

TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA :: HYDERABAD-082
ABSTRACT

TSTRANSCO-SLDC – Upgradation of existing SCADA system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal – Cost Estimate of the Project - Sanction - Orders - Issued.

T.O.O. (CE - SLDC) Ms.No.1644

Dt:- 02.05.2023

Read the following:-

Ref : Approved Note Dt. 24.02.2023

ORDER:

The Existing SCADA/EMS systems in SRLDC and SLDCs (Andhra Pradesh, Telangana, Tamil Nadu & Kerala) of Southern Region were commissioned in 2015-16 in SR Region.

The Performance of the existing system is gradually deteriorating due to continuous increase of database size & higher processing requirements. The spare parts of some hardware devices are also not available as the OEM has stopped supporting the devices, which is leading to maintenance issues. Support for security patch updates for some of the security solutions also has been stopped by the OEMs.

In light of continuous reforms in Power sector, real time grid management activities are becoming complex and require decision making platforms updated with latest visualization, with big data handling capabilities and with compliance to cyber security requirements. Hence, SCADA/EMS is proposed for upgradation.

Further, as part of disaster management planning it was proposed to establish Backup SLDC at Warangal. However, the proposal was withheld after deliberations at regional level and decision was taken to go for backup SLDC as part of unified upgradation to facilitate smooth integration between Main & Back up SLDC.

SRLDC/GRID-INDIA has consented to provide consultancy services without any charges and an agreement was entered with SRLDC by CE/SLDC on behalf of TSTRANSCO for Upgradation of existing SCADA system & Establishment of SCADA/EMS system at Backup SLDC. The Scope of works of the project & consultant is enclosed as Annexure-I.

The estimated cost of the project is **Rs.96,48,55,606/-** (Rupees Ninety-Six Crore Forty-Eight Lakhs Fifty-Five Thousand Six Hundred and Six only) based on least quote received for Telangana Main and Backup SLDC communicated by SRLDC/GRID-INDIA.

The estimated cost is inclusive of Upgradation/Establishment cost & AMC cost as detailed in Annexure -II.

After Careful consideration, TSTransco hereby accords approval for Upgradation of existing SCADA system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system at Backup SLDC at Warangal at the above estimated cost.

FA&CCA(Accounts) shall arrange tie up loan through REC /PFC/Banks for execution of the project.

This approval supersedes the administrative approval issued earlier for Backup SLDC vide T.O.O Ms. No. 502, dt:17.12.2019 for an amount of Rs.18.342 Cr. which stands cancelled.

CE/Telecom shall initiate necessary proposals for providing communication links from Main SLDC to Backup SLDC and from Main & Backup SLDC to Main & Backup SRLDC respectively as per the requirements of SLDC. CE/Civil has initiated construction of Backup SLDC at Warangal. In addition necessary infrastructural Upgrade required at Main SLDC shall be taken up after necessary approvals.

The above infrastructure related works falling outside this upgradation project may be taken up immediately for timely completion of the project.

This order is issued with the concurrence of Joint Managing Director(Finance, Comml. &HRD) vide Regd. No: 1724, Dt.28.04.2023.

(BY ORDER IN THE NAME OF TRANSMISSION CORPORATON OF TELANGANA LIMITED)

Enclosure: Annexure-I & II

Sd/-
D.PRABHAKAR RAO
Chairman & Managing Director

To:

The Chief Engineer/ SLDC / VS / Hyd.

The Chief Engineer/ Civil / VS / Hyd.

The Chief Engineer/ Telecom/ VS / Hyd.

Copy to:

The FA&CCA/ Accounts/ TSTRANSCO/VS/Hyd.

Copy Communicated to:

SE/T to Chairman & Managing Director/TSTRANSCO

PS to Joint Managing Director / Finance ,Comml. & HRD / TSTRANSCO

AE/T to Director / Grid operation /VS/TSTRANSCO

DE/T to Director / Projects / VS/TSTRANSCO

DE/T to Director / Transmission /VS/TSTRANSCO

ADE/T to Director / Lift Irrigation Schemes / VS/TSTRANSCO

//FORWARDED :: BY ORDER//

DIVISIONAL ENGINEER / SCADA

Annexure-I to T.O.O (CE-SLDC) Ms.No.1644, Dt:02.05.2023

Scope of works of the Project & Consultant

i. Scope of works of the project

The scope of work under this package shall include overall Project Management having Survey, Planning, Design, Engineering, Documentation, Integration, Supply, Delivery to site, Unloading, Insurance, Storing, Handling, transportation to final locations, Installation, Termination, Testing, Demonstration for acceptance, and Commissioning of the following:

