Schedule of Requirements

The delivery schedule expressed as days stipulates hereafter a delivery date which is the date of delivery at Regional Stores SEPCO Rohri & Larkana on FCS (Free Consignee Stores) basis. The unloading at SEPCO stores shall be the responsibility of the contractor.

- In order to determine the correct date of delivery hereafter specified, the Procuring Agency has taken into account the additional time that will be needed for international or national transit to the Project Site or to another common place. **50% quantity shall be supplied within 90 days or earlier & Remaining 50% quantity shall be delivered from 91st to 120th days or earlier** from the date of issue of purchase order. Delivery period shall be completed not later than the dates specified.

Number	Description	Quantity	50% quantity shall be supplied within 90 days or earlier & Remaining 50% quantity shall be delivered from 91st to 120th days or earlier

Technical Specifications

As per NTDC Specification DD-S-65:2003, DDS-98:2011, DDS-110:2012 and IEC 62055-31 for relays (all amended to date)

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SPECIAL PROVISIONS AND SPECIFICATIONS-TECHNICAL PROVISIONS FOR SINGLE PHASE AMI METERS

SEPCO SPECIAL CONDITIONS

a) This Tender is governed by General Conditions of Contract for Purchase by WAPDA Dated: 12.08.1984 amended to-date & latest Purchase Procedure, Registration Procedure, PPMC Procurement Guidelines / Instructions and PPRA Rules 2004 (Amended to-date).

b) Rate should be quoted inclusive of taxes / duties & 0.5% Inspection Charges (Non-reimbursable) but exclusive of Sales Tax on the basis of free delivery at consignee’s stores (FCS) i.e. Rohri & Larkana in local currency without involving any foreign exchange.

c) Bids having less than 100% of the quantities of tender will not be accepted. The Bid shall be quoted on signed SEPCO prescribed format / bid schedule. The conditional bids / rates shall not be accepted.

d) Single Phase AMR Smart Energy Meters should comply with relevant NTDC Design & Standard DDS-65:2003, DDS-98:2011 & Relevant IEC Standards for Relay operations (Remote Reconnection / Disconnection) (all amended to date), the Bidder shall have to obtain the prototype approval from the office of Chief Engineer (S&S), Lahore before start of mass production. Drawing and prototype samples for prototype testing for at least Three (03) Numbers complete Samples per meter shall be submitted within 30 days from the date of issuance of Purchase Order to Chief Engineer (Design & Standards) PPMC Lahore. Delay in offering the prototype beyond 30 days will be considered as delay in delivery and same late delivery charges / liquidated damages will be applicable as for delay in supply of goods. All expenses of testing charges will have to be borne by the manufacturer/supplier. Any change suggested during prototype testing for compliance of specification shall have to be incorporated without any extra price or claim. The Chief Engineer (Design & Standards) PPMC will approve the prototype sample within 30-days after its submission.
In case of failure of 1st prototype Sample, the material shall be improved and second samples must be re-offered for prototype testing to Chief Engineer (Design & Standards) PPMC by the Bidder, within 10 days and get prototype approval within 20 days after its submission. The time taken for improvement in samples and resubmission of drawings will not entitle the manufacturer to claim extension in delivery period on this account. If the Prototype fails second time, firm will be considered Non-Responsive and performance guarantee will be fortified / encashed in favor of SEPCO and the Contract Agreement will stand cancelled. SEPCO reserves the right to place Letter of Acceptance on the second lowest bidder. Any further delay shall be on account of the Supplier and SEPCO reserves the right to deduct the Liquidated Damages according to the relevant clause of the Purchase Order.
The supplier/manufacturer shall have to carry out specified type tests & sample tests as described in PPMC / NTDC Specification Nos. DDS 65:2003, DDS-98:2011 (amended to-date) in the presence of NTDC / WAPDA Engineer(s) before mass production. The testing will be carried out at manufacturer’s premises / HV & SC Lab Rawat /RTL Faisalabad or any other Lab of International repute like KEMA Holland, CRIEP Lab Japan, CESI Lab Italy to be approved by the Chief Engineer (S&S) NTDC. All expenses including service charges 192 testing charges, Traveling, Boarding / Lodging and Daily Allowance etc., of PPMC / NTDC Engineers shall be borne by the manufacturer.

e) Optical port of the proposed AMI meters should be secured by cover or any other suitable material which provide barrier for communication through optical port to avoid unauthorized access. Last date of meter programming should also be displayed in scrolling menu of meter display.

