



**OPERATOR OF THE NIGERIAN
ELECTRICITY MARKET**

**MARKET PROCEDURES FOR
THE NIGERIAN ELECTRICITY
SUPPLY INDUSTRY**

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METERING MARKET PROCEDURE

Purpose

The purpose of this Metering Market Procedure as required by the Market Rule, (27.6.10) is to describe:

- i. The requisites and technical specifications of the Commercial Metering System;
- ii. The calendar and procedures for Meter Data Collation, Correction and Validation to provide, in a timely manner, the Technical Data for Market Settlement;
- iii. The administration of special conditions.
- iv. The administration of complaints, in accordance with the Market Rules.

DEFINITIONS

- **Automatic Voltage Selector Switch (AVSS)** means the switch that enables automatic changeover of voltage supply from one Voltage Transformer (VT) source to another VT source in case of incomer VT outages, to ensure that the feeder/line meter continues to function.
- **Check Meter** means the standby Meter installed in series with the main meter, from where accurate and valid readings are obtained whenever the Trading Point Main meter is unreliable and inaccurate. The meter at the incomer (Transformer Meter) will be used as the Main Meter.
- **Check Tolerance** means the maximum difference between the Main and Check Meter readings. The Check Tolerance is taken as $\pm 2\%$.
- **Commercial Metering System** includes: VT, CT, Meter, Communication and associated termination kits.
- **Connection (*)** means a point of connection between the transmission system or a distribution network, and a generation facility or load facility where a Participant connects to inject or withdraw energy, and which will be allocated

a Trading Point for considerations of Market Settlement and the Commercial Metering System.

- **Current Transformer (CT)** means the instrument transformer used as current supply to the meter.
- **Distribution Company (*)** means a successor Distribution Company created in the restructuring of the erstwhile Power Holding Company of Nigeria (PHCN), which has ceased to exist.
- **Embedded Generation (*)** means a generation unit or power station directly connected to a distribution network at 33KV or lower voltage level.
- **Generation Company** means a company that generates electric power either connected to the Grid or embedded. This is not restricted to those created from the generation assets of the erstwhile Power Holding Company of Nigeria (PHCN) in accordance with the Act.
- **Historical Average** means the average calculated for the energy quantities used in the Market Settlement in the last six (6) months.
- **Market Settlement (*)** means the process of calculating charges, due from Participants who are required to make payment, and to be paid to Participants who are due to receive payments, pursuant to the Market Rules.
- **Meter** means the measuring instrument used to measure the feeder/line energy, power, power factor, frequency and other power system quantities.
- **Meter Data (*)** means quantities of energy measured and recorded by a Meter for the purpose of determining the energy injected or withdrawn by Participants;
- **TCN** means Transmission Company of Nigeria.
- **Settlement Quantity Meter Data (*)** means the processed data resulting from the collection, and validation process to Meter Data, and the adjustment for losses when the Meter is not located at the Trading Point, in respect of each Participant

- **Voltage Transformer (VT)** means the instrument transformer used as voltage supply to the Meter.

1. CONNECTIONS AND LOCATIONS OF TRADING POINTS

A. Connection Points and Meters

- i. The Market Settlement process requires measuring the energy injected to or withdrawn from the transmission system by each Participant.
- ii. In principle, the Connection Point of a Participant is the point where the Participant injects and/or withdraws energy, and therefore corresponds to:
 - a. The Participant's connection(s) to the transmission system; and/or
 - b. The Participant's connection(s) to the distribution network of another Participant.
- iii. When registering a new Participant or a new connection, each Connection Point shall be assigned a Trading Point and each Trading Point must have a Commercial Metering System, as established in the Market Rules and this Market Procedure.
- iv. This Metering Market Procedure specifies the location of the Trading Point for each type of the Participant in line with the Metering Code.

B. Generation/Transmission Trading Point

The location of the Trading Point between the Generating Station and the Transmission Network is at the beginning of the outgoing transmission line from the power station into the Transmission network and the energy metered using the instrumentations at the secondary of the step-up Transformer.

For PPAs signed prior to the implementation of this Metering Market Procedure, the Trading Point(s) will be as established in the PPA.

C. Transmission/Distribution Trading Point

- i. The location of the Trading Point between the Transmission Network and the Distribution Network is at the outgoing Transformer 33KV feeder (Transformer Incomer to the 33KV bus-bar) within the 132/33KV Transmission Substation.

D. Special Customers

The location of the Trading Point for a special Customer connected to the Transmission network (330 KV or 132KV) shall be at the beginning of the outgoing feeder at the Transmission Substation from where the feeder radiates to the Special Customer's Premises.

3. LOSSES

A. Transmission Losses

For purposes of calculating the Market Settlement, the energy measured with the Commercial Metering System for Genco/Transmission trading point shall be adjusted by the Market Operator, with respect to the Transmission Loss, in accordance with the provisions of the prevailing MYTO.

B. Adjustment for location of Meters

- i. The Trading Points define the entry and exit points to the wholesale electricity market. Therefore, the purchasing and selling of electricity by a Participant in the wholesale electricity market shall be at its Trading Points. For that purpose, each Participant shall have a Commercial Metering System associated to each of its Trading Points, for the Market Operator to determine the energy injected or extracted by each Market Participants.

- ii. All trading point meters shall be located at the Metering Code defined Trading Point. When a trading meter is not located at the correct Trading Point due to some contingent reasons, the MO will mandate the Participant involved to apply for a Derogation. The MO may consider applying a loss factor for calculation of Settlement Quantity pending the expiration of the derogation period. This loss factor will be determined by the MO if it was not submitted during the registration of the Commercial Metering System.

- iii. For the purposes of considering losses during the calculation of the energy for settlement when the Meter is not at the code-specified Trading Point, the MO shall consider the following issues:
 - a. The energy injected by generation facilities directly connected to the transmission system where the Commercial Metering System is not located at the Trading Point and includes internal consumptions in the power station shall be decreased by the internal consumption for the related settlement period. If the internal consumption is not metered, the Market Operator shall determine the corresponding internal consumption factor when the Commercial Metering System is approved and registered.

 - b. In case there are any step-down or step-up transformers between the Commercial Metering System and the Trading Point of the Participant, which are not included in the loss factors assigned to the Trading Point, a transformer loss factor shall be used to decrease the energy injected or increases the energy withdrawn accordingly, in order to reflect the related transformer loss. The Market Operator shall determine and register the corresponding transformer loss factors when the Commercial Metering System is approved.

