Tender No. (SELCo. 05/2020)

Electrical Meters

Total	
Discount	
Total after Discount($)	

Total in words:……

Company……. **Signature…….**

The following data shall be filled and submitted with the tender:

Tender Number:……...

Tender Name:……...

Supplier Name: …….

Contact Person: ……

Address: ……....

Telephone Number: ……..

Fax number: ……..

Mobile Number: ……...

Email: ……

Bid Submission date and time: ……

Company……. **Signature…….**

Instructions to bidders

- *General*
  - Tender documents could be obtained from SELCo website or from procurement department.
  - Palestinian companies who are registered at the Palestinian ministry of economy are the only able to participate in the tender.
  - The bidder shall have a team highly experienced with the offered system.
  - Bid document price is a nonrefundable 400 US dollar and will be paid when submission the offer by the participant.
  - The bid validity is 90 days from the final submission date.
  - Possibility to split the tender.
  - Discount at source certificate is required.
- *Pricing*
  - The offered prices should be in US dollar.
  - All prices are Excluding VAT.
  - Prices include all charges up to SELCo warehouse.
  - In case of mistakes in summation, the unit price will be considered.
  - Prices include the full technical support for 3 years as mentioned in the technical specifications.
  - The awarded supplier of at least 50% of the tender value shall bear all expenses of four engineers to visit and inspect the meters and system at manufacturer premises including travelling, accommodation and all related cost.
  - The supplier price should include training for SELCo team to be able to deal with the new meters and its system. The system training should be directly by the manufacturer and could be accomplished online using video conference. The training plan should be submitted with the offer.

- *Bid submission*
    - The bidder shall submit two copies of the offer (one original and a copy).
    - Each copy shall contain each of the following in separate sealed envelope:
        - Financial offer
        - Bank guarantee
        - Technical offer
- *Bid opening*
    - Wednesday October, 07th 2020 12:00 pm is the final date for receiving the offers at SELCo headquarter / purchasing department and in sealed envelops. The offers will be opened in the same date and time.
- *Evaluation*
    - The offers which pass the basic requirements of the tender will move to the next stage of technical and financial evaluation.
    - The technical evaluation will be according to the table mentioned in the tender document.
    - The lowest price will has the highest grade in the financial offer.
    - The total evaluation will be the summation of the technical and financial offer grades.
    - The evaluation criteria will consider the following weights as follows:
        - 30% for the financial offer.
        - 70% for the technical offer as mentioned in the technical specifications.
- *Awarding*
    - The tender awarding will be within 90 days from the final submission date.
    - The tender could be awarded to more than one supplier if the offer is not fully complying with the requirements.

- The purchaser has the right to ask for implementing a pilot project if it is needed according to offer evaluation. The time for the pilot and quantity will be decided and agreed on with the supplier after evaluation. The supplier will be initially awarded for the pilot project.
- In case of implementing a pilot project, the final letter of award is subjected to the success of the pilot project.

- *Delivery*
  - The delivery period will start from the awarding date.
  - The initially awarded supplier will deliver the goods and system required for implementing the pilot project. in case of pilot project failure, the supplier will bear all the cost of the pilot project.
  - The awarded supplier shall deliver the goods within 90 days and/or as per the submitted and approved delivery schedule. The purchaser has the right to split the delivery to different stages.
- *guarantees*
  - All required bank guarantees shall be issued from local banks.
  - The supplier shall submit a bid bond equivalent to 5% of the bid value valid for 90 days with his offer.
  - The awarded supplier and within 10 days from receiving the awarding letter shall submit a performance bond equivalent to 10% of the tender value valid for 180 days.
  - After delivery, the supplier shall submit a maintenance guarantee equivalent to 5% of the tender value valid for 3 years.
  - Advanced payment bond shall be submitted equivalent to the advanced payment value and not more than 20% of the total awarded value and valid for 6 months before receiving the payment.

- *Warranty*
  - The supplier shall submit a written undertaking to the satisfaction of the purchaser to warranty the goods and system as follows:
    - A written warranty to replace the failed meters valid for a minimum 5 years.
    - A written warranty to repair the system or part of it from operation failure valid for a minimum 5 years.
- *Payments*
  - After receiving the final letter of award, the supplier could obtain an advanced payment after submitting an advanced payment bond not exceeding 20% of the awarded value.
  - The payments of the delivered items will be not later than 45 days from receiving the invoice and supporting documents and passing the technical inspection in the purchaser warehouse.
- *Fines*
  - 1% of the delayed item value per week of delay and not more than 10% of the total bid value from the date of the receiving the final letter of award.
- *For further information please do not hesitate to contact the procurement department:*

  Eng. Abdelqadir Qaisieh

  Purchasing Manager

  Tel: 02 2283602/3

  Fax: 02 2283601

  Email: abed@selco.ps

  Website www.selco.ps.

Schedule of Requested Materials

No	Item / Description	QTY	Unit Price ($)	Total($)
1	Single phase prepaid meter 5 (80) A STS compliant.(Split mode- DC wire connection)	5,000		
2	Single phase prepaid meter 5 (80) A STS compliant.(Split mode- RFID), with Split keypad (CIU)(RFID).	1,000		
3	Three phase prepaid meter 5 (100) A STS compliant.(Split mode- DC wire connection)	1,000		
4	Three phase prepaid meter 5 (100) A STS compliant.(Split mode- RFID), with Split keypad (CIU)(RFID).	200		
5	Split keypad (CIU) (DC wire connection)	3,000		
6	Split keypad (CIU)(RFID)	200		
7	Vending Stations	upon request up to 20		
8	Token generation tools	upon request up to 3		
9	System management software (server application)	upon request up to 3		
10	Database license	1		
11	API application (web services)	1		
Total Excluding VAT ($)				

TECHNICAL SPECIFICATION OF METERS

System Characteristics

The basic characteristics of the electrical systems and equipment shall be as follows:

❖ **Prepaid System**

a) **LV prepaid single-phase meter (split mode) :**
Nominal operating voltage 230V, 1-phase, 50 Hz, neutral solid earthed, **With a build in keypad.** Ready to be operated using separate customer interface unit (CIU) with DC wire connection.

b) **LV prepaid single-phase meter (split mode) :**
Nominal operating voltage 230V, 1-phase, 50 Hz, neutral solid earthed. Ready to be operated using separate customer interface unit (CIU) with (RFID).

c) **LV prepaid three-phase meter (direct operated) (split mode) :**
Nominal operating voltage 230/400V, 3-phase, 50 Hz, neutral solid earthed, **With a build in keypad ,** Ready to be operated using separate customer interface unit (CIU) with DC wire connection.

d) **LV prepaid three-phase meter (direct operated) (split mode) :**
Nominal operating voltage 230/400V, 3-phase, 50 Hz, neutral solid earthed. Ready to be operated using separate customer interface unit (CIU) with (RFID) .

e) **Vending station :**
Vending station with all needed equipments

f) **Token generation tool.**

g) **System management software (server application)**

h) **Database management system license.**

i) **Technical Support contract (software maintenance)**

General Technical Specification

The meters shall be designed to withstand the design stresses given below without damage and disruption of service. All tests shall as a minimum be based on these design parameters.