f) The offered AMR Energy Meters data (through vendor’s MDC driver software) must be compliant to Universal Data Integration Layer (UDIL), developed by PITC for multivendor compliance.

g) The LOI will be issued to most advantageous bidder. The successful bidder has to submit PITC UDIL compliance requirements for Tier-1 Certification to PITC within 20 days of issuance of LOI and obtain UDIL compliance Tier-1 certificate from PITC within 30 days (from the submission of compliance requirements for Tier-I (extendible if both parties agreed), on latest PITC version applicable at the time of issuance of LOI. Failure to submit the requirements to PITC within stipulated time frame shall make the most advantageous bidder non-responsive and steps for forfeiture of bid security shall be taken by SEPCO. The performance guarantee shall be submitted within 07 days of issuance of UDIL certificate from PITC for Tier-1, then P.O will be issued.

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The UDIL Compliance testing will comprise of two phases / Tiers as under:

a) **UDIL Compliance Testing Tier-1 Certificate:**
In this phase MDCs will be tested for UDIL Compliance as per request proforma submitted by Vendors. After successful completion of which UDIL Compliance testing Tier-1 certificate will be issued.

b) **UDIL Performance Testing Tier-2 Certificate:**
Tier-2 Certificate will be issued by committee headed by Regional Manager (M&T) whereas concerned S.E (Opr) & Incharge AMI Cell will be Members of the Committee, after consultation with PITC once at least 500 Meters are installed in the field (out of total) and their two successful billing cycles have been performed by the SEPCO using the AMI Solution.

h) If the bidder does not possess the prototype approval for the offered material according to relevant DDS and IEC standards (all amended to date), if applicable under WAPDA approved specification, the bidder shall have to obtain the prototype approval from the office of Chief Engineer (S&S), Lahore before start of mass production. Drawing and prototype samples for prototype testing shall be submitted to Chief Engineer (Design & Standards) PPMC Lahore within 30 days from the date of issuance of purchase order. Delay in offering the prototype beyond 30 days will be considered as delay in delivery and same late delivery charges will be applicable as for delay in supply of goods.

i) All expenses of testing charges will have to be borne by the manufacturer. Any change suggested during prototype testing for compliance of specification shall have to be incorporated without any extra price or claim. If the prototype sample fails, the material shall be improved and re-offered for prototype testing to Chief Engineer (S&S) NTDC, Lahore. The time taken for improvement in samples and resubmission of drawings will not entitle the manufacturer to claim extension in delivery period on this account.
If prototype fails second time, the firm will be considered Non-Responsive and Performance Guarantee will be forfeited in

favour of SEPCO.

j) The supplied AMR meters will expose data and services as per specifications laid down in UDIL only. The meter will be created in respective vendors' driver software to expose data and services in compliance with UDIL document. All necessary features for billing and instantaneous data should be compliant in UDIL. Vendor's driver software will be hosted in PITC.

k) The offered AMR meter should be equipped with minimum one battery along with super capacitor; the battery shall be of lithium thionyl chloride having minimum cumulative capacity of 1200 mAh for Single Phase AMR Meter. A Super capacitor will be required for RTC to maintain date & time. The meter shall be equipped with fixed long life battery to display reading during power supply failure/outages.

l) The meter shall be capable to provide safeguard against the theft of energy through all possible means as required for Single Phase AMI Meters.

m) Provision of facility for data retrieval/downloading of data in case of damage of meter P.T Circuit of LCD / Display wash or any other critical issue. In case of damage of meter (except complete burning of meter), the security of EEPROM must be ensured and data should be readable from EEPROM.

n) Relevant support tools / Gadgets / software shall be provided to M&T offices for retrieving data in case of display off / retrieval from EEPROM. Provision of Read Only Software in CD/DVD along with essential accessories to relevant M&T offices of SEPCO for data download purposes shall also be made.

o) "The successful bidder will ensure the appropriate security scheme implemented for whole network. SEPCO will acquire the TELCOs assistance as and when desired.
The bidder will be required to provide documents mentioning the mechanisms for security of data from Meter to MDC".

p) The successful bidder will be responsible for provision of functionality of software in the meter, security of software programming and re-programming in the field and will provide necessary backup warranty and training to officers/officials of SEPCO as recommended in the relevant clauses of NTDC Specification DDS-65:2003. (All amended to date). The bidder will also provide documents mentioning the mechanism for implementing security of software programming.
Bidder will ensure that Date/Time of AMR Meter will be synchronize with that of MDC and MDC date/time will be

synchronized with Network Time Protocol (NTP).

