Grid System by Market Participant “mp” during hour “h”, in MWh
- $Imp_{mp,h}$ is the actual energy Imported (injected into the Grid System), by Market Participant “mp” during hour “h”, in MWh
- $ET_{mp,h}$ is the Energy bought and sold through Contracts with other Market Participants, by the Market Participant “mp” during hour “h”, calculated pursuant to Clause 5.4.1.2.
- $ES_{mp,h}$ is the Energy actually supplied (or exported) by the Market Participant “mp” during hour “h”, calculated pursuant to Clause 5.3.4.1.

5.4.2.2. Sign convention (I):

- A positive Imbalance indicates that the relevant Market Participant has either:
 - Injected into the Grid System, an Energy quantity greater than its contracted quantity; or
 - Withdrawn from the Grid System, an Energy quantity lesser than its contracted quantity.
- A negative Imbalance indicates that the relevant Market Participant has either:

- b.1. Injected into the Grid System, an Energy quantity lesser than its contracted quantity; or
- b.2. Withdrawn from the Grid System, an Energy quantity greater than its contracted quantity.

5.5. DETERMINATION OF THE APPLICABLE SYSTEM MARGINAL PRICE

- 5.5.1.1. On daily basis and for each hour of the day, the System Operator shall calculate the System Marginal Price.
- 5.5.1.2. Within eighteen [18] month from the approval of this Code, the System Operator shall, in collaboration with the Market Operator, make and submit to the Authority for approval a methodology for determining the hourly System Marginal Price. Until such methodology is approved, the procedure included in Appendix I shall be used, as an interim measure, for calculation of the System Marginal Price.
- 5.5.1.3. On daily basis, the System Operator shall communicate to the Market Operator, the System Marginal Prices of the previous day. The Market Operator and the System Operator shall agree on the channels and formats for this communication.

5.6. DETERMINATION OF THE AMOUNTS RECEIVABLE AND AMOUNTS PAYABLE

5.6.1. CALCULATION OF AMOUNTS RECEIVABLE / PAYABLE

- 5.6.1.1. Within five [5] Business Days immediately after the end of each month, the Market Operator shall determine the Amounts Payable and Amounts Receivable of each Market Participant, resulting from the administration of the Balancing Mechanism for Energy.
- 5.6.1.2. The Market Operator shall calculate such amounts as:

$$Bal_Am_{mp,M}[PKR] = \sum_{h=1}^{Tot_h} (Imb_E_{mp,h}[MWh] * Marg_h[PKR/MWh])$$

Where:

- $Bal_Am_{mp,M}$ is the final balance amount of Market Participant “mp” for the settlement month “M”, as a result of administration of the Balancing Mechanism for Energy
 - $Imb_E_{mp,h}$ is the Imbalance of Energy of Market Participant “mp” during hour “h” calculated pursuant to Clause 5.4.2.1.
 - $Marg_h$ is the System Marginal Price for the hour “h”, determined by the System Operator as per Section 5.5, expressed in PKR/MWh.
 - Tot_h are the total number of hours in month “M”
- 5.6.1.3. For the application of Clause 5.6.1.2, a positive balance amount implies an Amount Receivable and the Market Participant is entitled to receive a payment for such amount. A negative balance implies that the Market Participant is responsible for making a payment for such amount to the Market Operator.

5.7. APPLICABLE TAXES

5.7.1. APPLICABILITY OF TAXES

5.7.1.1. All Settlements calculated by the Market Operator pursuant to this Chapter shall be subject to the applicable taxes as per Applicable Law.

5.8. PUBLICATIONS OF BME RESULTS

5.8.1.1. On monthly basis the Market Operator shall document and make available to the relevant Market Participants the results of the BME.

5.8.1.2. The Market Operator shall publish, *inter alia*, the following:

- a) The System Marginal Prices, for each hour of the previous month;
- b) The Amounts Payable and Amounts Receivable of each Market Participant; and
- c) Any other information, the Market Operator deems suitable for proper understanding of the published results.

5.8.1.3. The Market Operator shall provide to each Market Participant and other relevant stakeholders the following information:

- a) the hourly metering data used for calculation of the Imbalances of Energy of such Market Participant;
- b) the hourly values of the Energy actually injected into or withdrawn from the Grid System, by the Market Participant;
- c) the hourly contracted quantities of such Market Participant, which were used for calculating the Imbalances of Energy of such Market Participant; and
- d) the hourly Imbalances of the Market Participant.

Chapter 6. ADDITIONAL MARKET CHARGES (ANCILLARY SERVICE CHARGES (ASC), MUST RUN GENERATION AND OPERATORS FEE)

6.1. PURPOSE

6.1.1.1. The purpose of this chapter is:

- a) to provide a procedure for identification of the Generation Units which may be eligible for compensation for Must Run Generation and/or for allowing provision of Ancillary Services;
- b) to determine the amount of compensation for Must Run Generation and/or for allowing provision of Ancillary Services; and
- c) charge the Market Operator Fee and, if applicable, the System Operator Fee.

6.2. MUST RUN GENERATION

6.2.1. CONGESTED AREAS

6.2.1.1. Where dispatch of least cost Generation results in overloading of the network elements, lines and transformers which connect an area with the rest of the Grid System, such area shall be considered as Congested Area.

6.2.1.2. The System Operator shall alleviate Congestion in a Congested Area either by:

- a) Dispatching Must Run Generation, if the Congested Area is importing Energy from the rest of the Grid System; or
- b) instructing one or more Generation Units located in the Congested Area to reduce Generation or disconnect from the network (Must Stop Generation), if the Congested Area is exporting Energy to the rest of the Grid System.

6.2.1.3. A Congested Area shall be considered severely Congested in the following cases:

- a) the area has, on annual basis, Congestion in more than twenty percent [20%] of the Energy Balancing Periods; or
- b) the cost for alleviation of Congestion exceeds [5%] of the cost of least cost dispatch without Congestion.

6.2.1.4. The System Operator shall identify all severely Congested Areas and place them into different Congested Zones considering their location in the Grid System and inform the Market Operator accordingly.

6.2.1.5. The Market Operator shall consider the area as a Congested Zone for Settlement purposes, from 0:00 a.m. of the first day of the first month immediately after receipt of intimation from the System Operator.

- 6.2.1.6. A Congested Zone shall continue to be considered as a Congested Zone till the augmentation of the Transmission or Distribution Network or the installation of new control and protection devices shows that Congestion is eliminated or significantly reduced. In such case, the System Operator, if required, delineate a new Congested Zone considering the latest position of the Grid System and inform the Market Operator accordingly.

6.2.2. IDENTIFICATION OF MUST RUN GENERATION

- 6.2.2.1. For each Dispatch Period, the System Operator shall clearly identify, the Generation Units which shall be dispatched to alleviate a Congestion (Must Run Generation) or the Generations Units which have to reduce their generation or may have to be disconnected to alleviate Congestion (Must Stop Generation).
- 6.2.2.2. On monthly basis, the System Operator shall inform the Market Operator for Settlement purposes about all Generation Units which shall be considered as Must Run or Must Stop Generation in each Dispatch Period.

6.2.3. COMPENSATION FOR MUST RUN GENERATION

- 6.2.3.1. For each Energy Balancing Period, the Market Operator shall calculate the Energy generated by a Generation Unit which has been identified as Must Run Generation by using the following information:
- a) Information provided by the System Operator:
 - a.1. list of Generation Units entitled to receive compensation for Must Run Generation;
 - a.2. if applicable, Energy that the Generation Unit would have produced if no instruction to increase the Generation had been issued by the System Operator, in case this value is different than zero.
 - a.3. the Variable Generation Costs of the Generation Unit, as per the operating conditions of such Generation Unit during the relevant Dispatch Period.
 - a.4. the System Marginal Price for each hour
 - b) Information from the Commercial Metering System:
 - b.1. Energy actually injected into the Grid System by the Generation Unit, entitled to receive compensation in the relevant Energy Balancing Period.
- 6.2.3.2. The amount of Energy to be compensated to a Generation Unit identified as Must Run Generation shall be calculated as:

$$UPC_MR_{j,h}[MWh] = EAG_{j,h} - EPG_{j,h}$$

Where:

$UPC_MR_{j,h}$	is the amount of Energy to be compensated for Generation Unit “j”, identified as Must Run Generation, in hour “h”, in MWh;
$EAG_{j,h}$	is the Energy actually injected into the Grid System by the Generation Unit “j”, in hour “h”, in MWh;
$EPG_{j,h}$	is the Energy that the Generation Unit “j” would have injected into the Grid System if Congestion had not existed , calculated by the System Operator, in hour “h”, in MWh.

6.2.3.3. For each Energy Balancing Period, the Market Operator shall calculate the economic compensation to be allocated to a Generator for its Generation Units which were considered as Must Run Generation:

$$MRC_{k,h}[PKR] = \sum_{j \in k} [UPC_{MR,j,h}[MWh] * (VC_i - Marg_h[PKR/MWh])]$$

Where:

$MRC_{k,h}$ is the hourly amount to be compensated to Generator “k” for Must Run Generation during hour “h”, in PKR;

$UPC_{MR,j,h}$ is the amount of Energy to be compensated for Generation Unit “j”, considered Must Run Generation, in hour h, in MWh, calculated pursuant to Clause 6.2.3.2;

$Marg_h$ is the System Marginal Price of hour “h”, determined by the System Operator pursuant to Section 5.5;

$VC_{i,hi}$ is the Variable Generation Cost of Generation Unit “j” at hour “h”, determined by the System Operator taking into consideration the operating conditions of the Generation Unit during the corresponding Dispatch Period expressed in PKR/MWh.

$\sum_{j \in k}$

Means the summation over all units “j” that belongs to Generator “k”

6.2.3.4. The Market Operator shall calculate the total monthly economic compensation for Must Run Generation as:

$$MMRC_{k,m} = \sum_{h=1}^T MRC_{k,h}[PKR]$$

Where:

$MMRC_{k,m}$ is the amount to be compensated to Generator “k” for Must Run Generation, during the Settlement Period “m”, in PKR;

$MRC_{k,h}$ is the hourly amount to be compensated to Generator “k” for Must Run Generation, during hour “h”, in PKR calculated pursuant to Clause 6.2.3.3;

T is the total number of hours in the Settlement Period.

6.2.4. COMPENSATION AMOUNT FOR MUST STOP GENERATION

6.2.4.1. Must Stop Generation shall not be eligible to receive any compensation for following the instructions of the System Operator to reduce its generation below its Available Capacity or disconnection from the network.

6.3. ANCILLARY SERVICES

6.3.1. REQUIREMENT AND PROVISION OF ANCILLARY SERVICES

- 6.3.1.1. The definitions, types and minimum requirements of Ancillary Services, which may be scheduled by the System Operator, are provided in the Grid Code or its operational procedures.
- 6.3.1.2. For the purpose of this Code, the following types of Ancillary Services shall be considered:
- a) Primary Operating Reserve;
 - b) Secondary Operating Reserve;
 - c) Replacement Reserve and Contingency Reserve (over separate time scales, collectively under “tertiary frequency control”;
 - d) Voltage / Reactive Power Control; and
 - e) Black Start Capability.
- 6.3.1.3. The System Operator shall determine and schedule the required Ancillary Services while performing the Security Constrained Economic Dispatch, either the Day Ahead Schedule or the Real Time Dispatch as established in the Grid Code. In this regard, it is hereby clarified that obtaining the necessary Ancillary Services is an integral part of carrying out the Security Constrained Economic Dispatch.
- 6.3.1.4. The provision of Ancillary Services as provided in Clause 6.3.1.2.a) through d), within the limits set out in the Grid Code, is mandatory for all Generators and Transmission Service Providers, subject to technical requirements defined in the Grid Code, and shall be provided on the instructions of the System Operator, which shall be compensated as provided in Clause 6.3.1.5 below and the decision of the System Operator in this respect shall be binding.
- 6.3.1.5. Notwithstanding anything contained in Clause 6.3.1.4 above, a Market Participant may be eligible to receive an economic compensation for:
- a) its revenue loss due to an instruction issued by the System Operator to generate below the maximum Available Capacity of a Generation Unit, while its Variable Cost is lower than the System Marginal Price, for providing one or more of the Ancillary Services provided in Clause 6.3.1.2.a) through d), or for allowing other Generation Units to provide them (lost opportunity cost); and
 - b) being instructed to produce Energy by a Generation Unit, while its Variable Generation Cost is greater than the System Marginal Price, for providing one or more of the Ancillary Services provided in Clause 6.3.1.2.a) through d), or for allowing other Generation Unit to provide these services (out of merit instructed generation); and
 - c) for being able to provide Black Start, if such cost has been approved explicitly by the Authority as a separate component for payment.
- 6.3.1.6. The System Operator shall inform the Market Operator in case a Generator fails or refuses to provide required Ancillary Services for necessary action. Notwithstanding any further action that may be taken by the Market Operator or System Operator for such non-compliance, a Generator which failed or refused to provide an Ancillary Service mandated by the System Operator shall not receive any kind of economic compensation.

6.4. COMPENSATION FOR PROVISION OF ANCILLARY SERVICES

6.4.1. GENERATORS ENTITLED TO RECEIVE COMPENSATION

- 6.4.1.1. The System Operator shall identify and inform the Market Operator, on daily basis and for each Energy Balancing Period, the Generation Units and determine the quantity of Energy for which a Generator may be eligible to receive compensations for:
- provision of Ancillary Services; or
 - reducing or increasing their Energy production to allow other Generation Units to provide Ancillary Services
- 6.4.1.2. Within eighteen [18] month from the approval of this Code, the System Operator shall make a CCOP whereby a procedure shall be devised to identify a Generator which may be eligible to receive the compensation as well as to determine the quantity of Energy for which compensation may be paid as provided in Clause 6.4.1.1 above. Till such time, the procedure included in Appendix I shall be applicable.
- 6.4.1.3. The System Operator shall communicate, on daily basis to the Market Operator, the quantity of Energy for which compensation may be paid to each Generator for each Generation Unit for providing, or allowing other Generation Units to provide, Ancillary Services.
- 6.4.1.4. The information related to the provision of Ancillary Services and compensation thereof shall be published on the System Operator's website, along with necessary supporting information.

6.4.2. COMPENSATION FOR REDUCING GENERATION

- 6.4.2.1. The Market Operator shall calculate the Energy not generated by a Generator at each Energy Balancing Period (one hour), to allow the production of Ancillary Services, using the following information:
- Information provided by the System Operator:
 - list of Generation Units for which a Generator may be eligible to receive compensation for allowing the production of Ancillary Services, as per Clause 6.4.1.1;
 - Available Capacity of the Generation Unit for which a Generator may be eligible to receive compensation, for the relevant Energy Balancing Period;
 - Variable Generation Cost of Generation Units for which a Generator may be eligible to receive compensation at the corresponding operating conditions of such units.
 - Information from the Commercial Metering System as per provisions of Chapter 4:
 - Energy actually produced by the Generation Unit for which a Generator may be eligible to receive compensation, for the relevant Energy Balancing Period.
- 6.4.2.2. Till the time the System Operator makes the CCOP as referred to in Clause 6.4.1.2, the Market Operator shall determine the quantity of Energy for which compensation may be paid to a Generator for reduction of its Generation as under:

$$LOCC_ASC_{i,h}[MWh] = 0.95 * AC_{i,h}[MW] * 1[h] - EAG_{i,h}[MWh]$$

Where:

$LOCC_SSC_{i,h}$	is the quantity of Energy for which compensation may be paid to a Generation Unit i , in hour h , due to the reduction in the generation of Energy, to provide Ancillary Services or allowing the provision of Ancillary Services by other Generation Units, in MWh (Lost Opportunity Cost Compensation)
$AC_{i,h}$	is the Available Capacity of Generation Unit i , in hour h , in MW, communicated by the System Operator to the Market Operator, provided that in the case of ARE, the Available Capacity should be equal to the potential Energy that such Generation Unit would have injected into the Grid System calculated by the System Operator. Till the time the CCOP indicated above is made, the potential Energy that the ARE Generation Unit would have injected into the Grid System shall be equal to the Energy forecasted by the System Operator for the relevant hour as per provisions of the Grid Code and the factor of 0.95 shall not apply.
$EAG_{i,h}$	is the Energy injected into the Grid System by Generation Unit i , in hour “ h ”, in MWh, considered by the Market Operator as per provision of Chapter 4.
0.95	is a factor that considers the provision of Frequency Containment Reserve by all Generation Units.

6.4.3. COMPENSATION FOR INCREASED GENERATION

6.4.3.1. The Market Operator shall calculate the Energy injected into the Grid by a Generation Unit, whose Variable Generation Cost is above the System Marginal Price, for each Energy Balancing Period (one hour), for allowing the provision of Ancillary Services, using the following information:

- a) Information provided by the System Operator:
 - a.1. List of Generation Units for which a Generator may be eligible to receive compensation for allowing the provision of Ancillary Services, as per Clause 6.4.1.1;
 - a.2. Energy that the Generation Unit would have produced if no Ancillary Services had been required.
 - a.3. Variable Generation Cost of Generation Units, for which a Generator may be eligible to receive compensation, at the corresponding operating conditions of such units.
- b) Information from the Commercial Metering System as per provisions of Chapter 4:
 - b.1. Energy actually injected into the Grid System by the Generation Unit, for which a Generator may be eligible to receive compensation, during the relevant Energy Balancing Period.

6.4.3.2. Till the time, the System Operator makes the CCOP as referred to in Clause 6.4.1.2, the Market Operator shall determine the quantity of Energy for which compensation may be paid to Generators which has been dispatched for allowing the provision of Ancillary Services as under:

$$UPC_ASC_{j,h}[MWh] = EAG_{j,h}[MWh] - EPG_{j,h}[MWh]$$

Where:

$UPC_ASC_{j,h}$ is the quantity of Energy for which compensation may be paid to Generation Unit “ j ”, in hour h , due to the increase in the generation of

	Energy having Variable Generation Costs above the System Marginal Price, to allow the provision of Ancillary Services, in MWh (Variable Cost Compensation)
$EAG_{j,h}$	is the Energy injected into the Grid System by Generation Unit “j”, in hour “h”, in MWh, considered by the Market Operator as per provisions of Chapter 4.
$EPG_{j,h}$	is the amount of Energy that Generation Unit “j”, in hour “h”, would have injected into the Grid System if there had been no requirements of providing Ancillary Services (in MWh). The value of $EPG_{j,h}$ will be zero (0.0) unless the System Operator explicitly informs the Market Operator to use a different value, clearly stating the reasons for this value being used.

6.4.4. TOTAL COMPENSATION FOR PROVISION OF ANCILLARY SERVICES

6.4.4.1. The Market Operator shall determine the compensation which may be paid to a Generator, for each Energy Balancing Period, for allowing the provision of Ancillary Services as under:

$$AC_{k,h}[PKR] = \sum_{i \in k} [LOCC_ASC_{i,h}[MWh] * (Marg_h[PKR/MWh] - VC_{i,h})] + \sum_{j \in k} [UPC_ASC_{j,h}[MWh] * (VC_j - Marg_h[PKR/MWh])]$$

Where:

$AC_{k,h}$	is the hourly amount which may be paid as compensation to Generator “k” during hour “h” for the provision of Ancillary Services, in PKR;
$LOCC_ASC_{i,h}$	is the amount of Energy for which compensation may be paid to Generation Unit “i”, during hour h, due to the reduction in the Energy generation, to allow the provision of Ancillary Services, in MWh, calculated pursuant to Clause 6.4.2.2;
$UPC_ASC_{j,h}$	is the amount of Energy for which compensation may be paid to Generation Unit “j”, in hour h, due to the increase in the Energy generation having Variable Generation Costs above the System Marginal Price, to allow the provision of Ancillary Services, calculated pursuant to Clause 6.4.3.2;
$Marg_h$	is the System Marginal Price of hour “h”, determined by the System Operator pursuant to Section 5.5;
VC_j	is the Variable Generation Cost of Generation Unit “j” during hour “h”, communicated by the System Operator to the Market Operator;
$\sum_{i \in k}$	is the sum over all Generation Units “i” which belongs to Generator “k”;
$\sum_{j \in k}$	is the sum over all Generation Units “j” which belongs to Generator “k”.

6.4.4.2. The Market Operator shall determine the total monthly compensation to a Generator, for the provision of Ancillary Services, as the sum, over all the hours of the Energy Settlement Period, of the hourly compensation as provided in Clause 6.4.4.1, plus the additional compensations as provided in Clause 6.4.4.3 below, if applicable.

6.4.4.3. Generators which were instructed by the System Operator to start a Generation Unit and connect it to the Grid System, for allowing the provision of Ancillary Services may be eligible to receive an additional compensation for such additional number of starts.

6.4.4.4. For cases where Clause 6.4.4.3 above is applicable, the System Operator shall inform the Market Operator, at the end of each month:

- a) the list of Generators which may be eligible to receive compensation for the number of starts of a Generation Unit, for allowing the provision of Ancillary Services;
- b) the total number of starts, for allowing the provision of Ancillary Services, of the Generation Unit, during the previous calendar month;
- c) the unitary cost for each start of the relevant Generation Unit, which shall be:
 - c.1. the cost as agreed in the PPA, for Legacy Contracts, which explicitly state this as an item for payment;
 - c.2. for contracts not falling under 6.4.4.4.c.1 above, the start-up cost of the relevant Generation Unit, communicated by the Generator to the System Operator. The System Operator shall verify the appropriateness and adequacy of the start-up cost communicated by the Generator before registering it in the relevant database.

6.4.4.5. The total monthly compensation to a Generator for the provision of Ancillary Services shall be calculated as under:

$$MAC_{k,m} = \sum_{h=1}^T AC_{k,h}[PKR] + \sum_{i \in k} (NS_i * SC_i) + BSC_k$$

Where:

$MAC_{k,m}$	is the amount for which compensation may be paid to Generator “k” during the Settlement Period “m” for allowing the provision of Ancillary Services, in PKR;
$AC_{k,h}$	is the hourly amount for which compensation may be paid to Generator “k” during hour “h” for allowing the provision of Ancillary Services, in PKR, calculated pursuant to Clause 6.4.4.1;
NS_i	is the number of starts of Generation Unit “i” belonging to Generator “k” for allowing the provision of Ancillary Services, during the Settlement Period as provided by the System Operator pursuant to Clause 6.4.4.4;
SC_i	Start-up cost of Generation Unit “i”, informed by the System Operator to the Market Operator pursuant to Clause 6.4.4.4.c);
BSC_k	Monthly payments to Generator “k” for the provision of Black Start Capability. This value will be zero, unless such cost has been approved explicitly by the Authority as a separate component for payment;
$\sum_{i \in k}$	is the sum over all Generation Units “i” which belongs to Generator “k”;
T	is the total number of hours in the Settlement Period.

6.5. DETERMINATION OF THE AMOUNTS RECEIVABLE AND PAYABLE FOR ASC AND MUST RUN GENERATION

6.5.1. ASSIGNING COMPENSATION FOR PROVISION OF ANCILLARY SERVICES AND MUST RUN GENERATION TO MARKET PARTICIPANTS (AMOUNTS RECEIVABLE)

6.5.1.1. Within five [5] Business Days immediately after the end of each month, the Market Operator shall determine the compensation for Generators which are eligible to receive such compensation for allowing the provision of Ancillary Services and Must Run Generation and it shall assign such compensation to the relevant Market Participants as an Amount Receivable.

6.5.1.2. The Market Operator shall assign the compensation referred to in Clause 6.5.1.1 above, as under:

- a) Where a Market Participant, which owns the Generation Unit or the Generation Plant, have not registered a Contract with the Market Operator, the Market Operator may assign the compensation (Amount Receivable) to such Market Participant; and
- b) Where a Market Participant, which owns the Generation Unit or Generation Plant, has registered one or more Contracts with the Market Operator, the Market Operator may assign the right to receive such compensation (Amounts Receivable) either to the Generator or to the other party as per information available in the Contract Register.

6.5.2. ALLOCATION OF AMOUNT OF COMPENSATION FOR PROVISION OF ANCILLARY SERVICES AND MUST RUN GENERATION AMONG MARKET PARTICIPANTS

6.5.2.1. Within five [5] Business Days immediately after the end of each month, the Market Operator shall allocate the amount for payment of compensation for the provision of Ancillary Services and Must Run Generation among all Market Participants which represent demand in each Congested Zone, on pro rata basis based on the total Energy withdrawn during the relevant Settlement Period (Amounts Payable). The Market Operator may adjust each component of the compensation for Must Run Generation and Ancillary Services if required to be compliant with the applicable taxation Laws in Pakistan.

6.5.2.2. The allocation of the amount of compensation as provided in Clause 6.5.2.1 shall be made as under:

- a) the total amount of compensation for allowing the provision of Ancillary Services and Must Run Generation in each Congested Zone shall be calculated as:

$$TAC_{AR_s,m}[PKR] = \sum_{\forall i \in AR_s} (MAC_{k,m}) + \sum_{\forall j \in AR_s} (MMR_{k,m})$$

Where:

$TAC_{AR_s,m}$ is the total amount for which compensation may be paid to Generators located in the Congested Zone “ARs”, for allowing the provision of Ancillary Services and Must Run Generation in the Settlement Period “m”, in PKR;

$MAC_{k,m}$ is the amount for which compensation may be paid to Generator “k” during the settlement period “m” for allowing the provision of Ancillary Services, calculated as per Clause 6.4.4.5;

$MMR_{k,m}$ is the amount for which compensation may be paid to Generator “k” during the settlement period “m” for Must Run Generation, calculated as per Clause 6.2.3.4;

$\forall i \in AR_s$ means all Generators connected to a network located in the Congested Zone “ARs”, which are eligible for compensation for allowing the provision of Ancillary Services;

$\forall j \in AR_s$ means all Generators connected to a network located in the Congested Zone “s”, which are eligible for compensation for Must Run Generation.

b) determination of the total Energy supplied by each Market Participant enrolled as Electric Power Supplier or withdrawn by a BPC which is a Market Participant or Electric Power Trader involved in Exports or representing Generation or a Generator withdrawing back feed Energy in each Congested Zone. The calculation will be different in case of BPCs, Generators, Competitive Electric Power Suppliers, Suppliers of Last Resort and Electric Power Traders involved in Exports.

b.1. In the case of a BPC which is a Market Participant, the Energy withdrawn shall be the Energy registered at the corresponding Metering Point considered by the Market Operator as per provisions of Chapter 4, minus the Energy purchased from the Competitive Electric Power Suppliers, if any:

$$ES_BPC_{i,ARS,m}[MWh] = \sum_{h=1}^T Act_E_{MP_{i,ARS,h}} - \sum_{h=1}^T \left(\sum_{\forall CS_j} EC_{MP_{i,j,ARsh}} \right)$$

Where:

$ES_BPC_{i,ARS,m}$ is the total Energy supplied to BPC “i”, which is located in the Congested Zone “ARs”, during the Settlement Period “m”, in MWh;

$Act_E_{MP_{i,ARS,h}}$ is the Energy, withdrawn by BPC “i”, which is located in the Congested Zone “ARs”, in hour “h”, calculated pursuant Clause 5.3.4, in MWh;

$EC_{MP_{i,j,ARsh}}$ is the Energy supplied by the Competitive Electric Power Supplier “j” to the BPC “i”, which is located in the Congested Zone “ARs”, in hour “h”, registered by the Commercial Metering System and considered by the Market Operator as per provision of Chapter 4 or the information contained in the Contract Register, as the case may be;

$\sum_{\forall CS_j}$ is the sum over all Competitive Electric Power Suppliers which have Contracts with the BPC “i” (if any);

T is the total number of hours in the Settlement Period “m”.

b.2. In the case of a Generator which is a Market Participant, the Energy withdrawn shall be the Energy registered at the corresponding Metering Point considered by the Market Operator as per provisions of Chapter 4, minus the Energy purchased from the an Electric Power Suppliers, if any:

$$ES_Gen_{i,ARS,m}[MWh] = \sum_{h=1}^T Act_E_{MP_{i,ARS,h}} - \sum_{h=1}^T \left(\sum_{\forall EPS_j} EC_{MP_{i,j,ARS,h}} \right)$$

Where:

$ES_Gen_{i,ARS,m}$ is the total Energy supplied to Generator “i”, which is located in the Congested Zone “ARs”, during the Settlement Period “m”, in MWh;

$Act_E_{MP_{i,ARS,h}}$ is the Energy, withdrawn by Generator “i”, which is located in the Congested Zone “ARs”, in hour “h”, calculated pursuant Clause 5.3.4, in MWh;

$EC_{MP_{i,j,ARS,h}}$ is the Energy supplied by the Supplier “j” to the Generator “i”, which is located in the Congested Zone “ARs”, in hour “h”, registered by the Commercial Metering System and considered by the Market Operator as per provision of Chapter 4 or the information contained in the Contract Register, as the case may be;

$\sum_{\forall EPS_j}$ is the sum over all Electric Power Suppliers “j” which have Contracts with the Generator “i” (if any);

T is the total number of hours in the Settlement Period “m”.

b.3. In the case of Competitive Electric Power Suppliers, the Energy supplied shall be the addition of the Energy supplied to all the BPCs or Generators supplied by the Competitive Electric Power Supplier:

$$ES_CS_{j,ARS,m}[MWh] = \sum_{h=1}^T \left(\sum_{\forall BPC_i \in ARS} Act_E_{MP_{i,h}} + \sum_{\forall Gen_i \in ARS} Act_E_{MP_{i,h}} \right)$$

Where:

$ES_CS_{j,ARS,m}$ is the total Energy supplied by the Competitive Electric Power Supplier “j”, to its customers, located in the Congested Zone “ARs”, during the Settlement Period “m”, in MWh;

$Act_E_{MP_{i,h}}$ is the Energy supplied to BPC “i” or Generator “i”, located in the Congested Zone “ARs”, by Competitive Electric Power Supplier “j” in hour “h”, in MWh, either calculated pursuant Clause 5.3.4 or the information contained in the Contract Register of the Market Operator, as the case may be, depending on the type of Contract between the Competitive Electric Power Supplier and the BPC or the Generator;

$\sum_{\forall BPC_i \in ARS}$ means the addition over all BPCs supplied by the Competitive Electric Power Supplier “j” which are located in the Congested Zone “ARs”;

$\sum_{\forall Gen_i \in ARs}$ means the addition over all Generator supplied by the Competitive Electric Power Supplier “j” for back-feed Energy which are located in the Congested Zone “ARs”

T is the total number of hours in the Settlement Period “m”.

- b.4. In the case of Suppliers of Last Resort, the Energy supplied shall be calculated through an appropriate balance of the total Energy taken by the Supplier of Last Resort from the Transmission Network or Imports plus the Energy injected by Embedded Generation owned by the Supplier of Last Resort, duly corrected to take into account the losses in the Transmission or Distribution Network.

$$6.5.2.3. ES_BS_{k,ARS,m}[MWh] = \sum_{h=1}^T \left[\left(\sum_{\forall i \in TP_{ARS}} Act_E_{TP_{i,ARS,h}} + \sum_{\forall j \in MP_{ARS}} E_{MP_{j,ARS,h}} \right) \right]$$

Where:

$ES_BS_{k,ARS,m}$ is the total Energy supplied by the Supplier of Last Resort “k”, to its consumers located in the Congested Zone “ARs”, during the Settlement Period “m”, in MWh;

$Act_E_{TP_{i,ARS,h}}$ is the Energy injected/extracted at the Trading Point “i”, belonging to the Supplier of Last Resort “k”, located in the Congested Zone “ARs”, in hour “h”, calculated pursuant to Clause 5.3.4, in MWh;

The Energy injected into the relevant network shall be considered positive and the Energy extracted from such network shall be considered negative;

$E_{MP_{j,ARS,h}}$ is the Energy injected/extracted at the Metering Point “j”, which is not a Trading Point, belonging to the Supplier of Last Resort “k”, located in the Congested Zone “ARs”, in hour “h”, measured by the corresponding Commercial Metering Systems and considered by the Market Operator as per provision of Chapter 4, in MWh. The Energy injected into the relevant network shall be considered positive and the Energy extracted from such network shall be considered negative. Only positive values shall be used in the calculation;

$\sum_{\forall i \in TP_{ARS}}$ means the addition over all Trading Points belonging to the Supplier of Last Resort “k”, which are located in the Congested Zone “ARs”;

$\sum_{\forall j \in MP_{ARS}}$ means the addition over all Metering Points which are not Trading Points, belonging to the Supplier of Last Resort “k”, which are located in the Congested Zone “ARs”;

T is the total number of hours in the Settlement Period “m”.