- a. Setting up of Main & Backup SCADA/EMS computer system hardware and software along with associated items at respective Control Centers. The new system shall be deployed in such a way that the operation of the existing systems shall not be disturbed. Both main and backup control center shall work in active-active mode and in case of failure of main control center backup shall come in role of main without any manual interruption (except commands/signals).
- b. Integration of existing and New RTUs & SAS system with Main and Back up Control Center System. Each RTU/SAS system shall report to Main and Back up Control Centers and suitable splitting (compatible with IEC 101/104) shall be used for redundancy at Front Ends of respective Control Centers. The devices required for integration of RTUs at control centre shall be in the scope of the contractor.
- c. Integration of Main and Back up Control Centers with existing Control Centers on Mix mode IEC protocol (i.e. new control centers are exchanging data on secure IEC and existing on plain IEC and/or Secure IEC protocol). Supplied system shall support simultaneous multiple bit encryption for SSL certificates for secure IEC connection.
- d. Integration of Main and back up control centers of SLDC with existing Control Centers such as main and backup control centers of RLDCs (Regional Load Dispatch Center).
- e. Integration of Main and Back up Control Centers on IEC protocol with Distribution Companies.
- f. Data exchange with URTDSM & Renewable Energy Control centers either on IEC or IEC 60870-5-101/104 Protocol as per site/system requirement.
- g. All necessary protocol emulations required to integrate the existing RTUs,SASs and existing Control Centers without affecting the data at the existing Control Center.
- h. Development of complete Database, displays and reports either from scratch or by extracting existing database, displays and reports. The text available in displays and reports shall support at least 3 fonts i.e., English, Hindi and

- local etc. Contractor shall develop and provide tools to convert CIM files for different versions based on customized CIM-profiles in the files used by vendors system.
- i. Data Exchange with test bench DDS (Database Development System) on ICCP by new control center and on IEC 60870-5- 101/104 protocol by new RTUs for testing before integrating with real time system.
 - j. Import and Adaption of database & displays made by TSSLDC/TSTransco for existing SCADA/EMS system including import historical data stored in existing Historical servers in new Historian System. Scope also includes the development of the required software tool to acquire the database/displays from the existing System, if required by contractor to perform this activity. All the features envisaged for the historian shall also be applicable for imported data from other systems.
 - k. A database development tool shall be provided at each Control Centre (As per BoQ) which shall import the data model from other control centres, validate the same at its own end and shall create ICCP database, historian database and SCADA/EMS database at each Control Centre including updation of ICCP bilateral table for fulfilling these requirements. The tool shall be independently operable and upgradable at each of the Control Centre.
 - l. Supply of Spares identified under AMC along with main items to meet the contingency during installation period and during AMC period.
 - m. All cabling, wiring, dressing, tagging, ferruling and interconnections to the equipment being supplied and to be integrated including communication equipment and power supply. Any cabling required for integration/interconnection of the supplied system with the existing equipment shall also be in the scope of the Contractor. All the supplied cables under the project shall be shielded type.
 - n. Integration of all the supplied equipment and existing system
 - o. The contractor's scope shall include customization of its ICCP protocol, such as configuration of ICCP database for ICCP name, scan period and all other - database parameters required to integrate existing Control Centers successfully.
 - p. The contractor's scope shall include customization of its IEC-60870-5-101 & 60870-5-104 protocols, such as configuration of database, scan period and all other database parameters required to integrate existing RTUs and SAS successfully.
 - q. Dismantling, Shifting of existing system workstation/SCADA system and installation of new system workstation at temporary location in parallel for intervening period.
 - r. Shifting and Installation of new system including server racks and panels after renovation of Control Center. This shall include all the services including