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q) Data from EEPROM should be readable in case of damage of meter (except complete burning of meter / damage of EEPROM). The list of meters alongwith their password should be provided to Manager (M.M) for onward distribution to concerned offices.

r) Bidder is bound to provide Read Only complete MDC access and he will certify the same alongwith Technical Bid.

s) The successful bidder will also provide PC application for meter configuration and mapping along with training to personnel from SEPCO AMI Cell and M&T for meter configuration and testing prior to its installation in the field.

t) Communication module used for Smart Energy Meters must be verified and approved by Pakistan Telecommunication Authority (PTA). It should be minimum 4G and must be downward compatible to 2G without changing the SIM. If communication fails on 4G, then the MODEM shall try to automatically connect on 2G and vice-versa.

u) AMR meters shall be provided strictly in accordance with the applicable technical specifications and standards specified in this Tender Document and shall comply with all requirements stipulated therein.

v) Data consumption shall not exceed 32 MB per month in keep-alive mode.

w) MDC must support SIM identification, installed in AMR Meter which should be identifiable through UDIL Service.

x) The arrangement of hardware is the responsibility of SEPCO / PITC. Please suggest appropriate hardware for the proper functioning of the system.

y) MDC must be capable to handle all number of awarded meters concurrently.

z) MDC should be able to support retrieval of scheduled metering data as per programmed / configurable interval (e.g 30 Minutes) for AMR Meters. AMR Meters would be declared muted if the last successful read was before 48 hours. Number of such muted meters shall not be more than 2% at any point upto the warranty period within the system. MDC should be able to retrieve missing data from meters after restoration without compromising system performance also issues regarding error in data or missing data shall be treated as meter mute.

aa) In case of number of muted meters exceeds more than 2% as pointed out by Incharge AMI Cell SEPCO / PITC, an investigation shall be conducted into the matter and reasons other than declared scheduled communication outage by the Network provider, transformer damages, scheduled load shedding, cable breakdowns and ERO etc., shall be on Bidder’s liability. If it is observed that the muted meters ratio is more than 2%, the Supplier will be responsible to take remedial measures which include but not limited to replacement of such meters, up-gradation of software patches etc. or any other remedy proposed by the SEPCO. Such enquiries / investigations shall be conducted in liaison with PITC by R.M M&T SEPCO, DCM & XEN M&T of Concerned Circle & Vendor headed by Incharge AMI Cell SEPCO. The outcome of the investigation proceedings shall be binding upon the Vendor/SEPCO for taking remedial action and will be taken in view for the issuance of Project Completion / Acceptance Certificate by the Committee.

bb) The successful bidder will be responsible to provide open interfaces for integration/incorporation of new technologies/ systems at later stages.

cc) The successful bidder is required to configure meters during production for primary & secondary IPs, ports & Wakeup SIM numbers (which will be provided by SEPCO/PITC). By default, the AMR meters will be in “keep Alive” Mode and after energizing, these meters will be automatically connected with the MDC & provide required data as per UDIL specifications. Schedule activity will be initially twice a day, having a sampling rate interval of 30 minutes. However, the schedule as well as sampling rate must be configurable.

dd) On demand reading should be retrieved and the response time of On Demand reading should not be more than two minute or any other frequency set by SEPCO.

ee) In case of any missing scheduled activity, the AMR Meter must communicate any pending readings to the MDC immediately after restoration of supply/ elimination of communication error/ due to any reason/etc.

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ff) In case of delay of retrieval of readings beyond two minutes, an investigation shall be conducted into the matter and reasons other than the transformer damages, scheduled load shedding, ERO / disconnection etc., shall be on Bidder's liability. The meters should communicate at Signal Strength of -95dBm to -l05dBm. Vendors will get it tested also to the satisfaction of the SEPCO. If it is observed that the meter modem signal strength is lower than the one mentioned above, the Supplier will be responsible to replace / repair the meter under warranty. Retry Failure rate should not be more than 05 times. The Time out for each retry should not be more than 30 seconds.

gg) The manufacturer is required to print necessary bar code (whose format should be approved by SEPCO) on two suitable places of the meter i.e. at front or any other side of body and on cartridge / packing box.