- a.1. In the case of Electric Power Traders involved in Exports or representing Generators, the Energy demanded shall be the Energy registered at the corresponding Metering Point:

$$ES_TraderEXP_{l,ARS,m}[MWh] = \sum_{h=1}^T Act_E_{MP_{l,ARS,h}} + \sum_{h=1}^T Act_E_{MP_{gen,ARS,h}}$$

Where:

$ES_EXPTrader_{l,ARS,m}$ is the total Energy supplied by the Electric Power Trader “I”, which is located in the Congested Zone “ARs”, during the Settlement Period “m”, in MWh;

$Act_EMP_{l,h}$ is the Energy exported by the Electric Power Trader “I”, which is located in the Congested Zone “ARs”, in hour “h”, calculated pursuant Clause 5.3.4;

$E_{MP_{l,h}}$ is the Energy supplied to Generators represented by the Trader as back-feed Energy if such Energy has not been contracted with a Supplier of Last Resort calculated pursuant Clause 5.3.4;

T is the total number of hours in the Settlement Period “m”.

b) the total demand of the Congested Zone “ARs” shall be calculated as:

$$TD_{ARS,m} = \sum_i ES_BPC_{i,ARS,m} + \sum_j ES_Gen_{j,ARS,m} + \sum_k ES_CS_{k,ARS,m} + \sum_l ES_BS_{l,ARS,m} + \sum_n ES_Trader_{n,ARS,m}$$

Where

$TD_{ARS,m}$ is the total demand of the Congested Zone “ARs”, during the Settlement Period “m”, in MWh;

\sum_i is the sum over all BPCs which are Market Participants;

\sum_j is the sum over all Generators which are Market Participants;

\sum_k is the sum over all Competitive Electric Power Suppliers;

\sum_l is the sum over all Suppliers of Last Resort;

\sum_n is the sum over all Electric Power Traders which are performing Exports and/or representing Generators.

c) the charges applicable to each Market Participant enrolled as Electric Power Supplier or BPC or Electric Power Traders involved in Exports be calculated as:

c.1. For a BPC which is a Market Participant:

$$TC_BPC_{i,m}[PKR] = \sum_{s=1}^n \left[\frac{ES_BPC_{i,ARS,m}}{TD_{ARS,m}} * TAC_{ARS,m} \right]$$

c.2. For Generators drawing back-feed Energy:

$$TC_Gen_{j,m}[PKR] = \sum_{s=1}^n \left[\frac{ES_Gen_{j,ARS,m}}{TD_{ARS,m}} * TAC_{ARS,m} \right]$$

c.3. For a Market Participant enrolled as Competitive Electric Power Supplier:

$$TC_CS_{k,m}[PKR] = \sum_{s=1}^n \left[\frac{ES_CS_{k,ARS,m}}{TD_{ARS,m}} * TAC_{ARS,m} \right]$$

c.4. For a Market Participant enrolled as Supplier of Last Resort:

$$TC_BS_{l,m}[PKR] = \sum_{s=1}^n \left[\frac{ES_BS_{k,ARS,m}}{TD_{ARS,m}} * TAC_{ARS,m} \right]$$

c.5. For a Market Participant enrolled as Electric Power Trader with Exports and/or representing Generators:

$$TC_Trader_{n,m}[PKR] = \sum_{s=1}^n \left[\frac{ES_Trader_{n,ARS,m}}{TD_{ARS,m}} * TAC_{ARS,m} \right]$$

Where:

$TC_BPC_{i,m}$ are the total charges to be applied to Market Participant “i”, enrolled with the Market Operator as BPC, for Ancillary Services and Must Run Generation, in the Settlement Period “m”, in PKR;

$TC_Gen_{i,m}$ are the total charges to be applied to Market Participant “i”, enrolled with the Market Operator as Generator, for Ancillary Services and Must Run Generation, in the Settlement Period “m”, in PKR;

$TC_CS_{k,m}$ are the total charges to be applied to Market Participant “j”, enrolled with the Market Operator as Competitive Electric Power Supplier, for Ancillary Services and Must Run Generation, in the Settlement Period “m”, in PKR;

$TC_BS_{l,m}$ are the total charges to be applied to Market Participant “k”, enrolled with the Market Operator as Supplier of Last Resort, for Ancillary Services and Must Run Generation, in the Settlement Period “m”, in PKR;

$TC_TraderE_{n,m}$ are the total charges to be applied to Market Participant “l”, enrolled with the Market Operator as Electric Power Trader and involved in Exports and or representing Generation, for Ancillary Services and Must Run Generation, in the Settlement Period “m”, in PKR;

$TAC_{ARS,m}$ is the total amount to be compensated to Generators located in the Congested Zone “ARs”, for provision of Ancillary Services and Must Run Generation in the Settlement Period “m”, calculated pursuant to Clause 6.5.2.2.a);

$TAC_{ARS,m}$ is the total demand in the Congested Zone “ARs”, in the Settlement Period “m”, calculated pursuant to Clause 6.5.2.3.b);

$\sum_{s=1}^n$ means the addition of all the Congested Zones of Pakistan.

6.5.3. PUBLICATION OF ANCILLARY SERVICES AND MUST RUN GENERATION RESULTS

6.5.3.1. The Market Operator shall document and publish, on its Website, the results of the calculation of Amounts Payable and Amounts Receivable, for the provision of Ancillary Services and Must Run Generation, on a monthly basis.

6.5.3.2. The information that the Market Operator shall make publicly available on its Website, may include:

- a) the compensation that Generators may be eligible to receive for provision of Ancillary Services and Must Run Generation, for each Generation Unit;
- b) the assigning of the compensations to Generators or to other Market Participants;
- c) the Amounts Payable and Amounts Receivable by each Market Participant; and
- d) Any other relevant information.

6.6. OPERATORS FEE

6.6.1. MARKET OPERATOR FEE AND SYSTEM OPERATOR FEE

6.6.1.1. The Market Operator shall charge the Market Operator Fee and, if required, the System Operator Fee, payable by relevant Market Participants, in accordance with the determination of the Authority.

6.6.1.2. The following costs associated with the services being rendered by the Market Operator, will be included in the petition for the Market Operator Fee:

- a) general establishment and administration expenses;
- b) repair and maintenance;
- c) insurance;
- d) depreciation, if any;
- e) financial charges and other relevant costs;
- f) any estimated future capital expenditures required for compliance with the provisions in this Code; and
- g) any other relevant charges.

6.7. APPLICABLE TAXES

6.7.1. APPLICABILITY OF TAXES

6.7.1.1. All Settlements calculated by the Market Operator pursuant to this Chapter shall be subject to the applicable taxes as per Applicable Law.

Chapter 7. MONTHLY SETTLEMENT (MARKET PARTICIPANTS AND SERVICE PROVIDERS)

7.1. PURPOSE

7.1.1.1. The purpose of this Chapter is to provide a procedure for administration of a Market Settlement System to issue the monthly Settlement Statements to Market Participants.

7.2. MARKET SETTLEMENT SYSTEM

7.2.1. MARKET SETTLEMENT SYSTEM ADMINISTRATION

7.2.1.1. The Market Operator shall establish and administer a Market Settlement System for administration of the market and shall be responsible for the development and maintenance of the required digital infrastructure for the operation of the Market Settlement System.

7.2.1.2. The Market Operator shall be responsible for verification of data and the accuracy of the outputs of the Market Settlement System, which, shall be based on:

- a) the relevant legal instruments;
- b) the information provided by the Metering Service Providers;
- c) the information provided by the System Operator;
- d) the information available in the Market Participants Register as well as Contract Register; and
- e) the information available in any other database of the Market Operator.

7.2.2. MARKET SETTLEMENT SYSTEM FUNCTIONS

7.2.2.1. The Market Settlement System shall be capable to perform the following functions:

- a) calculate the settlement of the Balancing Mechanism for Energy, for all Market Participants according to the provisions of Chapter 5;
- b) calculate the settlement of the Balancing Mechanism for Capacity, for all Market Participants according to provisions of Chapter 11;
- c) calculate the settlement of the Ancillary Services and Must Run Generation, for all Market Participants according to provisions of Chapter 6;
- d) calculate the accrued Default Interest payable to or by accrued Market Participants, as provided in Clauses 7.2.3.1 and 7.2.3.2; and
- e) calculate the Market Operator Fee and, if required, the System Operator Fee.

7.2.2.2. The Settlement of charges to be paid to or by a Market Participant, for a month, shall include the Amounts Payable or Amounts Receivable by the Market Participant, as the case may be, for:

- a) its participation in the Balancing Mechanism for Energy, duly calculated as per Section 5.6;
- b) dispatch of Must Run Generation and the Ancillary Services, calculated as per Chapter 6;

- c) the Market Operator fee and, if required, the System Operator fee;
- d) if applicable, the amount payable by the Market Participant for the provision of Metering Services;
- e) corrections which arise from Extra Ordinary Settlement Statements as provided in Sub-Section 7.3.4; and
- f) accrued interest for previous payments not made or received on time.

7.2.3. ADDITIONAL CHARGES AND PAYMENTS

7.2.3.1. As provided in Sub-Section 12.3.6, the Market Operator may impose additional charges on a Market Participant as special adjustments and effect recovery in respect of:

- a) costs incurred by the Market Operator for administration of Security Covers and Settlement Guarantee Fund in case of non-payment;
- b) Default Interest.

7.2.3.2. The Market Operator shall determine the Default Interest accrued by Market Participants and Service providers for payments not executed at the Payment Due Date due to insufficient funds in the Market Operator's Credit Cover Account for Monthly Settlements. These amounts shall be recovered from the Market Participants which payments were not transferred at the Payments Due Date.

7.3. SETTLEMENT STATEMENTS

7.3.1. PRELIMINARY SETTLEMENT STATEMENTS

7.3.1.1. Within seven (07) Business Days of the beginning of each month, the Market Operator shall send, through electronic means, to each Market Participant and Service Provider, a Preliminary Settlement Statement for the to the results of the Settlements of the previous month.

7.3.1.2. The Preliminary Settlement Statement for a Market Participant shall, at least, include:

- a) the results of the Balancing Mechanism for Energy:
 - a.1. the hourly values of the Energy injected or withdrawn from the Grid System during the Settlement Period;
 - a.2. the Energy sold and bought through Contracts, registered with the Market Operator, for each hour of the Settlement Period;
 - a.3. the hourly Energy Imbalances;
 - a.4. the System Marginal Price for each hour of the Settlement Period; and
 - a.5. the total Payable or Amount Receivable;
 - a.6. the Transmission losses and the Transmission and Distribution Loss Factors used in the calculations;
- b) the compensation for Must Run Generation and Ancillary Services for the Settlement Period;
- c) the Market Operator Fee and, if required, System Operator Fee;
- d) the payable or accrued interest for previous payments not made on time; and

- e) any adjustment resulting from an Extraordinary Settlement Statement.

7.3.2. CLAIMS AGAINST THE PRELIMINARY SETTLEMENT STATEMENTS

- 7.3.2.1. Where a Market Participant considers that an error or discrepancy exists in the Preliminary Settlement Statement, it shall submit to the Market Operator a written Review Request within [five (5)] Business Days of receipt of the Preliminary Settlement Statement.
- 7.3.2.2. The Review Request shall clearly state the Settlement Period, Dispatch Day, the issuance date of the Preliminary Settlement Statement, the item claimed, the reasons for the claim, the amount claimed, and shall be accompanied with supporting documents.
- 7.3.2.3. After receipt of the Review Request, the Market Operator shall review the request and decide whether there is any error or discrepancy in the Preliminary Settlement Statement and if required, it may hold a meeting with the relevant Market Participant to settle the matter. If the Market Operator does not agree with the Review Request, it shall intimate the same to the relevant Market Participants along with reasons thereof.
- 7.3.2.4. Where the market operator, after review of the Preliminary Settlement Statement finds that there is an error or discrepancy as claimed by the relevant Market Participant, it shall rectify the error before issuing the Final Settlement Statement and shall inform all the relevant Market Participants accordingly.

7.3.3. FINAL SETTLEMENT STATEMENTS

- 7.3.3.1. On 25th of each month, the Market Operator shall issue the Final Settlement Statement to each Market Participant, using a format similar to the Preliminary Settlement Statement.
- 7.3.3.2. A Market Participant may challenge the Final Settlement Statement along with reasons thereof within [15] Business Days of its issuance. The challenge may relate to:
 - a) The metered values and contracted quantities of Energy; or
 - b) The settled amounts, either for Imbalances, Market Operator's Fee, if applicable, System Operator's Fee, Default Interest for late payments or any other item which has been included in the Final Settlement Statement.
- 7.3.3.3. The Market Operator and the Market Participant shall make reasonable efforts to mutually settle the matter within [20] Business Days after the challenge is submitted to the Market Operator as per dispute resolution mechanism provided in Chapter 14.

7.3.4. EXTRAORDINARY SETTLEMENTS

- 7.3.4.1. Market Operator shall issue an Extraordinary Settlement Statement for a month, where:
 - a) a Market Participant and the Market Operator settle a challenge made under Clause 7.3.3.2, in an amicable manner that results in an amount which is different from the Final Settlement Statement; or
 - b) the dispute is settled according to the dispute resolution mechanism which requires modification in the amounts included in the Final Settlement Statement.
- 7.3.4.2. The Extraordinary Settlement Statement shall supersede the issued Final Settlement Statement for such month.

7.3.4.3. The Market Operator shall calculate, for each Market Participant, the difference between the Extraordinary Settlement Statement and the Final Settlement Statement originally issued according to Sub-Section 7.3.1, and it will include the corresponding corrections in the Preliminary and Final Settlement Statement of the month immediately after the issuance of the Extraordinary Settlement Statement.

7.3.5. FAILURE OF THE MARKET SETTLEMENT SYSTEM

7.3.5.1. In case of an emergency or failure of the Market Settlement System, the Market Operator may issue an Estimated Settlement Statement and may modify the schedule for issuing Preliminary Settlement Statements or Final Settlement Statements, as the case may be. In such cases, the Market Operator shall inform all Market Participants and Service Providers the temporary procedural changes as soon as possible.

7.4. DEBIT AND CREDIT NOTIFICATIONS

7.4.1. NOTIFICATIONS TO MARKET PARTICIPANTS

7.4.1.1. Subject to Clause 7.4.3.1, The Market Operator, within [2] Business Days after issuance of the Final Settlement Statement, shall:

- a) issue a Debit Notification in respect of the previous month to all Market Participants who are liable to pay an amount as per the Final Settlement. All payments shall be made within [2] Business Days upon receipt of the Debit Notification except where specifically provided otherwise by the Market Operator.
- b) Issue a Credit Notification in respect of the previous month to all Market Participants who will receive a payment as per the Final Settlement Statement.

7.4.1.2. The Market Operator, in this process, shall act as an independent entity, without assuming any payment responsibility. Obligation of payment shall remain with the relevant Market Participants. For the avoidance of doubt, the Market Operator shall not be held liable for any kind of non-payment by any of the Market Participants.

7.4.2. DISAGREEMENTS WITH THE NOTIFICATIONS

7.4.2.1. Each Market Participant which receives a Debit or Credit Notification, as per clause 7.4.1.1 above, shall pay the required amount, and shall be entitled to receive the amount, shown in the Final Settlement Statement, on the Payment Due Date, whether or not there is any dispute regarding the Amount Payable or the Amount Receivable.

7.4.2.2. The payment of the amount by the Market Participant or the Market Operator, as the case may be, pursuant to clause 7.4.2.1 shall not prejudice the right of the Market Participant to seek resolution of the dispute pursuant to Chapter 14.

7.4.3. PAYMENTS BY ELECTRIC POWER SUPPLIERS INVOLVED IN LEGACY CONTRACTS

7.4.3.1. Any amount chargeable or amount recoverable that arise due the Settlement of Legacy Contracts (Imbalances, Ancillary Services and Must Run Generation charges) shall be distributed among all EX-WAPDA DISCOs and KE, in their role as Suppliers of Last Resort, proportional to their Energy purchased up to the cap set for the share of each EX-WAPDA DISCOs and KE in the Legacy Contracts.

Chapter 8. FIRM CAPACITY CERTIFICATION

8.1. PURPOSE

8.1.1.1. The purpose of this Chapter is to provide a procedure for administration of the certification process of Firm Capacity for Generators and Imports.

8.2. PROCEDURE FOR FIRM CAPACITY CERTIFICATION

8.2.1. CHARACTERISTICS OF FIRM CAPACITY CERTIFICATES

8.2.1.1. A Firm Capacity Certificate, issued by the Market Operator, shall have a nominal value of 0.1 MW, and may not be subdivided further.

8.2.1.2. Each Firm Capacity Certificate shall have a unique identification number which will be used to register and track Capacity transactions among Market Participants.

8.2.2. REQUIREMENT OF HAVING FIRM CAPACITY CERTIFICATES

8.2.2.1. A Generator interested to sell Capacity in the Market shall obtain Firm Capacity Certificates from the Market Operator for its Physical Assets, provided that a Generator may be represented by a Market Participant to obtain such certificates for its Physical Assets. In absence of such certification, the Firm Capacity allocated, to a Generator or a Market Participant which represents a Generator, shall be considered zero MW.

8.2.2.2. A Market Participant which has executed a Contract for Import of Energy or Capacity may also obtain Firm Capacity Certificates, subject to the conditions as laid down below.

8.2.2.3. A Market Participant may sell Capacity through registered Contracts up to the quantity included in its Firm Capacity Certificates.

8.3. ISSUANCE OF FIRM CAPACITY CERTIFICATES

8.3.1.1. The Market Operator shall make a CCOP for issuance of the Firm Capacity Certificates which shall include, inter alia, the following:

- a) The data and information to be submitted by the parties to obtain Firm Capacity Certificates
- b) The information to be provided by the System Operator
- c) The procedure to be followed for issuance of the Firm Capacity Certificates
- d) The templates for "Application for Firm Capacity Certification"
- e) The formulas to be used in calculation of the Firm Capacity Certificates for different type of technologies
- f) The procedure for changing Temporary Firm Capacity Certificates into permanent ones and the documents needed to certify the commissioning and actually installed capacity
- g) The procedure for review and amendment of the already issued Firm Capacity Certificates

- 8.3.1.2. The Market Operator shall issue the Firm Capacity Certificates, after registering them in the Firm Capacity Register. The number of Firm Capacity Certificates shall be calculated as the Firm Capacity in MW, certified during the certification process, multiplied by 10.
- 8.3.1.3. The Market Operator shall issue two types of Firm Capacity Certificates:
- a) Temporary Firm Capacity Certificates
 - b) Permanent Firm Capacity Certificates (for initial three years termed as Initial Firm Capacity Certificates).
- 8.3.1.4. Temporary Firm Capacity Certificates are such certificates which may be issued at the request of a Market Participant or an Enrolled Person, for a new generation facility which fulfils any of the following requirements:
- a) Generation License has been issued by the Authority or a formal application has been submitted in this respect, if required;
 - b) documents proving the acquisition or rental of the land for construction of the Generation Plant as well as the requisite transmission lines;
 - c) authorizations and permits, issued by the relevant entities, for the construction of the Generation Plant;
 - d) EPC contracts, clearly stating the project commissioning date; or
 - e) any other relevant document.
- 8.3.1.5. The application for a Temporary Firm Capacity Certificate shall also contain a formal Capacity declaration signed by the authorized representative of the applicant. This declaration shall clearly state the Installed Capacity of the Generation Plant, expressed in electrical megawatt [MWe].
- 8.3.1.6. Any person owning a Temporary Firm Capacity Certificate may use them for promotional or commercial purposes and for ex-ante verification of Capacity Obligations of a Market Participant, however, such certificates may not be used to support Capacity transactions in a registered Contract.
- 8.3.1.7. The owner of a Temporary Firm Capacity Certificate, who shall be enrolled as Enrolled Person with the Market Operator, shall submit an application to the Market Operator for its cancellation and issuance of a Permanent Firm Capacity Certificate (also termed as the Initial Firm Capacity Certificate) not earlier than two months of the expected COD: provided that the owner of the Temporary Firm Capacity Certificate shall not be issued Permanent Firm Capacity Certificate where no Contract exist for the Capacity Obligation of a Market Participant. However, the owner of the Temporary Firm Capacity Certificate may be issued Permanent Firm Capacity Certificate for participation in the Balancing Mechanisms if it can provide Ancillary Services.
- 8.3.1.8. The Permanent Firm Capacity Certificates shall be valid up to [20] years or any other shorter period as decided by the Market Operator upon performing a review pursuant to this Code. Temporary Firm Capacity Certificates will have validity as decided by the Market Operator on a case to case basis and will expire on the COD of the concerned Generation Unit or Generation Plant.

8.3.2. ISSUANCE OF FIRM CAPACITY CERTIFICATES

- 8.3.2.1. One month prior to the commencement of the CTBCM, the Market Operator shall issue Firm Capacity Certificates, an Initial Firm Capacity Certificates, to each Generator having Generation Units or Generation Plants commissioned, or expected to be commissioned, before CMOD.
- 8.3.2.2. Initial Firm Capacity Certificates for Contracts for Import may be issued by the Market Operator after considering the particular features of the relevant Contract.
- 8.3.2.3. For new Generation Units or Generation Plants, commissioned or expected to be commissioned after CMOD, the Initial Firm Capacity Certificates may be issued upon request of the concerned Generator or its representative.
- 8.3.2.4. After the CMOD, the Electric Power Traders or Electric Power Suppliers, who will procure Energy or Capacity through Import Contracts, the Initial Firm Capacity Certificates may be issued upon request of the concerned Electric Power Trader or Electric Power Supplier.
- 8.3.2.5. Any person interested to obtain the Initial Firm Capacity Certificates, may apply to the Market Operator, not earlier than two months before the expected COD of the Generation Unit or Generation Plant. The applicant shall submit all the relevant information to the Market Operator required for such certification.
- 8.3.2.6. Where in the opinion of the Market Operator, the information submitted by the applicant for obtaining the Firm Capacity Certificates is false, fabricated or forged, especially where the said information may have material impact on the number of Firm Capacity Certificates to be issued, it may investigate the matter and if deemed appropriate, may take any action available under this Code or under the Applicable Law.
- 8.3.2.7. For a Generation Unit or Generation Plant, the Initial Firm Capacity Certificates may be reduced or increased depending on its actual performance. This process may be initiated by the Market Operator on its own motion or upon the request of the concerned Market Participant.
- 8.3.2.8. For an Electric Power Trader or Electric Power Supplier with Import Contracts, the Initial Firm Capacity Certificates may be reduced depending on the information provided by the System Operator regarding the Energy or Capacity available for Import during critical periods of the system. This process may be initiated by the Market Operator upon information provided by the System Operator.
- 8.3.2.9. Two months prior to the expiry the date of the Firm Capacity Certificates, the concerned Market Participant, may request the Market Operator to renew them or issue new certificates according to the procedure for issuance of the Initial Firm Capacity Certificates as set out above.

8.3.3. REGISTRATION OF THE ISSUED CERTIFICATES

- 8.3.3.1. The Market Operator shall organize and maintain a Firm Capacity Register, for Firm Capacity Certificates with the following information:
- a) Unique number for each Firm Capacity Certificate;
 - b) Name of the Market Participant or other person for which the Firm Capacity Certificate was issued;

- c) Name of the Market Participant currently owning the Firm Capacity Certificate;
- d) Identification Code of the Generation Unit or Import Contract associated with the Firm Capacity Certificate;
- e) Status of Firm Capacity Certificate. The status of a Firm Capacity Certificate may be classified as:
 - e.1. **Available:** The Firm Capacity Certificate is valid and may be bought and sold to back any Capacity transaction;
 - e.2. **Blocked:** The Firm Capacity Certificate is valid but may not be used further for backing any Capacity transaction
 - e.3. **Cancelled:** The Firm Capacity Certificate is no longer valid.
- f) Issuance and expiry date of each Firm Capacity Certificate.

8.3.3.2. The Firm Capacity Register shall be updated on regular basis and published on the MO Website.

8.4. DETERMINATION OF INITIAL FIRM CAPACITY

8.4.1. COMMISSIONED GENERATION UNITS OR GENERATION PLANTS

- 8.4.1.1. The Initial Firm Capacity, for a Dispatchable Generation Unit, commissioned prior to CMOD, shall be determined by the Market Operator based on the actual Available Capacity of the Generation Unit, during System Peak Hours, in the last three years as per provisions of the CCOP prepared under Clause 8.3.1.1.
- 8.4.1.2. The Initial Firm Capacity, for a Non-Dispatchable Generation Unit, commissioned prior to CMOD, shall be determined as the average hourly Energy injected into the Grid System by the Generation Unit, during System Peak Hours, in the last three years as per provisions of the CCOP prepared under Clause 8.3.1.1.
- 8.4.1.3. For the application of Clause 8.4.1.2 above, where the Non-Dispatchable Generation Unit has been instructed by the System Operator or the Distribution Licensee, as the case may be, to reduce its production of Energy due to network or system constraints or due to provision of Ancillary Services or due to alleviation of Congestion, any Energy which was injected into the Grid System during the afore-referred period shall be excluded from the calculation of Initial Firm Capacity.
- 8.4.1.4. The values excluded as per Clause 8.4.1.3 above, shall be replaced with the potential Energy that the Non-Dispatchable Generation Unit would have injected into the Grid System as forecasted by the System Operator.
- 8.4.1.5. The CCOP prepared under Clause 8.3.1.1 shall also include provisions for determination of the Initial Firm Capacity for Dispatchable and Non-Dispatchable Generation Units describing the calculations to be performed to determine the Initial Firm Capacity of Dispatchable and Non-dispatchable Generation Units, as well as the necessary information and the institutions involved in providing such information.

8.4.2. NEW GENERATION UNITS

8.4.2.1. The Initial Firm Capacity of new Generation Units, which will be commissioned after CMOD, shall be calculated by the Market Operator based on the technology utilized by the Generation Unit, multiplying the Installed Net Capacity with the Equivalent Availability Factors as provided in Table I below.

Table I: Equivalent Availability Factors

Sr. No.	Generation Technology	Equivalent Availability Factor
1	Dispatchable Technologies	
1.1	Hydro with reservoir	0.85
1.2	Thermal (either liquid fuels, gas or coal fired)	0.85
1.3	Bagasse	0.85
1.4	Thermal Solar	0.8
1.5	Nuclear	0.80
2	Non-dispatchable Technologies	
2.1	Hydro run of river	Based on the feasibility study
2.2	Wind	0.30
2.3	Solar PV	0.22

8.4.2.2. The Initial Firm Capacity Certificate of new Generation Units may be issued with a validity up to [20] years. The Market Operator must review the Firm Capacity Certificate of such Generation Units within six months after completion of third year from COD.

8.4.3. NASCENT OR SPECIAL TECHNOLOGIES

8.4.3.1. The initial Firm Capacity of new Generation Units, which will be commissioned after CMOD, and use nascent or special technologies, not included in Table I, shall be determined on a case-to-case basis.

8.4.3.2. The Market Operator shall review the information submitted by the applicant and, if deemed appropriate, it may seek advice from reputable experts of such technologies.

8.4.3.3. Thereafter, the Market Operator shall fix the values to be included in the Initial Firm Capacity Certificate. These values shall be reviewed after [3] years of issuance of the Initial Firm Capacity Certificates for such Generation Units or any other shorter period as deemed appropriate.

8.4.4. CONTRACTS FOR ENERGY OR CAPACITY IMPORTS

8.4.4.1. Import Contracts, signed in compliance to NEPRA's regulations, which have provisions for firm Import shall be eligible to receive Firm Capacity Certificates. An Import Contract in order to qualify as firm Import shall:

- stipulate that the Import comes from clearly identified group of Generation Units or Generation Plants, which are not connected to the system of the territory where the Generation Unit is located; or
- in case of Imports from foreign countries, contain provisions which clearly specify that the buyer is entitled to receive the specified quantity of electric power on its demand, and that the seller is not entitled to restrict such Import for any reason, other than the unavailability of the interconnection line; and the laws prevailing in the country of the seller do not require suspension of exporting Energy in case of shortages or energy deficits;

- c) where the Import is backed by an international treaty, clearly specify that the Import is firm and it will be respected even in cases of energy deficits or shortages in the country or region of the seller.

8.4.4.2. The Market Operator shall review the submitted Import Contract and shall determine if such Contract qualifies as firm Import or not.

8.4.4.3. In case the Import Contract qualifies as firm Import, the initial Firm Capacity for the Import Contract shall be equal to the Firm Capacity stated in the Import Contract, or if this value is not clearly stated in the Contract, the average forecasted Energy to be imported during the System Peak Hours.

8.5. REVIEW OF FIRM CAPACITY CERTIFICATES

8.5.1. REVIEW INITIATED BY THE MARKET OPERATOR

8.5.1.1. All Initial Firm Capacity Certificates issued to the Generation Units or Generation Plants commissioned prior to or after the CMOD shall be reviewed by the Market Operator within 6 months after completion of three years from the issuance date of such certificates or any other shorter period as deemed appropriate by the Market Operator.

8.5.1.2. After carrying out the first review of the Initial Firm Capacity Certificates as stipulated above, the Market Operator shall carry out review of the Firm Capacity Certificates every five (5) years. This review shall be performed within six (6) months after completion of the five years period.

8.5.1.3. Notwithstanding the provisions of review as stipulated in Clause 8.5.1.2 above, the Market Operator may review and cancel certain number of the Firm Capacity Certificates, in cases:

- a) the actual availability of a Dispatchable Generation Unit is consistently below the values which were used to issue the certificates; or
- b) the actual Energy produced by a Non-dispatchable Generation Unit is consistently lower than the values which were used to issue the certificates; or
- c) the contracted quantity of Energy and/or Capacity in an Import Contract is not available for dispatch, when required.

8.5.1.4. This review may only be performed:

- a) After the third year of the date of issuing the initial or renewed Firm Capacity Certificates; and
- b) Not more than once within a period of five (5) years.

8.5.1.5. Where upon review of the Firm Capacity Certificates, it appears that the Firm Capacity of the Generation Unit or the Generation Plan is less than the number of Firm Capacity Certificates issued to a Market Participant, the Market Operator shall issue a notice to the concerned Market Participant requiring it to provide reasons why certain number of certificates may not be cancelled and, if requested, provide an opportunity of meeting. After receipt of reply to the notice and holding the meeting, if needed, the Market Operator shall decide whether to cancel certain number of Firm Capacity Certificates and inform the concerned Market Participant accordingly.

8.5.1.6. In case the Market Operator cancels certain number of Firm Capacity Certificates, it shall change the status of such certificates to “Cancelled”. The number of certificates to be cancelled shall be calculated as the difference between the Firm Capacity included in the existing Firm Capacity Certificates and the new reduced value decided by the Market Operator multiplying it with a factor of ten [10]. A Cancelled Firm Capacity Certificate shall not change its status in any circumstance.

8.5.1.7. The CCOP prepared under Clause 8.3.1.1 shall include a criteria and procedure for measuring the actual performance of a Generator or Import Contract.

8.5.2. REVIEW OF FIRM CAPACITY CERTIFICATES REQUESTED BY A MARKET PARTICIPANT

8.5.2.1. A Generator, a Market Participant representing a Generator or an Electric Power Trader importing electric power through an Import Contract may apply to the Market Operator for review of the Firm Capacity Certificates.

8.5.2.2. In case of Import Contracts, the application for review will only be processed where the Contract is explicitly associated with a Generator or Generation Plant. In such case, the Import Contract shall be considered as a Generation Unit.

8.5.2.3. The applicant may submit an application for review of the Firm Capacity Certificates by providing supporting information and documents, in the following cases:

- a) after modification or major overhaul of the Generation Unit or Generation Plant, which results in an increase in the Installed Net Capacity; or
- b) after overhaul of a Generation Unit which results in resolution of the cause of reduction of Firm Capacity Certificates; or
- c) for any other reason, where the concerned Market Participant considers that the existing Firm Capacity Certificates do not reflect the actual Firm Capacity of the relevant Generation Unit. In this case, the Market Participant, along with other information, shall also submit information for last three years in which the Equivalent Availability Factor or the Energy actually generated, taking due consideration of those periods in which the Generation Unit has been instructed to reduce Generation as per an instruction issued by the System Operator or the Distribution Network Operator, as the case may be, is above the input values considered to issue the existing Firm Capacity Certificates.

8.5.2.4. The application for review of the Firm Capacity Certificates of a Generation Unit may only be accepted if the Generation Unit:

- a) is dispatched for, at least, 1,500 hours in each of the previous two years; and
- b) has injected into the Grid System such quantity of Energy, in each of the previous two years, which is above the Generation Unit Installed Net Capacity multiplied by 1,200 hours; or
- c) in case of Dispatchable Generation Units, has been tested by the System Operator to establish its dependable capacity and has issued a certificate in this regard.

8.5.2.5. Upon acceptance of the application, the Market Operator shall:

- a) conduct analysis and carry out assessment as deemed appropriate, which may include:
 - a.1. comprehensive review of the submitted documents;
 - a.2. request the opinion of an independent expert on the cost of the applicant;

- a.3. perform or required tests on the relevant Generation Unit on the cost of the applicant;
 - a.4. require a verification period, which may not last more than [180 days], during which the input values claimed by the applicant shall be actually demonstrated.
 - b) determine, after conducting analysis and carrying out asses as stipulated above, the revised values which may be used to issue, if required, additional Firm Capacity Certificates for the relevant Generation Unit.
- 8.5.2.6. The above application for review of Firm Capacity Certificates shall only be accepted after three years of issuance of the existing Firm Capacity Certificate, provided that only one such application shall be processed within a period of five (5) years.
- 8.5.2.7. After acceptance of the application for review of the Firm Capacity Certificates, the newly issued Firm Capacity Certificates shall have the same validity date as of the previously issued Firm Capacity Certificates for the relevant Generation Unit.

8.5.3. CALCULATION OF NEW VALUES OF FIRM CAPACITY IN CASE OF REVIEW

- 8.5.3.1. The calculations for reduction or increase in the number of the Firm Capacity Certificates resulting from the review by the Market Operator on its own motion or on the application of the concerned Market Participant, shall be the same as followed to issue the Initial Firm Capacity Certificates for existing Generation Units.
- 8.5.3.2. The data for a period of only last three years shall be considered for calculation of the Firm Capacity.
- 8.5.3.3. The CCOP prepared under Clause 8.3.1.1 shall include a criterion to accept or reject the application of the Market Participants and to determine the new values to be used to issue the revised Firm Capacity Certificates.

8.5.4. DISPUTE RESOLUTION

- 8.5.4.1. In case a Market Participant is aggrieved of a decision taken by the Market Operator regarding the Firm Capacity Certificates, it may file a dispute with the Market Operator according to the provisions of Chapter 14.

