Maharashtra State Electricity Distribution Company Limited
Tender No: CGM-IT/Substation Monitoring System/AP/23-24/013
Version 1.0
Date : 24.05.2023

BID NOTICE

Chief General Manager (IT), on behalf of Maharashtra State Electricity Distribution Company Limited (the Employer), hereby invites sealed bids from eligible bidders for "**Tender for Implementation of Substation Monitoring System for 33/22/11 kV substations and switching stations under Aurangabad and Pune Region**". The entire bidding document is available on MSEDCL e-Tendering Website **https://etender.mahadiscom.in** as the per date indicated below. Any changes in the Bid Schedule, corrigendum etc. shall also be notified through MSEDCL's website. Prospective bidders are therefore requested to regularly check the website for any updates.

Timelines of tender	Date and Time
Tender Document Sale/download	24.05.2023
Date and time of online Pre-bid Meeting Link for Pre-Bid meeting: https://meet.google.com/ong-cndw-fti	02.06.2023 at 15:00 Hrs.
Due date and time of submission of Bids	20.06.2023 at 17:00 Hrs.
Date of Technical Bid Opening	20.06.2023 at 17:15 Hrs.

Tender Fee: **Rs. 29,500/-** incl. 18% GST via online payment only (Non-Refundable)
Interested parties may register on the MSEDCL E-tendering website: "http://etender.mahadiscom.in" and purchase the Tender by online payment of Tender fees.

Bid Security:
The bid must be accompanied by Bid Security (EMD) for an amount in Indian **Rs. 2,13,44,990/- (Rupees Two Crore Thirteen Lakh Forty-Four Thousand Nine Hundred and Ninety only)** by way of **online payment** through e-Tendering website or be **in the form of an unconditional Bank Guarantee** from any Nationalized / Scheduled Bank in favour of Maharashtra State Electricity Distribution Company Limited, payable at Mumbai.

Bid Capacity:

In case the bidder is quoting for more than one tender out of the following tenders:

a) CGM-IT/Substation Monitoring System/NK/23-24/012 -- for Nagpur and Konkan Region
b) CGM-IT/Substation Monitoring System/AP/23-24/013 -- for Aurangabad and Pune Region

Then the technical and financial Qualifying Requirements shall be examined on the basis of the sum of tender-wise requirements of experience of all quoted tenders.

Financial bids of only those bidders will be opened and evaluated who qualify for Technical and Financial requirements as under:

Bids for the highest value tender i.e. CGM-IT/Substation Monitoring System/NK/23-24/012 -- for Nagpur and Konkan Region will be opened first and thereafter tender CGM-IT/Substation Monitoring System/AP/23-24/013 -- for Aurangabad and Pune Region will be opened. At every stage of bid opening (after the opening of the first tender) bid capacity (comprising of the Technical Requirements Sr. no. 4A and 4B and Financial Requirements Sr. No. 2 of table as per Appendix # 1 Qualification Criteria) of bidders will be adjusted/ readjusted by the amount of the estimated value of the tender for which

any bidder is adjudged as the lowest bidder (L1). Before opening financial bids for subsequent tender, the revised bid capacity of bidders on the basis of adjusted values (bid capacity) will be assessed and in case the value of a tender is more than the so adjusted bid capacity, bids of such bidders will not be opened

QUALIFICATION CRITERIA:

Sr.no	Type	Description	Documents Required
1	Definition of Bidder	The bidder can be an individual entity or consortium of maximum three (3) entities registered in India under companies Act 1956 or Companies Act 2013, or Firm registered with Registrar of firms in India who fulfills the eligibility criteria. Lead Bidder/ Lead Consortium Member: In case of consortium, one of the consortium members responsible for performing key components of the contract shall be designated as Lead Bidder. Evidence of this authorization shall be provided by submitting a power of attorney signed by legally authorized signatories of all consortium members along with the bid.	Certificate of Incorporation issued by Registrar of Companies or Article of Association, or certificate issued by Registrar of Firms. Sole Bidder / all consortium members shall submit relevant documents.
2	Financial Strength - Turnover	The bidder should have minimum average annual financial turnover of at least **Rs. 220 Crores** for the last three financial years ending 31st March of the previous financial year (i.e. FY 2019-20, FY 2020-21 and FY 2021-22). In case of consortium, • The Lead Consortium Member/ Lead Bidder shall meet not less than **51%** of the minimum financial requirement criteria as given above. • While, the other Consortium Member individually shall meet not less than **25%** of the minimum financial requirement criteria.	Copy of the Audited Annual financial statements, Balance Sheet, and P&L Account OR Certificate from Chartered Accountant for the respective financial years.
3	Financial Strength – Net-worth	Net worth should be positive for the last three financial years ending 31st March of the previous financial year (i.e. FY 2019-20, FY 2020-21 and FY 2021-22). • Net worth means the sum total of the paid-up capital and free reserves (excluding reserves created out of revaluation) reduced by the aggregate value of accumulated losses (including debit balance in the profit and loss account for the current year) and intangible assets.	Net worth Certificate duly certified by Chartered Accountant. In the event, Bidder is a Consortium; this financial requirement shall be met individually by all the Members in the Bidding Consortium.
4A	Experience in implementation	Qualification criteria Experience in Implementation: Part 1 • Experience of having successfully completed SCADA system/ Substation monitoring system / RT-DAS project / IoT based Remote Monitoring System by bidder during last 7 years ending last day of month previous to the one in which bids are invited and should be as follows :	• Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement *AND* • Work completion certificate / Go-live certificate on letterhead of clients indicating client name, the