 - c. In case there are any lines between the Commercial Metering System and the Trading Point of the Participant, which are not included in the loss

factors assigned to the Trading Point, a line loss factor shall be used to adjust (decrease) the metered energy injected or (increase) the metered energy withdrawn in order to reflect the related line loss. The Market Operator shall determine and register the corresponding line loss factor upon the approval and registration of the Commercial Metering System.

4. COMMERCIAL METERING SYSTEM

A. Components

The Commercial Metering System comprises of:

- i. Main and Check Meters for each Trading Point, of Participants and the associated Current and Voltage Transformers (CT & VT), AVSS where necessary and cabling;
- ii. A system that integrates and stores the measurements from the Meters;
- iii. Automatic Remote Meter Reading System to access and read meters remotely;
- iv. A data collation system and dispatch system to enable send the manually read meter data to MO in the event that the AMR is not operational, (through e-mail or courier services).

B. CHECK METER

Configuration:

- i. At each Trading Point as defined in section (2) above, a certified compliant digital energy Meter will be installed by the Participant who injects the energy into another network, as the Main Meter while the Participant who extracts (receives) energy at the same

interface, installs yet another certified compliant energy meter in series with the main meter as the **Check-Meter**.

- ii. Bi-directional Meters shall be installed at Trading Points where energy can flow in both directions to meter energy in the injection (export) and withdrawal (import) direction separately.
- iii. **Inter-Disco Trading Point:** The actual geographic network delineation and the location of the inter-disco boundary trading point meters (Trading Point between two Distribution Networks), are the exclusive decision to be taken by both Discos involved. Having taken the meter reading at the Transmission/Distribution trading point as defined in the Metering Code, the MO will not exercise any other jurisdiction over inter-disco trading points.

METERING SYSTEM SPECIFICATIONS FOR THE TRANSITIONAL ELECTRICITY MARKET STAGE

Although the Metering System Specifications for trading in the electricity market world-wide are moving targets as detected by the evolving metering technology, there are basic requirements for a meter to be accepted into the Nigerian Electricity Market for commercial trading.

- i. The standard specifications for the Commercial Metering System during the **Transitional Stage** are as follows:
 - a. Accuracy class of at least 0.5 for voltage levels not more than 33KV and 0.2 for Transformer Incomers feeders of 33KV and higher voltage feeders;
 - b. Accumulation and storing of metered data with an integration period of **30 minutes**;
 - c. Stand by-battery with a total stand-by life of **10 years** (minimum);

- d. The capability to be **interrogated remotely** through a modem (AMR compliant);
- e. Information storage capacity in memory of at least **6 months**.
- ii. The target Commercial Metering System for the **Medium Term Market** shall comply with the following standards:
 - a. Accuracy class of at least **0.2**;
 - b. Accumulation and storing of metered data with an integration period of **15 minutes**; and
 - c. Ability to be interrogated remotely and information storage capacity in circular memory of at least twelve **(12) months**.
- iii. The accuracy class requirements of the instrument transformers, (VTs & CTs), shall be in accordance with the size of the load and shall meet the prevailing metering standards.
- iv. The Market Operator shall, periodically, review the metering specifications and standards with a view to forwarding modifications, if any, to the Metering Review Panel (MRP). On approval by the MRP, the MO shall update of this Market Procedure accordingly.

Calculation of Settlement Quantities

- i. The Meters in the Commercial Metering System shall measure the physical flows.
- ii. To calculate the Settlement Quantities, based on the meter readings of a Participant, the readings from its Commercial Metering System shall be adjusted by the Market Operator to take into consideration losses when applicable in accordance with the principles established in this Market Procedure.

5 METERING RESPONSIBILITIES AND OBLIGATIONS:

A. Responsibilities of the Services Providers

- i. Before the inception of the Transitional Stage of the Electricity Market (TEM), the MO will hand-over the commercial meters to the Participants according to their network delineation and MO's Meter Information Register (MIR).
- ii. The MIR shall be used for any eventual metering system derogation administration.
- iii. If a Commercial Metering System uses transformers owned by the Transmission Services Provider (TSP), the TSP will have the responsibility of maintaining, repairing and replacing such instrument transformers (CT and VT) as these transformers, not only serve as part of the main metering system but also serve for Transmission Systems Protection.
- iv. The TSP shall ensure that commercial meters or the associated instruments are not disconnected, replaced or Current Transformer Ratios changed without prior notification to the MO and the Participants who depend on these instruments for energy trading; again, on no account shall TSP swap/change VT/CT phases without prior notification to MO and the Participants. If any of these happens, the MO shall determine the amount of energy involved in such tampering and charge it on TSP. When any of the above occurs, the participants reserve the right to raise a petition to the MO.
- v. On hand-over of the Trading Point Meters to the Participants, the Participants assume the full responsibility of installing, maintaining, replacing and reprogramming their meters with the Market Operator regulating the Participants Metering activities in consonance with the Metering Code.

- vi. The MO will approve every newly installed trading point meter through testing, confirmations, certification and validation of specification compliance before it is commissioned as a commercial trading point meter.
- vii. **Any meter installed without certification by the MO will not be accepted as a trading point meter and will also not be registered in the MO's MIR**
- viii. The Market Operator, from time to time, will inspect, test and revalidate Trading Point Metering Systems suspected to be yielding inaccurate metering data. **The MO may** recommend Metering Systems for derogation as may be necessary and the Participant must comply within 7days of this recommendation or have the associated losses charged on her account in favour of the party who sustained losses as a result of the negligence.
- ix. Before an Applicant Participant is authorized and registered by the Market Operator as a Participant in the Market, in respect of a Trading Point, the Participant must ensure that:
 - a. Each of its Trading Points has a compliant Commercial Metering System;
 - b. Each Commercial Metering System must comply with the specifications and conditions established in the Market Rules and this Market Procedure; and
 - c. All its Commercial Metering Systems are registered with the Market Operator.

6. COMMERCIAL METERING SYSTEM REGISTRATION

A. Application

- i. When an entity applies for registration as a Participant, the accompanying registration documents must include Commercial Metering Systems for each of its Trading Points or else the application shall be rejected.