8.5.5. ACTIONS AFTER REVIEW OF FIRM CAPACITY CERTIFICATES

- 8.5.5.1. In case the number of Firm Capacity Certificates is increased after the review, the concerned Market Participant shall be entitled to register new Contracts or amend its existing registered Contracts using the additional Firm Capacity Certificates.
- 8.5.5.2. In case the number of Firm Capacity Certificates is reduced, and the remaining certificates are below the total Capacity sold by this Market Participant through registered Contracts, the concerned Market Participant shall execute new Contracts, amend the existing Contracts with the relevant Market Participants or procure the necessary additional certificates through Contracts with other Market Participants.
- 8.5.5.3. The aggregate Capacity sold in the new or amended Contracts shall not exceed the number of the Firm Capacity Certificates. The new or amended Contracts executed by the concerned Market Participant shall be registered with the Market Operator, following the standard procedure as set out in this Code.

8.5.5.4. The CCOP prepared under Clause 8.3.1.1 shall include a procedure that shall be followed to check the appropriateness of the Contracts after review of the Firm Capacity Certificates.

Chapter 9. BALANCING MECHANISM FOR CAPACITY

9.1. INTRODUCTION

9.1.1. PURPOSE

- 9.1.1.1. The purpose of the Balancing Mechanism for Capacity is to facilitate Market Participants to comply with their Capacity Obligations. In the Balancing Mechanism for Capacity, a Market Participant purchases Capacity in order to comply with its Capacity Obligations from other Market Participants which have Capacity in excess of their obligations.
- 9.1.1.2. The Capacity Imbalances for each Market Participant shall be determined, through the Balancing Mechanism for Capacity, as the difference between:
- a) the Capacity taken from the Grid System and the Credited Capacity to such Market Participant pursuant to a registered Contract or its own Generation Units;
 - b) the Guaranteed Capacity sold by a Market Participant through a registered Contract and the Capacity actually provided by the relevant Generation Units.
- 9.1.1.3. The results of the Balancing Mechanism for Capacity shall also be used to verify ex-post compliance with the Capacity Obligations of each Market Participant.

9.1.2. BALANCING PERIOD

- 9.1.2.1. The Market Operator shall calculate the Capacity Imbalances on yearly basis (the Capacity Balancing Period), on the basis of certain number of hours in which the system is stressed “the Critical Hours”.

9.1.3. SELLERS AND BUYERS IN THE BALANCING MECHANISM FOR CAPACITY

- 9.1.3.1. The following Market Participants may sell Capacity in the Balancing Mechanism for Capacity:
- a) a Generator which has not sold all of its Available Capacity, through registered Contracts, to other Market Participants;
 - b) a Market Participant which has excess Capacity, purchased through registered Contracts, than its requirement;
- 9.1.3.2. The following Market Participants may purchase in the Balancing Mechanism for Capacity:
- a) a Market Participant which has sold Guaranteed Capacity, as provided in Clause 3.2.1.5, to another Market Participant, however, the provided Capacity is less than the Guaranteed Capacity;
 - b) a Market Participant which has taken Capacity from the Grid System in excess of its Credited Capacity.

9.2. PROCEDURE FOR ADMINISTRATION OF THE BALANCING MECHANISM FOR CAPACITY

9.2.1. STEP 1: IDENTIFICATION OF CRITICAL HOURS

- 9.2.1.1. For calculation of the Capacity Imbalances of a Market Participant, the Market Operator shall consider the Capacity actually provided by a Generator and the Capacity actually taken by a Market Participant during the “Critical Hours”. For the purposes of this chapter, the Critical Hours are defined as such hours of the previous year when the power system was under maximum stress.
- 9.2.1.2. Within eighteen [18] months of the CMOD, the System Operator shall, in collaboration with the Market Operator, make a CCOP for determining the Critical Hours, of the previous year, during which the power system was under maximum stress. The said CCOP shall include:
- a) the characteristics of the Demand;
 - b) the production of Energy by certain technologies, which, due to their characteristics, are not able to fully control their Energy injection into the Grid System;
 - c) the specific characteristics of the constraints of the hydro Generation;
 - d) the Generation Units maintenance plans; and
 - e) the minimum reserve requirements of the power system.
- 9.2.1.3. Until the System Operator develops the CCOP as provided in Clause 9.2.1.2 above, the Critical Hours shall be determined as:
- a) the fifty (50) hours in which the sum of the Total Demand, hourly transmission losses and an estimation of the Demand, which has been disconnected upon instructions issued by the System Operator or the DISCO due to generation or network constraints, as the case may be, is higher than all other hours; and
 - b) not more than five (5) hours of the same day shall be included in the Critical Hours.

9.2.2. STEP 2: DETERMINATION OF THE CAPACITY PROVIDED BY GENERATORS

- 9.2.2.1. For the Balancing Mechanism for Capacity, the Capacity provided by each Generation Unit (expressed in MW-year) shall be equal to the average Capacity provided by such Generator to the Grid System during the Critical Hours.
- 9.2.2.2. The System Operator shall determine, for each hour included in the Critical Hours, the Capacity provided by a Generation Unit, after taking due consideration of the type of such unit as under:
- a) for an ARE Generation Unit without storage, whose production of Energy is dependent on the availability of the primary energy resource, the Capacity provided shall be equal to:
 - a.1. the Energy injected into the Grid System by such Generation Unit during the hour; plus
 - a.2. such quantity of Energy that such Generation Unit would have injected into the Grid System during the hour, but could not be injected due to grid failure or curtailment instructed by the System Operator or the DISCO for disconnection or reduction of Energy generation, on account of Congestion or provision of Ancillary

Services, which shall equal to the Energy forecasted by the System Operator for the relevant hour.

- b) for Non-Energy Limited Generation Units, the Capacity provided shall be equal to the Available Capacity of the Generation Unit during the hour, as informed by the concerned Market Participant to the System Operator according to the provisions of the Grid Code such as thermal power plants;
- c) For Energy Limited Generation Units as defined below, the Capacity provided during the hour shall be calculated as provided below depending on the quantity of primary energy stored;
 - c.1. In case the primary energy stored during the relevant hour would be enough for operating the Generation Plant at its Installed Capacity for at least ninety-six (96 hours), the Generation Unit shall be considered as a Non-Energy Limited Generation Unit and the Capacity provided shall be calculated as per paragraph b) above such as Hydro plant with large reservoirs as well wind and solar having similar storage capacity.
 - c.2. In case the primary energy stored at the relevant hour would not be enough for operating the Generation Plant at its Installed Capacity for at least ninety-six (96 hours), the Capacity provided shall be calculated as per Paragraph 9.2.2.2.a) above such as run of river hydro plants or wind and solar plants with very limited storage capacity.
- d) for Imports, the Capacity provided shall be equal to the Capacity determined by the System Operator taking due consideration of the nature of the Import Contract, which shall not be lower than the actual Import during the corresponding hour.

9.2.2.3. Within eighteen [18] months after the approval of this Code, the System Operator shall, in collaboration with the Market Operator, make a CCOP describing the detailed methodology for implementing the calculations indicated in Clause 9.2.2.2. Such methodology shall take due consideration of:

- a) Generation Units maintenance plans and eventual modifications of such plan, instructed by the System Operator;
- b) Availability Declarations of each Generation Plant or Generation Unit, as the case may be, and eventual changes to such declarations informed by the Generators or other Market Participants during real time operations;
- c) the results of tests performed or instructed by the System Operator to verify the Availability Declarations submitted by the Generators or other Market Participants, including compliance with instructions of start-up, synchronizing and production of Energy;
- d) the results of audits, performed by the System Operator, aimed to verify the appropriateness of the Availability Declarations submitted by the Generators or other Market Participants.

9.2.2.4. The Capacity provided by each Generation Unit, for each hour included in the Critical Hours, shall be determined by the System Operator within fifteen (15) Business Days immediately after the end of each Calendar Year and provide such information to the Market Operator.

9.2.3. STEP 3: CAPACITY CREDITED TO MARKET PARTICIPANTS

9.2.3.1. The Market Operator shall credit the Capacity provided by each Generation Unit, for each of the hours included in the Critical Hours, to the relevant Market Participants by considering the information contained in the Contract Register as well as the Firm Capacity Register.

9.2.3.2. The crediting of the Capacity shall be done in the following way:

- a) where a Generator which owns the Generation Unit, or an Electric Power Trader representing the Generator, has not registered any Contract involving “Guaranteed Capacity”, the Capacity provided by the relevant Generation Unit, during each of the hours included in the Critical Hours, shall be credited proportionally to the owners of the Firm Capacity Certificates of such Generation Unit, during the day to which the corresponding hour belongs;
- b) where the Generator which owns the Generation Unit or Electric Power Trader representing the Generator has registered a Contract, in which the Generation Unit is involved in a transaction of “Guaranteed Capacity”, for each hour included in the Critical Hours :
 - b.1. the Capacity stated in the Contract shall be fully credited to the Market Participant which is the buyer in the Contract; and
 - b.2. the Capacity provided by the Generation Unit shall be fully credited to the Market Participant which is the seller in the Contract.
- c) where the Generator which owns the Generation Unit or Electric Power Trader representing the Generator has registered Contracts, in which the Generation Unit is involved, partially in transactions of “Guaranteed Capacity” and partially in transactions of “Non-Guaranteed Capacity”, the portion involved in “Guaranteed Capacity” shall be assigned as indicated in paragraph b) and the remaining part shall be assigned as provided in paragraph 9.2.3.2.a) above.

9.2.3.3. Once the Market Operator has credited the Capacity provided by all Generation Units to the corresponding Market Participants, in accordance with Clause 9.2.3.2 above, it shall determine the Credited Capacity of each Market Participant as the average of the Credited Capacity at each hour included in the Critical Hours:

$$ACC_{i,y}[MW] = \frac{\sum_{h \in CH} CC_{i,h}}{50 \text{ hours}}$$

Where:

$ACC_{i,y}$ is the Credited Capacity to Market Participant “i”, for the Fiscal Year “y”, in MW;

$CC_{i,h}$ is the Credited Capacity to Market Participant “i”, in hour “h”, calculated pursuant Clause 9.2.3.2, in MW;

$\sum_{h \in CH}$ means the 50 hours which have been defined as Critical Hours, for the Fiscal Year “y”.

9.2.4. STEP 4: CAPACITY REQUIREMENTS OF MARKET PARTICIPANTS

9.2.4.1. For the Balancing Mechanism for Capacity, all Market Participants which supply to Consumers, BPCs which are enrolled as Market Participants and, if applicable, Firm Exports, shall be required to procure Capacity, as determined below. Further, Generators or Electric Power Traders representing Generators which have sold Guaranteed Capacity to Market Participants, shall be required to provide Capacity which was sold through the registered Contracts. This requirement to procure Capacity is termed as the Capacity Requirement for the Market Participants.

9.2.4.2. The Capacity Requirement for the Market Participants as referred to in Clause 9.2.4.1 above shall be calculated by the Market Operator as under:

- a) in the case of a BPC, which is a Market Participant, the Capacity Requirement shall be equal to the average Energy withdrawn, during the Critical Hours, calculated pursuant to Clause 5.4.2.2.a), multiplied by an Operational Reserve Margin:

$$ACR_{i,y}[MW] = \left[\frac{\sum_{h \in CH} (Act_E_{i,h} - \sum_{\forall CS_j} EC_{MP_{i,j,h}})}{50 \text{ hours}} \right] (1 + RM)$$

Where:

$ACR_{i,y}$ is the Capacity Requirement of BPC “i”, for the Fiscal Year “y”, in MW;

$Act_E_{i,h}$ is the Energy withdrawn by BPC “i”, in hour “h”, calculated pursuant to Clause 5.4.2.2.a), in MWh;

$EC_{MP_{i,j,h}}$ is the Energy supplied by the Competitive Electric Power Supplier “j” to the BPC “i”, in hour “h”, as per the information contained in the Contract Register of the Market Operator;

$\sum_{\forall CS_j}$ means the sum over all Competitive Electric Power Suppliers which have Contracts with the BPC “i” (if any);

$\sum_{h \in CH}$ means the 50 hours which have been defined as Critical Hours, for the Fiscal Year “y”;

RM is the applicable Operational Reserve Margin.

- b) in the case of Competitive Electric Power Suppliers, its Capacity Requirement shall be equal to the average Energy supplied by the Electric Power Supplier, during the Critical Hours, calculated pursuant to Clause 5.4.2.2.a), multiplied by an Operational Reserve Margin. The Energy supplied for each particular hour shall be the addition of the Energy supplied to all the BPCs served by the Competitive Electric Power Supplier during the relevant hour:

$$ACR_{j,y}[MW] = \frac{\sum_{h \in CH} (\sum_{\forall BPC_{i,j}} Act_E_{i,j,h})}{50 \text{ hours}} (1 + RM)$$

Where:

$ACR_{j,y}$ is the Capacity Requirement of the Competitive Electric Power Supplier “j”, for the Fiscal Year “y”, in MW;

$Act_E_{i,j,h}$ is the total Energy supplied by the Competitive Electric Power Supplier “j”, to BPC “i” in hour “h”, either calculated pursuant Clause 5.4.2.2.a) or the information contained in the Contract

Register of the Market Operator, as the case may be, depending on the type of Contract between the Competitive Electric Power Supplier and the BPC, in MWh;

$\sum_{\forall BPC_{i,j}}$ means the sum over all BPCs “i” which are supplied by the Competitive Electric Power Supplier “j” ;

$\sum_{h \in CH}$ means the 50 hours which have been defined as Critical Hours, for the Fiscal Year “y”;

RM is the applicable Operational Reserve Margin.

- c) in the case of Suppliers of Last Resort, the Capacity Requirement shall be equal to the average Energy supplied by the Electric Power Supplier, during the Critical Hours, calculated pursuant to Clause 5.2.1.3, multiplied by an Operational Reserve Margin. The Energy supplied shall be calculated through an appropriate balance of the total Energy withdrawn by the Supplier of Last Resort from the Transmission Network or Imports plus the Energy injected by Embedded Generation owned by the Supplier of Last Resort (duly corrected to take into account the losses in the Transmission or Distribution Network):

$$ACR_{k,y}[MW] = \frac{\sum_{h \in CH} \left(\sum_{\forall i \in TP} Act_E_{TP_{i,h}} + \sum_{\forall j \in MP} E_{MP_{j,h}} \right)}{50 \text{ hours}} (1 + RM)$$

Where:

$ACR_{k,y}$ is the Capacity Requirement of the Supplier of Last Resort “k”, for the Fiscal Year “y”, in MW;

$Act_E_{TP_{i,h}}$ is the total Energy injected/withdrawn at the Trading Point “i”, belonging to the Supplier of Last Resort “k”, in hour “h”, calculated pursuant to Clause 5.2.1.3, in MWh;

$E_{MP_{j,h}}$ is the Energy injected/withdrawn at the Metering Point “j”, which is not a Trading Point, belonging to the Supplier of Last Resort “k”, in hour “h”, considered by the Market Operator in accordance with the Provisions of Chapter 4.

The Energy injected into the Distribution Network in the service territory of the Supplier of Last Resort “k” shall be considered positive and the Energy withdrawn from such network shall be considered negative. Only positive values shall be used in the calculation;

$\sum_{\forall i \in TP}$ means the sum over all Trading Points belonging to the Supplier of Last Resort “k”;

$\sum_{\forall j \in MP}$ means the sum over all Metering Points which are not Trading Points, belonging to the Supplier of Last Resort “k”;

$\sum_{h \in CH}$ means the 50 hours which have been defined as Critical Hours, for the Fiscal Year “y”;

RM is the Operational Reserve Margin.

- d) in the case of Electric Power Traders which have Contracts for Firm Export, the

Capacity Requirement shall be equal to Capacity stated in the registered Contract, calculated pursuant to Clause 5.4.2.2.a), multiplied by an Operational Reserve Margin:

$$ACR_{k,y}[MW] = \frac{\sum_{h \in CH} (\sum_{\forall EXP_{x,k}} Act_E_{k,x,h})}{50 \text{ hours}} (1 + RM)$$

Where:

$ACR_{k,y}$ is the Capacity Requirement of the Electric Power Trader with Export Contracts “k”, for the Fiscal Year “y”, in MW;

$Act_E_{k,x,h}$ is the total Energy exported by the Electric Power Trader “k”, to system “x”, in hour “h”, calculated pursuant Clause 5.4.2.2.a), in MWh;

$\sum_{\forall EXP_{x,k}}$ means the sum over all exports “x” which are carried out by the Electric Power Trader “k”;

$\sum_{h \in CH}$ means the 50 hours which have been defined as Critical Hours, for the Fiscal Year “y”;

RM is the applicable Operational Reserve Margin.

- e) in the case of Market Participants which have executed Contracts, involving the sale of Guaranteed Capacity to other Market Participants, the Capacity Requirement shall be equal to the Capacity sold through such Contracts, without considering losses or Operational Reserve Margin.

9.2.4.3. The Operational Reserve Margin is the minimum amount of reserve that the system requires for the provision of Ancillary Services, including frequency control, which are required for secure and reliable operation, and it will be expressed as percentage of the Total Demand. The value of the Operational Reserve Margin shall be determined, periodically, by the System Operator pursuant to the provisions of the Grid Code. Till such time the System Operator determines this value and inform the Market Operator accordingly, the Operational Reserve Margin shall be equal to [7.0%].

9.2.5. STEP 5: CAPACITY BALANCES OF EACH MARKET PARTICIPANT

9.2.5.1. The Market Operator shall calculate the Capacity Balance of each Market Participant as the difference between the Credited Capacity and the Capacity Requirement of each Market Participant as under:

$$CB_{i,y} = ACC_{i,y} - ACR_{i,y}$$

Where:

$CB_{i,y}$ is the Capacity Balance of Market Participant “i”, for the year “y”, which will be used for determining its participation in the Balancing Mechanism for Capacity, in MW;

$ACC_{i,y}$ is the Credited Capacity to Market Participant “i”, for the year “y”, calculated pursuant to Clause 9.2.3.3, in MW;

$ACR_{i,y}$ is the Capacity Requirement of the Market Participant “i”, for the year “y”, calculated pursuant to Clause 9.2.4.2, in MW.

9.2.6. STEP 6: DETERMINATION OF THE EFFICIENT RESERVE AND THE REFERENCE TECHNOLOGY

9.2.6.1. Every year, while developing the IGCEP, as stipulated in the Grid Code, the System Operator shall determine:

- a) the efficient level of reserves required for the system; and
- b) the unitary price for the Capacity expressed in PKR/MW-year, which will be used for the Balancing Mechanism for Capacity.

9.2.6.2. The efficient level of reserves is the Capacity that is required to be installed in the system above the peak load, on long term basis, in order to minimize the total system costs. The total system costs shall include:

- a) the investment costs;
- b) the operational costs;
- c) the cost of the energy not supplied.

9.2.6.3. The efficient level of reserves shall be calculated as the total Installed Capacity divided by the peak load of the system included in the end period of the IGCEP, expressed in percent:

$$RE = \frac{\sum_y \left(\frac{TIC_y}{PL_y} - 1 \right) * 100}{n}$$

Where:

- RE is the efficient level of reserves expressed in percentage;
- TIC_y is the total Installed Capacity in year “y”, which minimizes the total costs of the system, calculated by the System Operator in the IGCEP;
- PL_y is the peak load of the system in year “y”, including transmission losses, which has been used by the System Operator in preparation of the IGCEP;
- n are the total number of years used in the determination of the efficient reserve.

9.2.6.4. Till such time the System Operator determines the efficient level of reserve, the value provided in Clause 18.2.9 shall apply.

9.2.6.5. The unitary cost of the Capacity is the investment cost of the most economic Generation Unit, capable to provide 1 MW of Firm Capacity during the Critical Hours.

9.2.6.6. The System Operator shall determine the unitary cost of the Capacity, when developing the IGCEP, considering different generation technologies, and calculating for each of them, the levelized investment cost and the revenues that this project would obtain during the “Critical Hours” if it had been operating in the market. Only technologies capable to provide controllable Capacity shall be considered.

9.2.6.7. The estimated investment costs, for each technology shall include:

- a) the costs of the project may include, among other inputs:
 - a.1. equipment costs;

- a.2. site acquisition costs (land);
- a.3. engineering, procurement, project management and construction costs;
- a.4. legal costs;
- a.5. interconnection costs of the transmission system;
- a.6. construction costs and interconnection of fuel pipelines, if applicable; and
- a.7. mobilization and contingent costs;
- b) estimated financial costs of the project;
- c) the assumed economic operational life of the project, considering the salvage value after that operational life;
- d) an appropriate discount rate, which shall be determined by the System Operator, properly documented in the reports attached with the IGCEP.

9.2.6.8. The estimated revenues for each technology shall be calculated by the System Operator, as the difference between the estimated System Marginal Prices at the expected Critical Hours and the variable cost of the technologies evaluated.

9.2.6.9. The levelized fixed cost of the technologies evaluated shall be calculated as:

$$LFT = LIC - RevMarket$$

Where:

- *LFT* is the levelized fixed cost of the technology being evaluated;
- *LIC* is the levelized investment cost; and
- *RevMarket* are the simulated revenues that this technology would have obtained in the CTBCM during the 50 Critical Hours.

9.2.6.10. The Reference Technology will be the technology which minimizes their levelized fixed costs, determined pursuant to Clause 9.2.6.9. The unitary cost of the Capacity shall be equal to the levelized investment cost of the reference technology.

9.2.6.11. The System Operator shall provide to the Market Operator, the detailed methodology which was utilized for determining the efficient reserve and the unitary cost of the Capacity. Till such time this methodology is developed by the System Operator, the unitary cost of the Capacity shall be determined as per Clause 18.2.8.1 and the efficient reserve level shall be determined as per Clause 18.2.9.1.

9.2.6.12. The Authority shall approve the values of the efficient reserve and the unitary cost of the Capacity when approving the IGCEP. The approved values will be notified by the Authority to the Market Operator. These values will remain valid until the Authority notifies to the Market Operator new values.

9.2.7. STEP 7: DETERMINATION OF THE CAPACITY PRICE FOR THE BMC

9.2.7.1. The Market Operator shall determine the Capacity price to be used in the Balancing Mechanism for Capacity through two curves: A supply curve and a demand curve, as demonstrated in Figure 1 below.

- a) The supply curve represents the Capacity “offered” by the Market Participants. It shall be calculated as the sum of the Capacity Balances of all Market Participants which have a positive Capacity Balance (Capacity surplus). This Capacity is considered to be offered in

the Balancing Mechanism for Capacity, as a price taker.

- b) The demand curve: The demand curve will have two sections. The mandatory part and the efficient part.

9.2.7.2. The “mandatory” part will start at point A, which corresponds to a Capacity of zero and a price equal to two times the levelized fixed costs of the Reference Technology, and extends horizontally to point B, which corresponds to the sum of the Capacity Balances of all Market Participants with a negative Capacity Balance value (Capacity deficit).

9.2.7.3. The “efficient” section will start at point B and it will extend to point C. This point will be determined by the intersection of the levelized fixed cost of the reference technology, and the “efficient” demand level calculated as:

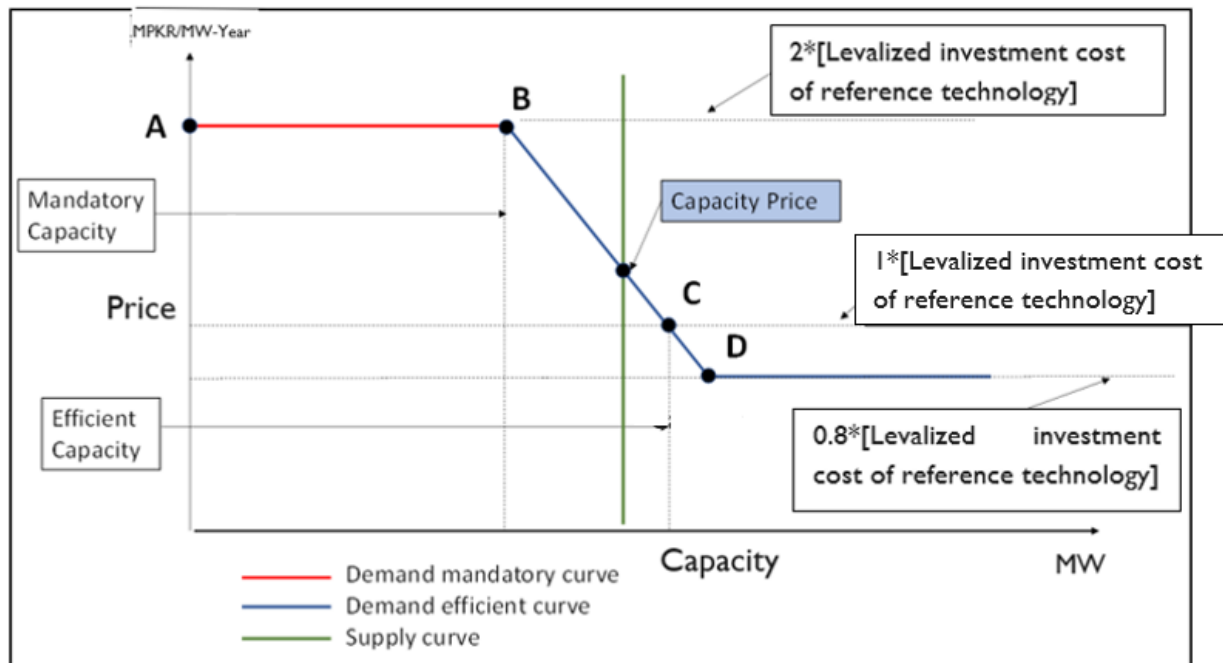
$$EDL_y = \sum_{\forall i \in neg} CB_{i,y} * \frac{1 + RE}{1 + RM}$$

Where:

- EDL is the efficient demand level;
- $CB_{i,y}$ is the total amount of Capacity required by the Market Participants “i” which has a negative value of the Capacity Balance, calculated pursuant to Clause 9.2.5.1;
- RE is the efficient level of reserve calculated as per Clause 9.2.6.3;
- RM is the Operational Reserve Margin.

9.2.7.4. The “efficient” section of the demand curve will extend, with the same slope, up to point D, which corresponds to 80% of the levelized fixed costs of the reference technology. The Capacity prices will be capped at such level.

Figure I: Demand and Supply Curves for the Capacity Balancing Mechanism



9.2.7.5. The Capacity price, which will be used in the Capacity Balancing Mechanism will be the intersection of the demand and supply curves.

9.2.8. STEP 8: DETERMINATION OF THE AMOUNTS SOLD AND PURCHASED BY EACH MARKET PARTICIPANT

9.2.8.1. The amount of Capacity sold and purchased by each Market Participant in BMC shall be calculated according to the procedure given below, depending on the crossing point between the supply and demand curves, determined pursuant to Sub-Section 9.2.7:

a) If the supply curve crosses the demand curve in the segment delimited by the points A and B of Figure I, it implies that the sum of the Capacity Balances of Market Participants with positive balances (Capacity Surplus) is not enough for covering the sum of Market Participants with negative balances. In this case:

a.1. the Market Participants with positive balances will sell all their surplus of Capacity:

$$CS_{i,y} = CB_{i,y}$$

Where:

$CS_{i,y}$ is the total amount of Capacity sold by the Market Participant “i” with positive value of Capacity Balance, in year “y”;

$CB_{i,y}$ is the total amount of Capacity offered by the Market Participant “i”, in year “y”, which has a positive value of the Capacity Balance, calculated pursuant to Clause 9.2.5.1.

a.2. the Market Participants with negative balances will purchase only a share of their Capacity Requirement, on a proportional basis:

$$CP_{j,y} = \frac{CB_{j,y}}{\sum_j CB_{j,y}} * \sum_i CB_{i,y}$$

Where:

$CP_{j,y}$ is the total amount of Capacity purchased by the Market Participant “j” with negative value of Capacity Balance, in year “y”;

$CB_{j,y}$ is the total amount of Capacity Requirement by the Market Participant “j”, in year “y”, which has a negative value of the Capacity Balance, calculated pursuant to Clause 9.2.5.1;

$CB_{i,y}$ is the total amount of Capacity offered by the Market Participant “i”, in year “y”, which has a positive value of the Capacity Balance, calculated pursuant to Clause 9.2.5.1;

\sum_j means the sum of all Market Participants with negative Capacity Balance;

\sum_i means the sum of all Market Participants with positive Capacity Balance.

b) If the supply curve crosses the demand curve to the right of B of Figure I, it implies that the sum of the Capacity balances of Market Participants with positive balances (Capacity Surplus) is sufficient or in excess of the requirements of all Market Participants with negative balances. In this case:

b.1. the Market Participants with negative balances will purchase all their deficit of Capacity:

$$CP_{j,y} = -CB_{j,y}$$

Where:

$CP_{j,y}$ is the total amount of Capacity purchased by the Market Participant “j” with negative value of Capacity Balance, in year “y”;

$CB_{i,y}$ is the total amount of Capacity required by the Market Participant “j”, in year “y”, which has a negative value of the Capacity Balance, calculated pursuant to Clause 9.2.5.1.

b.2. the Market Participants with positive balances will sell a portion of their Capacity surplus, on a proportional basis:

$$CS_{i,y} = -\frac{CB_{i,y}}{\sum_i CB_{i,y}} * \sum_j CB_{j,y}$$

Where:

$CS_{j,y}$ is the total amount of Capacity sold by the Market Participant “i” with positive value of Capacity Balance, in year “y”;

$CB_{i,y}$ is the total amount of Capacity required by the Market Participant “j”, in year “y”, which has a negative value of the Capacity Balance, calculated pursuant to Clause 9.2.5.1;

$CB_{i,y}$ is the total amount of Capacity offered by the Market Participant “i”, in year “y”, which has a positive value of the Capacity Balance, calculated pursuant to Clause 9.2.5.1;

\sum_j means the sum of all Market Participants with negative Capacity Balance;

\sum_i means the sum of all Market Participants with positive Capacity Balance.

9.3. DETERMINATION OF THE PRELIMINARY RECEIVABLE AND PAYABLE AMOUNTS

9.3.1. CALCULATION OF THE PRELIMINARY RECEIVABLE / PAYABLE AMOUNTS

9.3.1.1. Within forty five [45] Business Days immediately after the end of each Calendar Year, the Market Operator shall preliminarily determine the Amounts Payable and Amounts Receivable by each Market Participant as under:

$$AR_{i,y}[PKR] = CS_{i,y}[MW] * Cap_price_y[PKR/MW]$$

$$AP_{j,y}[PKR] = CP_{j,y}[MW] * Cap_price_y[PKR/MW]$$

Where:

- $AR_{i,y}$ is the Amount Receivable by a Market Participant “i” for the settlement year “y”, for the Capacity sold in the Balancing Mechanism for Energy
- $AP_{j,y}$ is the Amount Payable by Market Participant “j” for the settlement year “y”, for the Capacity purchased in the Balancing Mechanism for Energy

- $CP_{i,y}$ is the Capacity purchased by a Market Participant “i” in the settlement year “y” calculated pursuant to Clause 9.2.8.1
- $CS_{j,y}$ is the Capacity sold by a Market Participant “j” in the settlement year “y” calculated pursuant to Clause 9.2.8.1
- Cap_price_y is the unitary price of Capacity, corresponding to the Fiscal Year “y”, calculated pursuant to Clause 9.2.7.5.

9.3.1.2. The Amounts Payable shall be recovered from the relevant Market Participants in [six] equal monthly instalments and the Amounts Receivable by the Market Participants shall be paid to such Market Participants in same manner.

9.4. APPLICABLE TAXES

9.4.1. APPLICABILITY OF TAXES

9.4.1.1. All Settlements calculated by the Market Operator pursuant to this Chapter shall be subject to the applicable taxes as per Applicable Law.

9.5. INTIMATION TO THE MARKET PARTICIPANTS

9.5.1.1. The Market Operator shall intimate to each Market Participant:

- a) The preliminary values of the Amounts Payable or the Amounts Receivable, as the case may be, of all Market Participants, in the Balancing Mechanism for Capacity;
- b) The date for determination of the final Amounts Payable or the Amounts Receivable, as the case may be, of all Market Participants, in the Balancing Mechanism for Capacity;
- c) the amount of Security Covers for an amount not lower than [2] monthly instalments of the value of the notified Amounts Payable, and the last date for the provision of Security Cover; and
- d) the amount of Security Covers to be submitted for the future instalments; and
- e) A clear warning that failure to provide the necessary Security Cover on time will automatically exclude such Market Participant from participation in the Balancing Mechanism for Capacity and will also result in non-compliance with its Capacity Obligations.

9.5.1.2. In case a Market Participant considers that an error or discrepancy exists either in the determination of the Amounts Payable or Amounts Receivable intimated by the Market Operator, or in the calculations performed, or in the parameters used to perform such calculations, it shall submit to the Market Operator a written Review Request within [ten (10)] Business Days of receipt of the intimation as provided in Clause 9.5.1.1.

9.5.1.3. The Review Request shall clearly state the item or items claimed, the reasons for the claim, the amount claimed, and shall be accompanied with all the supporting documents.

9.5.1.4. After receipt of the Review Request, the Market Operator shall review the request and decide whether there is any error or discrepancy in the calculations it has made and if required, it may hold a meeting with the relevant Market Participant to settle the matter. If the Market Operator does not agree with the Review Request, it shall intimate the same to the relevant Market Participants along with reasons thereof.