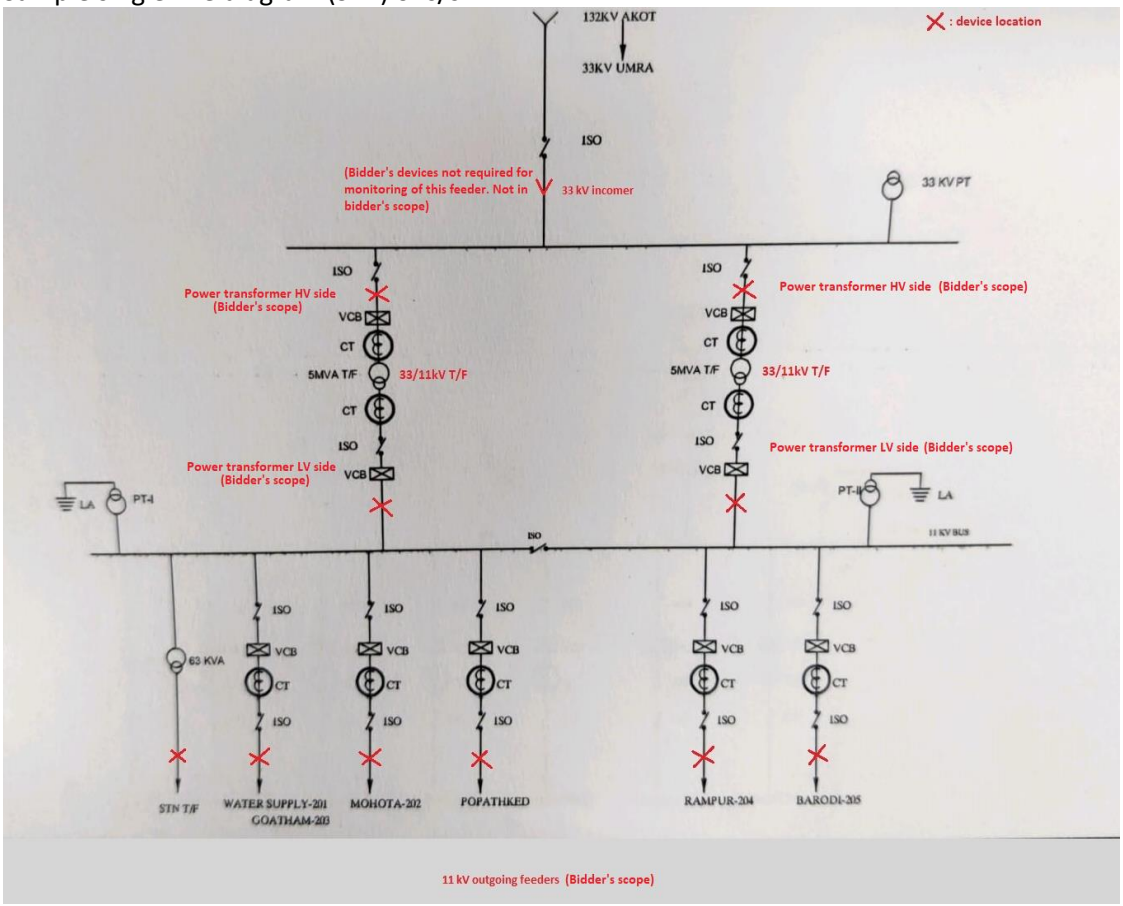
		The Sole Bidder/All of the Consortium member together shall have executed similar works with cumulative Total Order Value of 100 Crores or more. Note: 1) The similar works means successful implementation / Integration and Go-Live of SCADA/RT-DAS/Substation Monitoring System/ IoT based Remote Monitoring System 2) Multiple POs for same contract from same client will be considered as a single project. In such case, cost of project will be sum of value of all such POs in a project.	scope of work, Project start date and date of completion/date of go-live, cost of the project/ LoA price etc. • In the case of a consortium, this QR is to be met collectively.
4B	Experience in implementation	AND B] Part 2 The SCADA system/ Substation monitoring system / RT-DAS projects should have been successfully implemented by bidder in at least 150 numbers of sub-stations. The experience should be of power distribution/transmission companies in India during last 7 years ending last day of month previous to the one in which bids are invited. Note : 1) In case bidder is submitting Go-live certificate instead of client completion certificate then Client certificate for minimum 150 nos. of substation Go-live will be accepted. 2) Multiple POs for same contract from same client will be considered as a single project. In such case, cost of project will be sum of value of all such POs in a project.	• Purchase Order (PO)/ Work Order (WO)/ Letter of Award (LOA) / Contract Agreement *AND* • Work completion certificate / Go-live certificate on letterhead of clients indicating client name, the scope of work, Project start date and date of completion/date of go-live, cost of the project/ LoA price etc. • In the case of a consortium, this QR is to be met collectively.
5	Quality Certification	ISO 9001:2015 and ISO 27001 Certification	Copy of valid Certificate as of date of bid submission. In the case of a consortium, the lead bidder has to fulfil this requirement.
6	CMMI Certification	CMMI level 3 Certification	Copy of valid Certificate as of date of bid submission. In the case of a consortium, the lead bidder has to fulfil this requirement.
7	PAN & GST Registration	The Bidder (individual/ all members of the consortium) shall have a valid PAN and GSTIN Number if applicable.	Copy of relevant certificates indicating PAN number, GST registration number (GSTIN). Sole Bidder / all consortium members shall submit relevant documents.