hh) The MDM interface of PITC shall be used. In case of development of SEPCO's own MDM in future, the integration of supplied MDC will be carried out by the bidder within the warranty period of MDC.

ii) MDC should comply (identify and report) all the tempering parameters of MDM, DDS and UDIL.

jj) For Single Phase Smart AMR Energy Meters system should be capable to carry out command of remote disconnection / reconnection in case of unauthorized load extension on the basis pre-programmed instructions through MDC. Similarly, the system should be able to carry out command of remote disconnection / reconnection in case of default by consumer on the basis of pre-programmed instructions as well as manual command (individual consumer / Group consumers). Generalization of disconnection systems are as follows:

a. **Disconnection due to Non-Payments**:
Meter shall accept disconnection/reconnection command by backend system remotely as and when required. In case of disconnection initiated by backend system, meter shall not reconnect until it will receive reconnection command from backend system.

b. **Disconnection due to Load Limiting / Exceeding Sanctioned Load**:
Minimum two different load thresholds against different tariffs (peak/off peak) shall be programmed to activate disconnection/reconnection automatically by the meter and time between disconnection and reconnection shall also be programmable. Meter shall have the capability to change load thresholds locally and remotely.

c. SEPCO shall have provision to enable and disable the feature (Remote disconnect/ reconnect for both scenarios) locally by meter software and remotely by head end system.
Further to this in case of disconnection command execution (Individual / bulk AMR meters(s)), the AMR meter(s) will execute the relay command and make the AMR meter(s) into "Keep Alive Mode" the same AMR meter will become into "Non-Keep Alive" mode after execution of (Individual / Bulk AMR meter(s)) reconnection command.

Note:
It is clarified that, improvements suggested by (S&S) NTDC vide draft amendments issued (letter No Z-184/137-56 dt: 17-01-2024) must be complied with for this tender.

kk) The bidder will quote the prices including all taxes and duties and excluding 18% GST on FCS basis. The offered price shall not be escalated for any reason what so ever.

ll) All procured AMI Meters will be installed by SEPCO under the supervision of authorized representative of successful vendor (In case of any malfunctioning).

mm) The successful vender will depute authorized representative / supervisor in SEPCO as per following schedule till issuance of Tier-2 certificate:

a) Remote support shall be provided till the warranty of the meters.
b) Initial field support and training to SEPCO Staff till installation of at least 100 Meters for troubleshooting purpose.
c) The field support shall be provided (if required) by SEPCO for any troubleshooting in the meter software / hardware which could not be handled by SEPCO Staff.

nn) This shall conform to NTDC (S&S) Specification. However, "No SIM" prompt on LCD Screen if provided shall be appreciated.

oo) The location / navigation feature of smart meter will not be required in this tender.

pp) The last communication of AMR Meter with MDM may not be displayed on Meter LCD.

qq) The voltage and current of the single measuring phase of the Single Phase AMR Smart Energy Meter shall be recorded in the load profile, in addition to the existing registers in channels 1 to 4 as per DDS, which can be downloaded through data retrieval software.

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rr) Following activities are pre requisite for installation of AMI Meters by the successful bidder And SEPCO:

(i) SIMs allocation to meters (M2M SIMs will be provided by SEPCO)
(ii) Meter configuration (Bidder's Responsibility).
(iii) Meter creation on respective vendors driver software.
(iv) Meter installation is SEPCO responsibility.
(v) Live communication testing (Bidder's Responsibility).
(vi) Data validation (Bidder's Responsibility).

NOTE: All input data will be provided by SEPCO wherever required.

ss) 02 No Gadgets will be provided by supplier alongwith Software Downloading Data.

tt) Any technical requirement related with Software / IT / Billing of AMI Meters raised or required by PITC / SEPCO in future will be fulfilled and responsibility of bidder.

uu) Future Network Compatibility Clause:

The offered AMI Smart Energy Meter shall be equipped with a PTA compliant 4G communication module with backward compatibility to 2G, as specified in the Bidding Documents.

In case 5G communication technology is officially deployed and approved by the competent authorities during the process of evaluation, approval, or award of contract, the successful bidder shall provide AMI Smart Energy Meters having 5G compatible communication capability, without any additional financial liability to the purchaser, provided such requirement is communicated before issuance of Purchase Order / Contract Agreement.

vv) <u>FAILURES AND TERMINATION:</u>

A) If you fail to obtain the prototype approval as per Clause "h" of the special conditions.