9.5.1.5. Where the market operator, after review of the calculations it has performed, finds that there is an error or discrepancy as claimed by the relevant Market Participant, it shall rectify the error and shall issue new intimations to all Market Participants, informing at least:

- a) the corrections made and the new values for the preliminary Amounts Payable and Amounts Receivable;
- b) the new values for the Security Covers to be provided; and
- c) if it is considered appropriate, a new date for the final implementation of the Balancing Mechanism for Capacity.

9.6. EXECUTION OF THE BALANCING MECHANISM FOR CAPACITY

9.6.1. VERIFICATION OF THE SECURITY COVERS

9.6.1.1. Prior to final implementation of the Balancing Mechanism for Capacity, the Market Operator shall examine and verify the Security Covers provided by each Market Participant, both in their form and the required amounts.

9.6.1.2. In case a Market Participant fails to provide the Security Cover in the requisite form, the concerned Market Participant shall be excluded from participation in the Balancing Mechanism for Capacity.

9.6.1.3. Where a Market Participant has provided a Security Cover in the requisite form, however, for an amount less than the requisite amount, the concerned Market Participant may be allowed, on case to case basis, to participate in the Balancing Mechanism for Capacity, limited up to the amount for which it has provided the Security Cover.

9.6.1.4. In case of insufficient Capacity as per Clause 9.2.8.1.a), the Capacity allocated to a Market Participant, which has been excluded from the BMC as per Clause 9.6.1.2, or whose participation has been limited as per Clause 9.6.1.3, will be redistributed among the other Market Participants with negative Capacity Balances on pro-rata basis.

9.6.1.5. In case of sufficient Capacity as per Clause 9.2.8.1.b), the Capacity sold by all Market Participants shall be recalculated, reducing it on pro-rata basis.

9.6.2. EXECUTION OF THE BALANCING MECHANISM FOR CAPACITY

9.6.2.1. After fulfilling the above referred requirements, the Market Operator shall determine the final Amounts Payable and Amounts Receivable by all Market Participants, which will be used in the Yearly Settlement Statements, as provided in Chapter 11 and make payments accordingly.

9.6.2.2. The methodology and procedures to be used to determine the final Amounts Payable and Amounts Receivable of each Market Participant shall be the same as the procedure set out in Sub-Section 9.3.1, except that:

- a) the Capacity purchased by the Market Participants which have been excluded from participation in the Balancing Mechanism for Capacity shall be set at zero [0.0]; and
- b) the Capacity purchased by the Market Participants, whose participation has been limited under Clause 9.6.1.3, will be capped to such limit.

9.6.3. PUBLICATIONS OF BMC RESULTS

9.6.3.1. The Market Operator shall publish, on the MO Website, the following information:

- a) the 50 Critical Hours that were used to determine the Capacity Balances;
- b) the Capacity Requirement of each Market Participant;
- c) the Credited Capacity of each Market Participant;
- d) the resulting Capacity Balance of each Market Participant;
- e) the Capacity price for the corresponding settlement year, along with a report justifying the calculations performed and the parameters used in such calculations.
- f) the Amounts Payable and the Amounts Receivable of each Market Participant; and
- g) the list of Market Participants which have been excluded from participation in the Balancing Mechanism for Capacity due to their failure to provide the requisite Security Covers
- h) any other information the Market Operator deems appropriate.

9.6.3.2. Following information shall be made available to each relevant Market Participant:

- a) the details of the Capacity Requirement at each of the Critical Hours, and the metering data that was used for determining the Capacity Requirement of such Market Participant;
- b) the details of the Credited Capacity at each of the Critical Hours, and the availability of Generation Units or the actual Generation, as the case may be, communicated by the System Operator that was used for determining the Credited Capacity of such Market Participant.

9.7. ACTIONS AFTER EXECUTION OF THE BMC

9.7.1. VERIFICATION OF COMPLIANCE WITH THE EX-POST CAPACITY OBLIGATIONS

9.7.1.1. After closing of the Balancing Mechanism for Capacity in a year, the Market Operator shall verify compliance of all Market Participants with the ex-post Capacity Obligations.

9.7.1.2. Non-compliance with the Capacity Obligations may arise due to any of the following reasons:

- a) The Balancing Mechanism for Capacity closed with a total amount of Capacity sold and purchased, which was not enough to cover the Capacity Requirements of the Market Participants with negative Capacity Balances, as set out in Clause 9.2.8.1.a);
- b) A Market Participant, with negative Capacity Balance, was excluded to participate in the Balancing Mechanism for Capacity due to failure to provide the requisite Security Cover as required by the Market Operator.
- c) A Market Participant, with negative Capacity Balance, whose participation in the Balancing Mechanism for Capacity was limited due to failure in providing the full amount of Security Cover as required by the Market Operator.

9.7.1.3. Any Non-compliance with the ex-post Capacity Obligations as per Clause 9.7.1.2 shall be dealt in accordance with the provisions of Clause 10.5.4.6.

9.7.1.4. In all cases other than as provided in Clause 9.7.1.2 above, compliance of all Market Participants with Ex-post Capacity Obligations shall be considered fulfilled.

9.7.2. UPDATE OF THE STATUS OF FIRM CAPACITY CERTIFICATES

9.7.2.1. After closing of the Balancing Mechanism for Capacity, the Market Operator shall make an adjustment in the Firm Capacity Certificates, which were blocked for backing a Load Following or Customized Contract with a BPC.

9.7.2.2. To make this adjustment, the Market Operator shall:

- a) upon request of the concerned Market Participant, change the status of the Firm Capacity Certificates, which were used to back up a Standardized Load Following Supply Contract or a Customized Contract pursuant to Clauses 3.3.3.3.d) or 3.4.3.4, as the case may be, from “Blocked” to “Available”;
- b) determine the requisite number of Firm Capacity Certificates that the Competitive Electric Power Supplier needs to back up the registered Contracts, wherein the Capacity sold is dependent on the Capacity demanded by the BPCs. The Market Operator shall determine such number as:

$$CS_CR_j[MW] = \max_{\forall h \in SPH} \left(\sum_{\forall BPC_{i,j}} Act_E_{i,j,h} \right)$$

Where:

CS_CR_j is the amount of Capacity required by the Competitive Electric Power Supplier “i” to back up the Contracts with BPCs, in which the Capacity sold is dependent on the Capacity taken by the BPC, in MW;

$Act_E_{i,j,h}$ is the total Energy supplied by the Competitive Electric Power Supplier “j”, to BPC “i” in hour “h” included in “Critical Hours”, calculated pursuant to Clause 5.4.2.2.a), in MWh

$\sum_{\forall BPC_{i,j}}$ means the sum over all BPCs “i” which have Contracts with the Competitive Electric Power Supplier “j”, in which the Capacity sold is dependent on the Capacity taken by the BPC

$\max_{\forall h \in SPH}$ means the maximum value occurred during the System Peak Hours of the previous Fiscal Year.

- c) determine the number of Firm Capacity Certificates, which shall be blocked, as under:

$$\#Block_FCC_{CSj} = CS_CR_j * 10$$

Where:

$\#Block_FCC_{CSj}$ is the number of Firm Capacity Certificates of the Competitive Electric Power Supplier “j” that should be blocked to back up the registered Contracts in which the Capacity sold is dependent on the Capacity demanded by the BPCs.

CS_CR_j is the amount of Capacity required by the Competitive Electric Power Supplier “i” to back up the Contracts with BPCs, calculated pursuant to clause 9.7.2.2.b) above, in MW.

9.7.2.3. The value of $\#Block_FCC_{CSj}$ shall be rounded up to the nearest integer number.

- 9.7.2.4. In case the number of the Firm Capacity Certificates, having the status of “Available”, of the concerned Competitive Electric Power Supplier is equal or higher than the number of Firm Capacity Certificates that are required to be blocked pursuant to Clause 9.7.2.2.c), the Market Operator shall, if requested by the concerned Market Participant, change the status of such number of Firm Capacity Certificates, from “Available” to “Blocked”. The Market Operator shall intimate the Competitive Electric Power Supplier about the changes it has made in the Firm Capacity Register.
- 9.7.2.5. In case the number of the Firm Capacity Certificates, having the status of “Available” of the concerned Competitive Electric Power Supplier is lower than the number of Firm Capacity Certificates that are required to be blocked pursuant to Clause 9.7.2.2.c), the Market Operator shall:
- a) change the status of all Firm Capacity Certificates of the concerned Competitive Electric Power Supplier from “Available” to “Blocked”;
 - b) intimate the concerned Competitive Electric Power Supplier about the changes it has made in the Firm Capacity Register;
 - c) inform the Competitive Electric Power Supplier that existing number of Firm Capacity Certificates are not enough to back up its existing Contracts with BPCs; and
 - d) require the concerned Competitive Electric Power Supplier to contract additional Capacity or to deregister one or more Contracts following the procedure set out in Section 3.6 and the Market Operator may not register any new Contract, other than Contracts for increasing the Credited Capacity of the concerned Market Participant, till the time the matter is resolved.

Chapter 10. COMPLIANCE WITH Ex-ANTE CAPACITY OBLIGATIONS

10.1. PURPOSE

10.1.1.1. The purpose of this Chapter is to provide a mechanism for verification of compliance with Capacity Obligations of Market Participants and to take the necessary actions in case of non-compliances by Market Participants.

10.2. CAPACITY OBLIGATIONS OF MARKET PARTICIPANTS

10.2.1. OBLIGATION OF CONTRACTING CAPACITY

10.2.1.1. An Electric Power Supplier, a BPC enrolled as a Market Participant and an Electric Power Trader engaged in Firm Exports shall have enough Capacity, either provided by its own Generation Plants or purchased through registered Contracts, for the current and subsequent years as detailed in Clause 10.3.1.1 below, to cover a percentage of its forecasted demand as provided in this Code.

10.3. DEMAND FORECASTS

10.3.1. SUBMISSION OF DEMAND FORECASTS

10.3.1.1. Every year, before [Jan 31st] the Market Operator shall require the Market Participants mentioned in Clause 10.2.1.1 above, to submit their updated demand forecasts covering a period of:

- a) for Suppliers of Last Resort: Current year and following [4] years;
- b) for Competitive Electric Power Suppliers: Current year and following [4] years;
- c) for BPCs: Current year and following [4] years; and
- d) for Electric Power Traders engaged in Firm Exports: Current year and following [4] years.

10.3.1.2. The demand forecast submitted by a Market Participant shall include, for each year, at least:

- a) the total amount of Energy to be supplied/withdrawn;
- b) the expected yearly Maximum Demand, indicating the month in which this Maximum Demand is expected to be taken; and
- c) the expected Maximum Demand to be supplied at System Peak Hours.

10.3.1.3. The Market Participants shall submit the required information before [March 1st] of each year.

10.3.1.4. The Market Operator shall make a CCOP containing:

- a) Details of the information to be submitted by the Market Participants;
- b) forms/templates for the submission of information.

10.3.2. DEMAND FORECAST OF SUPPLIERS OF LAST RESORT

10.3.2.1. The Demand Forecast submitted by the Supplier of Last Resort shall be prepared using appropriate models or algorithms and by taking into account the latest available information, particularly, the following:

- a) the demand of its current consumers;
- b) the expected growth in the number of consumers and their demand;
- c) notices received from BPCs informing to end the contracted supply and their intention to contract such supply from Competitive Electric Power Suppliers;
- d) estimations regarding the number of BPCs, and the associated demand, which may end the contracted supply with the Supplier of Last Resort to receive such supply from Competitive Electric Power Suppliers;
- e) estimations regarding the number of BPCs, and the associated demand, which may end the contracted supply with Competitive Electric Power Suppliers or other Market Participants, which may return to receive such supply from the Supplier of Last Resort;
- f) the effect of loss reduction plans implemented by the relevant Distribution Licensee;
- g) the effect of plans, prepared either by the Supplier of Last Resort or the relevant Distribution Licensee, aimed at reducing consumption at the peaks;
- h) the effect of distributed generation;
- i) any other important factor affecting the forecast.

10.3.2.2. The Demand Forecast submitted by a Supplier of Last Resort shall be based on the Demand Forecast submitted by such Supplier of Last Resort to the Authority in the latest approved Power Acquisition Programme in accordance with NEPRA Power Procurement Regulation.

10.3.2.3. The Market Operator shall compare the Demand Forecast submitted by a Supplier of Last Resort with the demand forecast included in the latest Power Acquisition Programme approved by the Authority. In case both forecasts are materially different, the Market Operator shall inform the Authority accordingly. The Market Operator shall use the forecast submitted by the Supplier of Last Resort for its intended purpose.

10.3.3. DEMAND FORECAST OF COMPETITIVE ELECTRIC POWER SUPPLIERS

10.3.3.1. The Demand Forecast of a Competitive Electric Power Supplier shall include the demand of all those BPCs:

- a) which have registered Contracts with the Competitive Electric Power Supplier, or have been submitted for registration with the Market Operator; plus
- b) which have valid Contracts or irrevocable letter of commitments with BPCs which will become effective at a later date and, for such reason, may have not been submitted for registration with the Market Operator at the time of submitting the forecast.

For the avoidance of doubt, the demand of BPCs which have formally given a notice to the Default Electric Power Supplier, about its intention to contract its supply from the Competitive Supplier shall be included in this forecast.

10.3.3.2. The information contained in the forecast of the Competitive Electric Power Supplier shall include information only up to the expiry date of the Contract or the irrevocable letter of commitment. For any subsequent periods, it shall be assumed that the relevant BPC has ceased to be supplied from the Competitive Electric Power Supplier.

10.3.3.3. In case, the Contract or irrevocable letter of commitment does not have a certain expiry date, it shall be considered that the Contract or irrevocable letter of commitment is valid for all the reported period, and the associated demand shall be included in the Competitive Electric Power Supplier forecast.

10.3.4. DEMAND FORECAST OF BPCS

10.3.4.1. A BPC, which is enrolled as a Market Participant, shall submit to the Market Operator its Demand Forecast for all the periods for which it has registered Contracts for Energy and/or Capacity with Competitive Electric Power Suppliers.

10.3.4.2. For the period after the expiration of the registered Contracts, the BPC shall include in its forecast:

- a) its best estimation of the Energy and peak demand to be consumed, in case the BPC intends to continue being enrolled as a Market Participant; or
- b) Zero [0.], if the BPC intends to withdraw from the Market as a Market Participant and obtain its supply of electric power from the Supplier of Last Resort.

10.3.5. DEMAND FORECAST OF TRADERS INVOLVED IN FIRM EXPORT

10.3.5.1. A Trader involved in Firm Export, shall submit to the Market Operator its demand forecast for all the periods for which it has registered Contracts for Energy and/or Capacity with or is planning to register such Contracts.

10.3.6. REVIEW OF THE DEMAND FORECASTS

10.3.6.1. The Market Operator shall review the submitted information and assess its authenticity through tests and checks as deemed appropriate. The Market Operator may require confirmation and/or clarifications of the provided information. The concerned Market Participants shall submit the requisite information within ten [10] Business Days.

10.3.6.2. The Market Operator shall utilize the values submitted by the Market Participant, either those originally submitted or the revised values ones as per provisions of Clause 10.3.6.1, for verifying compliance with the Capacity Obligations.

10.3.6.3. Where in the opinion of the Market Operator, the information submitted by a Market Participant for its demand forecast is false, fabricated or forged, especially where the said information may have material impact on the compliance with Capacity Obligations, it may assess the matter and if deemed appropriate, may take any action available under this Code or under the Applicable Law.

10.3.6.4. The CCOP prepared under Clause 10.3.1.4 above, shall also include details about the tests and checks to be performed on the submitted information.

10.4. CAPACITY OBLIGATIONS

10.4.1. CAPACITY OBLIGATION OF SUPPLIERS OF LAST RESORT

10.4.1.1. The Capacity Obligation of a Supplier of Last Resort, for each year in which this obligation is verified by the Market Operator, shall be calculated as:

$$CO_{BSi,p} = \frac{MD_{PH,i,p}}{(1 - Tloss_p)} * (1 + RM_p) * OB\%_{BS,p} / 100.$$

Where:

- $CO_{BSi,p}$ is the Capacity Obligation of the Supplier of Last Resort “i” in the period “p” which will be verified by the Market Operator as provided in Section 10.5;
- $MD_{PH,i,p}$ is the Maximum Demand at System Peak Hours of the Supplier of Last Resort “i” in the period “p”. The value of $MD_{PH,i,p}$ will be the forecasted Maximum Demand at System Peak Hours, submitted by the involved Supplier of Last Resort to the Market Operator, as per the requirements set out in Section 10.3, for the current year and all periods immediately thereafter;
- $OB\%_{BS,p}$ is the Capacity Obligation Percentage, applicable to Suppliers of Last Resort, corresponding to period “p” as provided in Sub-Section 18.2.4;
- $Tloss_p$ is the value of the cap (expressed in percentage) on Transmission losses of NTDC as determined by the Authority in the latest tariff determination;
- RM_p is the Operational Reserve Margin applicable to period “p”.

10.4.2. CAPACITY OBLIGATIONS OF COMPETITIVE ELECTRIC POWER SUPPLIERS

10.4.2.1. The Capacity Obligation of a Competitive Electric Power Supplier, for each year in which this obligation is verified by the Market Operator, shall be calculated as:

$$MCO_{CSj,p} = \frac{MD_{PH,j,p}}{(1 - Tloss_p)} * (1 + RM_p) * OB\%_{CS,p} / 100.$$

Where:

- $MCO_{CSj,p}$ is the mandatory Capacity obligation, of the Competitive Electric Power Supplier “j” in the period “p” which will be verified by the Market Operator as provided in Sections 10.5;
- $MD_{PH,j,p}$ is the Maximum Demand at System Peak Hours of the Competitive Electric Power Supplier “j” in the period “p”. The value of $MD_{PH,j,p}$ will be the forecasted Maximum Demand at System Peak Hours, corresponding to the Contracted Supply, submitted by the relevant Competitive Electric Power Supplier to the Market Operator, as per the requirements provided in Section 10.3, for the current year and all periods immediately thereafter;
- $OB\%_{CS,p}$ is the Capacity Obligation Percentage, applicable to Competitive Electric Power Suppliers, corresponding to period “p” as provided in Sub-Section 18.2.4;
- $Tloss_p$ is the value of the cap (expressed in percentage) on Transmission losses of NTDC as determined by the Authority in the latest tariff determination;
- RM_p is the Operational Reserve Margin applicable to period “p”.

10.4.3. CAPACITY OBLIGATIONS OF BPCs ENROLLED AS MARKET PARTICIPANTS

10.4.3.1. The Capacity Obligation of a BPC enrolled as a Market Participant, for each year in which this obligation is verified by the Market Operator, shall be calculated as:

$$CO_{BPCk,p} = \frac{MD_{PH,k,p}}{(1 - Tloss_p)} * (1 + RM_p) * OB\%_{BPC,p} / 100.$$

Where:

- $CO_{BPCk,p}$ is the Capacity obligation, of the BPC enrolled as Market Participant “k” in the period “p” which will be verified by the Market Operator as provided in Section 10.5;
- $MD_{PH,k,p}$ is the Maximum Demand at System Peak Hours of the BPC enrolled as Market Participant “k” in the period “p”. The value of $MD_{PH,k,p}$ will be the forecasted Maximum Demand at System Peak Hours, corresponding to the contracted Supply, submitted by the relevant BPC to the Market Operator, as per the requirements set out in Section 10.3, for the current year and all periods immediately thereafter;
- $OB\%_{BPC,p}$ is the Capacity Obligation Percentage, applicable to BPCs enrolled as Market Participants, corresponding to period “p” as provided in Sub-Section 18.2.4.
- $Tloss_p$ is the value of the cap (expressed in percentage) on Transmission losses of NTDC as determined by the Authority in the latest tariff determination;
- RM_p is the Operational Reserve Margin applicable to period “p”.

10.4.4. CAPACITY OBLIGATIONS OF FIRM EXPORTS

10.4.4.1. The Capacity Obligation of a Trader involved in Firm Export, for each year in which this obligation is verified by the Market Operator, shall be calculated as:

$$CO_{BPCk,p} = \frac{MD_{PH,k,p}}{(1 - Tloss_p)} * (1 + RM_p) * OB\%_{BPC,p} / 100.$$

Where:

- $CO_{BPCk,p}$ is the Capacity obligation, of Trader “k” in the period “p” which will be verified by the Market Operator as provided in Section 10.5;
- $MD_{PH,k,p}$ is the Maximum Demand at System Peak Hours of the Trader involved in Firm Export “k” in the period “p”. The value of $MD_{PH,k,p}$ will be the forecasted Maximum Demand at System Peak Hours, corresponding to the contracted Supply, submitted by the relevant Trader to the Market Operator, as per the requirements set out in Section 10.3, for the current year and all periods immediately thereafter;
- $OB\%_{BPC,p}$ is the Capacity Obligation Percentage, applicable to Trader involved in Firm Export, corresponding to period “p” as provided in Sub-Section 18.2.4.
- $Tloss_p$ is the value of the cap (expressed in percentage) on Transmission losses of NTDC as determined by the Authority in the latest tariff determination;
- RM_p is the Operational Reserve Margin applicable to period “p”.

10.5. EX-ANTE VERIFICATION OF CAPACITY OBLIGATIONS (CURRENT AND SUBSEQUENT YEARS)

10.5.1. GENERAL

- 10.5.1.1. Every year prior to [April 31st], the Market Operator shall verify compliance with the Capacity Obligations of Market Participants which have such obligations, for the current and following years. The number of years to be verified shall be the same as provided in Sub-Section 10.3.1, for which the forecasts were submitted.
- 10.5.1.2. The Market Operator shall communicate the preliminary results of the verification to each relevant Market Participant. In case a Market Participant considers that an error or discrepancy exists in the calculations done by the Market Operator for the verification of compliance with the Capacity Obligations, it shall submit to the Market Operator a written Review Request within ten [10] Business Days of receipt of such communication from the Market Operator.
- 10.5.1.3. The Review Request shall clearly state the reasons for the claim, the items containing an error, inaccuracy or mis-interpretation, accompanied with supporting documents.
- 10.5.1.4. After receipt of the Review Request, the Market Operator shall review the request and decide whether there is any error or discrepancy in the calculations that it has performed and if required, it may hold a meeting with the relevant Market Participant to settle the matter. If the Market Operator does not agree with the claim, it shall intimate the same to the relevant Market Participants along with reasons thereof.
- 10.5.1.5. Where the market operator, after review of the calculations finds that there is an error or discrepancy as claimed by the relevant Market Participant, it shall rectify the error and shall inform the concerned Market Participant accordingly.

10.5.2. INFORMATION REQUIRED FROM MARKET PARTICIPANTS

- 10.5.2.1. Every year, before [Jan 31st], the Market Operator shall require each Market Participant, as mentioned in Clause 10.3.1.1 above, to submit an application containing information regarding Generation projects, planned or under construction, or Contracts with existing Generation Plants which may be taken into account for determining the Capacity allocated to such Market Participant.
- 10.5.2.2. Such application shall contain all supporting documents to demonstrate the project's firmness, including one or more of the following:
- a) for projects being developed by the Market Participants:
 - a.1. Temporary Firm Capacity Certificates or documents showing the submission of the application for issuance of such certificates;
 - a.2. EPC Contracts, clearly stating the project commissioning date; and
 - a.3. any other document the Market Participant considers appropriate to assess the actual status of the project construction.
 - b) For projects being developed or already developed by third parties, which have signed a Contract with the Market Participants, the duly signed Contract, clearly indicating the date at which these Contract will become effective and enforceable along with the associated Temporary Firm Capacity Certificates;

10.5.3. VERIFICATION OF THE SUBMITTED INFORMATION

- 10.5.3.1. The Market Operator shall review the submitted information for each project and determine whether such project may qualify for compliance with the Capacity Obligations. In conducting such assessment, the Market Operator may:
- a) request additional information, which shall be provided within the specified time;
 - b) conduct assessments aimed at determining the accuracy of the submitted information; and/or
 - c) request the advice of reputable experts on the cost of the applicant.
- 10.5.3.2. For projects or Contracts submitted by a Supplier of Last Resort, the Market Operator shall verify whether such project or Contract is included in the latest Power Acquisition Programme approved by the Authority, as per NEPRA Power Procurement Regulation, and in case the project or Contract is not included in such plan, it shall not be considered for compliance with Capacity Obligations. For projects or Contracts included in the Power Acquisition Programme, the project characteristics as well as the expected COD shall be the same. In case there are differences between the Power Acquisition Programme and the request made by the Supplier of Last Resort, regarding the project Capacity or the commissioning date, the lower value of Capacity and the later commissioning date shall prevail.
- 10.5.3.3. Based on the analysis and evaluations performed, the Market Operator shall catalogue each project in any of the following three categories:
- a) Eligible for crediting Capacity, at the date requested by the Market Participant;
 - b) Eligible for crediting Capacity, at a later date than the request made by the Market Participant;
 - c) Not eligible for crediting Capacity.
- 10.5.3.4. Only the projects belonging to the first two categories will be considered for compliance with the Capacity Obligations of the involved Market Participant, as prescribed in Clause 10.5.3.3.

10.5.4. DETERMINATION OF COMPLIANCE WITH THE CAPACITY OBLIGATIONS

- 10.5.4.1. The Market Operator shall monitor compliance with the Ex-ante Capacity Obligations of each Market Participants, as mentioned in Clause 10.3.1.1 above, for each year in which the Market Participant has such obligations, through the comparison of two yearly values: the Capacity Obligation and the Credited Capacity of such Market Participant for each year.
- 10.5.4.2. The Capacity Obligation of each Market Participant, for each year in which this obligation exists, shall be determined by the Market Operator according to the provisions of Sub-Section 10.4.1, Sub-Section 10.4.2 or Sub-Section 10.4.3, as the case may be.
- 10.5.4.3. The Credited Capacity of each Market Participant, for the Ex-ante verification of its yearly obligations will be the sum of:
- a) Firm Capacity of Generation Plants owned by the Market Participant, which have been issued the corresponding Firm Capacity Certificates by the Market Operator, and not sold to other Market Participants through registered Contracts.
 - b) Explanation:

- c) The Credited Capacity to the Market Participants or BPC shall be calculated as the addition of the values stated in the Firm Capacity Certificates of all the Generation Units it owns, minus the Capacity sold, every year, to other Market Participants through registered Contracts.
- d) Capacity acquired through registered Contracts executed with Generators, Imports, or other Market Participants.

Explanation:

The Capacity Credited in this case shall be calculated as the yearly addition of the Capacity purchased through all the registered Contracts. The contracted Capacity shall be clearly stated during the registration of the Contract.

- e) Capacity which will be installed, by the Market Participant, or it will be acquired through Contracts from Generation Units which are under construction, provided such Contracts are considered eligible by the Market Operator, according to the provisions of Clause 10.5.3.3, such Capacity will be credited to the relevant Market Participant starting from the COD of the Generation Unit, as approved by the Market Operator.

The Capacity Credited in this case shall be determined based on:

- e.1. the values stated in the Temporary Firm Capacity Certificates, in cases in which the Market Operator has issued such certificates; or
- e.2. the declared Capacity to be installed, as per the application, as provided in Clause 10.5.3.3, multiplied by the Equivalent Availability Factor stated in Table I of Sub-Section 8.4.2.

10.5.4.4. In case the Credited Capacity of a Market Participant is above [98%] of the Capacity Obligation determined for such Market Participant, in all of the years evaluated, the obligation shall be considered fulfilled.

10.5.4.5. In the case the Credited Capacity of a Market Participant is lower than [98%] of the Capacity Obligation determined for such Market Participant, in one or more of the years evaluated, the obligation shall be considered not fulfilled.

10.5.4.6. The Market Operator shall categorize non-compliance with the Capacity Obligations of each Market Participant as:

- a) Minor non-compliance: Non-compliance with the ex-ante Capacity Obligations occurs only in one or two of the years being verified and, the difference between the Capacity Obligation and the Credited Capacity is below five percent [5%] during each year.
- b) Serious non-compliance: In case there is a non-compliance with the ex-post Capacity Obligations as per Clause 9.7.1.2 or a non-compliance with the ex-ante Capacity Obligation which cannot be categorized as Minor non-compliance.

10.6. DISSEMINATION OF THE RESULTS AND ACTIONS IN CASE OF NON-COMPLIANCE

10.6.1. COMPLIANCE WITH CAPACITY OBLIGATIONS REPORT

10.6.1.1. The Market Operator shall prepare a report titled as “Compliance with Capacity Obligations Report”, including the calculations performed, the information being utilized and the results of the verification. The report shall contain separate sections for the ex-ante and ex-post verifications, and analysis and evaluations for each Market Participant individually along with a summary of the most important conclusions which shall be published on MO Website.

10.6.2. DISPUTE RESOLUTION

- 10.6.2.1. Any Market Participant, feeling aggrieved of the decision of the Market Operator regarding the compliance with the Capacity Obligations, may file a dispute with the Market Operator according to the provisions of Chapter 14.

10.6.3. ACTIONS TO BE TAKEN IN CASE OF NON-COMPLIANCE

- 10.6.3.1. The Market Operator shall issue a warning notice to all Market Participants which are involved in a Minor Non-compliance. In such notice, the Market Operator shall require the involved Market Participant, to solve the Non-compliance by contracting additional Firm Capacity or installing additional Generation. The Market Operator may not register any new Contract, other than Contracts for increasing the Credited Capacity of the concerned Market Participant, till the time the Non-compliance is resolved.
- 10.6.3.2. The Market Operator shall issue a Serious Non-Compliance Notice to all Market Participants which are involved in a Serious Non-compliance, requiring them to solve the Non-compliance within a specified timeframe, by contracting additional Capacity or installing additional Generation. Failure to comply with the requirement of the Serious Non-Compliance Notice shall constitute an Event of Default and shall be dealt with according to the provisions of Chapter 17. Such situation shall also be communicated to the Authority so that it may take appropriate action, including the imposition of penalties.
- 10.6.3.3. Till the time the Serious Non-compliance is fully resolved, the Market Operator may not register any new Contract, other than Contracts for increasing the Credited Capacity of the concerned Market Participant.

Chapter 11. YEARLY SETTLEMENT STATEMENTS (FOR BMC AND EXCESS LOSSES)

11.1. YEARLY SETTLEMENT

11.1.1.1. The Market Operator shall make yearly Settlement, for Balancing Mechanism for Capacity and Excess Losses, of each Market Participant or Service Provider, for the previous year, which may include, *inter alia*, the following:

- a) the Amounts Payable or Receivable by a Market Participant, as the case may be, for the participation in the Balancing Mechanism for Capacity;
- b) the Amounts Receivable by a Market Participant for the Excess Losses of one or more Transmission Service Providers, if applicable;
- c) The Amounts Payable by a Transmission Service Provider to the Market Operator for the Excess Losses if applicable;
- d) The Amounts Payable to or Amounts Receivable by a Market Participant due to a correction in the Balancing Mechanism for Capacity and/or the Excess Losses of a Transmission Service Provider, arising from Yearly Extraordinary Settlement Statement as per Sub-Section 11.4.4; and
- e) The Amount Payable to or Receivable by the Market Participant on account of accrued interest for previous late payments or default in making payments.

11.2. CHARGES AND COMPENSATIONS FOR EXCESS LOSSES OF A TSP

11.2.1. EXCESS LOSSES

11.2.1.1. The Market Operator shall determine the charges to be imposed on a Transmission Service Provider which had incurred, during the previous Fiscal Year, Transmission losses above the target which was determined by the Authority in the latest Tariff Determination for the relevant Transmission Service Provider.

11.2.1.2. Such Excess Losses shall be assessed and determined by the Market Operator based on the information provided by the Commercial Metering System, according to the provisions of Chapter 4.

11.2.2. ASSESSMENT OF THE ANNUAL LOSSES OF A TRANSMISSION SERVICE PROVIDER

11.2.2.1. The total Transmission losses of a Transmission Licensee shall be assessed by the Market Operator as:

$$TransLoss_k[MWh] = \sum_{h=1}^{h=n} \left(\sum_{\forall i \in MP_k} E_{MPi,k,h} \right)$$

Where:

- $TransLoss_k$ are the total Transmission losses of the Transmission Service Provider k in the previous fiscal year, expressed in MWh;
- $E_{MPi,k,h}$ is the Energy registered by the Commercial Metering System as per provisions of Chapter 4 at the Trading Point i , corresponding to the Transmission Service Provider k in the hour h ;

- $\forall i \in MP_k$ means all those Trading Points located at the boundary of the Transmission Service Provider k ;
- $\sum_{h=1}^{h=n} ()$ means the sum over the total number of hours of the previous fiscal year (8,760 or 8,784 hours, as the case may be).

11.2.2.2. Sign convention: For the application of the formula provided in Clause 11.2.2.1, the Energy registered at each Trading Point at each particular hour shall be considered positive if it is injected into the Transmission Network of Transmission Service Provider “k” and negative if it is withdrawn from such Transmission Network. In case a Metering Point records separate values for Energy injected and withdrawn, the sign convention shall apply accordingly for each recorded value at the particular hour.

11.2.3. CALCULATION OF TRANSMITTED ENERGY OF A TRANSMISSION SERVICE PROVIDER

11.2.3.1. The Market Operator shall determine the total Transmitted Energy of a Transmission Service Provider, for the previous fiscal year, by adding the total Energy injected into the Transmission Network of the relevant Transmission Service Provider. For such purpose, the Market Operator shall utilize the metering data submitted by the Metering Service Provider as per provisions of Chapter 4.