8	Undertaking for non-blacklisting	The bidder must Not be under a declaration of ineligibility / banned / blacklisted by any State or Central Government / any other Government institutions in India for any reason as on last date of submission of the Bid or convicted of economic offence in India for any reason as on last date of submission of the Bid. Bidder should comply all conditions mentioned in MSEDCL POLICY & PROCEDURE FOR DEBARRING OF AGENCY	• Undertaking signed by its Authorized Signatories that bidder (individual/ all members of the consortium) is not blacklisted. • In the case of a consortium, each member should submit separate undertaking. • Also, undertaking to have read and comply MSEDCL POLICY & PROCEDURE FOR DEBARRING OF AGENCY.

For more details, please refer to the Tender Document.

BRIEF SCOPE OF WORK:

1) Supply, customization, installation, deployment and maintenance of necessary hardware, centralized software and communication equipment at 1681 nos. of 33/22/11 kV Substations and switching stations under Aurangabad and Pune Regions of MSEDCL and necessary HES/DAS software at cloud to facilitate monitoring of Power Transformer, incoming and outgoing feeders, capacitor bank, station distribution transformer and substation DC auxiliary power supply in project area of MSEDCL for the purpose of Monitoring, data logging and data analysis.
Sample single line diagram (SLD) of s/s:



Device location given in SLD is only for illustration purpose. Bidder is required to do monitoring of the equipment and install their devices based on the site survey. Further, for switching station monitoring of incoming feeder to switching station is also to be done.

2) Along with the monitoring of feeders, feeder control action (ON/ OFF) is also required under ADMS (Automatic Demand management Scheme) for all feeders.
3) One computer with required software, hardware, one computer Table and one Chair is to be supplied per sub-station compulsorily. Also, this local PC is required to fetch the data from the devices installed by the bidder and not from the cloud.
4) Alert message indicating which feeder is tripped under ADMS should be displayed on local PC at substation immediately.
5) Proposed substation monitoring scheme shall monitor all parameters on real-time basis at the substation and feeder level, and provide the reports at the Substation, Sub-Division, Division and Circle/Zone/Region/HO level. The bidder should use MSEDCLs existing s/s code , feeder code , BU (Billing code) code and existing standard nomenclature such as feeder code , feeder type etc. for easy identification of ss, feeder etc. for SLD display and reports etc.
6) Contract period will be 98 months with 18 months' period for installation. Operations and Maintenance of the system for the period of 80 months. The Project Manager is to be deployed by bidder for Operations and Maintenance activity for smooth functioning of the system.
7) Following reports/monitoring is to be done.
    a) Real time data for Voltage, current, Demand, Power factor, energy, frequency etc.
    b) Indicative List of electrical parameters to be captured and I/O list are listed as below:

	Data points		Type
	Real time clock , date and time (by default HH:MM:SS)		
Feeder (incomer, Transformer LV outgoing feeders and outgoing feeders)	Parameters	Ir	Analog
		Iy	
		Ib	
		Vr-n	
		Vy-n	
		Vb-n	
		Vr-y	
		Vy-b	
		Vb-r	
		Signed active power kW (+ forward; - reverse)	
		Signed Reactive power, kvar (+ lag; - lead)	
		Apparent power KVA	
		Frequency	
		Number of power failures	
		Cumulative power OFF duration in min	
		Cumulative energy , kWh (import)	
		Cumulative energy , kWh (export)	
		Cumulative energy , kvarh-Q1 (as per IS 14697)	
		Cumulative energy , kvarh-Q2 (as per IS 14697)	
		Cumulative energy , kvarh-Q3 (as per IS 14697)	
		Cumulative energy , kvarh-Q4 (as per IS 14697)	

		Cumulative energy , KVAh (import)	
		Cumulative energy , KVAh (export)	
		Maximum demand, kW	
		Maximum demand, KVA	
		Three phase power factor, PF	
		Signed Power factor , R phase (+ lag, - lead)	
		Signed Power factor , Y phase (+ lag, - lead)	
		Signed Power factor , B phase (+ lag, - lead)	
	Master trip		Digital Input
	OC		Digital Input
	EF		Digital Input
	CB OFF		Digital Input
	CB ON		Digital Input
	ADMS		Digital Output
	Local remote switch		Digital Input
	Spare		Digital I/O
DC Battery	Volt		Analog
	Current		
Substation distribution Transformer	Volt		Analog
	Current		
	kW		
	kWh		
	PF		
Capacitor Bank	V		Analog
	I		
	PF		
	MW		
	MVAR		
	Capacitor breaker Status		2 Digital Input
	Healthiness of Neutral Displacement Relay		Digital Input
	Spare		Digital I/O
Power Transformer, OLTC	OTI		Analog
	WTI		Analog
	OLTC		Analog
	OTI Alarm		Digital Input
	OTI Trip		Digital Input
	WTI Alarm		Digital Input
	WTI Trip		Digital Input
	Buchholz Trip		Digital Input
	OLTC Buchholz Trip		Digital Input
	Differential Relay		Digital Input
	Oil Level Alarm		Digital Input

c) The meters/ MFT/ MFM provided by the bidder should have accuracy class of 0.2S with certification from NABL approved agency/ lab. Existing MSEDCL meters are not to be used.

d) Energy Accounting:

1) 33 kV incomer of Power transformer HV side vs 11 kV incomer i.e. Power transformer LV side (i.e. Power transformer loss) . If there are more than 1 Power transformer then addition of input energy of all Power transformer is to be done and energy accounting to be carried out accordingly.
2) 33 kV incomer of Power transformer HV side vs 11 kV outgoing feeders (i.e. S/s loss).
3) 11 kV incomer i.e. Power transformer LV side vs 11 kV outgoing feeders (i.e. 11 kV Bus loss) .
4) Similarly for switching station 11 kV incomer vs 11 Kv outgoing feeders loss is to be calculated.
5) Additionally for each individual feeder, the corresponding consumer sale data in kwh will be given to bidder for calculation of feeder loss.

e) Average, Instantaneous, Maximum and Minimum values of voltage, current and demand and other parameters of feeders / sub-stations

f) Computation of reliability indices such as SAIDI, SAIFI etc.

g) Monitor Power transformer load, Oil Temperature, Oil level, Winding Temperature, OLTC position, differential relay and buchholz relay.

h) For Monitoring of capacitor bank in sub-station following parameters are to be monitored:

i. Current, Voltage, Power Factor, Under Voltage indication, Over Voltage indication, Neutral current measurement (Healthiness of Neutral Displacement Relay)
ii. Indication for taking bank in circuit depending on load condition.
iii. Measurement of instantaneous values of MW, MVAR, KV and Connected capacity of capacitor Bank.

i) Change in circuit breaker (ON/OFF position) and relay status with time stamp along with "Fault" indication shown on SLD (with specific information about EF/OC/ differential relay/ buchholz relay).

j) Status of substation DC auxiliary supply (including monitoring of voltage, current, power and energy)

8) Facility to time synchronize the events and energy recordings with GPS clock

9) Reporting of violations: Whether the feeders are tripped as per the planned outage schedule, Power transformer and feeder with load more than prescribed values, voltage variations etc. Violations, if any, should be tagged and report to be sent to the concerned with the reason (email and SMS alerts).