The meters to be delivered under this Contract must be warranted to function correctly without degradation of the guaranteed life time under the following network conditions:

1. The total harmonics up to 15%
2. Surge withstand and electromagnetic interference; as per IEC specifications
3. The Meters must sustain under-load of 10A per phase, with the phase to neutral over-voltage (420V) for 48 hours
4. Voltage fluctuation: -30% - +30% of nominal voltage.

- **Environmental Conditions**

Unless otherwise specifically stated in Particular Technical Specification, any equipment, component and assembly shall be designed for the following service conditions:

Description	Unit	Value
1 Altitude of site above sea level	m	-400 to + 1200
2 Ambient Temps: - Maximum Minimum	 °C °C	 80 - 25
3 Relative Humidity Maximum Minimum	 % %	 80 <10

- **Materials**

Standardization of Equipment

The Supplier shall be responsible for the standardization of all mechanical and electrical equipment, materials and devices.

Sealing and securing devices

Facilities for applying safety or security seals to metering devices, enclosures related to the metering system etc. shall be provided. The facilities shall be suitable for seals made up of multi strand steel wire with a circular lead seal, allowing the seal to be crimped using security sealing pliers.

Electrical Equipment Materials

All material delivered shall be of the best quality and of the class most suitable for working under the conditions specified and shall withstand the variations of temperature and atmospheric conditions arising under specified conditions without distortion or deterioration or the setting up of undue stresses in any part and also without affecting the strength and suitability of the various parts for the work which they have to perform. No welding, filling or plugging of defective parts will be permitted without the sanction in writing of the Purchaser.

Materials that are susceptible to mould growth under tropical conditions shall be treated to exclude moisture and prevent growth of mould after all machining has been carried out.

All apparatus, connections and cabling shall be designed and arranged to minimize the risk of fire and any damage that might be caused in the event of fire. All plastic material used in boxes, panels and boards shall be self-extinguishable.

- **Meter Housing**

The housing should comply with BS5685

- **Nameplates and Signs**

All equipment shall be clearly and permanently labeled in English, specifically marked according to the relevant IEC standard, to the approval of the Purchaser. The metering equipment will also be marked clearly indicating the connection diagram to the network. Where labels are provided for making clear the method of operation of equipment they shall be concise and preferably diagrammatic in form.

Before production of labels and notices the Supplier shall submit to the Purchaser full scale drawing of the proposed labels.

The name plate must contain a year of production.

General Technical Specification for Prepaid System

The prepayment system will be distributed by the Purchaser to SELCO distribution Company (SELCO) , it is therefore required that the prepayment system shall be uniquely coded via a database code or identifier linked to the meters. So that meters and token from this region cannot be used in another region-outside SELCO.

The prepayment environment will be made up of the following equipment and components:

- The metering device, this includes the user interface for the loading of credit and other data. The metering device must be securely mounted to prevent tamper. And also can be installed in two manner :
    1- Stand alone meter : the credit and other data can be loaded directly using meter **key pad.**
    2- Split meter :the credit and other data can be loaded through the Customer interface unit where the meter is installed away from the customer premises.
- Customer interface unit (CIU).
- The vending station, (hardware, software).
- Flexible and user defined reports from the software to allow reporting on all aspects of the system and the consumer consumption and spend. Trend analysis must form part of the reporting options.

➢ **General:**

- **Standards**

The STS prepayment meter will conform to the applicable IEC standards for this type of equipment. These standards are:

- BS EN61036: 1996: Alternating current static watt-hour meters for active energy (classes 1 & 2.)
- BS5685: 1979: Part 1: Specification class 0.5, 1 and 2 single-phase and Polyphase, single rate and multi-rate watt-hour meters.
- IEC61107: Data Exchange for Meter Reading, Tariff and Load Control.
- IEC 62055-41: Electricity metering-Payment systems. Part 41: Standard transfer specification (STS)-Physical layer protocol for one-way numeric token carrier systems.
- IEC 62055-31: Electricity metering-Payment systems. Part 31: Particulars requirements for static payment meters for active energy (classes 1 & 2.)
- IEC 62055-51: Electricity metering-Payment systems. Part 51: Standard transfer specification (STS)-Physical layer protocol for one-way numeric and magnetic card token carrier systems.

Where these standards have been updated by newer versions the most recent version will apply. The supplier must provide standards pertinent to the equipment. Included in these must be the security standards for the token device and the transfer mechanism. The standards must refer to the security standards applied, specifically including the token device, the transfer mechanism and for all interactions between the token and its environment.

The British Standard specific to the enclosure and form factor will apply. Where the meter security and anti-tamper measures cause a deviation from these standards, the supplier shall note these deviations.

The measurement standard will be for class 1 metering devices, active energy only.

Meter types will be:

- Split meter, where the measurement and contactor – used to disconnect the line from the load, will be housed in one enclosure and the customer interface unit CIU will be housed in a separate enclosure.
  - The measurement enclosure will conform to the all standard specifications relating to the split meter.
  - The Display will not be required to conform to the standard housing specifications.

- **Lifetime**

a) The equipment shall be certified for a minimum of a 12 year life cycle.
b) To ensure that this specification is satisfied the supplier shall submit a certified SLT-Statistical Lifetime Test according to Siemens Norm SN29500.
c) In addition the Purchaser will request the Supplier who will be awarded the contract to submit a certified ALT (Accelerated Lifetime Test) and IEC test reports, EMC test, using an international recognized and accredited test facility

- **Design and Construction**

a) The Contract Supplies shall be designed to facilitate inspection, cleaning and repairs and for operation, in which continuity of service is the first consideration. All apparatus shall be designed to ensure reliable and safe operation under the atmospheric conditions prevailing at the Site and under such sudden variations of load and voltage as may be met with under working conditions of the system, and short circuits, including those due to faulty synchronizing, within the rating of the apparatus. The general operating conditions are given in this specification.

b) In no part of the equipment, including bus bars, connection, isolators, fuses, contacts and cable boxes shall the temperature rise exceed the values specified in the relevant IEC or equivalent Standards.

c) Corresponding parts liable to renewal shall be interchangeable. When required by the Purchaser, the Supplier shall demonstrate this quality. All apparatus shall operate without undue vibration and with the least practicable amount of noise.

d) All apparatus shall be designed to exclude vermin and insects from entering the equipment.

e) Master cover and terminal cover shall be sealable separately .

f) The meters shall conform to the degree of protection at least IP 54 as given in IEC 529-1989.

- **Real Time Clock**

The metering device must have a real time clock providing an accuracy of better than 10 – second drift per month , and also equipped with temperature compensation .