11.2.3.2. Total Transmitted Energy, for the Transmission Service Provider shall be assessed as:

$$11.2.3.3. TransEnergy_k [MWh] = \sum_{h=1}^{h=n} \left(\sum_{i \in MP_{G \rightarrow T}} E_{MP_{i,k,h}} \right)$$

Where:

- $TransEnergy_k$ is the total Transmitted Energy by the Transmission Service Provider k ;
- $E_{MP_{i,k,h}}$ is the Energy registered by the Commercial Metering System at the Metering Point i , corresponding to the Transmission Service Provider k in the hour h ;
- $\forall i \in MP_{G \rightarrow T}$ means all those boundary points between a Transmission Network and
 - a Generator; or
 - a Distribution Network; or
 - a BPC; or
 - an Import point; or
 - a Transmission Network of another Transmission Service Provider in which the Energy is injected into the Transmission Network of the Transmission Service Provider k (positive value according to the sign convention provided in Clause 11.2.2.2), during hour h ;
- $\sum_{h=1}^{h=n} ()$ means the sum over the total number of hours of the previous fiscal year (8,760 or 8,784 hours, as the case may be).

11.2.4. CALCULATION OF ANNUAL LOSSES PERCENTAGE OF A TRANSMISSION SERVICE PROVIDER

11.2.4.1. The Market Operator shall determine the Annual Loss expressed in percentage of a Transmission Service Provider, for the previous fiscal year, by dividing the total Transmission losses by the Transmitted Energy of the relevant Transmission Service Provider.

$$AnnualLoss_k[\%] = \frac{TransLoss_k}{TransEnergy_k[MWh]} * 100$$

11.2.5. DETERMINATION OF EXCESS LOSSES

11.2.5.1. In case the Transmission Service Provider's Annual Loss Percentage is lower or equal to the allowed losses, as determined by the Authority in the latest Tariff Determination for the relevant Transmission Service Provider, the Excess Losses will be zero for such Transmission Service Provider and there will be no charges imposed on it. Otherwise, the amount of excess losses (in MWh) shall be calculated as:

$$TSP\ Excess\ Losses\ (MWh)_k = TransLoss_k[MWh] - AllowLoss\ (\%)_k * TransEnergy_k[MWh]$$

Where:

- $TSP\ Excess\ Losses_k$ is the amount of Excess Losses of the Transmission Service Provider k , expressed in MWh;
- $TransLoss_k$ are the total Transmission losses of the Transmission Service Provider k in the previous fiscal year, expressed in MWh, calculated pursuant to Clause 2.6.2.1;
- $AllowLoss_k$ is the allowed losses, expressed in percent, as determined by the Authority in the latest Tariff Determination of Transmission Service Provider k ;
- $TransEnergy_k$ is the total Transmitted Energy by the Transmission Service Provider k in the previous fiscal year, expressed in MWh, calculated as per Clause 11.2.3.2.

11.2.6. DETERMINATION OF CHARGES TO BE IMPOSED ON A TSP FOR EXCESS LOSSES:

11.2.6.1. The charges for Excess losses of a Transmission Service Provider shall be determined multiplying the Excess Losses, expressed in MWh, by the weighted average System Marginal Price of the previous fiscal year.

11.2.6.2. The yearly weighted average System Marginal Price, expressed in PKR/MWh, shall be calculated as:

$$YMP\left[PKR/MWh\right] = \frac{\sum_{h=1}^{h=n} (TotDem_h[MWh] * Marg_h[PKR/MWh])}{\sum_{h=1}^{h=8760} TotDem_h[MWh]}$$

Where:

- YMP is the weighted average yearly System Marginal Price, for the previous fiscal year, expressed in PKR/MWh;
- $Marg_h$ is the System Marginal Price, for the hour h , calculated pursuant to Clause 5.3.2.2;
- $TotDem_h$ is the total Energy demanded by Market Participants in hour h , calculated pursuant to Clause 5.3.2.2;

- $\sum_{h=1}^{h=n} ()$ means the sum over the total number of hours of the previous fiscal year (8,760 or 8,784 hours, as the case may be).

11.2.6.3. The Charges to be imposed on the Transmission Service Provider which has incurred such Excess Losses, for the previous fiscal year, shall be determined as:

$$ExcLossCharge_k[PKR] = YMP(PKR/MWh) \times TSP\ Excess\ Losses\ (MWh)_k$$

Where:

- $ExcLossCharge_k$ is the charge to be imposed on the Transmission Service Provide k, for Excess Losses, for the previous fiscal year;
- YMP is the weighted average yearly System Marginal Price, for the previous fiscal year, as provided in Clause. 11.2.6.2;
- $TSP\ Excess\ Losses_k$ is the amount of Excess Losses of the Transmission Service Provider k, expressed in MWh, in the previous fiscal year, as provided in Clause 11.2.5.1.

11.2.7. CALCULATION OF COMPENSATION TO MARKET PARTICIPANTS REPRESENTING DEMAND

11.2.7.1. The amounts received from the Transmission Service Providers for Excess Losses shall be transferred to the Market Participants in the Yearly Settlement Statements, proportionately to the total Energy withdrawn by each Market Participant, from the Grid System, in the previous fiscal year.

11.2.7.2. The total Energy withdrawn from the Grid System, by a Market Participant shall be determined as:

$$YEW_j[MWh] = \sum_{h=1}^n \left[\sum_{\forall i \in MP_j} (Act_E_{i,h}[MWh] * N_{ih}) \right]$$

Where:

- YEW_j is the total Energy withdrawn by Market Participant “j” from the Grid System, in the previous fiscal year, expressed in MWh;
- $Act_E_{i,h}$ is the Energy interchanged at the Trading Point i in the hour h, calculated pursuant to Clause 5.4.2.2.a);
- N_{ih} is a number which takes the values of:
 - -1 if the value of $Act_E_{i,h}$ is negative (Energy flowing out of the Transmission or Distribution Network, according to the sign convention provided in Clause 5.3.1.4);
 - 0 otherwise;
- $\forall i \in MP_j$ means all those Trading Points in which Market Participant j is involved.

11.2.7.3. The compensation a Market Participant will receive for Excess Losses of the Transmission Service Providers will be determined as:

$$CA_EL_j[PKR] = \frac{YEW_j[MWh]}{\sum_{\forall j} YEW_j[MWh]} * \sum_k ExcLossCharge_k[PKR]$$

Where:

- CA_{EL_j} is the amount to be compensated to Market Participant j expressed in PKR;
- $ExcLossCharge_k$ is the charge imposed on Transmission Service Provider k , pursuant to 11.2.7.2;
- YEW_j is the Energy withdrawn by Market Participant j from the Grid System, in the previous fiscal year, expressed in MWh;
- Σ_k means the sum over all Transmission Service Providers;
- Σ_j means the sum over all Market Participants representing demand.

11.2.7.4. The Amounts Payable by a Transmission Service Provider shall be recovered in [six] equal monthly instalments and the Amounts Receivable by Market Participants shall be paid to the relevant Market Participants in same manner. The Transmission Service Provider shall deposit a Security Cover for an amount not lower than the amount equal to [2] monthly instalments after issuance of the Final Yearly Settlement Statement and then shall deposit the remaining amount in [4] equal monthly instalments subject to adjustments that arise due to any Extraordinary Settlement Statement.

11.3. APPLICABLE TAXES

11.3.1. APPLICABILITY OF TAXES

11.3.1.1. All Settlements calculated by the Market Operator pursuant to this Chapter shall be subject to the applicable taxes as per Applicable Law.

11.4. SETTLEMENT STATEMENTS

11.4.1. PRELIMINARY YEARLY SETTLEMENT STATEMENTS

11.4.1.1. Within ten (10) Business Days of intimation of the results of the Balancing Mechanism for Capacity to the Market Participants or within one month of completion of a fiscal year, the Market Operator shall send, through electronic means, to each Market Participant and to the Service Providers, a Preliminary Yearly Settlement Statement.

11.4.1.2. For Market Participants, the Preliminary Yearly Settlement Statement shall, *inter alia*, include:

- a) the Amounts Payable and Amounts Receivable in the Balancing Mechanism for Capacity;
- b) the compensation for Excess Losses for the previous fiscal year, if applicable;
- c) the interest accrued and payable for previous late payments or default in making payments; and
- d) if applicable, the corrections resulting from an Extraordinary Yearly Settlement Statement.

11.4.1.3. For Transmission Service Providers, the Preliminary Settlement Statement shall, *inter alia*, include:

- a) the Amount Payable to the Market Operator for Excess Losses for the previous fiscal year, if applicable;

- b) if applicable, the corrections resulting from an Extraordinary Yearly Settlement Statement; and
- c) the interest payable for previous late payments or default in making payments.

11.4.2. CLAIMS AGAINST THE PRELIMINARY YE SETTLEMENT STATEMENTS

- 11.4.2.1. Where a Market Participant or a Transmission Service Provider considers that an error or discrepancy exists in the Preliminary Yearly Settlement Statement, it shall submit to the Market Operator a written Review Request within [five (5)] Business Days of receipt of the Preliminary Yearly Settlement Statement.
- 11.4.2.2. The Review Request shall clearly state the issuance date of the Preliminary Yearly Settlement Statement, the item claimed, the reasons for the claim, the amount claimed, and shall be accompanied with supporting documents.
- 11.4.2.3. After receipt of the Review Request, the Market Operator shall review the request and decide whether there is any error or discrepancy in the Preliminary Yearly Settlement Statement and if required, it may hold a meeting with the relevant Market Participant or Transmission Service Provider to settle the matter. If the Market Operator does not agree with the Review Request, it shall intimate the same to the relevant Market Participants or Transmission Service Providers along with reasons thereof.
- 11.4.2.4. Where the Market Operator, after review of the Preliminary Yearly Settlement Statement finds that there is an error or discrepancy as claimed by the relevant Market Participant or Transmission Service Provider, it shall rectify the error before issuing the Final Yearly Settlement Statement and shall inform all the relevant Market Participants and Transmission Service Providers accordingly.

11.4.3. FINAL YEARLY SETTLEMENT STATEMENTS

- 11.4.3.1. Within twenty-five [25] Business Days after issuance of the Preliminary Yearly Settlement Statement, the Market Operator shall issue the Final Yearly Settlement Statement to each Market Participant and Transmission Service Provider, using a format similar to the Preliminary Yearly Settlement Statement.
- 11.4.3.2. A Market Participant or a Transmission Service Provider may challenge the Final Yearly Settlement Statement along with reasons thereof within [10] Business Days of its issuance. The challenge may relate to:
 - a) the metered values and contracted quantities of Capacity; or
 - b) the settled amounts in the Balancing Mechanism for Capacity, Default Interest for late payments or any other item which has been included in the Final Yearly Settlement Statement.
- 11.4.3.3. The Market Operator and the Market Participant or Transmission Service Provider shall make reasonable efforts to mutually settle the matter within [30] Business Days after the challenge is submitted to the Market Operator as per dispute resolution mechanism provided in Chapter 14.

11.4.4. EXTRAORDINARY YEARLY SETTLEMENTS

- 11.4.4.1. Market Operator shall issue an Extraordinary Yearly Settlement Statement for a year, where:

- a) a Market Participant or a Transmission Service Provider and the Market Operator settle a challenge made under Clause 11.4.2.4, in an amicable manner that results in an amount which is different from the Final Yearly Settlement Statement; or
- b) the dispute is settled according to the dispute resolution mechanism which requires modification in the amounts included in the Final Yearly Settlement Statement.

11.4.4.2. The Extraordinary Settlement Statement as provided in Clause 11.4.4.1 shall supersede the issued Final Yearly Settlement Statement for such year.

11.4.4.3. The Market Operator shall calculate, for each Market Participant, the difference between the Extraordinary Yearly Settlement Statement and the Final Yearly Settlement Statement originally issued according to Sub-Section 11.4.1, and shall decide whether to include such amounts in the next Preliminary and Final Yearly Settlement Statement, as the case may be, or to issue the notifications as per Section 11.5 below.

11.4.5. FAILURE OF THE MARKET SETTLEMENT SYSTEM

11.4.5.1. In case of an emergency or failure of the Market Settlement System, the Market Operator may issue an Estimated Yearly Settlement Statement and may modify the schedule for issuing Preliminary Yearly Settlement Statements or Final Yearly Settlement Statements, as the case may be. In such cases, the Market Operator shall inform all Market Participants and Service Providers the temporary procedural changes as soon as possible.

11.5. DEBIT AND CREDIT NOTIFICATIONS

11.5.1. NOTIFICATIONS TO MARKET PARTICIPANTS

11.5.1.1. The Market Operator, within [5] Business Days after issuance of the Final Yearly Settlement Statement or Extraordinary Yearly Settlement Statement, as the case may be, shall:

- a) issue a Debit Notification to all Market Participants and Transmission Service Providers which have to pay the Amounts Payable as per the Final Yearly Settlement Statement or the Extraordinary Yearly Settlement Statement, as the case may be. For the avoidance of doubt, in the Amounts Payable shall exclude the amounts already paid to the Market Operator before the final administration of the Balancing Mechanism for Capacity.
- b) issue a Credit Notification to all Market Participants or the Transmission Service Providers who will receive a payment as per the Final Yearly Settlement Statement or the Extraordinary Yearly Settlement Statement, as the case may be.

11.5.1.2. The Market Operator, in this process, shall act as an independent entity, without assuming any payment responsibility. Obligation of payment shall remain with the relevant Market Participants. For the avoidance of doubt, the Market Operator shall not be held liable for any kind of non-payment by any of the Market Participants or Transmission Service Providers.

11.5.2. DISAGREEMENTS WITH THE NOTIFICATIONS

- 11.5.2.1. Each Market Participant or Transmission Service Provider which receives a Debit or Credit Notification, as per clause 11.5.1.1 above, shall pay the required amount, and shall be entitled to receive the amount, shown in the Final Yearly Settlement Statement or the Extraordinary Yearly Settlement Statement, as the case may be, on the Payment Due Date, whether or not there is any dispute regarding the Amount Payable or the Amount Receivable.
- 11.5.2.2. The payment of the amount by the Market Participant or Transmission Service Provider or the Market Operator, as the case may be, pursuant to clause 11.5.2.1 shall not prejudice the right of the Market Participant or the Transmission Service Provider to seek resolution of the dispute pursuant to Chapter 14.
- 11.5.2.3.

Chapter 12. PAYMENT SYSTEM

12.1. COMPONENTS OF THE PAYMENT SYSTEM

12.1.1. MARKET OPERATOR BANK ACCOUNTS

12.1.1.1. The Market Operator shall open [2] months prior to CMOD and maintain such number of bank accounts as mentioned in Clause 12.1.1.3, in order to perform its duties as mandated under this Code. A separate ledger account shall also be opened for each Market Participant for the accounts as referred to in Clause 12.1.1.3.

12.1.1.2. Unless otherwise specified in this Chapter, the Market Operator shall recover all costs incurred in connection with opening, maintaining and administering the bank accounts through the Market Operator Fee.

12.1.1.3. The Market Operator shall hold and operate the following separate bank accounts:

- a) Market Operator Settlement Account for Monthly Settlements, to and from which payments according to this Code, shall be made, which includes payments for:
 - a.1. The Balancing Mechanism for Energy;
 - a.2. Ancillary Services and Must-Run Generation;
 - a.3. Market Operator Fee and , if required, the System Operator Fee;
 - a.4. Penalties and Default Interest for payments not done at the Payment Date for monthly Settlements, calculated in accordance with Clause 12.3.6;
 - a.5. other amounts included in a Debit/Credit Notification issued by the Market Operator which relates to monthly Settlements, in accordance with this Code;
 - a.6. any amounts deposited by the Market Participants to the Market Operator in respect of initial amount of Security Cover for monthly Settlements or Guarantee Amount or as replenishment of the Security Covers for monthly Settlements or Guarantee Amount, shall be deposited in this Account.
- b) Market Operator Settlement Account for Annual Settlements, to and from which payments according to this Code, shall be made, which includes payments for:
 - b.1. The Balancing Mechanism for Capacity;
 - b.2. The Settlement of Excess Losses;
 - b.3. Default Interest for payments not done at the Payment Date for annual Settlements, calculated in accordance with Clause 12.3.6.
- c) Market Operator Miscellaneous Account, in accordance with Clause 12.1.1.5.
- d) Market Operator Settlement Guarantee Fund Account, in accordance with Clause 12.1.1.6.
- e) Market Operator Credit Cover Account for Monthly Settlements in accordance with Clause 12.1.1.7.
- f) Market Operator Credit Cover Account for Annual Settlements in accordance with Clause 12.1.1.8.
- g) Market Operator operational accounts, in accordance with Clause 12.1.1.6.

- 12.1.1.4. All Market Participants or Transmission Service Providers shall make all payments due under the Debit Notifications into the Market Operator Settlement Account for Monthly Settlement or the Market Operator Settlement Account for Annual Settlement, as the case may be, by Close of Banking Business on the Payment Due Date. The Market Operator shall pay to the Market Participants or the Transmission Service Providers from the Market Operator Settlement Account for Monthly Settlement or the Market Operator Settlement Account for Annual Settlement, as the case may be, under Credit Notifications, by Close of Banking Business on the Clearing Day or any other date as specified in the Credit Notification.
- 12.1.1.5. The Market Operator shall operate the Market Operator Miscellaneous Account in the following manner:
- a) any amounts paid to the Market Operator in respect of Default Interests or financial penalties imposed on Market Participants or Service Providers for Non-Compliance with the provisions of this Code, as provided in Section 16.3, including Default Interest on such penalties as deposited in the Market Operator Settlement Account for Monthly Settlements or Market Operator Settlement Account for Annual Settlements, as the case may be, shall be transferred from such account to the Market Operator Miscellaneous Account;
 - b) Default Interest for payments not received at the Payment Due Date, calculated in accordance with Clause 12.3.6 and the funds referred to in paragraph 12.1.1.5.a) above, shall first be used as compensation for any expenses, loss or costs incurred by the Market Operator on account of Non-Compliance by any Market Participant or Service Provider.
 - c) any excess amount shall be used by the Market Operator in training and capacity building initiatives for the development of the Market.
- 12.1.1.6. The Market Operator shall operate the Settlement Guarantee Fund Account in the following manner:
- a) any amounts paid to the Market Operator in respect of initial Guarantee Amount or as replenishment of the Guarantee Amount, when deposited in Market Operator Settlement Account for Monthly Settlements shall be transferred from such account to the Market Operator Settlement Guarantee Fund Account.
 - b) on the Clearing Day, if needed, the funds available in the Settlement Guarantee Fund account will be transferred to the Market Operator Settlement Account for Monthly Settlements in order to make payments as per relevant Settlement Statements.
 - c) the amounts used by the Market Operator from the Settlement Guarantee Fund Account shall be replenished upon receipt of payments from the Market Participants.
- 12.1.1.7. The Market Operator shall operate the Credit Cover Account for Monthly Settlements in the following manner:
- a) any amounts paid to the Market Operator in respect of initial amount of Security Cover for monthly Settlements or as replenishment of the same, when deposited in Market Operator Settlement Account for Monthly Settlements, shall be transferred from such account to the Market Operator Credit Cover Account for Monthly Settlements.
 - b) on the Clearing Day, as per requirement, the funds available in the Credit Cover Account for Monthly Settlements account will be transferred to the Market Operator Settlement Account for Monthly Settlements in order to make payments as per monthly Settlement Statements.
 - c) the amounts used by the Market Operator from the Credit Cover Account for Monthly

Settlements shall be replenished upon receipt of payments from the Market Participants.

12.1.1.8. The Market Operator shall operate the Credit Cover Account for Annual Settlements in the following manner:

- a) any amounts paid to the Market Operator in respect of Security Cover for Annual Settlements or as replenishment of the same, when deposited in Market Operator Settlement Account for Annual Settlements, shall be transferred from such account to the Market Operator Credit Cover Account for Annual Settlements.
- b) on the Clearing Day, as per requirement, the funds available in the Credit Cover Account for Annual Settlements account will be transferred to the Market Operator Settlement Account for Annual Settlements in order to make payments to Market Participants or Transmission Service Providers as per annual Settlement Statements.
- c) the amounts used by the Market Operator from the Credit Cover Account for Annual Settlements shall be replenished upon receipt of payments from the Market Participants or Transmission Service Providers, as the case may be.

12.1.1.9. In addition to the bank accounts mentioned above, the Market Operator shall maintain and operate such number of bank accounts in scheduled banks as are required to manage its corporate finance.

12.1.2. MARKET PARTICIPANT'S BANK ACCOUNT.

12.1.2.1. Each Market Participant, except Electric Power Suppliers segregated from EX-WAPDA DISCOs, shall maintain a bank account with a scheduled bank(s) approved by the Market Operator from which payments to, and from, the Market Operator shall be made pursuant to this Code. No Market Participant shall make any change to its bank account without giving a prior written notice to the Market Operator of not less than ten [10] Business Days.

12.1.3. SERVICE PROVIDER'S ACCOUNT.

12.1.3.1. Each Transmission Service Provider and, if applicable, Metering Service Provider shall maintain a bank account, with a scheduled bank(s) approved by the Market Operator from which payments to, and from, the Market Operator shall be made pursuant to this Code. The Transmission Service Provider nor Metering Service Providers shall make any change to its bank account without giving a prior written notice to the Market Operator of not less than ten [10] Business Days.

12.1.4. DESIGNATED ACCOUNT OF ELECTRIC POWER SUPPLIERS SEGREGATED FROM EX-WAPDA DISCOs FOR MARKET SETTLEMENTS.

12.1.4.1. Each Electric Power Supplier segregated from EX-WAPDA DISCOs shall open and/or maintain a Designated Account for the purposes of settlements with the Market Operator as per this Code in a Designated Bank having a minimum long term credit rating of "A" and above as published by the State Bank of Pakistan that receive, accept and process immediately any payment in accordance with the irrevocable mandate to operate in accordance with the standing instruction given in Clause 12.1.4.5.

12.1.4.2. The Market Operator, each Electric Power Supplier/DISCO and the Designated Bank shall enter into an agreement to operate the Designated Account as per the terms and condition agreed and provision of Clause 12.1.4.5.

- 12.1.4.3. Each Designated Account shall receive a significant portion, to be determined on case to case basis, of the revenues from sale of electric power through main Revenue Collection Bank Accounts.
- 12.1.4.4. The Designated Account shall be operated in accordance with the standing instructions, issued prior to CMOD, by the Market Operator and the relevant Electric Power Supplier jointly, as provided in Clause 12.1.4.5, as well as the terms and conditions of the agreement entered into among the Market Operator, the Designated Bank and the relevant Electric Power Supplier for disbursement of payments to the Market Operator and the Electric Power Supplier. Such standing instructions shall be reviewed on periodic basis by the Market Operator and the relevant Electric Power Supplier jointly and necessary amendments shall be made.
- 12.1.4.5. The Designated Bank shall be responsible for the timely disbursement of the payments from the Designated Account of such Electric Power Supplier to the Market Operator Settlement Accounts on receipt of instructions from the Market Operator and the relevant Electric Power Supplier as stated below:
- a) the Designated Bank shall order the transfer of payments as per the instructions issued by the Market Operator for the payment of amounts on account of Settlement Guarantee Fund to the Market Operator Settlement Account for Monthly Settlements.
 - b) when funds remain in the Designated Account after payment of amounts on account of Settlement Guarantee Fund under Clause 12.1.4.5.a) above, the Designated Bank shall order the transfer of payments on account of the initial Security Cover as instructed by the Market Operator, to the Market Operator Settlement Account for Monthly Settlements.
 - c) when funds remain in the Designated Escrow Account after payment of amounts on account of initial Security Cover under Clause 12.1.4.5.b) above, the Designated Bank shall order the transfer of payments on account of any instruction issued by the Market Operator pursuant to any Settlement Statement and the resulting Debit Notifications to the Market Operator's Settlement Account for Monthly Settlement or Market Operator's Settlement Account for Annual Settlement, as the case may be.
 - d) when funds remain in the Designated Bank Account after payment of amount on account of instruction issued by the Market Operator under Clause 12.1.4.5.c) above, the Designated Bank shall order the transfer of payments as instructed by the Market Operator on account of any periodic invoice/Debit Notification for deposit of any penalties or Default Interest to the Market Operator's Settlement Account for Monthly Settlement or Market Operator's Settlement Account for Annual Settlement, as the case may be.
 - e) when funds remain in the Designated Bank Account after payment of the amounts specified in the Debit Notification by Market Operator under Clause 12.1.4.5.d) above, the Designated Bank shall act in accordance with the existing instructions of the relevant Electric Power Supplier.
- 12.1.4.6. Each Designated Bank shall issue an irrevocable mandate applicable to Designated Bank Accounts, in accordance with the format mutually agreed by the Market Operator and the Electric Power Supplier/DISCO, to receive, accept and immediately process any payment requirement that is received from the Market Operator provided that such payment requirement is fully consistent with the standing instructions given in Clause 12.1.4.5.

- 12.1.4.7. After the issuance of the invoices/Debit Notifications by the Market Operator as per this Code, the Designated Bank shall determine if there are enough funds in its Designated Bank Account to afford the required payment to satisfy the payment obligations priority in accordance with Clause 12.1.4.5.
- 12.1.4.8. Whenever the remaining funds in Designated Account are, or deemed to be, insufficient to comply with such obligations, the Designated Bank shall inform the relevant Electric Power Supplier and the Electric Power Supplier shall be responsible for depositing the required difference before the Payment Due Date.
- 12.1.4.9. The standing instructions given in Clause 12.1.4.5 shall remain applicable till the Payment Due Date and no funds shall be transferred from the Designated Account for any other purpose till the payments are made as per priority given in Clause 12.1.4.5.
- 12.1.4.10. Actions at the Payment Due Date:
- a) At the Payment Due Date, the Designated Bank shall execute the irrevocable mandate of transferring in accordance with Clause 12.1.4.5, provided the Designated Account has enough funds at this moment, as to pay in full such amount.
 - b) In the case that, after the Designated bank has executed the irrevocable mandates transferring the amounts to the respective parties in accordance with priority given in Clause 12.1.4.5, there are additional funds remaining in such account, the Designated Bank shall execute orders issued by the respective Electric Power Supplier.

12.2. MARKET OPERATOR PAYMENTS CALENDAR

12.2.1. CONTENTS OF THE MARKET OPERATOR PAYMENTS CALENDAR

- 12.2.1.1. Each year, the Market Operator shall prepare a draft Market Operator's Payments Calendar for the following fiscal year showing:
- a) the dates on which the Market Operator will issue Preliminary Settlement Statements (monthly and yearly) to all Market Participants and/or Transmission Service Providers.
 - b) the dates on which the Market Operator will issue Final Settlement Statements (monthly and yearly) to all Market Participants and/or Transmission Service Providers;
 - c) the dates on which the Market Operator will issue Debit Notifications to Market Participants and/or Transmission Service Providers;
 - d) the dates when Market Participants and/or Transmission Service Providers from whom money is owed are required to make payments into the Market Operator Settlement Accounts, in accordance with the Debit Notifications issued;
 - e) the dates when the Market Participants and/or Transmission Service Providers to whom money is owed in accordance with the Credit Notifications will receive payments from the Market Operator Settlement Account; and
 - f) provided that for the first fiscal year following the CMOD, the Market Operator's Payments Calendar shall be established pursuant to Sub-Section 12.2.3.
- 12.2.1.2. The Market Operator may change the contents or format of the Market Operator's Payments Calendar for future years upon prior written notification to Market Participants and Transmission Service Providers.

12.2.2. DATES FOR THE MARKET OPERATOR'S PAYMENTS CALENDAR

- 12.2.2.1. Subject to Sub-Section 12.2.3, on June 1st of each year, the Market Operator shall publish on the MO Website, a draft of the Market Operator's Payments Calendar for the following fiscal year. Any Market Participant may submit comments to the Market Operator within [10] Business Days after such publication.
- 12.2.2.2. No later than [June 25th] of each year, the Market Operator shall publish on the MO Website, the final version the Market Operator's Payments Calendar for the following fiscal year, after considering the comments received pursuant to Clause 12.2.1.1.
- 12.2.2.3. The final Market Operator's Payments Calendar, made available in accordance with Clause 12.2.2.2 or Sub-Section 12.2.3, as the case may be, shall be binding on the Market Operator and on all Market Participants and Transmission Service Providers for the relevant fiscal year.

12.2.3. FIRST MARKET OPERATOR PAYMENT CALENDAR

- 12.2.3.1. Within fifteen [15] Business Days of the CMOD, the Market Operator shall publish the first Market Operator's Payments Calendar on the MO Website. This first Market Operator's Payments Calendar shall be followed by the Market Operator for the remaining period of the fiscal year.
- 12.2.3.2. Within five [5] Business Days following the publication of the first Market Operator's Payments Calendar, the Market Participants or Transmission Service Provider shall submit their comments to the first Market Operator's Payments Calendar notified by the Market Operator pursuant to Clause 12.2.3.1 above.
- 12.2.3.3. Within [5] Business Days of receipts of comments from the Market Participants or Transmission Service Providers pursuant to Clause 12.2.3.2 and taking into account their comments, the Market Operator shall amend the first Market Operator's Payments Calendar, if required, and notify the Market Operator's Payments Calendar for the remaining part, if any, of the first fiscal year and the next following fiscal year.

12.3. PAYMENT PROCEDURES

12.3.1. PAYMENT PROCESS FOR MONTHLY SETTLEMENTS

12.3.1.1. On the Clearing Day:

- a) the Market Operator shall order the relevant bank to transfer the funds from the Market Operator Credit Cover Account for Monthly Settlement to the Market Operator Settlement Account for Monthly Settlements as per the relevant Settlement Statements.
- b) while making such payments to the Market Participants, the Market Operator shall ensure proper accounting of the Credit Cover Account for Monthly Settlement and utilize the amounts deposited by the Market Participants from whom the money is owed to Market Operator first;
- c) where the money deposited by such Market Participants, who owe money to the Market Operator, is not enough to settle the amounts payable under the Credit Notifications, the Market Operator may utilize other monies available in the Credit Cover Account for Monthly Settlement to bridge the gap and settle all Credit Notifications in full;

- d) where the total funds available in the Credit Cover Account for Monthly Settlement are not sufficient to make full payments to the Market Participants under the Credit Notifications, the Market Operator may utilize the balance available in the Settlement Guarantee Fund to bridge the gap in order to make full payment to the relevant Market Participants.
 - e) the Market Operator shall make payments to the relevant Market Participants from the Market Operator Settlement Account for Monthly Settlements, in accordance with the Credit Notifications;
- 12.3.1.2. On the next Business Day following the Clearing Day, the Market Operator shall issue Debit Notifications to all Market Participants who owe money to the Market Operator requiring them to pay the required amounts by the Payment Due Date. Any late payment from the Payment Due Date shall attract Default Interest.
- 12.3.1.3. Each Market Participant shall remit to the Market Operator Settlement Account for Monthly Settlements the amount shown on the Debit Notification, as payable by the Market Participant, by Close of Banking Business on the Payment Due Date.
- 12.3.1.4. As the payments are received in the Market Operator Settlement Account for Monthly Settlements, the Market Operator shall order the relevant bank to the transfer of the amounts to the Market Operator Credit Cover Account for Monthly Settlements first and then, if any amount was utilized from Settlement Guarantee Fund as per Clause 12.3.1.1.d), the same amount shall be deposited back in the Settlement Guarantee Fund Account.

12.3.2. PAYMENT PROCESS FOR YEARLY SETTLEMENTS

12.3.2.1. On the Clearing Day:

- a) the Market Operator shall order the relevant bank to transfer the funds from the Market Operator Credit Cover Account for Yearly Settlement to the Market Operator Settlement Account for Yearly Settlements as per the relevant Settlement Statements.
 - b) while making such payments to the Market Participants and/or Transmission Service Providers, the Market Operator shall ensure proper accounting of the Credit Cover Account for Yearly Settlement and utilize the amounts deposited by the Market Participants from whom the money is owed to Market Operator;
 - c) where the money deposited by such Market Participants and/or Transmission Service Provider, who owe money to the Market Operator, is not enough to settle the amounts payable under the Credit Notifications, the Market Operator may reduce payments to the Market Participants and/or the Transmission Service Providers on pro-rata basis while taking into account the shortfall amount;
 - d) the Market Operator shall make payments to the relevant Market Participants or Transmission Service Providers, as the case may be, from the Market Operator Settlement Account for yearly Settlements, in accordance with the Credit Notifications;
- 12.3.2.2. On the next Business Day following the Clearing Day, the Market Operator shall issue Debit Notifications to all Market Participants who owe money to the Market Operator requiring them to pay the required amounts by the Payment Due Date. Any late payment from the Payment Due Date shall attract Default Interest.

12.3.2.3. Each Market Participant and/or Transmission Service Provider shall remit to the Market Operator Settlement Account for Yearly Settlements the amount shown on the Debit Notification, as payable by the Market Participant and/or Transmission Service Provider, by Close of Banking Business on the Payment Due Date.

12.3.2.4. As the payments are received in the Market Operator Settlement Account for Yearly Settlements, the Market Operator shall order the transfer of the amounts to the Market Operator Credit Cover Account for Yearly Settlements. Any Default Interest on late payments shall be deposited into the Market Operator Miscellaneous Account.

12.3.3. DEFAULT IN MAKING PAYMENT BY A MARKET PARTICIPANT

12.3.3.1. In case of monthly Settlements, where a Market Participant defaults in making any payment due under the Debit Notification or otherwise, the Market Operator may make payments from the Settlement Guarantee Fund Account, provided that upon recovery or receipt of such amount from the defaulting Market Participant, such amount shall be deposited back to the Settlement Guarantee Fund Account. It is hereby clarified that payment of any amount from the Settlement Guarantee Fund Account shall be without prejudice to any enforcement action that may be taken by the Market Operator under Chapter 16.