B) Fails to deliver the stores any or all of the Goods or any consignment thereof within specified delivery period in the contract or within any extension thereof granted by the Purchaser and installation in case of Single Phase AMR Smart Energy Meters, the purchaser shall be entitled at his option either:

i) To recover from your liquidated damages levied at the rate of two percent (2%) per month OR a fraction thereof subject to a maximum of ten (10%) of the purchase order price, except:

a) Where undelivered stores hold up use of other stores, liquidated damages shall be levied on the total value of P.O.

b) The recovery of liquidated damages mentioned above can be affected from any payment due to you from any unit of SEPCO/DISCO's/PITC/NTDC/WAPDA.

ii) To purchase from elsewhere without notice to you at your risk and cost, the stores not delivered without canceling the purchase order in respect of the consignment not yet due for delivery OR

iii) To cancel the procurement at your risk and cost in the event of event of action being taken under (i) or (ii) above, your shall be liable for any loss which the purchaser may suffer on the account, but you shall not be entitled to any gain on repurchase made against the supply order.

C) If during the course of execution of purchase order, you are black listed by WAPDA/NTDC /PITC/ SEPCO or any other DISCO under PPMC then SEPCO may proceed with all or any of the actions detailed below:

i) To allow the purchase order to run its course till completed in accordance with terms and conditions of the contract
ii) To stop further supplies with or without financial repercussions.
iii) To cancel the purchase order with or without reservation or rights.

Note: While determining liquidated damages the purchaser shall not consider any of the following circumstances, a cause under "FORCE MAJEURE" and shall not allow any relaxation in the liquidated damages on the account:

i. Delay on part of the manufacturer / supplier in the arrangement of raw material;
ii. Defect or failure occurring to any machinery or equipment installed at contractor works during the currency of P.O.

D) If the Supplier fails to perform any other obligation under the Contract.

E) Termination for Insolvency:

The Purchaser may at any time terminate the Contract by giving Notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In such event, termination will be without compensation to the Supplier, provided that

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such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Purchaser

vv) <u>FORFEITURE OF BID / PERFORMANCE BOND:</u>

The contracting officer will have the right to blacklist / debar & forfeit the Bid / Performance Bond.

A) If the contractor:

i) Fails to apply & obtain UDIL Certificate Tier-1 to PITC within stipulated time as per Clause "g" of Special Conditions in addition to all other relevant clauses of bidding documents.
ii) Non approval of prototype sample as per Clause "h" of the special conditions.
iii) Fails to supply the goods within the time specified;
iv) Very delayed supply of material resulting in loss to purchaser
v) Defective / bad quality material supplied.
vi) Non replacement of defective material within the warranty period.
vii) Non-Provision of back up services / support etc.
viii) Refusal to provide testing facilities as per satisfaction of engineer(s)/inspector(s) as per NTDC Specifications.
ix) Fails continuously to ship the inspected material in specified / extended time period
x) Fails continuously to supply / provide / handover the shipping documents in specified / extended time period.
xi) Commits any breach of contract.
xii) Fails to account for the import license issued on account of the purchaser.
xiii) Fails to account for the raw material secured by the contractor against any license or permit issued on account of the contracting officer.
xiv) Fails to return drawings, design or any material belonging to the contracting officer which was to be returned in good condition to the contracting officer after the successful termination of purchase order.

B) For other reasons specified in purchase order by the contracting officer for forfeiting the security deposits.

If the forfeiture of the security deposit does not compensate the contracting officer for losses suffered due to non-delivery or breach of contact for any other reason, the contracting officer will have a right to forfeit other security deposits or to recover the same from any other security deposits made in favor of any other unit of DISCO/ PPMC / PITC/ GENCO/ NTDC / WAPDA / SEPCO or from any money due to the contractor from any unit of WAPDA /SEPCO / DISCO / PPMC / PITC / GENCO / NTDC.

DRAWINGS

(As per Specification of WAPDA/NTDC/PEPCO/SEPCO/PITC)
(Amended to date)

i) DDS-65:2003 (Amended to date)
ii) DDS-98:2011 (Amended to date)
iii) DDS-110:2012 (Amended to date)
iv) IEC-62055-31 (For Relay)
UDIL (Latest Version as time of issuance of LOI)

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