QUOTATION REF NO: CBK/019/2013/2014

SUPPLY, INSTALLATION, TESTING

AND COMMISSIONING

OF

A 20 KVA UNINTERRUPTIBLE POWER SUPPLY UNIT (UPS)

FOR

FINANCIAL REPORTING CENTRE

AT

CENTRAL BANK OF KENYA,

PENSION HOUSE, NAIROBI

CLOSING DATE: MONDAY. 11/11/2013 AT 10.30 AM

SECTION A

SPECIFICATIONS FOR SUPPLY, DELIVERY AND INSTALLATION OF A 20 KVA UNINTERRUPTIBLE POWER SUPPLY UNIT (UPS) FOR THE FINANCIAL REPORTING CENTRE (FRC) OFFICES AT CENTRAL BANK PENSION HOUSE, NAIROBI

A. NOTES TO BIDDERS

1. The Bidder will be required to submit his/her quotation as per the attached specifications.

2. The quotation submitted shall be for **the supply, delivery, installation, testing and commissioning of a 20 KVA Uninterruptible Power Supply Unit (UPS)** and related works as per the attached specifications.

3. The quotations submitted shall be for the complete works and these specifications will only serve as a guide as to the scope of work. Therefore Bidders are required to make thorough inspection of the area of work to ensure they understand the scope of work clearly before submitting the tender.

4. All prices entered in the offer shall be inclusive of all Government taxes and no claims for lack of understanding or omission in this regard will be accepted after the award of tender. Therefore, Bidders are requested to ask for clarifications where and if necessary.

5. The Bank will not be obliged to accept the lowest or any tender.

6. The tender will be a firm lump sum figure expressed in Kenya Shillings, to cover all works. No variations will be accepted after award of tender.

7. Payment for the works will be done after supply, installation and commissioning of the same.

8. The quotation shall remain valid for 120 days from the date of tender opening.

9. Quotations to be dropped into the Green Quotation Box on the Ground Floor at Central Bank of Kenya, Headquarters Building before the closing date i.e. **Monday 11/11/2013 at 10.30 am.**

SECTION B

EVALUATION CRITERIA

1. MANDATORY REQUIREMENTS (MR)

The following mandatory requirements **MUST** be met notwithstanding other requirements in the documents for the bidder to proceed to Scoring Evaluation Criteria:

NO	REQUIREMENTS	TENDERER'S RESPONSE
MR 1	Provide copy of the company's Certificate of Incorporation/Registration (legal structure)	
MR 2	Provide copy of the company's **current/valid** Certificate of Tax Compliance issued by Kenya Revenue Authority (KRA). The Tax Compliance Certificate **should be valid up to or beyond** the tender closing date.	
MR 3	Visit the site to confirm measurements and site details before completing and submitting the tender **(Register the visit with CBK Projects Office).**	
MR 4	Provide Tender Security (Bid Bond) of **KShs 10,000.00** (Kenya shillings ten thousand only) in form of a Bank Guarantee from a Bank or a Bond from an Insurance Firm approved by Public Procurement and Oversight Authority (PPOA).	
MR5	To provide Manufacturer's or Master Distributor's letter of authorization confirming the bidder as dealer/vendor in the region of the proposed type of UPS.	
MR6	Provide a draft maintenance contract showing the anticipated annual maintenance cost, terms and conditions applicable after the one year warranty period.	

Only Bidders who meet all the above Mandatory Requirements will qualify for further evaluation. Those who do not meet the requirements will be disqualified forthwith.

2. SCORING EVALUATION CRITERIA

	Evaluation Attribute	**Tenderer's Response**	**Weighting Score**	**Max Score %**
T1	Number of years in the business of UPS installation and maintenance		• 3 Years and above: **30%** • Others prorated at: Number of years x 30 3	**30**
T2	Provide a list of clients and give references letters from the company where you have installed similar UPS systems each valued at KShs 2 million and above in the last 5 years		• 5 or more clients: **30%** • Others prorated at: Number of clients x 30 5	**30**
T3	Provide a list of qualified UPS technician/ engineers in the company (Attach CVs and relevant supporting documents)		• 5 or more technicians /Engineers: **30%** • Others prorated at: Number of tech. x 30 5	**30**
T6	Delivery/ completion period after the award of tender (the quoted period should be realistic)		• Shortest period: **10%** • Others prorated at: Shortest Period x 10 Tender period	**10**
	Total			**100**

3. LOWEST EVALUATED BIDDER

Only bidders who **score 70 of the total 100 score** on the above evaluation will be ranked and the one having the lowest price will be declared the Lowest Evaluated Bidder.