- **Back up sources**
  - **Battery**

a) Lithium battery work at least 10 years.
b) Installed inside meter.
c) Simply to replace.
d) The meter shall has an alarm showing that the battery is low or damaged .
e) Battery is replaceable

- Super capacitor could be used ,in that case , specify the continuous time of meter working with super capacitor and with electricity consumption.

- **LCD Display**

a) The LCD should be at least with 2 line 16 characters
b) Can show the messages and the alarms clearly.
c) Backlight Availability .

- **Viewable Data in LCD:**

Minimum requirement data that LCD display should show:

a) Total credit and KWH
b) Remaining credit and KWH
c) Relay status
d) Volt / ampere
e) Current month consumption in KWH.
f) Total consumption in KWH
g) Date & time – meter date and time
h) Last charge inserted into the meter with relevant date
i) Charges sequence
j) KVARH for 3 phase meters.
k) Bypass and reverse energy .
l) Bypass and reverse times .
m) Bypass and reverse accumulative time .
n) Alarm credit
o) Total times of cover open
p) Overload times

q) Power fail times
r) Meter serial number
s) Software version number
t) SGC
u) Tariff index
v) Power limit level
w) Indicator of overload trip
x) Indicator of tamper trip
y) Indicators of inserting token status , (preferred sad face , happy face)

- **Alarm & Cautions**

Alarm should be configurable with visual (LED) and Audible (device).
The following are the minimum situations that the meter will generate alarms & Cautions:

a) Specified credit in KWH (low KWH).
b) Giving and register a caution when case of low battery.
c) When the meter in overload situation.
d) When the meter in the open cover situations .

- **Meter Security**

a) The meter work by SELCO token only .
b) The meter must be manufactured with SGC of SELCO that owned it from ESKOM
c) SELCO can convert the SGC to default SGC 999907 if its required .
d) Meter should be prepared for one customer only, so the customer token just work in his meter and have the ability to replace if it is lost.
e) Tamper detection (intrusion, by pass, reverse polarity, maintenance , terminal and meter cover open).

- **Operational Requirements**

- **Measurement**

  The meter must measure active energy to an accuracy of class 1, with a range from 5 to 80 Ampere for single phase and 10-100A for three phases. The meter is of the direct-connect type, with the standard applicable to this type of meter. The meter must also have a flashing red rate LED indication the rate of consumption and this indicator must also allow for calibration checks.

- **Real Time Clock**
  The metering device must have a real time clock providing an accuracy of better than 0.5-second drift per day. (Optional)

- **Data storage**
  The metering device must be able to store all program parameters and metering data on a non-volatile memory for at least 12 years in case of any power failure with the following features:
  a) Has an EEPROM memory to store configuration and necessary data, with data transmission rate not less than 32 bit /s
  b) Memory should not be affected when power supply shut off.
  c) The meter must store historical consumption data for 12 month at least.
  d) Facility to change it simply with the old data.

- **Reverse Energy**
  The meter must provide an anti-tamper indication on the display. The meter must also be able to be programmed to add both the forward and reverse energy to a single energy register. This energy register must be available on the display.

- **Credit display in KWH**
  The meter must be able to display the remaining credit in (KWH).

- **Low Credit Alarm**
  Once the available credit falls below a programmed level a visual and audible alarm must be triggered. The audible alarm should preferably be programmable by the utility regarding the duration once triggered and interval, until the condition is remedied.

- **Tariff**
  The meter shall have the capability to calculate the consumption with KWH energy values only. and the system allows configuring a tariff for 5 steps.

- **Current Limit**
  The meter must allow for current limiting to be programmed by the utility. The current limit function shall be activated with a 40 - 60 seconds delay after the current limit event occurred.

- **User interface-(for base type meter only)**
  - Push button or similar interface allowing the consumer to:

- Scroll through the displays
- Setting the relay back on after the consumer has credit the load.

- Display – for split meter equipment
- All features listed above in the topic (viewable data in LCD) must be available on the display in a user-friendly manner. Display sequences, parameter list and the display time should preferably be user programmable.
  - Digits: Minimum – 8, Minimum height – 4.5 mm
  - Backlit (optional)
  - Active Rate indication
  - Token activity: Insertion, Error insertion, Successful insertion, credit transferred
  - Error and Fault conditions
  - The display must function| during a power outage, that is, the display must be internally powered so that it functions when there is no external power supplied to the meter.

- Optical interface allowing interaction with the meter and a hand held unit or similar device. The optical interface will conform to IEC61107 and allow all functions of the meter to be extracted programmed and set **taking into consideration the security for SLECO.*(for base and din rail type).***

- **Audible device**

  The audible device must indicate various states important to the user; these include, but are not limited to the conditions listed below. The audible alarm should preferably be programmable regarding the duration once triggered and interval, until the condition is remedied.
  - Emergency credit
  - Load limiting condition
  - Token activity

- **<u>Single phase and Three phase (Direct Operated) Contactor</u>**

The relay inside the meter must be polarized latching type, used to disconnect the load, shall confirm to the following minimum standards:

a) Maximum switching power: 20kVA
b) Insulation: 4kV
c) The relay's life time is 20 years or 100,000 times (ON/OFF)
d) smart relay unit (Groner (Germany)) or equivalent .

The contactor will be triggered on the following conditions:

a) Zero credit reached, with the exception of friendly credit
b) Current limiting with a 20-40 seconds delay

c) Smart relay should open immediately when terminal cover / meter cover opened (in both conditions when the power is on / off on the meter)
d) Smart relay should open if the meter dose not has operational parameters.
e) Smart relay should open when the metering unit stops or gets interrupted.
f) in case meter malfunctioning , the contactor must switch to the open position.
g) In case of over and under voltage (should preferably be programmed by the user), the contactor must switch to the open position

- **Battery Alarm**
  The meter shall have an alarm showing that the battery is low or damaged.

- **Operational Modes**
  The meter shall operate in prepayment mode and should be able to programmed to operate in credit mode.

- **Meter Housing**
  The housing should comply with BS5685. Consideration will be given should other standards apply specifically to accommodate the anti-tamper and secure installation of the metering device. The meter dimensions must not exceed those provided for a single-phase and three-phase whole current meter within the standard. The user may decide to install the metering device inside an enclosure; provision must therefore exist for the supplier to cooperate with the user to assist in the design/assembly mechanism for such a fitment.

  One of the most prevalent tamper methods includes the piercing of the incoming conductor. Using an extended terminal cover, thereby ensuring that no conductor is visible, can prevent this. The terminal cover should therefore also be fitted with securing seals and an anti-tamper switch. Other alternatives include rear entry of the conductors into the metering device. The supplier must describe the method of ensuring or reducing the ability to tamper with the metering device.