10) To facilitate the concerned engineer-in-charge of the substations to view the status of their feeders and other vital parameters through web browser / mobile phone/ tablet.

Integration of HES/DAS with MSEDCL systems. Bidder has to provide DAS/ HES and integrate the same with MSEDCL systems (currently deployed on AWS cloud) using Web Services/ APIs. The centralized software is to be deployed on cloud and the same is to be provided by the bidder. The mandatory technical requirements of the cloud are enclosed as Appendix 10. The centralised software should be able to support min. 6000 nos of s/s. The centralised software of bidder should be integrated with similar software implemented in another tenders i.e. a) CGM-IT/Substation

Monitoring System/NK/23-24/012 and b) CGM-IT/Substation Monitoring System/AP/23-24/013, such that MSEDCL as a whole status is also possible in each dashboard and all reports.

11) Implement civil and electrical work required for all the supplied equipment including separate earthing.
12) Cyber Security-Bidder is required to take necessary cyber security measures. Bidder shall ensure device's cyber security with due consideration of authentication, data privacy, confidentiality and as per latest cyber security guidelines of CERT-In specified at http://www.cert-in.org.in. Provided devices shall have required security audit compliance/certification. CEA (Cyber Security in Power Sector) Guidelines, 2021 are also to be complied with.

    Security Management:

    - The protection from unauthorized usage, detection of intrusions, reporting as required and proactive prevention actions are to be provided by the bidder. No cyber-attack or intrusion in Substation monitoring system incident
    - Cyber security audit shall be carried out from CERT-IN empanelled agency at every six months as per CEA guidelines for cyber security in power sector.
    - No cyber-attack or intrusion in SCADA/DMS system incident

13) Bidder has to carry out all required work including supply and installation of necessary hardware/sensors/wiring for monitoring of above parameters. If Overcurrent, earth fault and differential relay are found to be non-working then the same will be replaced by MSEDCL.
14) If SIM card based solution is proposed by bidder then SIM cards are to be provided by the bidder and solution should be dual SIM based (4G/5G SIMs, may have fall back to 2G) for redundancy. The monthly SIM charges will be borne by the bidder. It is bidder's responsibility to check the network coverage at site and they should use two SIM cards preferably from different service providers. Please note that bidder is free to use any other communication technology (such as VSAT etc.) other than SIM card so as to achieve SLA however all charges required for communication are to be borne by the bidder.

Important Note:

If Bidder has not participated in any tender of MSEDCL in the past, then it should go through 'Vendor Registration manual' for WORKS Tenders available on e-Tender portal and create the 'Contractor' Account for participating in Works tender at e-Tender portal which can be created at no cost. Vendor manuals for Registration & Bid Submission can be found at MSEDCL's eTender Portal (Download Section). Bidder will be solely responsible for any mistake in account creation/wrong category. After creation of account, kindly go through 'Bid Submission manual' for Works Tender to understand the procedure of uploading Bids on e-Tender portal. Please note that Bidder has to purchase the tender (by paying Bid Fee) before submitting their Bid.

Chief General Manager (IT),
MAHAVITARAN, Prakashgad, 4th Floor
Plot No G-9, A.K. Marg, Bandra (East),
Mumbai 400 051
Email: substation@mahadiscom.in

Pre-Bid Query Format

Tender No. : CGM-IT/Substation Monitoring System/AP/23-24/013

Tender Name: Tender for Implementation of Substation Monitoring System for 33/22/11 kV substations and switching stations under Aurangabad and Pune region

Name of the Company:

Name of Key Person:

Key Person Contact details: Mobile: Email:

Tender Purchased: YES/NO :

Sr.	Clause No.	Page No.	Tender Section & Clause	Query/Suggestion with justification

Note:

1. It is to be noted that Pre-Bid Queries must be sent within one daybefore the Pre-Bid meeting in the *above prescribed format in **excel sheet** only*. Any query sent in other format shall not be accepted.
2. Pre-Bid queries should be sent on substation@mahadiscom.in only. Other modes of communication shall not be entertained.
3. MSEDCL is not bound to reply to all queries.
4. Replies to Pre-Bid Queries shall be published on the MSEDCL eTender website.
5. Bidder should visit the site/ substations and based on the site survey they should submit their queries.