The Lowest Evaluated Bidder will be recommended for the award of the contract.

	Name of Bidders listed from the lowest to the highest price	**Rank**
1.		
2.		
3.		
4.		
5.		

SECTION C

SCHEDULE OF GENERAL SPECIFICATIONS AND REQUIREMENTS

1.0 General Requirements

1.1 This specification covers the design, supply, delivery, installation, testing and commissioning of a continuous duty, 50 Hz, 415V, three phase, (four-wire and earth) uninterruptible power supply unit of the capacity stated in the technical specifications of this document complete with maintenance-free sealed battery. The uninterruptible power supply unit shall operate in conjunction with the existing power distribution system. In the event of an emergency mains power failure the UPS shall be able to supply independently at least 10 minutes of clean and regulated uninterruptible power for the connected equipment and other critical loads connected to the UPS using the power from the internal batteries. Only **"True-On-Line"** technology, Double Conversion also called Voltage Frequency Independent Operation with By-pass (VFI according to IEC 62040-3), following the IEC-62040 standard, are accepted.

1.2 The UPS and all associated equipment and components shall be manufactured in accordance with the IEC 62040 standards or equivalent and approved.

1.3 The UPS manufacturer shall be ISO 9001:2000 certified and shall have a minimum of 10 years experience in the design, manufacture and testing of UPS systems.

2.0 Submission requirement

2.1 The Quotation submission shall be in sufficient details to show compliance to the specification and shall include a full set of descriptive and technical literature on the equipment and system proposed.

2.2 The following drawings and information are to be submitted with the proposal:

- Functional description;
- Dimensions, weight and heat dissipation of units;
- Layout plan of front and rear panel;
- Installation drawings.

3.0 Environnemental Conditions

3.1 The UPS shall be capable of withstanding any combination of the following environment conditions in which it must operate, without mechanical or electrical damage or degradation of operating characteristics:

- Ambient temperature :0 to 40 degrees Celsius
- Relative Humidity :15% up to 95%
- Interference :The UPS shall be provided with EMI/RFI suppression

3.2 Noise generated by the UPS system under any condition of normal operation shall not exceed an allowable sound pressure level of 55 dBA at 1 meter according to EN27779

3.3 For safety purposes the UPS shall be equipped with a back-feed protection contactor in the bypass circuit. This back-feed protection shall be installed as standard inside the UPS cabinet.

4.0 System description

4.1 The UPS shall consist of the following major equipment:

a) Rectifier
b) Boost converter
c) Battery charger
d) Static inverter
e) No-break static transfer switch
f) Maintenance by-pass switch
g) Battery bank for standby full load supply for at least 10 minutes
h) Main control panel with LCD display

4.2 The UPS system shall be able to operate in any of the following modes:

4.2.1 **On-line Mode** - During on-line operation mode, the UPS system shall be used to provide precise regulated and transient-free power to the computer equipment loads. The mains supply provides power to the input converter. The input converter shall provide regulated DC power to support the inverter and simultaneously supply the battery charger to maintain the battery in a fully charged condition. The inverter shall convert the DC power into regulated AC power for the load.

4.2.2 Battery Mode - Upon failure of the mains supply, input power for the inverter shall automatically be supplied from the connected battery. When the mains are restored or the standby generator set supply is ready, input power for the inverter and for recharging the battery shall automatically be supplied from the rectifier. If the input does not return, the UPS shall automatically shut itself down in an orderly manner when the discharge limit of the battery is reached.

4.2.3 **By-pass Mode** - Upon the failure of static inverter, the no-break static transfer switch shall be activated automatically to isolate the faulty inverter and at the same time maintain a continuous supply to the system load. The automatic transfer mode shall also operate in the event of system overloading or if irregular or undesirable output for the load is detected. In this case, the system shall automatically return to the original on-line mode operation if the disturbance is cleared.

4.2.4 **Manual By-pass Mode** - If the UPS system needs to be isolated for service or maintenance, the maintenance by-pass shall transfer the load from inverter to the mains without interruption and vice versa.