- ii. A Participant shall send an application to the Market Operator for the approval and registration of a Commercial Metering System, for:
 - a. Any modification to a registered Commercial Metering System; or
 - b. Installation of a new Commercial Metering System at an existing Trading Point or at a new Trading Point.

B. Test and Certification

- i. The application for registration of a new Commercial Metering System must be accompanied by a certification that it complies with the manufacturer's standards and also accuracy test certificate from any of the EMS (PHCN) Meter Test Stations. If the specified certifications are not attached, the application may be rejected.
- ii. For existing trading point meters which are already in the network before Meter-hand over to the Participants, re-registration may not be necessary as such meters are already in the MO's Meter Information Register (MIR).
- iii. Before approving the registration of a Commercial Metering System, the Market Operator shall verify that:
 - a. The Participant has provided valid certificates, except when no certification is required from the Participant; and
 - b. The manufacturer's specifications are within the standards and specifications established for the Commercial Metering System,

B. Register

- i. The register of a Participant shall include the configuration/profile of its Commercial Metering System which will be used by the Market Operator to determine the settlement quantities.

- ii. In the registration process of a Commercial Metering System, the Market Operator will define the associated loss factors, if any, to be used for the calculation of the Settlement Quantities Meter Data. The Commercial Metering System register shall include,
 - a. A distribution technical loss factor, if it applies, when it is connected to a distribution network;
 - b. An internal consumption factor, if it is a connection of a power station where the Commercial Metering System readings will include the internal consumption of the power station;
 - c. A transformer loss factor or line loss factor, as applicable, if the Commercial Metering System is not at the Trading Point and losses need to be discounted from the Meter Data
- iii. Upon registration of a new Participant or a new Trading Point, the Market Operator shall update the register of Meters used for the Market Settlement. Where Meters shall be read manually, the Market Operator shall prepare and send:
 - a. A list of Meters that must be read by each Participant as part of the data collection process for the Market Settlement; and
 - b. The list of Meters that must be read by the System Operator as validation of Meter Data for the Market Settlement.

7. METER DATA CALENDAR

- A. The Meter Data Calendar shall describe the following dates:
 - i. **Reading Date**, the date by which the monthly commercial Meter Data of Trading Points must be read.

- ii. **Meter Data Submission Date**, the date by which the meter reading must be received by MO from the Market Participant and the System Operator, for the monthly settlement purposes.
 - iii. Trading Point data must be received by the Market Operator from each Participant and the System Operator within the first **10** business days of the new month by courier or E mail for the Market Settlement process.
 - iv. **Preliminary Settlement Statement** is prepared and sent to each participant not later than **10** business days from the beginning of a new month.
 - v. **Final Settlement** is prepared and sent out to the Participants not later than **20** business days after the commencement of the new month.
- B. Complaints Submission Date: Complaints with respect to Preliminary and Final Settlement statements must be received by the MO within five **(5)** business days after the date of the Preliminary Settlement Statement or within thirty **(30)** business days after the date the final Settlement Statement respectively.
- C. Before the beginning of each year, the Market Operator shall publish in its Website (www.onem.ng.org), the Settlement and Payment Calendar, including the timetable for the dates defined in this Market Procedure.
- D. The Meter Reading Date shall be:**
- i. The readings, registered on 0.00hrs in the meter, the first day of the new month, following the settlement month;
 - ii. Where the Automatic Meter Reading System (AMR) is available, the reading will be done by the Market Operator on the first Business Day of the month following the settlement month.

- E. The Meter Data Submission Date shall be on the fourth Business Day of the month.

8. READING OF METERS

A. General Characteristics

- i. All Commercial Trading Point Meters must be read at the end of each month by the representatives of the Market participants and the System Operator.
- ii. The readings for a month shall correspond to the recorded metered quantity at 0:00 hours of the 1st day of the new month, already stored in the Meter.
- iii. Readings shall be done:
 - a. By the Market Operator where remote reading system has been implemented; and
 - b. Jointly by the Participants and the System Operator, manually in accordance with this Market Procedure:
 - for the Meters where remote reading has not been implemented; and
 - for the Meters where remote reading has been implemented but the remote reading mechanism is not operational due to fault or communication failure.
- iv. When a remote reading system is fully implemented, the Market Operator shall access the meters for the purposes of collating readings for billing and settlement. Readings so collated shall appear in the participants' settlement statement for reconciliation and verification purposes.

B. Joint Manual Readings for Distribution and Generation Companies

- i. Generally, in the absence of telemetry or other remote reading systems, the Trading Point Meters shall be read jointly by the representative of the Participant and a staff of the System Operator in the substation where the meter is installed. The purpose of the joint reading is for checking and ensuring continuity of Meter Data for the Market Settlement process.
- ii. **Given the present technology whereby the electronic digital meters execute monthly stacking of energy readings at 0.00hrs of the 1st day of each month, with time and date stamps, the representatives of both the participants and the System Operator can read same meters separately at their convenience for onward submission to the MO within the first five days of the new month.**
- iii. The reading process shall include reading of the main meter (the Incomer Feeder Meter) and the associated Check Meter which is installed in series with the main meter.
- iv. Readings shall be cross checked by both representatives for:
 - a. Accuracy, by making sure that reading is from the right Meter and that the copied figures are correct; and
 - b. Consistency, by ensuring that the copied readings are coherent with the readings of the previous months.
- v. In a situation where it is obvious that the main trading point meter is inconsistent based on the established accuracy trend, the check-meter reading subsists, taken as the reading for settlement purposes.

C. Manual Readings for Eligible Customers and Independent Power Producers

- i. In the absence of Remote reading facility, joint Meter reading shall be taken as stored in the programmable Meter by the representatives of the SO and the Independent Power Producer (IPP) or Eligible Customers on an agreed date and time, every month not later than two Business Days before the Meter Data Submission Date.
- ii. In the presence of the representative of IPP or Eligible Customer, the representative of the Market Operator shall, when necessary for PPA or contract settlement purposes, retrieve load profiles from the Meters for the purposes of graphical representation of the power flow and analysis.
- iii. For the purposes of monthly Capacity Settlement, the System Operator shall send to the Market Operator each Genco's capacity quantity recorded on an hourly bases as well as information on instructed outage as this would be credited to the Genco as Deemed Capacity.
- iv. Instructed outage information shall indicate outage period and the amount of power obstructed and the System's constraint that justified the instruction and sent to MO not later than one Business day after the Meter Data Submission Date.