12.3.3.2. Where there is no chance of recovery from the defaulting Market Participant, the Market Operator shall assess the impact on the Settlement Guarantee Fund and determine if any additional amounts are required to be deposited by all the Market Participants. If the Market Operator determines that additional amounts are required to be deposited in the Settlement Guarantee Fund, all Market Participants shall deposit the requisite amounts within specified timeframe.

12.3.3.3. In case of yearly Settlements, where a Market Participant or the Transmission Service Provider defaults in making any payment due under the Debit Notification or otherwise, the Market Operator may reduce payments to the Market Participants and/or Transmission Service Providers on pro-rata basis., provided that upon recovery or receipt of such amount from the defaulting Market Participant or Transmission Service Provider, such amount shall be paid to the relevant parties together with the Default Interest as received from the defaulting party. Provided that payment with the Default Interest will be prejudice to any enforcement action that may be taken by the Market Operator under Chapter 16.

12.3.4. SET-OFF.

12.3.4.1. The Market Operator is authorised to recoup, set off or apply any amount to which any defaulting Market Participant is, or will be, entitled, for or towards the satisfaction of any of that Market Participant's debts arising under the Settlement and billing process in accordance with Chapter 7 and Chapter 12, or any penalty imposed on the Market Participant by the Market Operator pursuant to Chapter 16. The oldest outstanding amounts will be settled first in the order of the creation of such debts.

12.3.5. ORDER OF PAYMENTS

12.3.5.1. The Market Operator shall apply payments received in respect of amounts owed to Market Participants to repay the relevant debts in the order of the creation of such debts.

12.3.6. DEFAULT INTEREST

- 12.3.6.1. All Market Participants or the Transmission Service Providers shall pay Default Interest on Default Amounts for the period commencing from the relevant Payment Due Date till the date on which the payment is actually received by the Market Operator, together with any related costs incurred by the Market Operator.
- 12.3.6.2. The Default Interest shall eventually be transferred to the Market Operator Miscellaneous Account.

12.3.7. OVERPAYMENTS

- 12.3.7.1. Where a Market Participant receives an overpayment as a result of an error on the part of the Market Operator, it shall intimate the Market Operator of such overpayment immediately, but not later than 24 hours of the knowledge thereof.
- 12.3.7.2. The Market Participant shall return the received overpayment in full by the next Business Day.
- 12.3.7.3. If the Market Participant has not remitted the amount back to the Market Operator within the next three [3] Business Days from the date of receipt of such overpayment, the Market Operator shall be entitled to charge Default Interest on the amount of the overpayment, until the amount is credited to the Market Operator Settlement Account, and the Market Operator shall be entitled to treat the overpayment, and any interest accruing thereon, as a Default Amount to which Clause 12.3.6.1 and 12.3.6.2 shall apply.

Chapter 13. GUARANTEES AND SECURITY COVERS

13.1. REQUIREMENTS FOR PROVIDING GUARANTEES AND SECURITY COVERS

13.1.1. GUARANTEES AND SECURITY COVERS TO BE PROVIDED BY MARKET PARTICIPANTS

13.1.1.1. Each Market Participant shall provide to the Market Operator appropriate Security Covers for guaranteeing their:

- a) Expected Amounts Payable as per Final Settlement Statements calculated pursuant to this Code;
- b) Expected Amounts Payable for the Capacity purchased in the Balancing Mechanism for Capacity calculated pursuant to this Code and included in the Yearly Settlement Statements (Final or Extraordinary, as the case may be);
- c) Expected Amounts Payable for other amounts as per Yearly Settlement Statements (Final or Extraordinary, as the case may be).

13.1.1.2. In addition to Security Covers required under Clause 13.1.1.1 above, the Market Participants shall also provide to the Market Operator their contribution to the Settlement Guarantee Fund (the Guarantee Amount) pursuant to clause 13.1.3.2.

13.1.1.3. Security Covers for guaranteeing payment obligations under the monthly Settlement Statements shall be provided by the Market Participants:

- a) before enrolment as a Market Participant, pursuant to Clause 2.3.4.1; and
- b) at the time of registration of a Contract to which the Market Participant is a party.

13.1.1.4. Security Covers for guaranteeing payment obligations under the Yearly Settlement Statement or Extraordinary Yearly Settlement Statement shall be provided by the Market Participants as stipulated in Clauses 9.5.1.1 or 9.5.1.5, as the case may be.

13.1.1.5. A Transmission Service Provider shall provide Security Cover for guaranteeing payment on account of Excess Losses under the Yearly Settlement Statement or Extraordinary Yearly Settlement Statement, as specified under Clause 11.2.7.4.

13.1.2. ACCEPTABLE FORM OF SECURITY COVERS AND GUARANTEE AMOUNT

13.1.2.1. Market Participants and Transmission Service Providers, which are required to provide a Security Cover and Guarantee Amount pursuant to the provisions of this Code for the amount determined by the Market Operator, shall provide and maintain such Security Covers and Guarantee Amounts, in cash.

13.1.3. SECURITY COVERS AND SETTLEMENT GUARANTEE FUND

13.1.3.1. The initial amount of Security Cover shall be calculated by the Market Operator for each Market Participant or other person separately and the relevant Market Participant or the other person shall be required to deposit such amount in the Market Operator Settlement Account for Monthly Settlements in the form of cash. Any return on the deposited amounts shall remain within the Market Operator Credit Cover Account for Monthly Settlement and may be utilized to cover any default risk in the Market, if any.

- 13.1.3.2. The initial Guarantee Amount or any revised Guarantee Amount shall be calculated by the Market Operator for all Market Participants and all Market Participants shall be required to deposit such amounts in the Market Operator Settlement Account for Monthly Settlement in the form of cash. The Market Operator shall be entitled to invest these funds in approved securities and/or other avenues of investments in accordance with the mechanism as may be approved by the MO Board of Directors. The Market Operator shall ensure that while depositing these funds in alternative securities, the principal amount is not left at risk and shall constraint such investments to risk free securities, interest bearing accounts, saving accounts etc. Any returns on such investment will be retained in in the Settlement Guarantee Fund Account. Upon withdrawal of a Market Participant, only the principle amount deposited by such Market Participant, duly adjusted for any defaults during the previous period, will be returned to it.
- 13.1.3.3. The Market Operator shall make a CCOP describing a detailed methodology to determine the initial amount of Security Cover and Guarantee Amount and the revisions thereof.
- 13.1.3.4. Till the time, the CCOP is prepared as per Clause 13.1.3.3 above, as an interim measure, the following criteria shall apply for the calculation of initial amount of Security Covers:
- For EX-WAPDA DISCOs, the amount shall be equal to the percentage, as given in Table 2, of the average revenue over the last [3] years period prior to the CMOD.
 - For KE, the amount shall be equal to the [0.05] % of the average revenue over the last [3] years period prior to the CMOD.
 - For other Market Participants, the initial amount shall be equal to the one-month maximum possible payable amount under a monthly Settlement Statement out of the upcoming [6] months.

Table 2: Initial Security Cover amount of EX-WAPDA DISCOs

Sr. No.	Name of EX-WAPDA DISCOs	Security Cover Requirement (% of DISCO Revenue)
1	PESCO	0.013%
2	TESCO	0.006%
3	IESCO	0.003%
4	GEPCO	0.004%
5	LESCO	0.004%
6	FESCO	0.004%
7	MEPCO	0.005%
8	SEPCO	0.004%
9	HESCO	0.001%
10	QESCO	0.002%

- 13.1.3.5. For the Guarantee Amount to be deposited in the Settlement Guarantee Fund Account:
- For Ex-WAPDA DISCOs and K-Electric, the initial Guarantee Amount shall be equal to 1.5 times the initial Security Cover amount of each Market Participant calculated under Clause 13.1.3.4 above.
 - For new Contracts of the Ex-WAPDA DISCOs, K-Electric and other Market Participants, a mechanism shall be developed by the Market Operator in the CCOP to be developed under Clause 13.1.3.3 to calculate the Guarantee Amount. This calculation

shall be linked with the quantum of Imbalances, either positive or negative.

13.1.3.6. The Market Operator shall continuously monitor the sufficiency of the Security Cover Amounts and Guarantee Amount and shall be entitled to increase/decrease it.

13.1.3.7. Till the time the CCOP is prepared as per Clause 13.1.3.3, the Market Operator shall determine the revised amounts as under:

- a) On rolling basis, if the average amount to be paid by a Market Participant as per previous [3] monthly Settlement Statements is higher than the amount deposited as Security Cover by such Market Participant, the Security Cover Amount requirement of such Market Participant shall be increased to the maximum Amount Payable during the same period.
- b) If the average amount to be paid by a Market Participant as per previous [12] monthly Settlement Statements is lower than the amount deposited as Security Cover by such Market Participant, the Security Cover Amount requirement of such Market Participant will be decreased to the maximum Amount Payable during the same period which shall be capped at [Rs. 1.5] Millions.
- c) On rolling basis, if the average amount calculated by the Market Operator as per previous [6] monthly Settlement Statements is higher than the amount deposited as Guarantee Amount by such Market Participant, the Guarantee Amount requirement of such Market Participant shall be increased to the maximum requirement during the same period.

13.1.3.8. The Market Operator shall inform the respective Market Participants whose Security Cover Amount and/or Guarantee Amount requirement has been increased along with reasons thereof. The Market Participants shall pay to the Market Operator any increase in its Security Cover Amount and/or Guarantee Amount as required by the Market Operator within the specified time.

13.1.3.9. In case of decrease in the Security Cover Amount of the Market Participant as per 13.1.3.7.b), the Market Operator shall inform the respective Market Participant of such decrease and stating whether such amount will be paid to it or the same will be adjusted in its settlements being done by the Market Operator.

13.2. SECURITY COVER FOR MONTHLY SETTLEMENTS

13.2.1. SECURITY COVER REQUIRED DURING ENROLMENT AS MARKET PARTICIPANT

13.2.1.1. The amount of the Security Cover which shall be provided by a Market Participant pursuant Clause 2.3.4.1 shall be determined according to the Category for which the application has been made which are described below:

- a) For enrolment as BPC, Electric Power Supplier or Electric Power Trader, no Security Cover shall be required.
- b) For enrolment as a Generator, the amount of the Security Cover shall be determined on the basis of its expected consumption from the network in one month if this back-feed Energy is not already contracted from another Market Participant. This value shall be calculated as 5 percent of its Installed Net Capacity (expressed in kW) multiplied by the 720 hours and multiplied by [six (6)] PKR/kWh.
- c) When a Market Participant registers a new Contract, the amount of the Security Cover provided during the enrolment process shall be adjusted accordingly.

13.2.2. SECURITY COVER FOR LEGACY CONTRACTS

- 13.2.2.1. Market Participants which are purchasing Energy and Capacity through Legacy Contracts shall provide to the Market Operator an initial Security Cover, as provided in Clause 13.1.3.4.

13.2.3. SECURITY COVER FOR NEW CONTRACTS

- 13.2.3.1. The Market Operator shall determine the amount of the Security Cover to be provided by each Market Participant prior to registration of a Contract, which shall be maintained until a new or different amount is determined. The Security Cover that shall be provided shall guarantee the obligations of the Market Participant party to the Contract being registered, plus its obligations associated with any other Contract already registered with the Market Operator.
- 13.2.3.2. The amount of the Security Cover that shall be provided pursuant to Clause 13.2.3.1 above, shall be determined by estimating the expected payments from such Market Participant, towards the purchase of Energy from the Balancing Mechanism for Energy, plus the payments for the Ancillary Services and Must Run Generation, the Market Operator fee and, if applicable, the System Operator fee, for the following Energy Settlement Period. The Market Operator shall require the parties registering the Contract to provide all the necessary information to perform this calculation.
- 13.2.3.3. The CCOP prepared under Clause 13.1.3.3 shall include mechanisms for determining the amount of the Security Cover and the Guarantee Amount to be provided by each Market Participant at the time of registration of a new Contract.

13.2.4. DEPOSIT AND VERIFICATION OF THE SECURITY COVER

- 13.2.4.1. After depositing the Security Cover in the Market Operator Monthly Settlement Account, the concerned Market Participant shall immediately inform the Market Operator along with the relevant documents.
- 13.2.4.2. The Market Operator shall review the submitted documents to verify whether the Security Cover is adequate and in accordance with the provisions of this Code. The Market Operator shall verify that the amount of the Security Cover is equal or above the amount calculated by the Market Operator.
- 13.2.4.3. In the case the Security Cover is according to the requirements, the Market Operator shall acknowledge the acceptance thereof and shall proceed to enroll the person as Market Participant or register the Contract, as the case may be.
- 13.2.4.4. In case the Market Operator considers that the Security Cover is not in accordance with the requirements, it shall require the Applicant or Market Participant to provide the Security Cover according to the requirements.

13.3. SECURITY COVER FOR THE BMC

13.3.1. SECURITY COVER REQUIRED FOR PARTICIPATION IN THE BMC

- 13.3.1.1. A Market Participant having negative Capacity Balance, calculated pursuant to Clause 9.2.5.1, shall submit Security Cover for an amount as determined by the Market Operator in accordance with Clause 9.5.1.1.

13.3.2. DEPOSIT AND VERIFICATION OF THE SECURITY COVER

- 13.3.2.1. After depositing the Security Cover in the Market Operator Yearly Settlement Account, the concerned Market Participant shall immediately inform the Market Operator along with the relevant documents.
- 13.3.2.2. The Market Operator shall review the submitted documents to verify whether the Security Cover is adequate and in accordance with the provisions of this Code. The Market Operator shall verify if the amount of the Security Cover is equal or above the amount notified by the Market Operator pursuant Clause 9.5.1.1;
- 13.3.2.3. In the case the Security Cover is according to the requirements, the Market Operator shall acknowledge the acceptance thereof and the Market Participant shall be allowed to participate in the Balancing Mechanism for Capacity. In case the Market Operator considers that the Security Cover provided is not adequate and not in accordance with the provisions of this Code, the provision of Clause 9.6.1.2 shall apply.

13.4. SECURITY COVERS ASSOCIATED WITH EXCESS LOSSES

13.4.1. VERIFICATION OF THE SECURITY COVERS FOR PAYMENT OF EXCESS LOSSES

- 13.4.1.1. After depositing the Security Cover in the Market Operator Yearly Settlement Account, the concerned Transmission Service Provider shall immediately inform the Market Operator along with the relevant documents.
- 13.4.1.2. The Market Operator shall review the submitted documents to verify whether the Security Cover is adequate and in accordance with the provisions of this Code. The Market Operator shall verify if the amount of the Security Cover is equal or above the amount notified by the Market Operator pursuant Clause 11.2.7.4.
- 13.4.1.3. In the case the Security Cover is according to the requirements, the Market Operator shall acknowledge the acceptance thereof. In the case the Market Operator considers that the Security Cover provided is not adequate it shall require the Transmission Service Provider to provide the Security Cover according to the requirements. In case of failure of the Transmission Service Provider to provide the Security Cover as notified by the Market Operator, then the Market Operator shall inform the Authority to take the appropriate action. In such case, the Market Operator may reduce payments to the Market Participants on pro-rata basis considering the shortfall amount.

13.4.2. REGISTRATION OF THE SECURITY COVERS

- 13.4.2.1. The Market Operator shall organize and maintain a register for the Security Covers provided by each Market Participant and Transmission Service Provider.
- 13.4.2.2. The following information shall be included in the Security Covers Register:
- a) The identification of each Market Participant and Transmission Service Provider.
 - b) The amount of the Security Cover provided by each Market Participant and Transmission Service Provider;
 - c) The purpose for which the Security Cover is provided (enrolment as Market Participant, monthly Settlements or yearly Settlements).
- 13.4.2.3. The Market Operator shall update the Security Covers Register when:

- a) the Market Participant or a Transmission Service Provider provides a new Security Cover, or it modifies the amounts submitted;
- b) a Security Cover is totally or partially used;
- c) a Market Participant terminates its participation and its Security Cover is returned; or
- d) any excess amount of a Market Participant or Transmission Service Provider is returned.

13.5. UTILIZATION / CANCELLATION OF THE SECURITY COVERS

13.5.1. SECURITY COVER UTILIZATION IN CASE OF MONTHLY SETTLEMENTS

- 13.5.1.1. On the Clearing Day, the Market Operator shall utilize or make necessary payments from the Security Cover of a Market Participant on account of Amounts Payable by such Market Participant.
- 13.5.1.2. Upon utilization of the Security Cover to pay the Amounts Payable as per the Monthly Settlement Statement, the Market Operator shall:
 - a) inform the concerned Market Participant about the utilization of the Security Cover, clearly indicating the amount that has been utilized;
 - b) Determine the new value of the Security Cover that the Market Participant shall provide to the Market Operator. This value shall be calculated pursuant to Clause 13.2.3.3; and
 - c) Issue a Debit Notification to the concerned Market Participant to provide the Market Operator a new Security Cover, for the amount indicated in paragraph 13.5.1.2.b) above within Payment Due Date.
- 13.5.1.3. Failure to comply with the requirement of providing a new Security Cover, as per Clause 13.5.1.2, shall be considered as an Event of Default of the concerned Market Participant, pursuant to Sub-Section 16.2.1.

13.5.2. SECURITY COVER UTILIZATION IN CASE OF YEARLY SETTLEMENTS

- 13.5.2.1. After utilization of the Security Cover of a Market Participant to satisfy its payment obligations under a Yearly Settlement Statement or Extraordinary Yearly Settlement Statement, the Market Operator shall:
 - a) inform the involved Market Participant about the execution of the Security Cover, clearly indicating the amount that has been executed;
 - b) Inform the new value of the Security Cover that the Market Participant shall provide to the Market Operator as calculated pursuant to Clause 9.5.1.1; and
 - c) Issue a Debit Notification to the concerned Market Participant to provide the Market Operator the Security Cover for the next instalment, for the amount indicated in Clause 13.5.2.3.b) above within five [5] Business Days of the date of issuance of such notification.
- 13.5.2.2. Failure to comply with the requirement of Clause 13.5.2.1.b) shall be considered as an Event of Default of the concerned Market Participant, pursuant to Sub-Section 16.2.1.
- 13.5.2.3. After utilization of the Security Cover of a Transmission Service Provider to satisfy its payment obligations under a Yearly Settlement Statement or Extraordinary Yearly Settlement Statement, the Market Operator shall:

- a) inform the involved Transmission Service Provider about the utilization of the Security Cover, clearly indicating the amount that has been utilized;
- b) Inform the new value of the Security Cover that the Transmission Service Provider shall provide to the Market Operator as calculated pursuant to Clause 11.2.7.4; and
- c) Issue a Debit Notification to the concerned Transmission Service Provider to provide the Market Operator the Security Cover for the next instalment, for the amount indicated in Clause 13.5.2.3.b) above by the Payment Due Date.

13.5.2.4. Failure to comply with the requirement of Clause 13.5.2.3.c) shall be considered as an Event of Default of the concerned Market Participant, pursuant to Sub-Section 16.2.1

13.5.3. ADJUSTMENT AND RETURN OF A SECURITY COVER

13.5.3.1. Non-utilized Security Cover may be returned or adjusted, in the following cases:

- a) The Security Cover may be returned if the enrolment of a Market Participant is withdrawn or revoked after following the procedure as provided in section 2.5;
- b) The Security Cover may be adjusted against payments under monthly Settlements, after satisfying the payment obligations under a Yearly Settlement Statement or Extraordinary Yearly Settlement Statement.

13.5.3.2. Where a Market Participant deregisters a Contract, pursuant to Section 3.6, the amount of the required Security Cover shall be recalculated by the Market Operator. If the recalculated amount is lower than the Security Cover already provided by the Market Participant, it may decide to:

- a) maintain the existing Security Cover for future transactions; or
- b) request the Market Operator to return the excess amount of the Security Cover.

13.5.3.3. The Market Operator may return the excess amount upon request of the relevant Market Participant.

13.5.4. RETURN OF A PRINCIPAL AMOUNT OF SETTLEMENT GUARANTEE FUND

13.5.4.1. The principal amount deposited by a Market Participant may be returned, if the enrolment of a Market Participant is withdrawn or revoked after following the procedure as provided in section 2.5.

13.5.4.2. While calculating the amount to be returned to the Market Participant pursuant to Clause 13.5.4.1 above, the Market Operator shall take into account any default in the Market which was covered through utilization of the Settlement Guarantee Fund. Any amount that was used as contribution from such Market Participant to cover the default in the Market shall be deducted from the amount deposited by such Market Participant.

13.5.5. ADJUSTMENT OF THE AMOUNT OF SETTLEMENT GUARANTEE FUND

13.5.5.1. Each year, the Market Operator shall review the adequacy of the amount deposited in the Settlement Guarantee Fund to cover the payment obligations of the Market Participants.

13.5.5.2. The Market Operator shall prepare a report on the adequacy of the Settlement Guarantee Fund and submit the same to the Authority along with recommendations to adjust the amounts being deposited in the Settlement Guarantee Fund.

Chapter 14. SETTLEMENT OF DISPUTES

14.1. APPLICATION

14.1.1.1. The Dispute resolution procedure provided in this Chapter shall apply to:

- a) any Dispute between the Market Operator and the System Operator, or the Market Operator with ~~or~~ a Service Provider or ~~and~~ any Market Participant, which arises under or in connection with or in relation with provisions of this Code;
- b) any order of rejection by the Market Operator to enrol a person as a Market Participant or Service Provider, or to register a Contract;
- c) a dispute under this Code between the Market Operator and a Service Providers or a Market Participant regarding the terms and conditions or interpretation of the Market Participation Agreement or the Service Provider Agreement.

14.1.1.2. The dispute resolution process shall not apply to the following:

- a) a dispute arising under a Bilateral Contract between the Market Participants or any other dispute which is not related to the implementation of the provisions of this Code;
- b) any dispute relating to, connected with or arising out of an application by any person to amend a Clause or condition of this Code or a Dispute relating to validity of an Amendment to this Code;
- c) disputes with respect to a proposal to amend or not to amend any provision of this Code; and
- d) disputes between the Market Operator and a Market Participant relating to the quantum of the Market Operator fee or, if applicable, to the System Operator fee, chargeable by the System Operator and the Market Operator to the Market Participant, unless the dispute relates to or is connected with the manner of calculation of the Market Operator or System Operator charge payable by the Market Participant in any given case.

14.1.1.3. Without limiting the generality of the foregoing, where any Dispute arises and the parties have commenced proceedings under this Chapter, the concerned parties shall comply with the procedures set forth in this Chapter and shall not make such Dispute a subject matter of any civil or other proceedings.

14.1.1.4. Any Dispute shall be lodged only within one year of the occurrence thereof and no Dispute shall be entertained after expiry of this time period and the Notice of Dispute shall be rejected.

14.2. CONTINUING OBLIGATIONS AND STAY OF ORDERS

14.2.1.1. Where a Dispute involves the payment or recovery of monetary amounts due under this Code, other than payment of a financial penalty, the amount shall be due and payable at the time specified for payment, notwithstanding initiation of a dispute resolution process whether under this Code or otherwise.

14.2.1.2. Where a Dispute involves the implementation of an order made or a direction given by the Market Operator under Chapter 16, the obligation of the Market Participant to comply with the order or direction, shall be stayed until 15 days after the appointment of Adjudication Tribunal, and thereafter for such period, if any, as may be determined by the Adjudicator.

14.3. PROCEDURE FOR SETTLEMENT OF A DISPUTE

14.3.1. NOTICE OF DISPUTE

- 14.3.1.1. Subject to Clause 14.1.1.2, any person feeling aggrieved or any other person who wishes to settle a matter under this Chapter shall submit to the Market Operator a written “Notice of Dispute” clearly explaining the Dispute or the grievance along with all necessary supporting documents.
- 14.3.1.2. The Market Operator shall acknowledge the receipt of the Notice of Dispute and review its completeness. The Market Operator may require the party issuing the Notice of Dispute to submit further information or additional documents, which shall be provided to the Market Operator within the specified time.

14.3.2. AMICABLE RESOLUTION

- 14.3.2.1. Within [20] Business Days of the receipt of the Notice of Dispute or the additional information or documents, as the case may be, the Market Operator and the party who issued the Notice of Dispute, shall make good faith efforts to negotiate and resolve the Dispute. The Market Operator and the other party to the Dispute shall designate a senior officer from their respective organizations, with the authority to negotiate the matter set out in the Notice of Dispute.
- 14.3.2.2. For application of the provisions of Clause 14.3.2.1, the Market Operator may constitute different committees of its officers and each committee will commence negotiations based on the nature of the Dispute and will prepare a report upon completion of the negotiations.
- 14.3.2.3. Upon successful negotiations, the Market Operator shall issue a notice of termination of the Dispute.
- 14.3.2.4. Disputes between the Market Operator and System Operator or a Service Provider on matters related to the Market and this Code that fail an amicable resolution shall be submitted to the Authority for decision. Expert Determination.

14.3.3. SOLE EXPERT

- 14.3.3.1. Failing an amicable settlement of the Dispute under Sub-Section 14.3.2, within a reasonable period of time, if the Dispute between the Market Operator and a Market Participant is of technical nature and does not involve directly a Dispute on Settlement, the same may be referred, by mutual agreement of the parties to the Dispute, to a sole expert. The sole expert shall be an independent and impartial person with relevant qualifications and experience and shall be appointed by agreement between the parties to the Dispute and who shall not, by virtue of personal connection or commercial interest, have a conflict between his own interest and his duty as a sole expert.
- 14.3.3.2. The Market Operator shall publish on its website a list of credible professionals having relevant qualification and experience which may be selected with mutual consent of the parties to perform the duties of the sole expert. Such list may be updated from time to time.

- 14.3.3.3. In the event, that the parties to the Dispute fail or are unable to agree on a sole expert within thirty (30) days or such longer period as may be mutually agreed by such parties, the sole expert shall be appointed by a body or an institution or an agency or a person, mutually agreed by such parties. In case, there is no agreement on the body or an institution or an agency or a person for appointing sole expert or such institution or agency or body fails to appoint a sole expert within thirty (30) days or such longer period as may be mutually agreed by such parties, the matter shall be referred to adjudication as provided under Sub-Section 14.3.4 below.
- 14.3.3.4. Any sole expert appointed shall be acting as an expert and not act as an adjudicator or arbitrator and the decision of the sole expert if not accepted by a party shall be subject to adjudication as provided below within 90 days thereof.
- 14.3.3.5. The sole expert and representatives of the disputing parties, with authority to settle the dispute, shall within fourteen (14) days after the date of appointment of the sole expert schedule a date to resolve the dispute. Matters discussed during such hearing shall be kept confidential and shall not be referred to in any subsequent proceedings.
- 14.3.3.6. If any party to the Dispute does not agree with the determination of the sole expert, the matter shall be referred to the adjudication as provided under Sub-Section 14.3.4 below.
- 14.3.3.7. If all parties to the Dispute agree with the determination of the sole expert, the Market Operator shall issue a notice of termination of the Dispute.

14.3.4. ADJUDICATION TRIBUNAL

- 14.3.4.1. Any Dispute that could not be resolved according to the provisions of Sub-Section 14.3.2 and 14.3.3 above, shall be resolved through an adjudication process as described below,.
- 14.3.4.2. An Adjudication Tribunal shall be appointed by the Market Operator and the parties to the Dispute with mutual agreement, as stipulated hereunder:
- a) If the Dispute is of a technical nature and could not be resolved according to the provisions of Sub-Section 14.3.2 or if the total amount of claims and counterclaims involved in a Dispute is less than One Million US Dollar, one Adjudicator shall be appointed, who shall be either an eminent professional in the power sector or a retired Judge of the Supreme Court or High Court; or
 - b) if the total amount of claims and counterclaims involved in a Dispute is more than One Million US Dollars, the Adjudication Tribunal shall consist of three members. Each party to the dispute shall appoint one Adjudicator (who shall be an eminent professional in the power sector) and both the Adjudicators shall appoint a retired judge of the Supreme Court or High Court as the chairperson of the Adjudication Tribunal with mutual agreement.
- 14.3.4.3. In the event that the parties to the Dispute fail or are unable to agree on a one Adjudicator, to be appointed under Clause 14.3.4.2.a) above, within thirty (30) days or such longer period as may be mutually agreed by such parties, the Adjudicator shall be appointed by a body or an institution or an agency or a person, mutually agreed by such parties.
- 14.3.4.4. In the event that the Adjudicators fail or are unable to agree on a the appointment of the chairperson of the adjudication panel, to be appointed under Clause 14.3.4.2.b) above, within thirty (30) days or such longer period as may be mutually agreed by such parties, the Adjudicator shall be appointed by a body or an institution or an agency or a person, mutually agreed by both the adjudicators.

14.3.4.5. Each member of the Adjudication Tribunal shall not have conflict of interest and shall act justly and impartially.

14.3.4.6. All proceedings before the Adjudication Tribunal shall not be treated as arbitration proceedings under the relevant arbitration laws as well as Applicable Law. However, in order to make the procedural matters consistent and uniform, while administering the proceedings, the Adjudication Tribunal shall adopt the procedures applicable for conducting arbitration proceedings in Pakistan.

14.3.4.7. The Dispute matter shall be decided preferably within six months and the decision shall be taken by the majority of the votes of the members of the adjudication Tribunal.

14.3.4.8. The decision of the Adjudication Tribunal shall be enforceable and binding upon all the parties unless stayed by the Authority.

14.3.5. APPEAL TO THE AUTHORITY

14.3.5.1. Within thirty days of issuance of the decision of the Adjudication Tribunal, any party to the Dispute may challenge the decision of the Tribunal before the Authority.

14.3.6. CONFIDENTIALITY

14.3.6.1. Any party may claim that a document, or information contained in a document, to be produced in the context of the adjudication of a Dispute is Confidential Information. The party making such a claim shall provide to the tribunal in writing the basis for its assertion. If the claim of confidentiality is confirmed by the tribunal, the Tribunal shall establish requirements for the protection of such document or information as may be necessary to protect the confidentiality and commercial value of such document or information, including requirements for disclosure of same only to the tribunal or independent advisor who has filed an undertaking as to confidentiality satisfactory to the tribunal and for in camera hearings at which only representatives of the disclosing party and such counsel and/or other independent advisor may be present.

14.3.7. RECORD-KEEPING AND PUBLICATION

14.3.7.1. The Market Operator shall maintain a record of all dispute resolution proceedings conducted. The Market Operator shall be responsible for ensuring that all measures are taken to prohibit access by any other person to any portion of such record which may be sealed and marked "CONFIDENTIAL" or otherwise identified as being confidential, except as may be required by Applicable Law.

14.3.7.2. The Market Operator may arrange publication of the following information on the MO website:

- a) notice of the appointment of the sole expert or the adjudication tribunal and its chairperson;
- b) notice of the date, time and place fixed for hearing; and
- c) a summary of the decision of the Adjudication Tribunal.

14.3.8. COSTS AND FEES

- 14.3.8.1. Each party to the Dispute shall bear its own costs incurred for the dispute resolution process. Initially, the fees of the sole expert and the Tribunal shall be borne on pro rata basis by the parties, however, in the decision, the sole expert or the Adjudication Tribunal shall decide which party have to bear the costs of the dispute resolution. If the decision is referred to the Authority, the final decision of Authority will prevail.

Chapter 15. MARKET DEVELOPMENT AND ASSESSMENT

15.1. MARKET DEVELOPMENT AND EVOLUTION

15.1.1. REVIEW OF LEGAL, POLICY AND REGULATORY FRAMEWORK

- 15.1.1.1. While implementing the Commercial Code, the Market Operator shall continuously review the overarching legal, policy and regulatory framework and propose recommendations to the competent authorities to enhance the efficiency of the Market. The Market Operator shall also abide by all the applicable legal instruments.

15.1.2. PRODUCT DESIGN AND MARKET EVOLUTION

- 15.1.2.1. The Market Operator shall recommend for the approval of Authority, any modifications in the design of the CTBCM, introduction of new products such as Ancillary Services market, day-ahead market, trading platforms etc.
- 15.1.2.2. The Market Operator shall be responsible to undertake the necessary research to enable the advanced features of competitive electricity markets by duly considering the maturity of the CTBCM.

15.1.3. INTERNATIONAL AFFAIRS

- 15.1.3.1. The Market Operator shall actively engage with international organizations involved in development and operation of the competitive electricity markets and shall form strategic partnerships with such organizations in order to learn from their experience to enhance the efficiency of CTBCM.

15.1.4. LIAISON WITH STAKEHOLDERS AND MARKET TRAININGS

- 15.1.4.1. The Market Operator shall actively engage with all stakeholders for the development of the competitive market and shall organize training and capacity building sessions in order to disseminate information among all stakeholders.

15.1.5. MARKET SIMULATIONS AND ANALYSIS

- 15.1.5.1. The Market Operator shall produce projections for future years about the results of the Market in order to give future perspectives to stakeholders.
- 15.1.5.2. The projections being carried out by the Market Operator shall be based on best estimates; however, the Market Operator shall not be held liable for any loss due to use of such projections in the decision making by the stakeholders.

15.2. MARKET ASSESSMENTS

15.2.1. MARKET ASSESSMENT FUNCTION

15.2.1.1. The Market Operator shall establish a separate department to assess the impacts of any activity related to the CTBCM or the conduct of a Market Participant, and thereafter prepare and submit reports to the Market Operator board. This department shall, *inter alia*, perform the following functions:

- a) Assess the impacts of the behaviour of the Market Participants including withholding of Capacity or manipulation of costs, abuse or possible abuse of market power;
- b) Assess and observe the implementation of this Code as well as the market design in consultation with the stakeholders, to identify and correct as early as possible any flaws or difficulties faced by parties operating in the Market;
- c) Provide input during the amendments to this Code; and
- d) Assess the pace of development of competition and market efficiency.