5.0 Electrical characteristics

5.1 General

The actual load carrying capacity of each UPS shall be as per Bills of quantities.
UPS Output Power Rating shall be **TPN, 415V**, 4 wire plus earth, power factor 1.0

5.2 Input power supply characteristics

a. Voltage = 324 - 478 Vac (at full load)
b. Frequency = 45 - 66 Hz
c. Power Factor $\geq$ 0.8 lagging

5.3 Output UPS characteristics

a. Output - Voltage = 400/415 TPN
- Frequency = 50/60 Hz, $\pm$ 0,1% if free running
= $\pm$ 4% with mains synchronised

b. Output power factor = 1.0

c. Output voltage THD - Linear Load = < 2%
- Non linear Load = < 3%

d. Voltage Transients - at 100% load step = +/- 3%

e. Recovery Time = <20 msec.

f. Inverter Overload Capability = 125% for 10 min.
= 150% for 1 min

g. Crest Factor Acceptance > 3:1 (according to EN-50091)

6.0 Input Converter

6.1 General

The input converter shall consist of a rectifier which converts the utility voltage into an unregulated DC voltage. This unregulated DC voltage is converted in a regulated, controlled DC voltage by a boost converter. The boost converter supplies power to the inverter and to the battery charger. The boost converter also provides a power factor corrected input to the UPS.

6.2 Capacity

The UPS shall have sufficient capacity to support a fully loaded inverter and at the same time maintain the battery in a fully charged condition.

7.0 Battery Charger

7.1 If the battery is fully discharged, with the standard current, the battery charger shall recharge the battery to 90% of its fully charged condition preferably within six to eight (6-8) hours and at the same time supplying full load current to the system.

7.2 The battery charger output voltage shall be automatically adjusted in proportion to the ambient temperature of the battery as per the battery supplier's recommendation to avoid over-charging.

7.3 The rectifier/charger output current and voltage shall be limited to the battery supplier's recommendation.

8.0 Inverter

8.1 The conversion of DC to AC must be accomplished by power transistors of high quality type. Failure of any components or power stage shall not interrupt the AC output. Instead it shall disconnect itself from the configuration while transferring the load to the static transfer switch and activate an alarm.

8.2 The inverter output voltage shall be controlled by microprocessor-based software that generates pure sine wave.

8.3 The waveform shall be fed through a filter circuit and protected by fast fuses. The inverter shall be able to handle short-circuit conditions without any damage.

8.4 The neutral of the inverter output shall be electrically isolated from the UPS system chassis.

8.5 The output frequency of the inverter shall be controlled by an oscillator, which can be operated as a free running unit or in synchronised operation with a separate AC source.

8.6 If the external synchronising source deviates from the pre-set frequency by $\pm$ 4% (adjustable), the oscillator shall automatically revert to free-running, and the microprocessor controlled accuracy shall be $\pm$ 0.1%.

9.0 Electronic by-pass switch

9.1 The electronic by-pass shall consist of a static switch, used to provide an uninterruptible transfer of the load to the utility in case of remarkable variation of the output voltage.

9.2 The electronic by-pass switch shall return the load automatically to the UPS when the malfunction or overload is cleared.

9.3 The electronic by-pass switch shall consist of microprocessor controlled thyristors.

9.4 The electronic by-pass switch shall be able to be activated manually by a switch/push button to test bypass operation. The switching time from inverter to reserve (bypass) and

vice-versa shall be of No-Break. If there is no synchronisation this test should be disabled automatically.

10.0 Maintenance by-pass

10.1 The maintenance by-pass shall be based on a manually operated switch which allows the electrical isolation of the UPS from the load while still supplying the load with power directly from the utility.

11.0 Battery / battery test

11.1 A battery shall provide the UPS system with a stored energy source. The battery shall be of a type designed for standby power service. The cells shall be completely sealed maintenance free.

11.2 The ampere-hour rating of the internal battery of the UPS shall be sufficient to support the inverter for the protection time of 15 minutes with the inverter operating at full rated load at power factor 1.0.

11.3 Bidder shall submit full technical data of the battery offered under the tender and shall provide calculation to show the number of cells required and their capabilities which shall match the load requirement and the charging characteristics of the UPS requirement being offered.

11.4 Bidder shall specify the recommended voltage per cell for float charging and recharging, acceptable electrolyte specific gravity when fully charged at 10 degrees Celsius.