9. MANUAL READING, COLLATION AND SUBMISSION OF METER DATA FOR GENERATION COMPANIES AND DISTRIBUTION COMPANIES

A. General Considerations on Submission

- i. Both the Participant and the System Operator shall collate the readings and submit Meter readings to the Market Operator in the specified format not later than the Meter Data Submission Date.
- ii. Meter Reading Submission Format shall indicate: Participant's Name and Settlement Month as overall heading, then column headings as Serial No, Name of Substation, Voltage Level, Trading-Point Name, Meter No, Present Reading, Previous Reading, Multiplication Factor (MF), Net Energy, Remark. All the headings are cascaded according to the Districts for a subtotal. The sum of all the subtotals gives the Disco's energy consumption for the month. For GENCOs, the sum of all the nets from all the HV Feeders yields the total energy injected into the system while stating the imported energy from the system.
- iii. The collated readings shall be sent via E-mail or Courier. Faxed Meter reading(s) shall not be accepted due to possible lack of clarity or integrity.

B. Check Criteria

Collated meter data shall be checked by the Participant and the System Operator for:

- i. Accuracy, such as typographical errors with respect to the Meter readings in the field.
- ii. Consistency, by verifying that incomer energy reading (that acts as Check Meter) is equal to the sum of the Meter readings in the

outgoing feeders (that are Trading Points) in that Transmission Station within the Check Tolerance.

10. LATE SUBMISSION OF MANUAL READINGS

A. General Conditions

- i. If the Meter readings are not received on time from the Participant, the Market Operator shall use the readings submitted by the System Operator for the settlement process. If the SO readings are not available or adjudged to be inconsistent, the Market Operator shall use **Estimated Energy Reading** through an established process in this Market Procedure.
- ii. Once the Meter Data is received, the correction of the estimated energy shall be carried out in the Market Settlement for the month and effected in the following month as a change to Meter Data, as described in the Settlement Market Procedure.

B. Distribution Companies and Eligible Customers

- i. In case of late submission of Meter Data, the Market Operator shall use as estimated energy figure for Market Settlement **the highest recorded consumption of the Participant in the last three (3) months.**
- ii. The Market Operator shall apply a penalty for late submission of manual Meter Data readings by the Participant: if,
 - a. On the date the Final Settlement Statement is sent out, Meter Data from the Participant have not been received by the Market Operator. The Market Operator shall apply a penalty equal to 2% of the energy consumption

in the Final Settlement Statement, valued in Naira at the Participant's buying price.

- b. If after the Meter Data Submission Date, the readings from a Participant have not been received by the Market Operator but all such data is received prior to the Final Settlement Statement, the Market Operator may apply a penalty equal to 1% of the energy in the Final Settlement Statement Valued in Naira at the Participants buying price.

C. Generation Companies

- i. For a Generator's late submission of Meter Data, the Market Operator shall use **as estimated energy the minimum between the metered generation data in the last three (3) months** and the energy generated in the month **calculated by the System Operator with its operational data.**
- ii. The Market Operator shall apply a penalty for late submission of Meter Data readings by a Generator as follows:
 - a. If on the last date of receiving the energy data for Final Settlement Statement, the Market Operator has not received a Genco's Meter Data, the Market Operator shall apply a **penalty equal to 2% of the energy generation** in the Final Settlement Statement valued in Naira at the Participant selling price.
 - b. If MO did not receive a Genco's Meter Data for Preliminary statement but received before the final settlement statement the Market Operator shall apply a penalty equal to **1%** of the energy generation in the Final Settlement Statement valued in Naira at the Participant selling price.

11. RECONCILIATION OF METER DATA

- A. Reconciliation by the Market Operator shall start on the Meter Data Submission Date using the Data Return format advised by the Market Operator. The MO's structured data return format must not be altered or modified by any Participant.
- B. The Market Settlement shall be done using the Incomer Feeder (Transformer Secondary feeder) as the Trading Points while the Check Meters shall be installed in series with the main trading-point meter. For faulty Meters, inaccurate readings or manual readings not submitted in time, the Market Operator shall use estimated data based on actual reading trend for the Market Settlement.
- C. The Market Operator shall check manual readings received from Participants against the readings received from the System Operator. If the readings differ, the Market Operator shall request the System Operator (in the Transmission Substation) to read again for a proper reconciliation, and then the System Operator's reading shall have precedence and be deemed valid. If the SO's reconfirmed data is still not acceptable to MO due to obvious trend reasons, the MO shall use estimation as defined in this procedure.
- D. Once a reading is identified **as inaccurate**, the meter engineer(s) of the Market Operator shall visit the site within thirty **(30)** days and, if the problem is from the Meter, the Participant who owns the meter shall be mandated to fix the problem urgently. If the problem is external to the Meter, the Market Operator shall inform the Participant and the Transmission Services Provider accordingly and also advise on derogation application if need be.

- E. If a Generation Trading Point Meter is defective, the Market Operator shall use the generation operations records of the System Operator to determine energy injected into the grid and use same as Meter Data for the Market Settlement of the month, if adjudged consistent.

12. COMPLAINTS ON METER DATA

A. Submission of Complaints

- i. To enable Participants verify the Meter Data used for the settlement and raise necessary objections, if any, the Market Operator shall include the Meter Data reconciliation format used in the Market Settlement as part of the supporting documents for the Preliminary Settlement Statement.
- ii. Until the Complaints Submission Date expires, Participants have the right to send complaints or observations to the Market Operator on the Meter Data for Market Settlement: The complaint must be sent in writing (including E mail) with a valid explanation.
- iii. If within the Complaints Submission Date a Participant does not object in writing (including by E mail) to the Meter Data included as supporting data for the preliminary Settlement Statement, it will be considered that the Participant accepts and agrees with the Meter Data used for the Market Settlement for the related month, and the Market Operator shall receive no further complaints, queries or objections on such data.

B. Review of Complaints

- i. The Market Operator shall review all complaints and queries received within the Complaints Submission period. If need be, during

the review of the complaint, the MO shall consult the System Operator and formally communicates the Participant as necessary.