- **Customer Interface Unit (CIU) – specific to split mode meters**
  The customer interface unit acts as a remote display and keypad for the meter. The CIU is a self-contained device that implements its own battery-backed power supply, or a DC input coming from the meter . Will display all information as meter display and it does have specific functionality that is of importance to the customer e.g. the indication of alarms for low credit or low battery conditions, communication to the meter etc.
  - The meters will incorporate a remote keypad and display unit for customer interface (CIU).
  - The CIU shall have 12 keys, includes "numeric keys" and "backspace" key and enter key to typing Token and/or return electricity to the meter on zero credit and warning credit or any other type of disconnection.
  - The CIU provides a serial of shortcut code to get meter information and make relevant operation thru the keypad
  - The keypad will allow to Scroll through the displays

- CIU should communicate via dc wire connection or RF with the meter.
- The CIU shall have a pair of 1.5V, AA sized, leak proof, alkaline cells batteries for operation when the power off.
- The customer interface unit will be required to operate on battery power under two conditions:
- Meter out of credit when pre-paid function is activated (load disconnected).
- A general power failure

- **Critical Performance Parameters**
  - The offered prepayment system complies with all the required specifications and functions
  - The software and database shall have no limitation on the number of named users and workstations it can accommodate.
  - A standard vending operation shall be less than 15 seconds from request to completion token printing or programming.
  - Thin client architecture shall require less than 32kb/sec to be functional over LAN/WAN.

- **Maximum Demand**

  The meter should be able to calculate the Maximum Demand in kW, for a programmable set of interval periods ranging from 5 minutes to 60 minutes. The date and time of the Maximum Demand occurrence should also be stored. The maximum demand should be reset automatically once a month – on the first day of the month. The previous maximum demand should be stored in a cumulative Maximum Demand register.

- **Load Management**

  The meter should provide a facility for load management. The contactor should be switched under the following conditions:
  - Programmed Load limit exceeded.

- **Communication – Meter and Customer Interface Unit**

  Communication through data wire connection:

  That means the medium of communication between the meter and the Customer Interface unit Is via Wire operated by DC voltage not exceed 24v.

  It must be possible to communicate with the meter via the Customer interface Unit, when credit is zero and the power to the consumer has been disconnected. The supplier is to indicate the method of managing this condition.

  Communication through (RF) modulation:

  That means the medium of communication between the meter and the Customer Interface unit is via RF technology with the following characteristic:
  - RF technology (point to point) over unlicensed spectrum.
  - RFID complaint with ISO/IEC 18000 and ISO/IEC 29167 standard series
  - Official certificate from international and well know organization (like IEEE, IEC,....) for bellow subjects is a must:

a- Laboratory test and measurement

b- Data communication
c- Power consumption

- **Token**
  The token is a data transfer mechanism; it transfers setup parameters and credit in kWh to the metering device.
  The same type of tokens must be used for all type of prepayment meters.

- **Security**
  The environment may be hostile and special consideration must be given to the security employed. Preference will be given to suppliers that can show exceptional secure designs and implementation. This should include standards applied, tests completed, installed base versus number of security violations, especially with regards to the token. An overview of the system integrity and details of the security employed, not only within the token but also to the entire environment must be supplied.
  The security of the system must be shown to be of a high standard between the various components that is the communications link between the meter and the customer interface unit.

- **Additional Features**
  The functions required are detailed below; the supplier should present any additional features.

- **Data Transfer**
  The token must transfer data to metering device.

- **Data transfer from vending station to metering device**
  - Purchased Credit – This must be in energy units (KWh). The supplier is to detail the method employed.
  - Program parameters – This will consist of switching tables, load management switching parameters (if available). These parameters should be transferred automatically without operator intervention.

Particular Specification for Prepaid Meters

1. **Single Phase Prepaid Meter**

Operational Requirements :

1) 5 (80) Amp prepayment meter.
2) Rated voltage : 230 v ± 30 %
3) Operating frequency 50 HZ
4) Accuracy IEC 62052 -11 class 1.0 at least.
5) Configured passing ampere.
6) Has a communication port to configure and read data from the meter according to IEC 61107.
7) Can work from -25 Cº to 80 Cº
8) Calculation inside meter with respect to kWh
9) Has three LEDs , one for meter status (relay status) , Another led for alarms, and the third one for output pulse (consumption).
10) Meter has the ability to store historical data for 12 month.
11) By basing current and reverse current indication.
12) Thermal shutting down protection.
13) Programmable current & power threshold.
14) The meters shall have terminal with bottom entry for cable and the arrangement shall be:
    i. L:N:N:L (live in, neutral in, neutral out, live out)
15) Provision to preset the meter to run without connect the meter with a customer on the customer management system by giving a charge to the meter and close the relay , the relay must open when this charge finished . SELCO team must have the capability to define the amount of the preset charge.
16) Provision to reset the meter , the meter must return to the Factory settings and shall be ready to reuse .
17) Single phase contactor to be rated at 80A maximum operating current
18) The contactor shall be of a single-pole type ensuring that LIVE is switched for single phase only.

- **Special requirements for LV prepaid single-phase meter (split mode-DC wire connection) :**

❖ The meter housing must be of base type with a **build in keypad** .
❖ the meter **must** be equipped with communication circuitry , that must be galvanically isolated ,non polarized, with output voltage 12 V DC.

- **Special requirements for LV prepaid single-phase meter (split mode-RFID connection) :**
  - ❖ The meter housing could be of base type or din rail type**.**
  - ❖ The meter **must** be equipped with (RFID) modem comply with the following :
    - RF technology (point to point) over unlicensed spectrum.
    - RFID complaint with ISO/IEC 18000 and ISO/IEC 29167 standard series
    - Official certificate from international and well know organization (like IEEE, IEC,...) for bellow subjects is a must:
      a- Laboratory test and measurement
      b- Data communication
      c- Power consumption

2. Three Phase Prepaid Meter (Direct Operated)

Operational Requirements :

1) 10 (100) Amp prepayment meter.
2) Rated voltage : 230/400 v ± 30 %
3) 3 phase 4 wire
4) Operating frequency 50 HZ
5) Accuracy IEC 62052 -11 class 1.0 at least.
6) Configured passing ampere.
7) Has a communication port to configure and read data from the meter according to IEC 61107.
8) Can work from -25 Cº to 80 Cº
9) Calculation inside meter with respect to KWH
10) Capability to measure and register KWH , KVARH.
11) Dual pulse output – dual Auxiliary relays .
12) Has three LEDs , one for meter status (relay status) , Another led for alarms, and the third one for output pulse (consumption).
13) Meter has the ability to store historical data for 12 month.
14) By basing current and reverse current indication.
15) Thermal shutting down protection.
16) Programmable for under / over voltage trip.
17) Programmable current & power threshold.
18) Self energized from the source i.e. without auxiliary batteries
19) Capability to measure and display :
    a. three phase voltages (phase – neutral), (phase – phase) .
    b. three phase currents (IL1 , IL2 , IL3).
    c. power factor .
20) The meters shall have terminal with bottom entry for cable and the arrangement shall be:
    L1L1:L2L2:L3L3:NN
21) Measure and register KWH consumed on neutral line.
22) Provision to preset the meter to run without connect the meter with a customer on the customer management system by giving a charge to the meter and close the relay, the relay must open when this charge finished.
    SELCO team must have the capability to define the amount of the preset charge.
23) Provision to reset the meter, the meter must return to the Factory settings and shall be ready to reuse.
24) Three phase contactor to be rated at 100A maximum operating current .
25) Three phase contactor to be rated at AC3 category

26) In case of phase failure for three phase meter, the contactor must switch to the open position
27) For 3 phase meters the relay shall switch all three phases in unison, that is, it shall not be mechanically possible to switch individual phases separately.