11.5 The design life span of the battery shall not be less than 5 years and only battery with proven field applications of not less than 10 years in Kenya shall be accepted.

11.6 The internal battery shall be mounted on shelves inside a cabinet

11.7 The UPS must be provided with an automatic battery test system.

11.8 The end of discharge voltage of the batteries must be load dependent in order to prevent deep discharging of the batteries whilst utilizing maximum available capacity.

12.0 Instrumentation

12.1 A back-lit 4 x 20 alpha-numeric characters Liquid Crystal Display (LCD), controlled by push buttons shall be provided.

12.2 The UPS system main control panel with LCD back-lit display shall include the following measurements indications:

- Mains voltage and mains frequency, and the current delivered by the mains
- Output voltage and output frequency, and the current delivered by the UPS
- Battery voltage and DC link voltage
- Remaining runtime (during mains failure)
- The total operating time of the UPS and inverter

12.3 The UPS system main control panel with LCD back-lit display shall include the following indications or controls:

- Start of a battery test
- Forced (manual) transfer to bypass
- Enable/disable ECO mode

12.4 The UPS system main control panel with LCD back-lit display shall include the following settings:

- Setting of the system operating frequency
- Setting of the system output voltage
- Setting of the installed battery capacity
- Bypass enable/disable
- Language on display shall be English. Other languages such as German, French, and Spanish etc may be included.

12.5 On the system alarm panel, a common audible alarm and indicating LED's shall be initiated when any of the following conditions are present:

- UPS is on battery operation
- UPS is on bypass operation
- UPS is on manual bypass operation
- Output is not synchronized to input
- Bypass input is out of limits
- High temperature
- Overload
- Batteries need to be replaced
- Batteries have low voltage

12.6 The UPS must be able to store over 240 alarms or events.

The Bidder shall provide detailed information for the above-mentioned together with their tender submission.

13.0 Mechanical Construction/Design

13.1 The UPS system shall be housed in free standing steel cabinet.

13.2 Forced air-cooling shall be provided to ensure that all components are operated within specifications with air entry on the side and exit in the top.

13.3 Input to the system and outgoing cables shall preferably be from the rear or the side of the cabinet.

13.4 The UPS system shall be of modular in construction for ease of maintenance and to minimise downtime.

13.5 Adequate space for termination shall be provided for incoming and outgoing cables. The cables for interconnecting the UPS and battery cubicles shall be supplied for side by side installation.

13.6 The equipment shall meet the requirements of protection class IP 21.

13.7 The UPS cabinet shall have stove enamel paint of neutral colour such as soft white of light grey.

14.0 Test and Acceptance Procedure

14.1 The Bidder shall submit detailed acceptance procedures and checklist which shall be designed to verify the full compliance of the installed system with this specification.

14.2 The acceptance test shall be carried out by the contractor's engineer and witnessed by the end-user's Project Engineer.

14.3 2 copies of the test report and commissioning certificate stating that the system has been installed and commissioned to the requirement of the specification shall be submitted to the end-user on handing over the commissioned system.

15.0 Hand-over Documentation

15.1 All documentation shall be written in good, simple and concise English using accepted technical terms, symbols and nomenclatures. For submission, all documentation shall be bounded with hard covers.

15.2 The document shall be updated regularly as the installation progresses. All changes in the installation layout, wiring, cabling and design shall be incorporated in its final edition. Three copies of this final edition shall be handed over to end-user upon commissioning of the system.

15.3 The final edition of the hand-over documents shall cover design, installation, commissioning, operation and maintenance aspects of the system.

15.4 One set of basic consumable spare parts shall be supplied under the contract.

16.0 Months Warranty and Free Maintenance

16.1 The Bidder shall be responsible for providing a 12 months Warranty and free maintenance of the system after the handover. In the tender submission, the Bidder shall include a draft maintenance agreement for the subsequent maintenance of the system for consideration by the Bank.

16.2 The draft agreement shall include a fixed sum proposed for annual performance of quarterly and regular comprehensive maintenance, testing and up-keeping of the system.

16.3 The Bidder shall submit as part of the maintenance proposal, a checklist on the activities to be carried out during the regular maintenance.

16.4 The Bidder shall provide evidence and undertake that round the clock on-call service is available to attend to system failure.