- ii. The party that submitted the complaint and the Market Operator shall use their best endeavors to resolve the dispute. Not later than ninety **(90)** days after the Complaints Submission Date, the Market Operator shall review and resolve all complaints presented by Participants within the defined deadline.
 - a. If the complaint is considered valid, the Market Operator and the Participant shall agree on the Meter Data to be used for the Market Settlement in accordance with this Market Procedure.
 - b. If a complaint is considered not valid, the Market Operator shall inform the Complainant the reason for the rejection.
- iii. All Meter Data complaints resolved with correction prior to the Final Settlement Statement shall be reflected in the final Market settlement statement.
- iv. All Meter Data complaints resolved after the corresponding Final Settlement Statement that requires a correction shall be reflected in the Preliminary Market Settlement of the next Market calendar.

13. Data Retention Policy

The Market Operator shall retain the Settlement Meter Data for a minimum **(5)** five years.

A. PARTICIPANTS REGISTRATION

Market Operations (MO)'s is authorized by the Nigerian electricity Regulatory Commission (NERC) to be the sole operator of the wholesale electricity market in Nigeria. One of its responsibilities is to admit and maintain registers of all market

participants in the wholesale electricity market. You must complete and submit registration form to apply to be a market participant, if you wish to:

- » participate in the wholesale electricity market and/or
- » convey any physical services through the market's facilities.

If you hold more than one electricity license and intend to perform different functions pursuant to those licenses in the wholesale electricity market, you must submit separate application forms for each function.

REGISTRATION FORM

The MO has developed this form to facilitate the admission of participants into the wholesale electricity market in accordance with the market rules. You should read the relevant sections of the market rules prior to completing the forms.

ELIGIBILITY

Before an applicant is fully admitted as a Market Participant, the following requirements must be satisfied:

- » Hold a valid electricity license or an exemption order granted or issued, by NERC
- » Fall within one of the classes of persons who may apply for admission as a market participant (see below): and
- » Have entered into agreement with the TSP for the use of the Transmission System
- » Have entered into agreement with the relevant DISCO for the use of the Distribution Network (embedded GENCOS and Retailers)

TYPES OF PARTICIPANTS

The classes of entities that may apply for admission as market participants are:

- » Generation Licensees
- » Electricity retail licensees

» Distribution Licensees

» Others, neither Electricity Generation nor Electricity Distribution licensees, that have been granted an electricity license by NERC permitting them to trade in the wholesale electricity market.

PROCESSING PERIOD

The MO will acknowledge the receipt of an application in writing within five (5) business days of the receipt of the fully completed application form or any further information or clarification that may be requested by the MO. If the application is declined, the notification will indicate the reasons. A complete and accurate form will help the MO to process your participant admission application within thirty (30) business days of the receipt of the application.

APPLICATION FEE

A non-refundable fee of N1.5M is charged as application processing fee. This is payable to Market Operations Account with the following details:-

Bank Name:-

Account No:-

Sort Code:-

SECURITY COVER:

Sum of three months average of the Participant's Monthly Service Charge is deposited with the MO as performance Security Cover, pursuant to sections 15.1.4(b) and 15.3.3(a) of the market rule.

If a Participant has signed some contract quantities with any Bulk Electricity Trader, the MO shall calculate the Security cover for the Participant from the Contract documents which would be submitted to MO as required by the Market Rule.

The Security Cover in question is for the securitization of the Service Providers' monthly charges. This security cover must be paid by an applicant to trigger off her participation in the Market.

TECHNICAL INFORMATION

Submission of the technical information as contained in appendix I & II as attached is a condition for the processing of application for admission. Any Commercial Agreement between the applicant and TSP or Distribution companies must be attached.

METERING SYSTEM SPECIFICATIONS

All trading point meters must be Digital, COSEM/DLMS compliant, AMR ready with embedded modem and external battery for meter reading during system outage.

The Market Operator shall certify all applicants' metering and communication systems. Successful certification is one of the conditions for admission as a Market Participant.

B. FULFILLMENT OF DUTIES AND RESPONSIBILITIES:

The Applicant Participant certifies that it has:

- Installed and certified the communication equipment required to communicate with the System Operator for the activities it proposes to fulfill in compliance with the Grid Code;
- Installed and certified with the MO all metering facilities and communication equipment (E-mail) to communicate with the Market Operations; and
- The Bank Account and transfer mechanism, as required by the Market Rules for Market Settlement and Payment in compliance with the Market Rules and the prevailing Codes (Grid & Metering Codes);

- Undertakes to install prior to acceptance of its Admission Application the facilities and equipment, and have the Bank Account and transfer mechanisms specified;

For the purpose of registration, the Applicant Participant attaches the list of Connection Points, metering facilities and communication equipment, and a description of the Bank Account and transfer mechanism is attached. In the event that the metering facilities are not yet installed as at the date of this Admission Application, a plan and schedule for completion of installation are attached.

- **For the Generators**, the Applicant Participant must attach the list of power stations, generation facilities in each power station and generation capacity of each unit machine.
- The Applicant Participant certifies that it employs, or has contracted entities that employ personnel, who are fully qualified and competent to perform the duties, responsibilities, tasks and functions of the Applicant Participant under the Market Rules and Market Procedures, the Grid Code and Metering Code. The Applicant Participant agrees that the qualifications of such personnel shall be available to the System Operator and the Market operations for review.

C. ADDITIONAL OBLIGATIONS:

The Applicant Participant agrees to comply with all terms and conditions of the Market Rules, the Market Procedures, the Grid Code and Metering Code, as they may be modified from time to time.

- The Applicant Participant undertakes that, after registration is confirmed by the Market operations, the Participant shall inform the Market Operations through a written notification of any changes to the information provided on or attached to this Admission Application form

within three (3) Business Days of the change(s). Such changes in the Authorized Representative or the Bank Account for the Market shall be notified immediately.

- The Applicant Participant certifies that all information contained provided in this Admission Application is true and correct, to the best of its knowledge and belief.
- By submitting this Admission Application, the Applicant Participant shall be deemed to have agreed to abide by the provisions of the Market Rules.

SETTLEMENT MARKET PROCEDURE

Purpose

The purpose of this Market Settlement Procedure is to describe the settlement calendar and process by which the net amount to be paid by or paid to each Participant is calculated, taking into consideration trading by Participants (buying and selling of electricity), charges for services provided by the Market, penalties, interests for late payment, corrections to previous settlements, other charges applicable (e.g. VAT), in accordance with the Market Rules and the settlement of charges to be paid to the, the Commission, Transmission Services Provider, the System Operator and the Market Operator.