15.2.1.2. The Market Operator may engage consultants with expertise in collecting and analysing the information pertaining to the market behaviour of the Market Participants

15.2.2. REPORTING

15.2.2.1. The Market Operator shall prepare reports upon completion of any assessment and submit the same to MO board for consideration and issuance of necessary instructions. Such instructions may include:

- a) Issuance of warning letters to Market Participants involved in anti-competitive behaviours;
- b) Submission of recommendations to the Authority for taking punitive action if the behaviour of a Market Participant is of such nature that involves breach of terms and conditions of a License or other rules and regulations of the Authority;
- c) Submission of recommendations to the Authority regarding improvements in the market design to enhance efficiency and competition; or
- d) Submission of recommendations to CCRP if the assessment requires any amendment to this Code.

15.2.3. MARKET ASSESSMENT PROCEDURE.

15.2.3.1. The Market Operator shall monitor, evaluate and analyse the conduct of Market Participant related to the Market and this Code and the structure and performance of, and activities in, the CTBCM including, but not limited to:

- a) inappropriate or anomalous market conduct, including unilateral or interdependent behaviour resulting in manipulation, abuse or possible abuse of market power;
- b) identify actual or potential design flaws or procedural inefficiencies in this Code or in the Commercial Code Operational Procedures;
- c) actual or potential design flaws in the overall structure of the CTBCM and assess whether any one or more specific aspects of the underlying structure of the CTBCM is consistent with the efficient and fair operation of a competitive market; and
- d) such other matters as the Market Operator deems appropriate.

- 15.2.3.2. The Market Operator shall develop a system for gathering information as well as criteria for evaluation of the information to enable it to effectively carry out the monitoring functions. For this purpose, the Market Operator shall develop and publish on MO Website:
- a) a detailed catalogue of data and/or categories of data it requires from Market Participants, the System Operator and relevant Service Providers; and
 - b) a catalogue of the monitoring indicators that it will use to evaluate and analyse the data so acquired.
- 15.2.3.3. The Market Operator shall establish procedures for handling the acquired data including procedures for protecting Confidential Information.
- 15.2.3.4. The Market Operator shall not disclose, to any person, Confidential Information pertaining to any other person and acquired for the purpose of carrying out its monitoring functions.
- 15.2.3.5. Market Participants, Service Providers and the System Operator must provide to the Market Operator the data referred to in the catalogue described in Clause 15.2.3.2.a) once published by the Market Operator.
- 15.2.3.6. The catalogues in Clauses 15.2.3.2.a) shall be subject to such re-evaluation and refinement by the Market Operator as deemed appropriate.
- 15.2.3.7. Nothing in this Chapter shall prevent the Market Operator from conducting such monitoring, evaluation, or analysis as it deems appropriate from time to time.
- 15.2.3.8. The Market Operator shall, no less than annually and more frequently if decided by the Market Operator board, prepare routine reports on matters pertaining to its responsibilities pursuant to this Chapter, including a summary of all complaints or referrals filed and assessments commenced under Clause 15.2.3.11. Such reports shall contain the Market Operator's general assessment as to the state of competition within, and the efficiency of, the CTBCM.
- 15.2.3.9. The Market Operator may, from time to time, if required, consult the Market Participants regarding the activities identified in Section 15.2, provided, however that no Confidential Information shall be disclosed to any Market Participant without prior concurrence of the concerned Market Participant to whom such Confidential Information belongs.
- 15.2.3.10. The Market Operator shall prepare a report if it, while carrying out its duties, identifies in matters related to the Market and this Code that:
- a) a Market Participant is or may be acting contrary to or may not be in compliance with statutory authority falling within the jurisdiction of a person, board, agency or tribunal including, but not limited to, the Authority; or
 - b) identifies that a Market Participant is or may be breaching or violating a provision of this Code; or
 - c) that an Amendment to this Code may be required;
 - d) If the report recommends that an Amendment to this Code, a copy of such report shall be sent to the Commercial Code Review Panel. If the report identifies a breach committed or that might be or might have been committed by a Market Participant, a copy of such report shall be sent to the concerned Market Participant as well.

- 15.2.3.11. Any person desiring the Market Operator to conduct an assessment of any matter related to the Market and this Code as referred to in Clause 15.2.3.1, or any board, agency or tribunal wishing to refer any such matter related to the Market and this Code to the Market Operator for assessment, shall submit a complaint or make a referral in writing to the Market Operator, setting out:
- a) the name and address of the complainant or person referring the matter related to the Market and this Code;
 - b) the details of the complaint or referral;
 - c) sufficient and adequate ~~any~~ information or facts in support the complaint or referral, that provide valid and verifiable information to justify the complaint or referral; and
 - d) the signature of the person making the complaint or referral or, where that person is not an individual, the signature of a duly authorised officer or duly authorised representative of the person.
- 15.2.3.12. The Market Operator may require the person submitting the complaint or making referral to provide additional information relating thereto within such time as may be specified by the Market Operator.
- 15.2.3.13. The Market Operator may refuse to commence an assessment or terminate an ongoing assessment into any matter related to the Market and this Code, submitted or referred to it under Clause 15.2.3.11, where, in its discretion, and adequate justification, it determines that the submitted complaint or referral is:
- a) frivolous, vexatious, otherwise not material or was not or is no longer warranted;
 - b) within the exclusive jurisdiction of another person, board, agency or tribunal; or
 - c) deficient and the person making the complaint or referral fails to provide sufficient justification or the additional information pursuant to Clause 15.2.3.12 within the timeframe specified by the Market Operator.
- 15.2.3.14. The Market Operator shall prepare a report after its decision to refuse to commence an assessment or terminate an ongoing assessment and advise the person who submitted the complaint or made the referral accordingly. Such report shall set out:
- a) the nature of the complaint or referral; and
 - b) the reasons for which the Market Operator determined that no assessment was warranted or that the assessment should be terminated, as the case may be.
- 15.2.3.15. Where the Market Operator determines that there is a prima facie case in respect of the conduct of a Market Participant in matters related to the Market and this Code and an assessment of such conduct and its impact is warranted, it shall inform the relevant person accordingly.
- 15.2.3.16. Upon completion of an assessment under Clause 15.2.3.15, the Market Operator shall inform the relevant person about the results of the assessment and informing whether any remedial action will be taken against it. On the written request of the person who submitted the complaint or made the referral, the Market Operator shall inform that person of the outcome of the assessment.
- 15.2.3.17. For the purposes of carrying out an assessment, the Market Operator may require any Market Participant, Service Provider, the System Operator or the person who submitted the complaint or made the referral to provide information in accordance with Clause 15.2.3.18 and 15.2.3.18.d).

15.2.3.18. A request for information pursuant to Clause 15.2.3.17 shall:

- a) be in writing;
- b) specify the information requested;
- c) specify a time for provision of the information; and
- d) specify whether the information shall be certified under oath or statutory declaration by the person or, its duly authorised representative thereof, as being correct and complete to the best of that person's knowledge.

15.2.3.19. Any person shall provide to the Market Operator the information required pursuant to Clause 15.2.3.17 within specified time. Failure to provide information may warrant an enforcement action under Chapter 16 or termination of the assessment, as deemed appropriate.

15.2.3.20. Upon completion of each assessment, the Market Operator shall prepare a report containing, *inter alia*, the following information:

- a) The matter that was assessed.
- b) Whether the matter came to the attention of the Market Operator by way of a referral or complaint or whether the Market Operator decided on its own to assess the matter.
- c) The findings of the Market Operator.
- d) Whether the matter was concluded or the Market Operator was unable to reach a firm conclusion on the matter assessed and the reasons for such inability.
- e) Where the findings of the Market Operator include findings to the effect that a Market Participant has engaged in inappropriate conduct and any response provided by the Market Participant to such findings.
- f) The recommendations, if any, of the Market Operator and the reasons for such recommendations.

15.2.3.21. During an assessment, if the Market Operator determines that a Market Participant may be engaged in inappropriate conduct including, but not limited to, a breach of this Code, it may inform the relevant Market Participant accordingly and providing it with opportunity to respond in writing within a specified time.

15.2.3.22. Upon receipt of the response or if no response is received within the specified time, the Market Operator, after consideration of the response, shall include its finding in the report.

15.2.3.23. Where the Market Operator determines that action is urgently required in respect of the matters which are revealed during the course of an assessment, the Market Operator may make an interim report to that effect.

15.2.4. DISPUTE RESOLUTION AND OTHER RELIEF

15.2.4.1. The dispute resolution procedures under Chapter 14 shall not apply to the activities carried out by the Market Operator under this Chapter.

15.2.5. PUBLICATION AND PROVISION OF DATA

- 15.2.5.1. Any interested party may request that the Market Operator to provide data, which is not Confidential Information collected or created in the course of the Market assessment activities described in Section 15.2**Error! Reference source not found.** and which is not otherwise required to be published by the Market Operator or the System Operator pursuant to this Code or the Grid Code. Such data may be provided unless, a justification is provided by the Market Operator that such disclosure is reasonably likely to compromise the work of the Market Operator.

Chapter 16. ENFORCEMENT

16.1. COMPLIANCE AND BREACHES

16.1.1. COMPLIANCE

- 16.1.1.1. The Market Operator, System Operator, Service Providers and all Market Participants shall comply with this Code as applicable.
- 16.1.1.2. The Market Operator shall monitor compliance with the provisions of this Code, as applicable, by all Market Participants and Service Providers.
- 16.1.1.3. Any Market Participant which has evidence that another Market Participant or a Service Provider has violated or is violating the provisions of this Code, shall inform the Market Operator immediately along with all supporting documents.

16.1.2. PROCEDURE CONCERNING ALLEGED BREACHES OF THIS CODE

- 16.1.2.1. Where this Code provides for consequences or penalties in respect of a breach of a particular Clause or provision by a Market Participant or Service Provider, those consequences or penalties shall apply in the circumstances and in the manner provided for in the relevant Clauses or provisions, in addition to any other penalties as may be imposed pursuant to Sub-Section 16.3.1.
- 16.1.2.2. In case the Market Operator considers, on the basis of its own information or upon receipt of written information from any person, that a Market Participant may have breached or may be breaching any provision of this Code, other than a breach constituting an Event of Default under Sub-Section 16.2.1, and it is appropriate that an enforcement action may be taken against that Market Participant, the Market Operator shall issue a notice, with a copy to the Authority, to the relevant Market Participant requiring it to provide the necessary explanation regarding the alleged breach.
- 16.1.2.3. The Market Participant shall submit the required explanation to the Market Operator within specified time and, if required, request for a representation before the Market Operator to present its case.
- 16.1.2.4. Upon review of the submitted explanation and, if applicable, consideration of arguments presented during the representation, the Market Operator may issue a show cause notice, with a copy to the Authority, to the relevant Market Participant specifying the following:
 - a) The alleged breach and the time within which the breach must be remedied.
 - b) The relevant evidence or information available with the Market Operator.
 - c) The remedial actions that will be taken if the breach is not remedied.
 - d) The time within which the Market Participant may submit written response.
 - e) The right of the Market Participant to request for a representation before the Market Operator to discuss the matter.
- 16.1.2.5. Where the Market Participant has requested a meeting pursuant to Clause 16.1.2.4.e), the Market Operator shall provide the Market Participant with a reasonable opportunity to present its case.

- 16.1.2.6. After expiry of the time specified in the notice and consideration of the response, if any, and holding of the meeting, if requested, the Market Operator may:
- a) determine that the Market Participant has not breached this Code ;
 - b) determine that the Market Participant is in breach of this Code ;
 - c) require that the Market Participant provide further information regarding the alleged breach; or
 - d) conduct such further assessment into the matter as the Market Operator may deem appropriate.
- 16.1.2.7. Where the Market Operator determines that a Market Participant has breached this Code, the Market Operator may require such Market Participant, to do any one or more of the following:
- a) direct the Market Participant to take, within a specified period, such actions as may be necessary to comply with this Code;
 - b) direct the Market Participant to cease, within a specified period, the act, activity or practice constituting the breach;
 - c) impose additional or more stringent record-keeping or reporting requirements on the Market Participant;
 - d) issue a non-compliance letter in accordance with Sub-Section 16.3;
 - e) take any remedial actions as per Market Participation Agreement; or
 - f) take such other action as may be provided for in this Code in respect of the provisions that have been breached by the Market Participant.
- 16.1.2.8. A Market Participant shall comply with an order of the Market Operator made pursuant to Clause 16.1.2.7 as soon as the order is effective.

16.2. SUSPENSION AND TERMINATION ORDERS

16.2.1. EVENTS OF DEFAULT

- 16.2.1.1. Each of the following shall constitute as an Event of Default for a Market Participant:
- a) the Market Participant fails to comply with an order of the Market Operator made pursuant to Clause 16.1.2.7 once the order has become effective.
 - b) a Market Participant fails to comply with the decision of the Adjudication Tribunal under Chapter 15 unless such decision has been stayed;
 - c) the Market Participant doesn't pay the required amount in full under a Security Cover within [one Business Day] after the Payment Due Date;
 - d) the Market Participant fails to renew the Security Cover required to be supplied under Chapter 13 of this Code within the time specified by the Market Operator;
 - e) it becomes unlawful for the Market Participant to comply with any of its obligations under this Code, or any other obligation owed to the Market Operator or it is claimed to have become so by the Market Participant;
 - f) a licence, including a Licence issued by the Authority pursuant to the Act, permit or other authorization necessary to enable the Market Participant to conduct its business or activities is suspended, revoked or otherwise ceases to be in full force and effect, provided that where a Market Participant holds more than one licence and only one such

licence has been suspended, revoked or otherwise ceases to be in full force and effect, the Event of Default and any action taken by the Market Operator with respect thereto shall relate only to such licence;

- g) The Authority informs the Market Operator that procedures have been initiated that may revoke the License;
- h) the Market Participant enters into or takes any action to enter into an arrangement, composition or compromise with, or an assignment for the benefit of, all or any class of their respective creditors or members, or a moratorium involving any of them;
- i) the Market Participant states that it is unable to pay from its own money its debts when they fall due for payment;
- j) a receiver or an administrator is appointed in respect of any property of the Market Participant which is used in or relevant to the performance by the Market Participant of its obligations under this Code;
- k) an administrator, liquidator, trustee in bankruptcy or person having a similar or analogous function under the laws of any relevant jurisdiction is appointed in respect of the Market Participant, or any action is taken to appoint such person;
- l) an application is made for the winding up or dissolution or a resolution is passed or any steps are taken to pass a resolution for the winding up or dissolution of the Market Participant;
- m) the Market Participant is wound up or dissolved, unless the notice of winding up or dissolution is discharged;
- n) the Market Participant is taken to be insolvent or unable to pay its debts under any applicable legislation;
- o) the Market Participant ceases to satisfy any material requirement imposed upon it as a condition of its authorization to participate in the CTBCM;
- p) the Market Participant fails to inform the Market Operator of a material change in the information required under its Admission Application pursuant to Sub-Section 2.3.2; or
- q) the Market Participant persistently commits breach of this Code or the Grid Code; or
- r) any other event, circumstances or situation that has been considered as an Event of Default by the provisions of this Code.

16.2.1.2. A Market Participant shall inform the Market Operator immediately upon becoming aware of any circumstance that may give rise to or of the occurrence of an Event of Default.

16.2.1.3. Where a Market Participant is involved in an Event of Default, the Market Operator may:

- a) issue to the concerned Market Participant a Default Notice specifying the alleged default and requiring the Market Participant to remedy the default within such time as may be specified in the Default Notice, which time shall not be more than [2] Business Days; and/or
- b) call on a Security Cover of the concerned Market Participant and recover such amount as the Market Operator determines appropriate that represents the amount of any money which is actually owed by the concerned Market Participant to the Market Operator or any of its contingent liabilities towards the Market Operator under this Code; or
- c) Issue a Suspension Order and a request for temporary or permanent disconnection, as the case may be, to the relevant Transmission or Distribution Licensee, if the matter is

of such nature that require urgent action and the provisions of Sub-Section 16.2.2 shall, *mutatis mutandis*, apply

16.2.1.4. Where the Market Operator issues a Default Notice to a Market Participant, the Market Operator shall also inform the Authority and the Transmission or Distribution Network Service Provider, where the Market Participant is connected:

- a) about the issuance of the Default Notice;
- b) about the time within which the Market Participant is required to remedy the default as specified in the Default Notice.

16.2.1.5. Once the default has been remedied by the Market Participant, the Market Operator shall inform the Authority, the relevant Transmission or Distribution Network Service Provider, if required.

16.2.1.6. A Market Participant may remedy an Event of Default, where the Default Notice relates to payment of amounts due to the Market Operator under this Code, including Clauses 16.2.1.1.b) to 16.2.1.1.d) and 16.2.1.1.h) to 16.2.1.1.n), as follows:

- a) by paying all Amounts Payable under this Code, together with any Default Interest in accordance with any Debit Notification issued by the Market Operator and any costs and expenses determined by the Market Operator to have been incurred by it by reason of the default; and
- b) by providing additional Security Cover which complies with the requirements of Chapter 13.

16.2.1.7. Notwithstanding that the Event of Default may have been remedied by the Market Participant, the Market Operator may, where it considers that it is in the interest of preserving the integrity of the CTBCM, impose such conditions on the authorization of a Market Participant to participate in the Energy or Capacity Balancing Mechanisms as deemed appropriate.

16.2.2. SUSPENSION ORDERS

16.2.2.1. If an Event of Default is not remedied within the time specified in the Default Notice or within such longer period as may be allowed by the Market Operator in writing, a notice of intention indicating the following may be issued by the Market Operator:

- a) a Suspension Order to the Market Participant suspending or restricting all or any of the Market Participant's rights to participate in the CTBCM; and/or
- b) a request to the relevant Transmission or Distribution Network Service Provider, requesting the temporary or permanent disconnection, as the case may be, of the relevant Facilities or equipment of the Market Participant.

16.2.2.2. The Market Operator shall provide a copy of the notice issued pursuant to Clause 16.2.2.1 to the relevant Transmission or Distribution Network Service Provider.

16.2.2.3. Upon receipt of the notice issued pursuant to Clause 16.2.2.1, the concerned Market Participant shall have the right to request, within 2 Business Days, a meeting with the Market Operator to justify that the Suspension Order, the request for disconnect, or both, as the case may be, shall not be issued.

16.2.2.4. Where the Market Participant:

- a) has not requested a meeting pursuant to Clause 16.2.2.3, or has notified the Market

- Operator that it does not intend to request such a meeting; or
- b) has requested a meeting, then upon conclusion of a meeting, the Market Operator may:
- b.1. issue a Suspension Order to the Market Participant suspending or restricting all or any of the Market Participant's rights to participate in the CTBCM; and/or
 - b.2. if considered appropriate, issue, with a copy to the Market Participant and the Authority, a request for disconnection to the relevant Transmission or Distribution Network Service Provider requesting temporary or permanent disconnection, as the case may be, of the relevant Facilities or equipment of the Suspended Market Participant from the Transmission Network or the Distribution Network as the case may be; and/or
 - b.3. make such other order with due justification for remedial actions regarding the default.
- 16.2.2.5. Where the Market Participant has requested a meeting pursuant to Clause 16.2.2.3, the Market Operator, within ten [10] Business Days of the date of receipt of such request, shall hold a meeting providing the Market Participant with a reasonable opportunity to justify that why the Suspension Order, the request for disconnection or both should not be issued against it. In such circumstances, the Market Operator shall not issue either the Suspension Order or the disconnection request until such meeting has been held.
- 16.2.2.6. The Market Operator may withdraw a Suspension Order if the Event of Default, which caused issuance of the Suspension Order, is remedied and there are no outstanding Events of Default with respect to the Suspended Market Participant, provided that the Market Operator may, as a condition of withdrawing a Suspension Order, impose such conditions on the Market Participant to participate in the CTBCM, as deemed appropriate including:
- a) establishing a lower buying and selling limit for the Market Participant than would otherwise be the case under this Code;
 - b) establishing a more frequent and continuing schedule of payments than would otherwise be the case under this Code; or
 - c) imposing more stringent Security Cover requirement than would otherwise be the case under Chapter 13.
- 16.2.2.7. Following the issuance of a Suspension Order to a Market Participant, the Market Operator may do one or more of the following to give effect to the Suspension Order:
- a) reject registering any new Contract submitted by the Suspended Market Participant or suspend its existing Contracts registered with the Market Operator;
 - b) withhold the payment of any amounts to the Suspended Market Participant under this Code; ~~or~~
 - c) make such further order or issue such directions to the Suspended Market Participant with adequate justification for enforcement of the Suspension Order.

- 16.2.2.8. The Transmission or Distribution Network Service Provider, as the case may be, which receives a request for disconnection from the Market Operator, shall disconnect the Facilities or equipment of the Suspended Participant referred to in the request for disconnection, on the date and at the time specified in the request for disconnection. The Transmission or Distribution Network Service Provider, as the case may be, shall not reconnect such Facilities or equipment until it receives the notice referred to in Clause 16.2.2.10, and shall reconnect such Facilities or equipment on the date and at the time specified in such notice. No costs associated with disconnection and reconnection shall be borne by the Market Operator.
- 16.2.2.9. The Market Operator may at any time and upon notice to the Suspended Market Participant, extend, stay the operation of or withdraw a Suspension Order as well as the request for disconnection or modify the conditions of any Suspension Order as well as the request for disconnection, and shall inform the Authority, the Transmission or Distribution Network Service Provider, as the case may be, accordingly.
- 16.2.2.10. The Market Operator shall, immediately following the issuance of a Suspension Order, publish a notice on the MO Website and issue a public statement that the rights of the Suspended Market Participant to participate in the CTBCM have been Suspended or restricted, including details of the suspension or restriction, and whether a request for disconnection has also been issued in respect of the Suspended Market Participant. The Market Operator shall issue a public notice promptly after a Suspension Order and, where applicable, a request for disconnection, is withdrawn, extended, modified or stayed and publish the same on the MO Website.
- 16.2.2.11. With effect from the date of issuance of Suspension Order, the Suspended Market Participant shall not be eligible to trade or enter into any transaction in the CTBCM to the extent specified in the Suspension Order.
- 16.2.2.12. The Suspended Market Participant shall comply with the terms of the Suspension Order issued to it. A Suspended Market Participant shall also comply with any subsequent order, including any directions or arrangements which may be made for the purpose of giving effect to the Suspension Order, made by the Market Operator.
- 16.2.2.13. A Suspended Market Participant shall remain liable for all of its obligations as a Market Participant, other than as expressly provided in the Suspension Order, including but not limited to, the payment of any amounts to the Market Operator in respect of any Energy withdrawn while the Suspension Order is in effect. Issuance of a Suspension Order shall not affect any liability or obligation of a Suspended Market Participant for the payment of any amounts to the Market Operator or any other person which were incurred or arose under this Code:
- a) prior to the date on which the Suspension Order was issued; or
 - b) during any period in which the operation of the Suspension Order has been stayed; regardless the date on which any claim relating thereto may be made.

16.2.3. REVOCATION OF ENROLMENT AND TERMINATION OF MARKET PARTICIPATION AGREEMENT

- 16.2.3.1. The Market Operator may, by Termination Order, revoke the enrolment of a Market Participant and terminate its Market Participation Agreement as well as its right to participate in the CTBCM where a Suspended Market Participant:
- a) has not remedied, to the satisfaction of the Market Operator, the Event of Default which

caused the issuance of the Suspension Order within [30] Business Days of the date of issuance of the Suspension Order or any other date as specified by the Market Operator; or

- b) has informed the Market Operator that it is not likely to remedy such Event of Default.

16.2.3.2. Notwithstanding that a Market Participant may have remedied breach of this Code pursuant to the non-compliance letters or other remedial actions taken against it in accordance with Sub-Section 16.3.1, the Market Operator may, by Termination Order, revoke the enrolment of a Market Participant and terminate a Market Participant's right to participate in the CTBCM if a Market Participant has been found to be in breach of this Code on a persistent basis.

16.2.3.3. Where the Market Operator intends to issue a Termination Order, the Market Operator may issue a notice of intention, including the reasons thereof, to the concerned Market Participant indicating the following may be issued:

- a) a Termination Order to revoke the enrolment of the Market Participants and the reasons thereof;
- b) a request to the relevant Transmission or Distribution Network Service Provider, if not already issued, for permanent disconnection relevant Facilities or equipment of the Terminated Market Participant from the Transmission Network or the Distribution Network as the case may be.

16.2.3.4. The Market Operator shall provide a copy of the notice issued pursuant to Clause 16.2.3.3 to the Authority and the relevant Transmission or Distribution Network Service Provider

16.2.3.5. Upon receipt of the notice issued pursuant to Clause 16.2.3.3, the concerned Market Participant shall have the right to request, within 2 Business Days, a meeting with the Market Operator to justify that the Termination Order, the request for disconnection, or both, as the case may be, shall not be issued.

16.2.3.6. Where the Market Participant:

- a) has not requested a meeting pursuant to Clause 16.2.3.5, or has notified the Market Operator that it does not intend to request such a meeting; or
- b) has requested a meeting, then upon conclusion of a meeting, the Market Operator may:
 - b.1. issue a Termination Order to the Market Participant revoking its enrolment or restricting all of the Market Participant's rights to participate in the CTBCM; and/or
 - b.2. if not already issued, issue, with a copy to the Market Participant, a request to the relevant Transmission or Distribution Network Service Provider requesting permanent disconnection of the relevant Facilities or equipment of the Terminated Market Participant from the Transmission Network or the Distribution Network as the case may be; and/or
 - b.3. make such other order with adequate justification for remedial of the default.

16.2.3.7. Where the Market Participant has requested a meeting pursuant to Clause 16.2.3.5, the Market Operator, within ten [10] Business Days of the date of receipt of such request, shall hold a meeting providing the Market Participant with a reasonable opportunity to justify that why the Termination Order, the Disconnection Order or both should not be issued against it. In such circumstances, the Market Operator shall not issue either the Termination Order, the Disconnection Order or any other order until such meeting has been held.

- 16.2.3.8. Upon receipt of the request for disconnection, the Transmission or Distribution Network Service Provider shall, on the date and at the time specified in the request for disconnection, disconnect the relevant Facility or equipment of the Terminated Market Participant referred to in the request for disconnection. The Transmission or Distribution Network Service Provider, as the case may be, shall not reconnect such Facilities or equipment until the Terminated Market Participant is again admitted as a Market Participant in accordance with this Code, in case it is exempted from enrolment, it has cleared all its obligations with the Market Operator. No costs associated with disconnection and reconnection shall be borne by the Market Operator.
- 16.2.3.9. With effect from the date of issuance of the Termination Order, all rights of the Terminated Market Participant to participate in the CTBCM shall stand terminated.
- 16.2.3.10. The Market Operator shall, immediately following the issuance of a Termination Order, publish the Termination Order on the MO Website and issue a public announcement that the rights of the Terminated Market Participant to participate in the CTBCM have been terminated and that a request for disconnection has been issued in respect of the Terminated Market Participant.
- 16.2.3.11. A Terminated Market Participant shall remain subject to and liable for all of its obligations and liabilities as a Market Participant, which were incurred or arose under this Code prior to the date on which it ceases to be a Market Participant, regardless of the date on which any claim relating thereto may be made.
- 16.2.3.12. A Terminated Market Participant who desires to be readmitted as a Market Participant shall be required to re-apply for enrolment to participate in the CTBCM, in accordance with the provisions of Chapter 2. The Market Operator may impose such additional terms and conditions on the right of the Market Participant to participate in the CTBCM as deemed appropriate in the circumstances, whether or not such terms and conditions are otherwise applicable to other Market Participants or has been provided under this Code.

16.3. NON-COMPLIANCE

16.3.1. NON-COMPLIANCE WARNING LETTERS AND OTHER REMEDIAL ACTIONS

- 16.3.1.1. This Sub-Section sets forth the manner in which the Market Operator may issue non-compliance warning letters and or take other remedial actions against the Market Participants for breaches of this Code.
- 16.3.1.2. Where a remedial action is provided in respect of a breach of this Code, the Market Operator shall:
- a) determine the level of non-compliance by the Market Participant in accordance with Clause 16.3.1.3;
 - b) determine the rate of recurrence of non-compliance by the Market Participant in accordance with Clause 16.3.1.4;
 - c) based on the determinations made in accordance with paragraphs (a) and (b), determine whether to issue a non-compliance warning letter take other remedial actions; and
 - d) where a determination is made to take other remedial actions, it shall be taken in accordance with Clause 16.3.1.5.

16.3.1.3. The Market Operator shall determine the level of non-compliance referred to in Clause 16.3.1.2.a) above as follows:

- a) Level “L1” shall be determined where the Market Participant has complied in part, but not in whole, with all the requirements of a Clause or a provision of this Code and where the Market Participant has, on its own initiative, informed the Market Operator on a timely basis of the non-compliance, the reasons for non-compliance and the manner in and the time within which such non-compliance will be remedied;
- b) Level “L2” shall be determined where the Market Participant has failed to comply with all of the requirements of a Clause or a provision of this Code and where the Market Participant has, on its own initiative, informed the Market Operator on a timely basis of the non-compliance, the reasons for non-compliance and the manner in which and the time within which such non-compliance will be remedied;
- c) Level “L3” shall be determined where the Market Participant has failed to comply, in whole or in part, with all of the requirements of a Clause or a provision of this Code and has failed to inform the Market Operator of the non-compliance on its own initiative and on a timely basis but, at the Market Operator’s notice and within the time specified in the notice, informs the Market Operator of the reasons for non-compliance and the manner in which and the time within which such non-compliance will be remedied; and
- d) Level “L4” shall be determined where the Market Participant has failed to comply, in whole or in part, with all of the requirements of a Clause or provision this Code and has failed to inform the Market Operator of the non-compliance on its own initiative, and on a timely basis, and has failed to respond to the Market Operator’s notice, within the time specified in the notice, for a statement of the reasons for such non-compliance and of the manner in which and the time within which such non-compliance will be remedied.

16.3.1.4. The Market Operator shall determine the rate of recurrence of non-compliance as referred to in Clause 16.3.1.2.b) based on the frequency and duration of the breaches of this Code.

16.3.1.5. Subject to the provisions of Clause 16.3.1.6, based on the determinations made under Clause 16.3.1.2 and the provisions of the table set forth below, the Market Operator may issue a warning letter for non-compliance and/or impose a financial penalty within the ranges specified in the following table:

Table 3: Remedial Actions

Level of Non-Compliance	Range of Sanctions
L1	Non-Compliance warning letter
L2	Non-Compliance warning letter and/or remedial action under Market Participation Agreement
L3	Non-Compliance warning letter and/or remedial action under Market Participation Agreement
L4	Non-Compliance warning letter and remedial action under Market Participation Agreement

16.3.1.6. In taking the remedial actions as provided in the table in Clause 16.3.1.5, the Market Operator, and where appropriate, the Adjudication Tribunal, shall have regard to:

- a) the circumstances in which the breach occurred;
- b) the severity of the breach;
- c) whether the breach was inadvertent, negligent, deliberate or otherwise;
- d) the length of time the breach was not remedied;
- e) the actions of the Market Participant on becoming aware of the breach;
- f) whether the Market Participant disclosed the matter to the Market Operator on its own or whether it was notified by the Market Operator;
- g) any benefit that the Market Participant obtained or expected to obtain as a result of the breach;
- h) any previous breach by the Market Participant of this Code;
- i) the impact of the breach on other Market Participants;
- j) the impact of the breach on the CTBCM as a whole; and/or
- k) such other relevant matters as the Market Operator considers appropriate.

16.3.1.7. Where:

- a) a Market Participant has breached a Clause or a provision for which no penalty is specified in the Commercial Code; or
- b) a Market Participant has failed to comply with an order made pursuant to Sub-Section 16.1.2,
the Market Operator may, without prejudice to any other enforcement actions that are provided in this Code, take remedial actions against the Market Participant as per Market Participation Agreement after having regard to the criteria set forth in Clause 16.3.1.6 and to the factors noted in Clause 16.3.1.8.b), where applicable.

16.3.1.8. The Market Operator may take severe remedial actions against a Market Participant otherwise provided for in Clause 16.3.1.5 where:

- a) the Market Operator determines that the impact of the Market Participant's breach on the CTBCM is particularly severe; or
- b) the rate of recurrence of non-compliance by the Market Participant with this Code is of such frequency or duration as to warrant the imposition of a higher financial penalty.

16.3.1.9. No additional remedial actions shall be taken in respect of a breach of this Code for which a remedial action has already been taken, provided that nothing in this Clause shall prevent the Market Operator from taking remedial actions for failure by a Market Participant to remedy a breach in respect of which a remedial action has been taken against it or if there is any repetition or continuation of such breach.

16.3.2. OFFICERS AND AGENTS

- 16.3.2.1. If any director, officer, employee, partner or agent of a Market Participant, the Transmission Service Provider, the Distribution Network Service Provider, the System Operator or the Market Operator does any act or refrains from doing any act which if done or omitted to be done, as the case may be, by a Market Participant, the Transmission Service Provider, the Distribution Network Service Provider, the System Operator or the Market Operator would constitute a breach of this Code such act or omission shall be deemed, for the purposes of this Chapter of the Commercial Code, to be the act or omission of the Market Participant, the Transmission Service Provider, the Distribution Network Service Provider, the System Operator or the Market Operator, as the case may be.