- **Special requirements for LV prepaid three-phase meter (direct operated) (split mode- DC wire connection) :**

❖ The meter housing **must** be of base type with a **build in keypad**.
❖ the meter **must** be equipped with communication circuitry , that must be galvanically isolated ,non polarized, with output voltage 12 V DC

- **Special requirements for LV prepaid three-phase meter (direct operated) (split mode- RFID connection) :**

❖ The meter housing **could** be of base type or din rail type**.**

❖ The meter **must** be equipped with (RFID) modem comply with the following :

- RF technology (point to point) over unlicensed spectrum.
- RFID complaint with ISO/IEC 18000 and ISO/IEC 29167 standard series
- Official certificate from international and well know organization (like IEEE, IEC,...) for bellow subjects is a must:
  a- Laboratory test and measurement
  b-Data communication
  c-Power consumption

3. Customer Interface Unit (CIU) – specific to split mode meters

a- *Customer Interface Unit (CIU)*- data wire connection

The Customer Interface unit must comply with the general electrical housing specifications and adhere to the general safety regulations required for electrical goods, specifically the resistance to fire. also have the following features:

1- The power for the unit should be through a DC input coming from the meter.
2- The CIU must function during a power outage, that is, it must be internally powered so that it functions when there is no external power supplied to the meter.
3- The operating range must not less than 120m.

b- *Customer Interface Unit (CIU)*- (RFID) connection

The Customer Interface unit must comply with the general electrical housing specifications and adhere to the general safety regulations required for electrical goods, specifically the resistance to fire. also have the following features:

1- The (CIU) should communicate with the meter using (RF) modulation .
2- The power for the unit should be through a DC input coming from the rechargeable battery .
3- The CIU must function during a power outage, that is, it must be internally powered so that it functions when there is no external power supplied to the meter.
4- The operating range must not less than 120m.

4. Vending Stations (client application)

1. The client stations work fine and perfect under Windows 10 both 32/64-bit Arabic and English version.
2. Security level for users at application level and data base level must allow assign single (or group of users) a set of allowed objects (functions or report sets). It must include:
    a. User permissions.
    b. SELCO team can define as many users and vending stations as they need.
    c. SELCO team can define any number of permission groups, vending category, tariff types, depts., fixed charges.
    d. SELCO team can assign access level (read, write, execute) for any application form at any permission group.
    e. SELCO team can map any user to any permission group.
    f. Ability to limit access (allow or not allow access) for a user at specific vending station.
    g. User auditing must be included from start time of system.
    h. The operator account enables for determined quantity of KWH and by validity date.
    i. Server aapplication installation, deployment, testing must be included.
    j. All needed database license, installation, media must be included.
    k. Connect to the central database by TCP / IP or more secured protocol.
    l. The application should cover these points:
3. The proposed prepaid application must work excellent with bellow SELCO needs:
    a. Three STS prepaid servers for three SELCO branches; each server has his ownsales points / vending stations and a server application.
    b. Meters will be installed at three different servers, according SELCO needs.
    c. Supplier must install a full test environment at SELCO primes including all needed applications, databases, software server needs, token generation needs.
4. Server, clients and database logs must be saved for future review with good utility to store/retrieve/ export logs, and must include all required fields needed by SELCO and can be changed as needed in future.
5. The possibility of programming step tariff at least 5 steps.
6. Time of Use Tariff must be included as a main function of the systems and Meter.
7. The tariff logs and history must save for future review at any time.
8. Vending station licensing through dangle or have a way to transfer license from one PC to another PC by SELCO team in case of PC failure is a must.
9. The credit transaction logs, for all vending stations, can be accessed for SELCO 3rd (PALPAY, …) must include: charging transactions, history, and API for online access and this API work in two ways, send & receive.
10. All API, web services, server application, vending client applications must be installed at SELCO premise and all software/API/services/web services/database/application must be at SELCO servers.

11. System must support Multilanguage interface (Arabic , English) with the ability to change interface language data by SELCO team for any language added to system .
12. All reports must be exported in the following formats (HTML , Excel , PDF , XML) with the ability to select the needed fields to be displayed by report .
13. All reports must be exported in the following formats (HTML , Excel , PDF , XML) and must support English and Arabic character set.
14. Customer vending receipt MUST be flexible to be changed by SELCO team according their needs, no restriction on updating receipt.
15. System must have a report generation ability to allow easily report making for any new needed reports.
16. CMS (Customer Management System) shall generate all types of tokens except credit token to transfer it to the meter with no needs to connect meter to customer.
17. Customer management system must have ability to deduct Fees and depts by these ways:
    a. Daily.
    b. Number of Times(from charge).
    c. Monthly.
    d. Percentage from total charge.
18. Local currency: NIS.
19. Adding new meters and new customers to system must be without limitation and no additional licensing is needed or additional fees.
20. Customer Management System shall give indicators for revenue, system transactions measurements, and status of resources components.
21. The online system shall be to handle at least 30 requests per second in parallel at same time.
22. SELCO must have ability to design vending receipt.
23. A standard vending operation shall be less than 15 seconds from request till token printing or programming.
24. Client application (vending station) shall work through VPN or VPN through internet network with client speed 1M symmetric and main server bandwidth of 8M symmetric, while number of client applications between 15 – 60 at each server.

5. Token

Token is the data transfer mechanism; the preferred mechanism is transfer data from the vending station to the meter.
Token Identifier (TID)Rollover solution must be included for all SELCO previous STS installed meters, more than 13000 meters.

Token Security:

a) The token must be generated from the CMS (Customer Management System) with SGC of SELCO , in other case SELCO can generate tokens with default SGC if its required .
b) The token generation (a hardware token generation device) must provide tokens in parallel, not serial generation, with more than 100 token at same time.
c) The data communication between the token and the vending station .
d) The data communication between the token and the meter .
e) Meter should not accept any external token which is not registered in SELCO system.
f) Token must be compliance with STS600-4-2 and IEC62055-41 Ed3 standards to guarantee validation of token after year 2024.
g) Data encryption must be included.

6. System Management Software (Server Application).

The server application structure needed for SELCO Company is as bellow: we have three branches; each branch has sales points (vending stations) and a server application. A Distributed server application for three branches is needed to support this need.

Application server redundancy (high availability)

- As per Redundancy and Failure Management, prepaid servers application must support redundancy and high availability capabilities: to support high-availability, all core functionality shall allow for dual redundancy at minimum.
- When a failure of a primary server in a redundant group is detected, the system must invoke the appropriate failover and restart actions so that functions assigned to the failed server are preserved. The failover must be of such a nature as to provide seamless continued operation to the users.
- All needed licenses by application and database, must be included to support online redundancy (DR) and HA.