The Settlement Market Procedure also describes the calendar and mechanisms for Participants and the Market Operator to exchange and validate the settlement results and the administration of complaints.

Definitions

- **Distribution Company (*)** means a Company that buys energy from the electricity wholesale market.
- **Generation Company** means a generator that sales energy in the electricity wholesale market.
- **Market Settlement (*)** means the process of calculating charges, due from Participants who are required to make payment, and to be paid to Participants who are due to receive payments, pursuant to the Market Rules.
- **Settlement Quantity Meter Data (*)** means the processed data resulting from application of the validation and collection process to Meter Data obtained from a Meter in respect of each Participant
- **Transmission Use of System (TUOS) Charges (*)** means the transmission wheeling tariff for the use of the Transmission system

1. General Conditions

A. General Characteristics

- i. Settlements by the Market Operator shall be in Naira.
- ii. Market Settlement shall be made on a monthly basis.
- iii. Capacity in MW shall be settled per hourly availability recorded by System Operator.
- iv. Energy shall be settled in MWh or KWh monthly as read from the trading meters or fair estimations where meter data is not readily available.
- v. The settlement statements shall be dispatched to participants in PDF format.

B. Role of Market Operator

In accordance with the Market Rules (section 27), The Market Operator shall administer the Market settlement services to all participants in the Market.

C. Services and Charges

The settlement will include, as appropriate, the following charges as applicable in the market:

- i. energy charges
- ii. Capacity charges
- iii. Transmission Use of System (TUOS) Charges, for the services provided by the Transmission Services Provider;
- iv. System Operation Charge for the services of the System Operator, if not already included in the TUOS Charge.
- v. Market Operation Charge for the services of the Market Operator; if not already included in the TUOS Charge.
- vi. Regulatory Charge
- vi. Imbalance charges

D. Market Settlement System

- i. The Market Operator shall administer a settlement system (software and data bases) to calculate:
 - the Market Settlement amount payable by each Participant and
 - the Market Settlement amount to be paid to each Participant under the Market Rules, and the charges payable to each services provider
- ii. The Market Operator shall be responsible for the development and maintenance of the required software, data (inputs and results) of the Market Settlement System.

E. Market Settlement Calendar

The Market Settlement Calendar shows the dates for delivery of settlement statements, describing all process undertaken during the billing cycle. It describes the following dates:

- a) **Preliminary Settlement Date** means the date the Market Operator sends by courier/e-mail the Preliminary Settlement Statements.
- b) **Preliminary Complaints Date** means five (5) Business Days after the Preliminary Settlement Date.
- c) **Notification Date** means the date the Market Operator sends by courier/e- mail the Final Settlement Statements.
- d) **Final Complaints Date** means the last date for Participants to submit to the Market Operator complaints on the Final Settlement Statement of a month.

On the first day of July in the New Year, the Market Operator shall publish in its Website the Settlement and Payment Calendar, including the timetable for the dates defined in 2(E) of this procedure.

F. Market Settlement Statement

- i. The Market Settlement by the Market Operator shall calculate the monthly net result for each Participant in view of:

- a) Amount Payable due to purchase of energy;
 - b) Amount Payable due to ancillary services;
 - c) Amount payable due to the Commission for regulatory charges and services provided, as applicable;
 - d) Amount Payable due to penalties or interests for late payments, when applicable;
 - Plus or minus corrections to previous settlements.
 - Plus or minus any other payments or charges as may be deemed relevant by the Market Operator (e.g. VAT)
- ii. The Settlement Statements (both the preliminary statement and the final statement) prepared by the Market Operator for a Participant shall include the following items:
- a. Receivables as a result of energy sales,
 - b. Receivables as a result of sales of ancillary services,
 - c. Payables as a result of energy purchases,
 - d. Transmission Use of System (TUOS) Charges (wheeling) for the TSP
 - e. System operation charge,
 - f. Market Operations Charge,
 - g. Regulatory Charge;
 - h. Penalties;
 - i. Corrections to previous settlements,
 - j. The net Market Settlement amount for the month;
 - k. The taxes required by the applicable laws.
- ii. Each Settlement Statement shall be accompanied by the necessary supporting data for the Participant or services provider to whom the Settlement Statement applies to be able to verify the calculations. The supporting data shall explain, as necessary, applicable charges.

G. Preliminary Settlement Statement

Not later than the Preliminary Settlement Date, the Market Operator shall prepare and send a Preliminary Settlement Statement to:

- a. Each Participant, showing the expected monthly amount which, as a result of the Market Settlement calculations, would have to be paid by the Participant to the Market Clearing Account(s) if the preliminary Market Settlement amount is negative, or would be paid to the Participant Bank Account from the Market Operator Clearing Account(s) if the preliminary Market Settlement amount is positive.
- b. The Transmission Services Provider, the System Operator, the Market Operator and the Regulatory Commission showing the preliminary charges that, as a result of the Market Settlement calculations, would be paid respectively to the TSP Bank Account and/or the System Operator Bank Account, the Market Operator Bank Account and the Regulatory Commission Bank Account.

H. Complaints on Preliminary Settlement Statement

- i. Until the Preliminary Complaint Date of the month, the Market Operator shall verify the Preliminary Settlement Statement. In case the Market Operator identifies any mistake, the Market Operator shall review the settlement calculations and include the corresponding corrections in the Final Settlement Statements.
- ii. If a Participant or a services provider reasonably believes there is a numeric error or discrepancy in the Preliminary Settlement Statement, the Participant or services provider may file a complaint with the Market Operator not later than the Preliminary Complaint Date of that month. The complaint shall include a valid explanation. Complaints shall relate exclusively to errors in the settlement calculation. All complaints

regarding metering data shall be administered separately, as established in the Metering Market Procedure.

- iii. The Market Operator shall review all complaints on numeric error or discrepancy in the Preliminary Settlement Statement, submitted by Participants and services providers within the defined deadline.
 - a. If before the Notification Date a complaint submitted is considered valid, the Market Operator shall review the settlement calculations and include the corresponding corrections in the Final Settlement Statements.
 - b. If before the Notification Date a complaint submitted within the deadline is not considered valid, the Market Operator shall notify the party that submitted the complaint (the Participant or the services provider) that the complaint has been rejected with the reasons for the rejection.
- iv. A complaint presented on the Preliminary Settlement Statement shall be considered and resolved if the complaint is accepted as valid by the Market Operator and the corresponding correction included in the Final Settlement Statement, or if the complaint is rejected and the Market Operator informed the Participant or services provider that submitted the complaint of the rejection and the reasons that justified such rejection, and the participant agrees.