17.0 Interfaces and Communications

17.1 Potential Free Contacts must be available on the UPS to indicate at least 6 alarms. The alarm to be indicated should be free programmable from a list of alarms and working condition presents in the UPS software which should contain at least: general alarm; bypass active; battery low; utility failure ; Stop Operation.

17.2 Input Connections for customer provided signals must be available**"emergency power off"** (to shutdown UPS and load in the event of an emergency).

17.3 It shall be possible to connect the UPS to a TCP/IP network using SNMP (simple network management protocol) using the international standard UPS MIB. The SNMP adapter can be a plug-in card, an external SNMP box or a PC with a proxy agent.

17.4 The UPS shall have available data protection software compatible with Windows/95, Windows/98, Windows/NT, UNIX, Novell, OS/2 and other common operating systems.

17.5 The UPS shall be able to communicate relevant data and alarms via the Internet to multiple addresses as E-mail, FAX and SMS. The remote access to the UPS shall be protected.

SECTION D

PARTICULAR SPECIFICATIONS AND BILLS OF QUANTITIES

ITEM	TYPE AND DESCRIPTION	QTY.	UNIT PRICE KSHS	TOTAL PRICE KSHS
1. A.	**Specifications for supply, delivery and installation of a 20 KVA uninterruptible power supply unit (UPS) for the Financial Reporting Centre (FRC) Offices at Central Bank Pension House, Nairobi with the following among other features:** Type: 3-phase IN/OUT UP Power rating: 20KVA Battery Back-up In-built: 10 min autonomy on full load Minimum Specifications: ✓ Output Voltage: 415V 3 Phase ✓ Input Voltage range: 324V – 478V ✓ Rated output Frequency: 50 Hz. ✓ Input Frequency range: 45-66Hz ✓ Double conversion, True on line, No break ✓ Built-in static by-pass ✓ Harmonic/surge filters (INPUT / OUTPUT) ✓ Diagnostic Panel	1 (ONE)		
B.	**Manual Changeover switch.** Supply and install (with links to the mains & the UPS), an appropriate manual change-over/ maintenance switch rated at 30 Amps 3-phase.	1(ONE)		
C.	**1No Input and 1No. Output Distribution Boards (DBs)** Supply and install 2No. 100A. 6-way surface mountable DB each with an integral isolator. The DB should be Merlin Gerin or equal and approved and each shall be fully loaded with 2No. 60A Merlin Gerin 3-phase MCBs' plus 12No. 10A single phase MCBs. All MCBs to be curve 'D' type rated at 16KA protection.	2 (TWO)		
D.	**CABLING** Supply and install 16 mm square 5-core (TPN+E) insulated copper cabling from the input board to the UPS and from the UPS to the output Board (Bidders to take own measurements to confirm required cable lengths) All electrical works beyond the input and output boards will be undertaken by others or by UPS supplier under separate	Item		

	quotation.			
E.	**Allowance for other miscellaneous items / works. State details:**			
F.	**Total Carried Forward to Summary page**			

SUMMARY

SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF A 20 KVA UNINTERRUPTIBLE POWER SUPPLY UNIT (UPS) FOR FINANCIAL REPORTING CENTRE (FRC) OFFICES AT CBK PENSION HOUSE, NAIROBI

1. Sub- total sum for UPS as specified in the Bills of Quantities items K**Shs_____**

2. Add 16 % VAT KShs _____

3. Sub-Total KShs _____

4. Allow Provisional for contingency KShs 50,000.00

5. Grand Total to Form of Tender **KShs _____**

We submit our tender for the above specified works amounting to KShs._____ in words:

Kenya Shillings_____

_____

_____

1. Our Completion Period shall be _____weeks

2. Our tender will remain valid for _____days (not less 120 days) from the date of Tender opening.

SECTION E

DATA TO BE COMPLETED BY THE BIDDER

(Schedule of rates and quantities for maintenance purposes)

Further to your tender for the UPS Systems you are required to provide the following information with respect to consumables and major components for each type of the UPS tendered for:

A. State the make and type of the UPS_____

B. State the make and type of Batteries the UPS uses_____

C.	**Item**	**Qty**	**Cost KShs**	**Approx. Life Span.**	**Remarks**
1.	Batteries used				
2.	Main Rectifier Board				
3.	Others (*please specify*)				
4.					
5.					
6.					