6.1 Database Management System (DBMS)

a) Centralized application server using RDMS that can be work with MSSQL and Oracle database systems latest version (at least MSSQL2019 and Oracle 12 at least).
b) All system transactions (server transactions and client vending station transactions) must be saved for auditing at the database. Full auditing is needed with all its needed features.
c) Work under windows environment or Linux/Unix OS.
d) The application must have certificate related to: software security, software development, and testing.
e) The system applying the replication routines with the vending stations.
f) Complete log/archiving utility for all transactions (Arabic , English)

g) Full MSSQL server license is needed that fit the needs of the application server.
h) Licensing for server is included for 3Years with 24/7 support.
i) Database is open for access by SELCO team and not closed to access.
j) Full control panel for the following functions:
    1. Users and permissions
    2. Backup and recovery
    3. Setup needed.
k) Integration utility with Customer management system (SELCO customer bank system (**bidirectional**) to allow data migration from billing system to prepaid system and vice versa including (Customer data, charge data, Fees data, Tariff data, meter data) , data migration between billing and prepaid system must be in formal format at least (online data transfer) and support ODBC connection .
    a. Integration must be through online API, installed at SELCO primes.
    b. Two-way integration, and online.
    c. No data redundancy is allowed.

6.2 Data Transfer from CMS (Customer Management System) to the Meter:

a) Customer information's – that must be registered in the meter.
b) Purchased credit – by KWH or NIS.
c) Parameters & argument – date & time, friendly days, friendly times, alarm situations, load management switching parameters (if available). These parameters should be transferred automatically without operator intervention.
d) Relay on, clearing alarms and control segments, clear credit

6.3 Application and Database Security:

a) The application should use data base security. for data encryption
b) The system and data base should have several layers of system users.
c) Passwords protection. for login and must be encrypted.
d) Server application installation.

6.4 Application Program Interface API

Application program interface (API) is a set of routines, protocols, and tools for building software applications. An API specifies how software components should interact. A good API makes it easier to develop a program by providing all the building blocks.
All needed API must be installed at SELCO premise and not outside SELCO premise and source will be owned by SELCO and open for SELCO team later use.

- The needed API are:
    1. **Vending API:**
       All needed transactions by vending stations must be available through API for:

1. Customer charging transactions by unfixed value, (min and max value defined by SLEOC team and it is variable).
2. Vending station credit change (increase or decrease) by the online API.
3. Service installed at SELCO primes,
4. Logs, auditing module must be included for monitoring and reporting all mentioned functions.

2. **Mobile application API:**
   Customers can do charge using a mobile application by send back the charge code for customer via SMS/mobile application. In addition, customer can see the account information. API must include bellow features:
   1. Customer add credit to do charge.
   2. Customer data verifications and validation according customer number and other defined parameters (pin code, security number if needed).
   3. Customer get token generated from SELCO prepaid systems, can be received by SMS, mobile apps, email (according customer type).
   4. Customer can review history transaction.
   5. Customer payment done using **Integration with SELCO 3rd partner**, as described below (point 3)**.**
3. **Integration with SELCO 3rd partner (PALPAY or other 3rd party supplier) including:**
   a. Customer charging transactions.
   b. Vending station credit change through API online.
   c. Vending station credit change logs.
   d. Vending station credit balance logs.
   e. Integration utility by API and online is must.
4. **Integration API with SELCO systems through API by web service/API online for:**
   a. Customer meter charge.
   b. Customers charging records view.
   c. Meter details view.
   d. Update customer main data like (mobile number, address, …).
   e. Integration with Billing system to view: customer bills, payment history.
   f. Integration utility by API and online is must.
5. **Integration with SELCO 3rd (Al-Haitham for Technology Development (HTD) partner through API for a mobile application by web service standard for customer uses, must support bellow functions: HTD API work as bellow:**
   a. Customer send power meter code via SMS to short number (defined by SELCO).
   b. All SMS send by customer will be send to SELCO system for processing.
   c. SELCO API feedback HTD by the charge code need to be entered at meter.
   d. A secure connection between SELCO and HTD will be used to send customer meter code to SELCO API online and vice versa.
   e. HTD receive charge code (20 digit) from SELCO API, through secure connection, to be send to customer.
   f. HTD send SMS to customer with 20digit charge code.
   g. Integration utility by API online is must.

6.5 Vending Mobile

The provided solution must allow a vending transactions using mobile application, either using a special application (like JAWWALPAY, PALPAY) or through SELCO mobile application.
Features needed:

1. All needed licenses.
2. Source code owned by SELCO, all needed.
3. Customer vending transaction (like using eWallet, or online bank account).
4. Vending station add credit.

6.6 On-field Reading and configuration application

Application used by on field teams, for managing meter issues and maintenance on field. Needed features are:
- Online connection with prepaid STS server database through VPN connection.
- Read meter data, complete.
- Meter configuration, complete.
- Token generation, especially for parameterization and special needs like meter change SGC code.
- Maintenance history.

7. SELCO current installed STS Software specifications

SELCO has SUPRIMA Standard Transfer Specification (STS, internationally recognized, having been published as an International Standard by IEC in 2007) software for server application and for client vending stations, details as bellow:

Server application:

S U P R I M A 5.1
STS Logo STS-665
Suprima Server : 5.1.0.32 (2018-06-04 00:00:00)
Java : Oracle Corporation (1.8.0_221)
Java VM : Java HotSpot(TM) 64-Bit Server VM (25.221-b11)
Operating System : Windows Server 2008 R2 6.1 (amd64)
Database Version : Microsoft SQL Server 2008 R2 (RTM) - 10.50.1600.1 (X64) Apr 2 2010 15:48:46 Copyright (c) Microsoft Corporation Standard Edition (64-bit) on Windows NT 6.1 <X64> (Build 7601: Service Pack 1)
Database Encoding : Arabic_100_CI_AS
Locale / Charset : en_US / UTF-8
Time Zone : IDT - Israel Standard Time (Asia/Jerusalem)

STS certificate as bellow:

THE STS ASSOCIATION

CERTIFICATE OF CONFORMANCE

This is to certify that the
VENDING SYSTEM SUPRIMA VER 4.X
ELECTRICITY, WATER & GAS
of
LANDIS & GYR (PTY) LTD
has been assessed
and found to satisfy
the requirements of the
Standard Transfer Specification

Tested for Compliance with: IEC 62055-41, IEC 62055-51
In accordance with the STS501, STS502, STS503
Compliance Test Specifications Entities: A-STS501-1-2 FDS; B-STS501-2-2 FDS; A-STS502-1-2 FDS; B-STS502-2-2 FDS; A-STS503-1-2 FDS;B-STS503-2-2 FDS
Ref: ESK/STS/13/005

DISCLAIMER
This certificate certifies that the certified product has been tested for compliance with the version of the Standard Transfer Specification (STS) current as at the date (as detailed above) of testing and that the certified product has been found to be STS compliant to the extent tested, as required by the STS Association. This certificate does not certify or imply STS compliance of every actual or potential feature of the certified product nor that the certified product is or will be interoperable with STS compliant products other than the certified product. In this regard, the STS Association does not and will not indemnify any person against claims of any nature that may arise out of the testing, certification, use, sale or distribution of the product and the STS Association is hereby indemnified against all liability for any claim by any party arising from any defect or other characteristic of the certified product.