I. Final Settlement Statement

- i. Not later than the Notification Date, the Market Operator shall prepare and send the Final Settlement Statement:
 - a. To each Participant, showing the monthly amount which (as a result of the Market Settlement calculations) is to be paid by a Participant to the Market Clearing Account(s) if the Settlement amount is negative, or to be paid to a Participant Bank Account

from the Market Operator Clearing Account(s) if the Settlement amount is positive, for the corresponding month; and

- b. To the Transmission Services Provider, the System Operator, the Market Operator and the Regulatory Commission showing the charges that (as a result of the Market Settlement calculations) are to be paid respectively to the TSP Bank Account, the System Operator Bank Account, the Market Operator Bank Account and the Regulatory Commission Bank Account from the Market Operator Clearing Account(s) for the corresponding month.
- ii. The Final Settlement Statement shall include the same type of information as the Preliminary Settlement Statement.
- iii. Objections to a Final Settlement Statement shall not stop the obligation of the Participant to pay the amount due shown in the settlement statement in full.
- iv. Each Participant is obliged to pay the amount shown, if negative, in the Final Settlement Statement even if the Participant continues to object to the calculations, or if the Participant presented a complaint to the Preliminary Settlement Statement and such objection had still not been decided or resolved by the Market Operator.

J. Complaints on Final Settlement Statement

- i. All complaints presented on the Preliminary Settlement Statement that are not resolved prior to the Final Settlement Statement, shall be considered as objections to the Final Settlement Statement, without the need of the Participant or services provider to submit an additional objection or complaint.
- ii. A Participant or a services provider may reasonably object to the Final Settlement Statement when an error concerning either the settlement

amount calculation or the supporting data is identified. The objections shall be submitted in writing (including by Courier or E mail) to the Market Operator not later than the Final Complaint Date. The application for objections shall indicate the valid justification for such objection.

- iii. The Market Operator shall review the reasons for the objection through examination of the data bases and settlement calculations, and communicating with the party that submitted the objection. In case the objection is regarding the metered data, this will be administered in accordance with the Metering Market Procedure.
- iv. The party that submitted the objection and the Market Operator shall use their best endeavors to resolve the dispute. Not later than sixty (60) days the Market Operator shall review and resolve all objections presented by Participants and services providers.
 - a. If the objection is considered valid, the Market Operator shall make the corresponding corrections to the Final Settlement Statements.
 - b. If the objection is not considered valid, the Market Operator shall notify the party that submitted the objection (the Participant or the services provider) that the objection has been rejected with the reasons for the rejection.

K. Corrections to Previous Final Settlement Statement

- i. The Market Operator shall make corrections to Final Settlement Statements in the following cases:
 - a. A Participant or a services provider submitted a complaint regarding a settlement calculation or metered data within the established deadlines, the complaint is considered valid by the

Market Operator and either the Metered Data or the calculation needs to be corrected; and/or

- b. If the Market Operator determines that there was an error in a Final Settlement Statement, even without any complaint, prior to the Final Complaint Date.

- ii. When the Market Operator determines that a Final Settlement Statement has to be corrected, the Market Operator shall send a written notification to the affected Participants and/or services provider, with the corresponding explanations.

- iii. The Market Operator shall include the related corrections as a “correction item(s)” in the Settlement Statement corresponding to the first Market Settlement process following the resolution of the complaint or identification of an error by the Market Operator.

PAYMENT MARKET PROCEDURE IN THE TRANSITION STAGE

1. PURPOSE

- The purpose of this Payment Market Procedure is to describe the Market payment calendar and the payment system used by Participants AND the Market Operator to pay Participants the amounts arising from the Final Market Settlement Statement, and the administration of special conditions such as late payment or insufficient payments, in accordance with the Market Rules.

2. DEFINITION OF ACCOUNTS

- Participant Bank Account has the meaning given to it in Rule 31.6.

- Each Participant shall maintain a bank account with the Bank from which payments to, and from, the Market Operator shall be made pursuant to these Rules.
- No Participant shall effect any change in its account with the bank without giving at least 15 Business Days prior written notice to the Market Operator.

MARKET ACCOUNTS

- The Market Operator shall maintain three accounts in the Bank appointed to administer the payment system as follows:
 - a Market Account, for payment of the System Operation and Market Administration Charge;
 - a Market Escrow Account, into which Participants shall pay Market Transaction Charges; and
 - a Reserve Account into which the Market Operator shall deposit any payments made by Participants for non-compliance with these Rules, in, as established in these Rules. This reserve accordance with the procedure established therein, provided that in cases of non-payment by one or more Participants, the reserve in the Reserve Account shall be transferred to the Market Escrow Account to cover any payment shortfall.

3. TRANSFER SYSTEM

- Once every month, the Market Operator shall send a summary of the final Settlement Statement to the Bank appointed to settle the payment system. In respect of each Participant, the summary shall specify:
 - amount due for transmission usage charges;
 - payment due for the System Operation and Market Administration Charge; and

- any amounts due in respect of Market Transactions:
- If the Participant has a negative Market Transaction, the payment due to be made into the Market Escrow Account by that Participant; or
- If the Participant has a positive Market Transaction, the factor stating the proportion of the monies deposited in the Market Escrow Account that the Bank will transfer into that Participant's account.
 - The Market Operator represents the Participants, but does not assume payment responsibilities.
 - Bank informs MO of deposits in escrow account and defaults from participants
 - If default information is received, MO directs the participant in default to make the payment.
 - If not done or incomplete, MO uses the Security Cover to transfer to the escrow account
 - If Security Cover is not enough the MO uses the Reserve Account
 - MO notifies SAP of defaults

4. GENERAL CONDITIONS

- General Characteristics
 - Payments in the Market shall be in Naira.
 - Market payments shall be made on a monthly basis.
- Role of Market Operator

Each month the Market Operator shall administer the Market Payment System, for Participants to pay the debit due or be paid the credit for the

previous month and for services providers to be paid their corresponding charges, as specified in the Final Settlement Statement.

The Market Operator shall act in this process representing Participants and services providers, but without assuming payment responsibilities. Debts and credits shall remain as rights and obligations of the Participants, and the Market Operator is not liable for non-payments of Participants.