16.3.3. NON-COMPLIANCE BY SERVICE PROVIDERS AND SYSTEM OPERATOR

- 16.3.3.1. In case the Market Operator considers, on the basis of its own information or upon receipt of written information from any person, that a Service Provider or the System Operator may have breached or may be breaching any provision of this Code, including an Event of Default under Sub-Section 16.2.1, the process provided in Sub-Section 16.1.2 shall, *mutatis mutandis*, apply.
- 16.3.3.2. If the Service Provider or the System Operator, as the case may, doesn't comply with the order made pursuant to Clause 16.1.2.7, the Market Operator shall inform the Authority.

Chapter 17. DISCLOSURE, ACCESS AND CONFIDENTIALITY

17.1. MAINTENANCE OF RECORDS

17.1.1.1. The Market Operator shall make and publish, and may from time-to-time revise, a record keeping policy for Records, or classes of Records prepared by the Market Operator, the System Operator, the Service Providers and Market Participants in connection with this Code.

17.1.1.2. The Market Operator, the System Operator and each Market Participant and Service Provider shall retain Records or classes of Records prepared for or in connection with this Code for at least five [5] years or any other longer period as per Applicable Law.

17.1.1.3. Where a Record is:

- a) prepared in one or more draft forms;
- b) not circulated in any such draft form by the person preparing it; and
- c) subsequently prepared in final form;

only the final form of the Record is required to be retained.

17.2. INFORMATION DISCLOSURE

17.2.1.1. Where a person is required by this Code to disclose or provide a Record to another person, such Record shall be disclosed or provided within the time specified in, and in the form and manner required by, the applicable provisions of this Code. Where no time is specified in relation to the disclosure or provision of a specific Record, the Record shall be disclosed or provided within a reasonable time.

17.2.1.2. A Record disclosed or provided shall be, to the best of the disclosing person's knowledge, true, correct and complete at the time at which such disclosure or provision is made. No person shall knowingly or recklessly disclose or provide a Record that, at the time and in light of the circumstances in which such disclosure or provision is made, is misleading or deceptive or does not state a fact that is required to be stated or that is necessary to make the statement not misleading or deceptive.

17.2.1.3. Where a person discovers that a Record disclosed or provided by it to any other person was, at the time at which it was disclosed or provided, or becomes untrue, incorrect, incomplete, misleading or deceptive, the disclosing or providing person shall immediately rectify the situation and disclose or provide the true, correct, complete, not misleading or not deceptive Record to the person to whom the original or currently untrue, incorrect, incomplete, misleading or deceptive Record had been disclosed or provided.

17.2.1.4. The System Operator and the Market Operator are entitled to use any Record obtained pursuant to this Code and the Grid Code in performing their functions and duties under this Code, the Grid Code, their Licences or Applicable Law.

17.3. ACCESS TO THE INFORMATION

17.3.1. ACCESS TO INFORMATION AND CONFIDENTIALITY

- 17.3.1.1. Subject to the Applicable Law, the Market Operator shall not disclose the Confidential Information to any person. However, upon application by an interested person, the Market Operator may disclose the Non-Confidential Information which is not available on MO Website on such terms and conditions as may be deemed appropriate.
- 17.3.1.2. All information, other than Confidential Information, required by this Code to be made available to Market Participants or other persons shall be either published by the Market Operator on the MO Website or may be provided in such manner and within the time prescribed by this Code. Where no time is specified in respect of the provision of a particular piece of information, such information shall be published or made available within a reasonable time.
- 17.3.1.3. The Market Operator shall determine and classify which information may be published on the MO Website related to the CTBCM for Market Participants, the Service Providers, other stakeholders and the public in general.
- 17.3.1.4. The following information and documents shall be published on the MO Website:
- a) the Market Participant Admission Application form;
 - b) the standard Market Participation Agreement;
 - c) The standard Service Provider Agreement;
 - d) The Commercial Code;
 - e) The Grid Code;
 - f) The Commercial Code amendment proposals under consideration;
 - g) The Commercial Code Operating Procedures;
 - h) The Market Participants Register;
 - i) Load forecasts and load statistics of the Grid System;
 - j) The System Marginal Price;
 - k) The results of the Balancing Mechanism for Capacity; and
 - l) The results of the verification compliance with the Capacity Obligations; and
 - m) The Capacity Certificates issued for each Generator; and
 - n) Any other information or documents as deemed appropriate and/or directed by the Authority.
- 17.3.1.5. The Operator shall develop a secured portal where information may be accessed by the Market Participants, Service Providers and Enrolled Persons in a secured manner. The portal may, *inter alia*, include the following:
- a) The reports issued by the Market Operator or the System Operator where this Code requires that such report shall be provided to the Market Participants or Service Providers or Enrolled Persons;
 - b) Compensations for Ancillary Services; and
 - c) Expected and actual Must Run Generation, and its compensations.

17.3.1.6. No Market Participant, Service Provider, the System Operator or the Market Operator:

- a) shall disclose Confidential Information to any person, except as expressly permitted by this Code;
- b) shall permit access to Confidential Information by any person not authorized to have such access pursuant to this Code; and
- c) shall use or reproduce Confidential Information for a purpose other than the purpose for which it was disclosed, or another purpose contemplated by this Code.

17.3.1.7. The Market Operator shall establish and maintain internal controls and measures, including measures relating to the protection of Confidential Information that enable the Market Operator to monitor and comply with its obligations.

17.3.2. EXCEPTIONS

17.3.2.1. Unless prohibited by the Applicable Law, nothing in this Code shall prevent:

- a) the disclosure, use or reproduction of information, if the information is, at the time of disclosure, generally and publicly available other than as a result of a breach of confidence by a Market Participant or the Market Operator;
- b) the disclosure of Confidential Information by a Market Participant or the Market Operator to:
 - b.1. its director or employee, where such director or employee requires the Confidential Information for the due performance of that person's duties and responsibilities; or
 - b.2. its legal or other professional advisor, auditor or other consultant, where such legal or other professional advisor, auditor or other consultant requires the information for purposes of this Code, or for the purpose of advising the Market Participant or the Market Operator in relation thereto;
- c) the disclosure, use or reproduction of Confidential Information:
 - c.1. by the Market Participant that provided the Confidential Information;
 - c.2. with the consent of the Market Participant that provided the Confidential Information; or
 - c.3. in the case of Settlement Data or Metering Data, by or with the consent of the Market Participant to whom such data relates.
- d) the disclosure, use or reproduction of Confidential Information to the extent required by Applicable Law or by a lawful requirement of any government or governmental body, regulatory body, authority or agency having jurisdiction over a Market Participant or the Market Operator.
- e) the disclosure, use or reproduction of Confidential Information if required in connection with legal proceedings, mediation, arbitration, expert determination or other dispute resolution mechanism relating to this Code, or for the purpose of advising a person in relation thereto; and
- f) the disclosure of Confidential Information, if required to protect the health or safety of personnel, equipment or the environment.

17.3.3. COST OF ACCESS AND ELECTRONIC DATA RECEIVING AND SHARING

- 17.3.3.1. Nothing in this Code shall prevent information which is made available by means of electronic communications from being provided on a read-only basis.
- 17.3.3.2. Nothing in this Code shall prevent the Market Operator from issuing or receiving any information or documents through electronic means.
- 17.3.3.3. Each Market Participant and any other person accessing, retrieving or storing information published or otherwise made available by the Market Operator shall be responsible for its own costs of accessing, retrieving or storing such information.

Chapter 18. MISCELLANEOUS, COMPLEMENTARY AND TRANSITORY PROVISIONS

18.1. SUPPLEMENTARY PROVISIONS

18.1.1. MARKET PARTICIPANTS HOLDING MULTIPLE LICENSES OR AUTHORIZATIONS

- 18.1.1.1. Wherever a Section, Sub-Section, Clause or provision of this Code is applicable to a specific Category of Market Participant and/or it is used in any kind of calculation, it shall be interpreted as applicable to all Market Participants belonging to such Category, and the provisions shall be construed accordingly.
- 18.1.1.2. Where a Market Participant, in addition to any other License, is also Licensed as a Transmission or Distribution Network Service Provider, the Metering Points shall be established at:
- a) The interface between a Generation Plant and/or Generation Unit, as applicable, and the Transmission or Distribution Network; and
 - b) Any other point within the Transmission or Distribution Network that the Market Operator or the System Operator considers necessary, for the appropriate implementation of this Code;
 - c) Commercial Metering System shall be installed at such locations as mentioned in Clause (a) and (b), regardless there are any commercial transactions at these points.
- 18.1.1.3. While processing the Application submitted by an Applicant, which also holds a Transmission or Distribution License, the Market Operator shall determine, in consultation with the System Operator, the points in the network referred to in Clause 18.1.1.2.b) at which Commercial Metering System shall be installed. The Market Operator is entitled to withhold the enrolment of such Applicant, in one or more of the Categories requested by the Applicant, until the required Commercial Metering Systems are properly installed and commissioned.

18.2. TRANSITORY PROVISIONS

18.2.1. INITIAL METERING SERVICE PROVIDER

- 18.2.1.1. Prior to the CMOD, the National Transmission and Despatch Company shall be enrolled with the Market Operator as a Metering Service Provider in order to perform the functions of a Metering Service Provider as set out in this Code as well as the Grid Code to provide metering services in whole Pakistan and other territories where the applicability of the Act is not extended except those areas served by KE. Similarly, KE shall also be enrolled with the Market Operator as a Metering Service Provider in order to perform the functions of a Metering Service Provider as set out in this Code as well as the Grid Code to provide metering services in the area specified in its Licenses. With the progress of the Market, other Metering Service Providers may also be enrolled with the Market Operator.

18.2.2. INITIAL CAP ON TRANSMISSION LOSS OF K-ELECTRIC

- 18.2.2.1. Till the time, the Authority determines a separate cap on the transmission loss of K-Electric, a value of [1%] shall be used.

18.2.3. MANUAL METER READING

- 18.2.3.1. All Metering Points shall be equipped with hardware or software for remote reading and collection of metering data through the Secured Metering System, as prescribed in Clause 4.2.1.2.b) and the Metering Service Provider shall make all efforts to comply with this requirement prior to the CMOD.
- 18.2.3.2. The Metering Service Provider shall establish a schedule for Local Meter Reading from the Metering Points where communication equipment has failed to electronically transmit the metering information to the database of the Metering Service Provider.
- 18.2.3.3. The Metering Service Provider shall submit to the Market Operator a specific request for each Metering Point on which Local Meter Reading shall be performed, along with:
- a) the schedule and time for each Meter reading; and
 - b) a plan to correct the deficiencies, which may include the replacement of the Meter or the Commercial Metering System, as the case may be, and to incorporate such Metering Point into the SMS system.
- 18.2.3.4. The Market Operator shall analyse the request and, if deemed appropriate, authorize the Metering Service Provider to perform Local Meter Reading at such Metering Point, notifying such authorization for a pre-specified period.
- 18.2.3.5. While performing Local Meter Reading, the Metering Service Provider shall perform an inspection of the metering facilities and if the Metering Service Provider detects any anomaly, including maintenance defects, inappropriate equipment, or evidence of tempering or suspicion thereof, it shall prepare a Metering Incident Report, informing this situation to the Market Operator.
- 18.2.3.6. The information collected by the Metering Service Provider for each Meter associated with a Metering Point shall be determined by the Metering Service Provider, but it shall include at least:
- a) half-Hourly readings of active and, if applicable, reactive Energy, with their associated time stamps in all cases the Meter installed at the Metering Point provides for such capability;
 - b) accumulated readings of active and, if applicable, reactive Energy, for the previous month;
 - c) time and date stamps;
 - d) alarms and event logs produced by the Meter;
 - e) accuracy qualifiers of the meter readings if the Meter produces such kind of information.
- 18.2.3.7. In case of successful reading of a Local Meter Reading, the Metering Service Provider shall analyse the completeness and reliability of the data obtained, in particular:
- a) absence of alarm signals from the Meter;
 - b) adequacy of time and date stamps;
 - c) completeness of readings for the Meters and validation;
 - d) the contents of the event log of the Meter; and
 - e) the adequacy of the parameters programmed in the Meter and metering equipment.

18.2.3.8. After the analysis of the completeness and reliability of the metering data, the Metering Service Provider shall decide about the correctness of the values obtained and shall mark the obtained data as “complete and accurate”, “incomplete but accurate” or “inaccurate”, as the case may be.

18.2.4. INITIAL CAPACITY OBLIGATIONS

18.2.4.1. With effect from the CMOD, the following values shall be applicable for the Capacity Obligations:

- a) For Suppliers of Last Resort, the values provided in Table 4 below.
- b) For Competitive Electric Power Suppliers, the values provided in Table 5 below.
- c) For BPCs which are enrolled as Market Participants, the values provided in Table 6 below.
- d) For Traders involved in Firm Exports, the values provided in 7 below.

Table 4: Capacity Obligations for Suppliers of Last Resort

Period		Capacity Obligations
		(In % of the registered or forecasted Maximum Demand at System Peak Hours)
Ex-post compliance with the Capacity Obligations	Previous year ⁽¹⁾	100
Ex-ante compliance with the Capacity Obligations	Current year ⁽²⁾	100
	Year 1 ⁽³⁾	100
	Year 2	100
	Year 3	80
	Year 4	60

(1) Previous year is the year immediately before the year in which compliance with the Capacity Obligations is verified. For the first year after the CMOD, the previous year's calculations shall not be applicable.

(2) Current year is the year in which compliance with the Capacity Obligations is being verified.

(3) Year 1 is the year immediately after the year in which compliance with the Capacity Obligations is verified, and Year 2, 3, and 4 shall be construed accordingly.

Table 5: Capacity Obligations for Competitive Electric Power Suppliers

Period		Capacity Obligations
		(In % of the registered or forecasted Maximum Demand at System Peak Hours)
Ex-post compliance with the Capacity Obligations	Previous year ⁽¹⁾	100
Ex-ante compliance with the Capacity Obligations	Current year ⁽²⁾	100
	Year 1 ⁽³⁾	100
	Year 2	100
	Year 3	80
	Year 4	50

- (1) Previous year is the year immediately before the year in which compliance with the Capacity Obligations is verified. For the first year after the CMOD, the previous year's calculations shall not be applicable.
- (2) Current year is the year in which compliance with the Capacity Obligations is being verified.
- (3) Year 1 is the year immediately after the year in which compliance with the Capacity Obligations is verified, and Year 2, 3, and 4 shall be construed accordingly

Table 6: Capacity Obligations for BPC

Period		Capacity Obligations
		(In % of the registered or forecasted Maximum Demand at System Peak Hours)
Ex-post compliance with the Capacity Obligations	Previous year ⁽¹⁾	100
Ex-ante compliance with the Capacity Obligations	Current year ⁽²⁾	100
	Year 1 ⁽³⁾	100
	Year 2	100
	Year 3	80
	Year 4	60

- (1) Current year is the year in which compliance with the Capacity Obligations is being verified.
- (2) Previous year is the year immediately before the year in which compliance with the Capacity Obligations is verified. For the first year after the CMOD, the previous year's calculations shall not be applicable.
- (3) Year 1 is the year immediately after the year in which compliance with the Capacity Obligations is verified, and Year 2, 3, and 4 shall be construed accordingly

Table 7: Capacity Obligations for Traders involved in Firm Exports

Period		Capacity Obligations
		(In % of the of the registered or forecasted Maximum Demand at System Peak Hours)
Ex-post compliance with the Capacity Obligations	Previous year ⁽¹⁾	100
Ex-ante compliance with the Capacity Obligations	Current year ⁽²⁾	100
	Year 1 ⁽³⁾	100
	Year 2	100
	Year 3	80
	Year 4	50

- (1) Previous year is the year immediately before the year in which compliance with the Capacity Obligations is verified. For the first year after the CMOD, the previous year's calculations shall not be applicable.
- (2) Current year is the year in which compliance with the Capacity Obligations is being verified.
- (3) Year 1 is the year immediately after the year in which compliance with the Capacity Obligations is verified, and Year 2, 3, and 4 shall be construed accordingly

18.2.5. METHODOLOGY AND FACTORS FOR ALLOCATION OF LEGACY CONTRACTS

18.2.5.1. The National Electricity Policy states that power allocation / distribution from the power pool to state-owned suppliers or any other entity shall continue in accordance with the existing power pool allocation mechanism, or as may subsequently be provided for in the National Electricity Plan. In order to calculate the Allocation Factors, the capacity payments by each Ex-WAPDA DISCO during the last three years (2019, 2020, 2021) has been utilized to calculate the average share of each Ex-WAPDA DISCO in the pool.

18.2.5.2. The Legacy Contracts shall be commercially allocated to the EX-WAPDA DISCOs, and to K-Electric, in their role as Suppliers of Last Resort, utilizing the Allocation Factors provided in Table 8 below which are derived as a result of the methodology as described in Clause 18.2.5.1 above. These factors will be revised as per provisions of the National Electricity Plan and this table will be updated accordingly.

Table 8: Suppliers of Last Resort Allocation Factors

Supplier	Allocation Factor
LESCO	21.10%
GEPCO	9.82%
FESCO	13.09%
IESCO	10.15%
MEPCO	17.06%
PESCO	12.89%

HESCO	4.79%
QESCO	5.62%
TESCO	1.74%
SEPCO	3.73%
KE	As per Bilateral Contract

18.2.6. INITIAL CONGESTED ZONES

18.2.6.1. For the application of the provisions of Section 6.2.1, the following areas shall be considered as Congested Zones:

- a) the territory served by K-Electric; and
- b) The territories served by EX-WAPDA DISCOs or other Distribution Licensees connected with the Grid System

18.2.6.2. Before CMOD, the Market Operator shall delimit the Zones mentioned in Clause 18.2.6.1 by identifying all the Metering Points located between these Zones and shall publish a list of such Metering Points on its website.

18.2.6.3. The relevant Metering Service Provider shall inform the System Operator and the Market Operator about Metering Points which shall be added or eliminated in the Congested Zones as indicated above, due to addition/deletion of Metering Points or the augmentation of the Transmission or Distribution Network.

18.2.6.4. In case the electrical studies or Dispatch simulations, performed by the System Operator, as a consequence of the expansion of the Transmission Network or the installation of new control or protection devices, show that Congestion in the area served by K-Electric is eliminated or significantly reduced, the System Operator shall inform the Market Operator about such development and that the territory served by K-Electric may no longer be considered as a separate Congested Zone.

18.2.6.5. The Market Operator shall analyse the information provided by the System Operator and take a decision in this respect accordingly.

18.2.6.6. The territory served by K-Electric shall cease to be considered as a separate Congested Zone by the Market Operator at 0:00 a.m. of the first day of the calendar month immediately after a decision has been made in this regard by the Market Operator.

18.2.7. DEFAULT INTEREST

18.2.7.1. The Default Interest rate on any amount not paid within the due date shall be [KIBOR + 2 %/year] or any other value as determined by the Market Operator from time to time.

18.2.8. UNITARY COST OF CAPACITY

18.2.8.1. Till the time, the System Operator devises a detailed methodology for determining the Unitary Cost of Capacity, as an interim measure, the unitary cost of Capacity shall be equal to [10,500,000] PKR/MW/year.

18.2.9. EFFICIENT LEVEL OF RESERVES

- 18.2.9.1. Till the time, the System Operator determines the efficient level of reserves, as an interim measure, the value of efficient level of reserves shall be equal to [35%].

18.2.10. TRANSITION TOWARDS GUARANTEE BASED MECHANISM

- 18.2.10.1. The Market Operator shall prepare bi-annually a report on the behaviour of the Market Participants regarding payments and shall submit the same to the Authority along with recommendations regarding feasibility of moving from the cash-based system of Security Covers towards a bank guarantee-based mechanism. First such report shall be prepared after five years of the CMOD.

Chapter 19. APPENDICES

19.1. APPENDIX I. METHODOLOGY FOR DETERMINATION OF SYSTEM MARGINAL PRICES AND ANCILLARY SERVICE CHARGES

19.1.1. GENERAL APPROACH

- 19.1.1.1. The Grid Code requires that the System Operator shall operate the system at its minimum cost while complying with the security and reliability criteria as set out therein. This, in turn, requires also to schedule the necessary Ancillary Services in the most economical way. The way to comply with all these provisions is to implement a Security Constrained Economic Dispatch to schedule the Energy production of each Generation Unit.
- 19.1.1.2. To implement the SCED, the System Operator requires necessary software tools and IT systems, as well as properly trained staff and appropriate operational procedures to ensure that the system achieves its optimal economic performance while maintaining always the required levels of reliability and security of supply.
- 19.1.1.3. Regardless of the fact that the System Operator may not yet be equipped with state-of-the-art software and IT systems, or that some of the operational procedures require adaptations or development of new ones, it is the duty of the System Operator that it shall make best efforts to operate the Grid System in the most economical way, within the security and reliability criteria established in the Grid Code.
- 19.1.1.4. Provided that the System Operator complies with the provisions of Clause 19.1.1.3, it is assumed that the results of the operations of the System Operator are aligned with the Security Constrained Economic Dispatch and, therefore, the determination of System Marginal Prices, as well as the identification of the Generation Units entitled for receiving compensation for providing, or allowing other Generation Units to provide Ancillary Services, shall be carried out through an ex-post analysis of the results of the daily operations.

19.1.2. PROCEDURE FOR DETERMINING THE SYSTEM MARGINAL PRICES

- 19.1.2.1. Every Business Day, the System Operator shall utilize the results of the actual operations of the previous day, or previous days in cases of non-Business Days, to develop an ordered table, in ascending order of their Variable Generation Cost or the Contract price in case of Imports, of all Generation Units and Imports for which the System Operator is responsible for Dispatching, for each hour of the day (the Variable Generation Cost List).
- 19.1.2.2. Each Generation Unit or Import shall have associated four values:
 - a) Variable Generation Cost: It is the value which was used by the System Operator for Dispatching the Generation Units and Imports in the most economical way, pursuant to Clause 19.1.1.3. In case, the Variable Generation Cost of a Generation Unit is a function of its output or Generation Unit configuration, the value to be included in the table is the value corresponding to the output or configuration at which this unit was dispatched.
 - b) An operational label: which shall have one of the following values:
 - b.1. "Unavailable", applicable to Generation Units or Imports which were not available for being Dispatched at the corresponding hour;

- b.2. “Zero Variable Cost”, applicable to available Generation Units which use natural resources as primary energy which do not have an associated cost. Hydro, Solar (either PV or CSP), Wind, and other similar renewable technologies will be labelled as such. Nuclear Generation Units shall be labelled as “Zero Variable Cost” regardless its Variable Generation Cost may be different than zero;
 - b.3. “Must Purchase” applicable to available Generation Units having Legacy Contracts which have to be dispatched to fulfil the contractual obligations irrespective of their variable cost.
 - b.4. “Transmission Must Run”, applicable to available Generation Units not labelled as “Zero Variable Cost”, or “Must Purchase” which have been dispatched to alleviate Congestion due to overloading of the network equipment or unstable voltage levels pursuant to Clause 6.2.2.1 or for voltage support pursuant to Clause 6.3.1.3 above;
 - b.5. “Reliability Must Run”, applicable to available Generation Units not labelled as “Zero Variable Cost”, or “Must Purchase” which have been dispatched to alleviate Congestion due or violation of the reliability and security criteria provided in the Grid Code pursuant to Clause 6.2.2.1;
 - b.6. “Must Stop”, applicable to available Generation Units, which have not been dispatched, or have been dispatched below its maximum Capacity, to alleviate Congestion pursuant to Sub-Section 6.2.1;
 - b.7. “Operational Constraints”, applicable to Generation Units not labelled as “Transmission Must Run” or Reliability Must Run” or “Must Stop”, which have not been dispatched, or have been dispatched below its maximum Capacity, for other operational reasons. The System Operator shall clearly identify and document such reasons;
 - b.8. “Fully Loaded”, applicable to available Generation Units not labelled as “Zero Variable Cost” or “Transmission Must Run” or “Transmission Must Run” or “Must Purchase”, which have been dispatched at or above ninety percent [90%] of its maximum available Capacity;
 - b.9. “Partially Loaded”, applicable to available Generation Units not labelled as “Zero Variable Cost” or “Must Run” or “Must Stop”, “Operational Constraint”, which have been dispatched below ninety percent [90%] of its maximum available Capacity
 - b.10. “Out of Merit”, applicable to the available Generation Units that have not been scheduled for Dispatch by the System Operator. For the avoidance of doubt, a Generation Unit or Import may be labelled as “Out of Merit” even if this Generation Unit or Import has produced electric power during the corresponding hour, if this production has not been instructed by the System Operator. .
- c) The Energy produced during the relevant hour;
 - d) The available Capacity: which shall be equal to:
 - d.1. The Energy produced during the relevant hour in case of Generation Units labelled as “Zero Variable Cost”
 - d.2. The declared Available Capacity for the relevant hour, as per the provisions of the Grid Code.
- 19.1.2.3. An example of the table to be prepared by the System Operator is shown in Figure 2. The values included in this figure are for illustration purposes only (not representing a real situation).

Figure 2: Example of Variable Generation Cost List

Time: From 2:00 p.m. to 3:00 p.m.					
Generation Unit	Available Capacity	Operating Cost	Dispatch	Label	Comments
TARBELA		0	554	Zero Cost	
TARBELA Ext 4		0	0	Zero Cost	
MANGLA		0	180	Zero Cost	
GHAZI BROTHA		0	730	Zero Cost	
WARSAK		0	60	Zero Cost	
...		0	87	Zero Cost	
MALAKAND - III	81	0	32	Zero Cost	
NEW BONG ESCAPE	84	0	19	Zero Cost	
...	147	0	29	Zero Cost	
CHASHNUPP-II	310	n.a.	311	Zero Cost	
CHASHNUPP-III	315	n.a.	315	Zero Cost	
...	3	0	3	Zero Cost	
ENGRO THAR COAL	625	3.2	607	Fully Loaded	
UCH	0	3.8	0	Unavailable	
PORT QASIM COAL	1250	5.19	1,248	Fully Loaded	
IDW-III (GHOTKI)	74	6.855	0	Not Dispatched	Not committed to allow dispatch generators with load following capabilities

...

Guddu 6	60	8.82	62	Fully Loaded	
Guddu 7	80	8.82	0	Must Stop	
Guddu 8	80	8.82	0	Must Stop	
Guddu 9	80	8.82	90	Fully Loaded	
Guddu 10	80	8.82	70	Fully Loaded	
...					
GUDDU 3-4	300	10.5	0	Must Stop	
NANDI PUR	355	11.08	498	Fully Loaded	
GUDDU 1-2	200	11.33	0	Must Stop	
OREINT	205	11.8	161	Partially Loaded	
SAPPHIRE	205	12.02	199	Fully Loaded	
HALMORE	205	12.03	197	Fully Loaded	
SAIF	205	12.05	0	Out of Merit	
AGL	156	12.67	0	Out of Merit	
...					
FKPCL	151	13.32	0	Out of Merit	
CHANAR ENERGY LIMITED	22		0	Out of Merit	

- 19.1.2.4. For determining the System Marginal Price, only Generation Units labelled as “Fully Loaded”, “Partially Loaded” will be considered.
- 19.1.2.5. The System Marginal Price, for each hour, will be calculated as the Variable Generation Cost of the cheapest Generation Unit labelled as “Partially Loaded”, which has been dispatched at a price higher than the most expensive Generation Unit labelled as “Fully Loaded”.
- 19.1.2.6. In case that the most expensive Generation Unit dispatched is labelled as “Fully Loaded” and there are no Generation Units labelled as “Partially Loaded” dispatched at a higher price, the System Marginal Price will be the Variable Generation Cost of the this last most expensive Generation Unit dispatched labelled as “Fully Loaded” Generation in the Table mentioned in Clause 19.1.2.1.
- 19.1.2.7. An example of discovering the System Marginal Price is shown in Figure 3. In this case, the Generation Unit “Nandi Pur”, which has 355 MW of Available Capacity and it was Dispatched at 270 MW sets the System Marginal Price, which results equal to 11.08 PKR/kWh.

Figure 3: System Marginal Price based on the Variable Generation Cost List

Time: From 2:00 p.m. to 3:00 p.m.					
Generation Unit	Available Capacity	Operating Cost	Dispatch	Label	Comments
ENGRO THAR COAL	625	3.2	607	Fully Loaded	
PORT QASIM COAL	1250	5.19	1,248	Fully Loaded	
GUDDU 747	720	6.94	734	Fully Loaded	
CHAINA HUBCO COAL	1250	6.97	1,200	Fully Loaded	
SAHIWAL (COAL)(HSR)	1250	7.14	1,200	Fully Loaded	
UCH-II	375	7.2	286	Partially Loaded	
LIBERTY POWER	210	7.22	90	Partially Loaded	
FOUNDATION	168	8.27	78	Partially Loaded	
ENGRO	210	8.45	92	Partially Loaded	
Guddu 6	60	8.82	62	Fully Loaded	
Guddu 9	80	8.82	90	Fully Loaded	
Guddu 10	80	8.82	60	Partially Loaded	
H-B-SHAH	1207	9.72	1,176	Fully Loaded	
BALLOKI	1198	9.84	1,143	Fully Loaded	
BHIKI (QATPL)	1256	9.85	1,126	Fully Loaded	
NANDI PUR	355	11.08	270	Partially Loaded	This Generation Unit sets the System Marginal Price
OREINT	205	11.8	161	Partially Loaded	
KAPCO	1345	13.42	179	Partially Loaded	

19.1.3. INTERIM PROCEDURE FOR DETERMINING THE GENERATORS ENTITLED TO RECEIVE COMPENSATION FOR ANCILLARY SERVICES

19.1.3.1. As provided under Clause 19.1.1.4 above, the results of the actual operations carried out by the System Operator are assumed to be in alignment with those of the Security Constrained Economic Dispatch, therefore, for determination of the compensation for Ancillary Services, it shall be assumed that:

- For the Generation Units, which have Variable Generation Costs lower than the System Marginal Price and have not been dispatched at full load other than Generation Units labelled as “Must Stop”, it shall be considered that they have been instructed to disconnect or to reduce their output for providing Ancillary Services or to allow other Generation Units to provide the same.
- For the Generation Units, which have Variable Generation Costs higher than the System Marginal Price and have been partially dispatched, it shall be considered that they have been scheduled for providing Ancillary Services.

19.1.3.2. As provided above, the following Generation Units shall be eligible to receive compensation for the provision of Ancillary Services:

- Generation Units, labelled as “Operational Constraints”, whose Variable Generation Cost is lower than the System Marginal Price: Such Generation Units shall receive compensation on account of Lost Opportunity Cost, which shall be calculated as per Clause 6.4.2.2;
- Generation Units, labelled as “Partially Loaded”, whose Variable Generation Cost is lower than the System Marginal Price: Such Generation Units shall receive compensation on account of Lost Opportunity Cost, which shall be calculated as per Clause 6.4.2.2; and
- Generation Units, labelled as “Partially Loaded”, whose Variable Generation Cost is higher than the System Marginal Price: Such Generation Units shall receive a compensation for its variable cost which shall be calculated as per Clause 6.4.3.2.

19.1.3.3. An illustration of the determination of the Generation Units eligible to receive compensations for the provision of Ancillary Services are shown in Figure 4. In this case, six Generation Units are eligible to receive compensation on account of Lost Opportunity Cost (JDW-III (Ghotki); UCH-II; Liberty Power; Foundation; Engro; Guddu 10 and Guddu 3-4) and Two Generation Units are eligible to receive variable cost compensation (Orient and Kapco).

Figure 4: Generation Units Eligible to Receive Compensations for ASC

Time: From 2:00 p.m. to 3:00 p.m.

Generation Unit	Available Capacity	Operating Cost	Dispatch	Label	Comments
ENGRO THAR COAL	625	3.2	607	Fully Loaded	
PORT QASIM COAL	1250	5.19	1,248	Fully Loaded	
JDW-III (GHOTKI)	24	6.855	0	Out of Merit	
GUDDU 747	720	6.94	734	Fully Loaded	
CHAINA HUBCO COAL	1250	6.97	1,200	Fully Loaded	
SAHIWAL (COAL)(HSR)	1250	7.14	1,200	Fully Loaded	
UCH-II	375	7.2	286	Partially Loaded	
LIBERTY POWER	210	7.22	90	Partially Loaded	
FOUNDATION	168	8.27	78	Partially Loaded	
ENGRO	210	8.45	92	Partially Loaded	
Guddu 6	60	8.82	62	Fully Loaded	
Guddu 9	80	8.82	90	Fully Loaded	
Guddu 10	80	8.82	60	Partially Loaded	
KOTRI	120	9.55	0	Must Stop	
H-B-SHAH	1207	9.72	1,176	Fully Loaded	
BALLOKI	1198	9.84	1,143	Fully Loaded	
BHIKI (QATPL)	1256	9.85	1,126	Fully Loaded	
GUDDU 3-4	300	10.5	0	Out of Merit	
NANDI PUR	355	11.08	270	Partially Loaded	
GUDDU 1-2	200	11.33	0	Out of Merit	
OREINT	205	11.8	161	Partially Loaded	
GULF POWER	96	12	0	Out of Merit	
SAIF	205	12.05	0	Out of Merit	
AGL	156	12.67	0	Out of Merit	
ROUSCH	395	13.01	0	Out of Merit	
FKPCL	151	13.32	0	Out of Merit	
KAPCO	1345	13.42	179	Partially Loaded	Required to provide voltage support
KEL	122	13.67	0	Out of Merit	
AEL	30	14.59	0	Out of Merit	
CHANAR ENERGY LIMITED	22		0	Out of Merit	

Entitled to receive Loss of Opportunity Cost Compensation

Entitled to receive Variable Cost Compensation