16 August 2013
Date

For the STS Association

Certificate No. STS-360

Client vending station:
Client version 5.1.0.32
Vendor: Landis+Gyr (Pty) Ltd
Website: www.landisgyr.com/za
Java VM: Java hotspot(TM) 64-Bit Server VM (25.73-b02)

According to STS standard, Bidder can use those software (server and vending station) if applicable and under his responsibility with all needed function mentioned at SELCO meter tender.

B. If current SELCO STS software will not be used, it will be the bidder responsibility to provide SELCO with all needs to guarantee:
   1. Servers application with all needs at "**Points mention before 4+5+6**".
   2. Vending station with all needs at "**4. Vending Station**".
   3. Number of vending stations will be upon SELCO request.
   4. Current, installed, SELCO meters (Holley, conlog, Lans&Gyr) running by SELCO STS software must work at Bidder proposed STS600 software, need to be compatible with STS2024 issue by supplier. We will not use 2 STS software as STS Association is backed by Eskom and compels all members to make codes available for an exchange of vending systems to take place at any given time. STS standards require that all vending systems are internet and SMS based and are able to be accessed from anywhere around the world.
C. SELCO has currently 3 STS server application distributed over three branches and 64 STS vending stations distributed over three server applications.
D. All functions currently running using current STS system (vending, SMS, Token generation for change mode postpaid to prepaid and vice versa, setup, Tariff organization, integration, reporting) .
E. Support contract must cover three years 24/7, and must cover all needs for update/change at current STS system and 3rd party changes.
   1. Scope of support services: SELCO current STS software OR if new STS software will be used, support contract will cover the new software.
   2. Supplier must upgrade current STS servers to STS600.
F. Bidder must provide full commitment to accomplish all needs required by SELCO 3rd party to support system integration and function of system, SELCO 3rd party are:
   1. Al-Haitham for Technology Development (HTD): customer SMS mention at "6.4 Application Program Interface API" point 2.
   2. PALPAY : mention at "6.4 Application Program Interface API" point 1.
G. Copyright and all other proprietary rights of SELCO applications must be guarantee and fulfilled by Bidder with all relevant conditions, this cover SELCO applications and SELCO 3rd party applications.
H. Limitation of liability: under no circumstances shall bidder or any of its affiliates, subsidiaries, or divisions, be liable for any damages suffered by you, including any incidental, special or consequential damages (including, without limitation, any lost profits or damages for business interruption, loss of information, programs or other data) that result from access to, use of, or inability to use proposed application or due to any breach of security associated with the transmission of information, even if bidder was advised of the possibility of such damages.
I. Compliance with law: You agree to comply with all governmental laws, statutes, ordinances, and regulations regarding your Website use.
J. Bidder must provide certificate show STS6 compliance certificate according to STS6 association for a specific needs of electricity metering system.

8.Software Support and Maintenance Agreement

Full support contract for 3 years is needed for server application and vending stations application issues for system update and customization needed.

Definitions:

- "**Error**(s)" means programming errors in the Software in the form provided by Wind River that prevent the Software from substantially conforming to its published specifications.

- "Error Category" means the severity class for Errors as further defined and set forth at the Wind River Support Network.
- "Patch(es)" means additional programming code to be integrated with the Software to correct an Error or alleviate its effects.
- "Project User(s)" means any Customer personnel who perform any duty or service for the Project, including, but not limited to, performing any development, testing and compiling functions for the Project.

Scope:

Server application.
Vending stations client (all vending station).
Webservices/API.
Database.
Integration services.

The support contract must include the following:

- Official Releases and Updates to Software
- **All provided software must be the latest version from the mother company.**
- **All mobile applications needed must be for both android and iOS devices.**
- Technical Support via Telephone, via Email, and on site.
- Priority Response to system errors, alerts, warning.
- Direct Bug Fix Updates.
- Annual Reminder.
- Errors and response time must be according bellow table:

Error category/ Severity Level	**Response time**	**Description**
Level A/ **critical impact**	1 Hour	major application or mission-critical system is stopped or so severely impacted that the customer cannot reasonably continue work, could have the following characteristics:

		• System hangs or crash situations • Data loss or data corruption • Critical functionality not available
Level B/ **Significant impact**	4Hours	Important product features are unavailable with no acceptable workaround. The software may be operating but is severely restricted. Problems could have the following characteristics: • Product error or failure forcing a restart or recovery • Severely degraded performance • Functionality unavailable but the system is able to operate in a restricted fashion.
Level C/ **Nominal Impact:**	1 working Day	Minor problem or question that does not affect the software function such as How To's, documentation, general questions, or enhancement requests. There is no impact to product usage or customer's operations. Problems could have the following characteristics: • General requests for advice on product usage • Clarification on product documentation or release notes

		• Product enhancement request
Level D / **system customization**	14 working days	All needed customization that don't prevent normal SELCO functions from work as normal.

- Ongoing Support.
- Patches. Supplier will make available to SELCO those Patches which have been published and made generally available to SELCO.
- Updates. Supplier will make available to SELCO one (1) copy of any Software Updates (or as applicable, Upgrades) in the form the Software was originally provided to SELCO (i.e., Object Code or Source Code) and one (1) set of documentation Updates (or as applicable, Upgrades), as available for general release to the extent such Updates (or as applicable, Upgrades) apply to Software covered by this Agreement.
- 24x7x365 Emergency Support. Support must offer 24x7x365x3 Emergency Support to SELCO.
- Support for Third Party Software. If a programming error or non-conformity in a third party product being utilized by SELCO as part of a Project, which third party product interacts with one or more Software, Supplier will use commercially reasonable efforts to coordinate with the third party support provider and will use commercially reasonable efforts to assist such support provider in addressing the error or problem for Customer. All such support and maintenance is the responsibility of Supplier.

9.Training

The supplier is required to provide onsite training for the installation, commissioning and maintenance of all equipment. The supplier must provide a training schedule together with the bid. The training schedule will detail the various levels and types of training; this is envisaged to include, but is not limited to, training to the following personnel:

a) Installation technicians – for the installation, commissioning, maintenance and testing of equipment
b) Administrative personnel – for the software application and vending environment
c) Database and application personnel – for assistance and maintenance of the back office integration.
d) Integration services configuration, setup, installation.

10. Documentation

Supplier shall regularly document and update all relevant and necessary hardware and software related matters, and shall submit the entirety of such documentation either on paper or in a write-enabled electronic format.