- General Characteristics
 - The Market Payment System shall be through Bank Accounts and transfer procedures, for the purpose of facilitating settlement and ensuring timely payment.
 - The Market Payment System shall include the following:
 - Bank account of each Participant (Generation Companies, IPPs, Distribution Companies, Special Trader or headquarters acting as Special Trader)
 - Bank account of each service providers (the Transmission Services Provider, the System Operator and the Market Operator)
 - Special funds;
 - Market Accounts; and
 - Transfers between these accounts

5. MARKET PEYMENT SYSTEM

- General Characteristics
 - The Market Payment System shall be through Bank Accounts and transfer procedures, for the purpose of facilitating settlement and ensuring timely payment.
 - The Market Payment System shall include the following:

- » Bank account of each Participant (Generation Companies, IPPs, Distribution Companies, Special Trader or headquarters acting as Special Trader)
- » Bank account of each service providers (the Transmission Services Provider, the System Operator and the Market Operator)
- » Special funds;
- » Market Accounts; and
- » Transfers between these accounts

REQUISITES

- To qualify as part of the Market Payment System a Bank Account must fulfill the following requisites
- The Bank rating must not be lower than AAA by Augusto rating or Banking index.
- The Bank must commit that all transfer instructions are effected within 48 hour.

PARTICIPANTS' BANK ACCOUNTS

- As Participant that is duly registered with the Market Operator, i.e Generation Company (successor Genco), each Distribution Company, each Eligible Customer and the Special Trader shall have and maintain a Bank Account for the administration of the Market Payment System, called the Participant Bank Account and have their security cover in place as the case may be.
- To be authorized as a Participant, the Market Operator must approve the Participant Bank Account.
- IPPs may use as Participant Bank Account the account agreed for payments in its PPA.

- When applying to register as a Participant, the Applicant Participant shall inform the Market Operator the name of the Bank and number of the proposed account for the Market Payment System, together with a signed declaration that the account complies with the requisites established for the Market Payment System in the Market Rules and this Market Procedure. The Market Operator shall review the proposed account to verify compliance with the established requisites.
- If the Market Operator identifies that the proposed account does not comply with the requisites established in the Market Rules and this Market Procedure, the Market Operator shall reject the application and request the applicant to propose another bank arrangement that meets the requisites.

NON PAYMENT

- The Bank shall notify the Market Operator of:
 - Payments made into the Market Escrow Account; and
 - Participants that defaulted, in full or in part, in settling the charges stated in the Final Settlement Statement.
- If after deadline expires without the Participant depositing or transferring the full amount due into the Market Escrow Account, the Market Operator shall implement the following procedure:

ENFORCEMENT OF NON PAYMENT

The Market Operator shall enforce the Security Cover in respect of any outstanding payment, and shall transfer to the Market Escrow Account, the lesser of:

- The amount due under the settlement; or
- The amount of the security.

- If the Security Cover is insufficient to cover the amount due, the Market Operator shall instruct the Bank to transfer from the Reserve Account to the Market Escrow Account, the lesser of:
- The amount required to cover the shortfall; or
- All the money standing to the credit of the Reserve Account.

PENALTY FOR NON PAYMENT

- The Market Operator shall enforce the Security Cover in respect of any outstanding payment, and shall transfer to the Market Escrow Account, the lesser of:
 - the amount due under the settlement; or
 - the amount of the security.
- If the Security Cover is insufficient to cover the amount due, the Market Operator shall instruct the Bank to transfer from the Reserve Account to the Market Escrow Account, the lesser of:
 - the amount required to cover the shortfall; or
 - all the money standing to the credit of the Reserve Account.

APPENDIX I

APPLICABLE ONLY TO GENCOS AND IPPs

- The technical data required of the Generator applicant includes and not limited to list of the Generating Units and their fixed electrical parameters.
- The Systems and Operational Data, comprising single-line diagrams and the electrical parameters relating to the facilities connection to the System Operator Controlled Grid.
- The applicant participant's load characteristics, providing the estimated parameters of load groupings in respect of harmonic content and sensitivity to grid frequency deviations.
- Data relating to Reactive Support Service Facilities other than those owned by the TSP.
- Short circuit in-feed to the System Operator Controlled Grid from the applicant participant's system at any connection point.
- Maximum net capacity of the generating unit.
- Minimum synchronization time of the generating unit.
- Minimum level of output for which the generating unit must, or is scheduled to run.
- The minimum continuous run time of the generating unit, if it is scheduled to run.
- The minimum continuous downtime of the generating unit, if it is scheduled to Desynchronize.
- The maximum ramp-up rate of the generating unit.
- The maximum ramp-up rate of the generating unit.
- The maximum availability.
- The ancillary service capability.
- The Governor droop; and

- Automatic Voltage Regulator (AVR) capability.
- Such other details, information and documentation as may reasonably be required by the system operator.

Note: Market Operations shall require test to be carried out on applicant participant's equipment. Successful completion of these tests is a condition for admission.

APPENDIX II

APPLICABLE ONLY TO RETAILERS, DISCOS AND ELIGIBLE CUSTOMERS

- Technical data for applicant participant's power transformer(s)
- Single line diagram of applicant participants network, showing the geographical locations of all distribution transformers, ring main unit, isolator etc.
- List of injection sub-stations, manned or un-manned and their conditions and locations.
- Load characteristics of the area of operation, showing maximum demand, minimum demand and expected annual load growth rate.
- Revenue generation profile in the past 2 years and expected annual growth rate.
- List of distribution transformers, showing, serial number, capacities, voltage ratio, frequency, full load losses and no-load losses.
- Percentage loading of power and distribution transformers
- Customer population according to their demography, and their expected annual growth rate.
- Stock level of fast moving distribution materials, e.g. conductors, cables, transformer oil, fuses, feeder pillars, etc.
- Stock level of equipment, e.g. power transformers, distribution transformer, panels, breakers, etc.
- List of metered customers, customers on direct connections and customers with faulty meters.
- List of meters in circuit, showing details as per MO/ MC specs.

Note: Market Operations shall require that a physical inspection of the applicant participant Metering installations and network be carried out. Successful conduct of this inspection is one of the conditions for admission into the Market.

The MO, based on the previous operations of the licensee, may use reasonable endeavor to grant a waiver where reasonable.