- ### Drawings to be submitted with the Bid

All equipment:

- Outline Drawings.
- Installation and connection diagrams.
- System overview

Metering devices:

- Secure installation and mechanism thereof

- ### Documentation to be submitted with the Bid

Certification of compliance for metering devices
STS6 certificate for the metering device and the software
MTBF statistics – metering device failures
MTBF statistics – security violations
Sample calibration certificates
Reference list of installed base, including date of installation, quantity and type installed and contact details.
Training schedule for personnel

Standards

The provided solution (systems and meter) must conform to the applicable standards for this type of equipment. These standards are:

- **BS EN61036**: 1996: Alternating current static watt-hour meters for active energy (Classes 1 & 2.).
- **BS5685: 1979: Part 1**: Specification class 0.5, 1 and 2 single-phase and Polyphase, single rate and multi-rate watt-hour meters.
- **IEC 62055-41**: Electricity Metering-Payment systems. Part 41: Standard transfer specification (STS)-Physical layer protocol for one-way numeric token carrier systems.
- **IEC 62055-31**: Electricity Metering-Payment systems. Part 31: Particulars requirements for static payment meters for active energy (classes 1 & 2.)
- **IEC 62055-51**: Electricity Metering-Payment systems. Part 51: Standard transfer specification (STS)-Physical layer protocol for one-way numeric and magnetic card token carrier systems.
- **IEC 62055-51**: sets out a framework for the integration of standards into a system specification for electricity payment metering systems.
- **IEC 62056**: Electricity metering - Data exchange for meter reading, tariff and load control.
- **IEC 62052-11:2003** : Electricity metering equipment (AC) - General requirements, tests and test conditions - Part 11: Metering equipment

- **IEC 62053-21:2003**: Electricity metering equipment (a.c.) - Particular requirements - Part 21: Static meters for active energy (classes 1 and 2)
- **IEC 61968-1**:(Interface architecture and general requirements) standard (information exchanges between electrical distribution systems).
- **ISO 9000/9001 if applicable.**
- **ISO14001:2015 if applicable.**

The Bidder Must Fill The Following Table With All The Required Data

Item	Required Data			Data from the bid
-1	Supplying period			
-2	Place of manufacture			
-3	Quality Certificate			
-4	Training of Selco team			
-5	Level of protection			
-6	Life time of meter (year)			
-7	Warranty of meter replacement			
-8	Warranty of meter maintenance			
-9	Support of system			
-10	Meter current (Ampere)			
-11	Meter energy consumption			
-12	Meter accuracy			
-13	Current limiting			
-14	Bidirectional counting			
-15	Tamper sensor			
-16	Tariff policy			
-17	Audible alarm			
-18	Visual alarm			
-19	Reserve credit			
-20	Minimum period for data storage (year) without electricity			
-21	Operating conditions – temperature			
-22	Operating conditions – humidity			
-23	Type of screen			
-24	Number of screen digits			
-25	Back light of screen			
-26	Type of contactor			
-27	Capacity of contactor (ampere)			
-28	Type of battery			
-29	Type of memory			
-30	Real time clock			
-31	Real time clock accuracy (second / day)			
-32	Lightning Protection			
-33	Level of Lightning Protection			
-34	Short circuit current			
-35	Maximum load of the meter			
-36	DC wire connection range (m)			
-37	RFID connection	a-	The operating range	
		b-	Frequency range	
		c-	Modulation type	
		d-	Power output	

-38	Starting current (ampere)	
-39	Vending stations licensing mechanism	
-40	Adding meters and customers in CMS without limitation and without licensing	
-41	Multi language interface (Arabic , English)	
-42	Reporting function(exporting and forms Arabic &English)	
46 Database management system		
46-1	Login/ encryption/ installation	
46-2	RDMS support MSSQL2019 & Oracle database systems latest version.	
46-3	Database auditing	
47 Server Application and vending station application:		
47-1	Integration with SELCO 3rd partner	
47-2	Integration with SELCO Billing system	
47-3	System support high availability	
47-4	Logs and history (Auditing) management for future review at any time.	
47-5	Compatibility with SELCO architecture.	
47-6	Users/permission/group/mapping dynamically + ability to control access (allow or not allow access)	
47-7	Software standard and certificate included.	
47-8	Token validity and compliance with needed certificate.	
48 API application		
48-1	All Features included.	
48-2	Integration is covered with 3rd application.	
48-3	Availability and location of API.	
49 Support contracts		
49-1	All objects covered.	
49-2	Period and yearly fees of contract.	
49-3	Response time compliance.	
50 Vending mobile		
50-1	Supported features.	
50-2	Fees.	
50-3	Integration.	
51 On field mobile apps		
51-1	Supported features.	
51-2	Fees.	
51-3	Integration.	

Technical Evaluation

The technical evaluation represents 70% of the total evaluation , technical evaluation shall consider the following points and weights:

NO.	Item	Degree
-1	Company compliance of delivering the required items	20
-2	Delivery schedule	10
-3	Place of manufacture	40
-4	Quality Certificates	50
-5	Training of SELCO team	10
-6	Level of protection	10
-7	Life time of meter (year)	100
-8	Warranty of meter replacement	70
-9	Meter current (Ampere)	20
-10	Meter energy consumption	20
-11	Meter accuracy	20
-12	Current limiting	20
-13	Bidirectional counting	20
-14	Tamper sensor	20
-15	Tarrif policy	20
-16	Audible alarm	20
-17	Visual alarm	10
-18	Reserve credit	20
-19	Minimum period for data storage (year) without electricity	30
-20	Operating conditions – temperature	20
-21	Operating conditions – humidity	20
-22	Type of screen	10
-23	Viewable data in LCD	50
-24	Back light of screen	20
-25	Type of contactor	40
-26	Capacity of contactor (ampere)	40
-27	Type of memory	100

-28	Back up source	50
-29	Level of Lightning Protection	20
-30	Starting current (ampere)	20
-31	Vending methods	200
-32	Control of vending credit	30
-33	Data transfer mechanism (one way)	40
-34	Server application features	40
-35	Vending station features	40
-36	Vending stations license mechanism	40
-37	Brand manufacturer profile	100
-38	Compatibility and vision of manufacturer and their product	100
-39	Supplier experience in prepayment systems	100
-40	ALT ,SLT,EMC test certificates (3rd party)	100
-41	System support and technical support team CVs	100
-42	Meter stability and reliability	100
-43	Server and vending station compatibility and integrity with existing SELCO systems	200
-44	Adding meters and customers in the system without limitation and licensing	100
-45	No Limitation of adding tariff types , depts. , fixed charges	40
-46	No Limitation of adding users, group of permissions, mapping user to group.	40
-47	API application	300
-48	Providing all ways of deduction and refunds in the system	100
-49	Vending Mobile	200
-50	On field mobile application	200
Grades		**3090**
Grades Percentage / 70%		**70%**