- cabling, interface modification and shifting or re-shifting of system required for intervening period and for final shifting to main Control Center. Re-cabling for some or all equipment as required for final shifting shall also be in the scope of supplier. All LAN cabling /power cabling etc. required for this activity shall be under the scope of supplier.
- s. Dismantling of existing system (SLDC) after successful shifting of Operation to New SCADA system. The existing system after dismantling shall be taken away (buy-back) by the contractor. The new System and existing system shall run in parallel for at least Three months before the dismantling of existing system. This shall include all the services including cabling and interface modification required for intervening period before final shifting to main Control Center.
 - t. Additional Hardware, software and services necessary to ensure compatibility with existing equipment.
 - u. Auditing of Cyber Security implementation by CERT-In listed Auditors during FAT, SAT and AMC.
 - v. Training TSSLDC/TSTransco's personnel
 - w. Comprehensive Maintenance of the supplied system as per specification including future ICCP & RTU/SAS, Database configurations, Maintaining Spare inventory etc.
 - x. Integration with Market, offline Applications: TSSLDC/TSTransco intends to separately procure IT Applications such as Open Access Application, WBES, Metering Applications etc. SCADA/EMS System shall exchange data with these applications in standard API (Application Program Interface)/formats like ODBC, XML, SOAP and REST.
 - y. GI/Aluminum cable trays/trace ways with covers shall be supplied by the contractor for laying cables so that cable can be protected from rodents. These cable trays/trace ways shall be screwed/ fixed on the floor by the contractor.
 - z. Contractor shall supply necessary interface (Hardware and software) for sniffing/tapping the existing RTUs for parallel operation of new system with existing system.
 - aa. Contractor AMC scope shall include supply of necessary interfaces (hardware and software) for integration of number of RTUs and Control Centers as specified in BOQ.
 - bb. Contractor shall supply and lay the power cable from TSSLDC/TSTransco provided points including distribution board for server room /Control room/Communication room and its distribution to the associated rack panels.
 - cc. During entire contract period (including extension of contract, if any), if OEM discontinues/ ends support to any item supplied (software/hardware/security solution) under the contract, contractor has to replace such hardware, software (or both, depending on software or hardware dependency) without

- any additional cost to TSSLDC/TSTransco. Replacement shall be of either same or higher configuration and from same OEMs.
- dd. Complete site overview display showing operating status of all hardware, LAN Wise Display in SCADA UI Browser along with alarms. The site overview display will also have provision for monitoring of historian functioning.
 - ee. Supply, Installation and Commissioning of Auxiliary Power System Comprising of UPS with Battery set along with all necessary distribution board wherever applicable.
 - ff. Integration and operation of existing equipments/devices, if any, to be utilized during contract period.
 - gg. All type of data exchange to/from the different applications of the complete system shall be in secure manner ensuring latest cyber security guidelines from various statutory authorities (CEA, NCIIPC, CERT-In etc.) throughout the period of contract, considering all the amendments issued from time-to-time.
 - hh. All the software licenses shall be purchased in the name of TSSLDC/TSTransco.

ii. Scope of the Consultant :

- a) Design & Engineering of SCADA/EMS system duly considering the TSSLDC/TSTransco's System requirements along with its future requirements.
- b) Preparation of all Bid documents including technical specification, BOQ, Qualifying Requirements in consultation with TSSLDC/TSTransco.
- c) Preparation of common bid document including all SLDCs & RLDC for award & execution of SCADA/EMS systems in a unified mode.
- d) Preparation of NIT cost estimate, Conditions of Contract, GCC, SCC, etc.
- e) Evaluation of bids including recommendation of award, pre-award discussions, preparation of draft LOA, draft contract agreement. However, placement of award on System Integrator(s) and contract signing is to be done by TSSLDC/TSTransco along with subsequent contract amendments, if desired so.
- f) Review and approval of System Integrator's drawings/documents.
- g) Assistance in project management in order to have the implementation of the agreed contract as per schedule, supply of all the materials and equipment and assistance in supervision at site for installation, testing & commissioning of the equipment. However, overall coordination for the project management activity shall be done by the Consultant.
- h) Association in witnessing of testing of equipment/materials at test laboratory, factory(FAT), review of test reports and inspection of materials at manufacturer's works or site along with TSSLDC/TSTransco.

- i) Association in testing for exchange of data with RLDC for, RTUs / SAS coming up with new protocols.
- j) Any other technical inputs required for smooth execution of the project is deemed to have been included in the scope of service.

Sd/-
D.PRABHAKAR RAO
Chairman & Managing Director

//FORWARDED :: BY ORDER//

DIVISIONAL ENGINEER / SCADA

Annexure-II to T.O.O (CE-SLDC) Ms.No.1644, Dt:02.05.2023

BOQ of Main & Backup SCADA/EMS system (Combined)

ABSTRACT					
Sl.No	Description	Unit	Qty	Rate (Rs)	Amount (Rs)
1	Software	Lot	1	22,75,96,936.00	22,75,96,936.00
2	Computer system hardware	Lot	1	21,68,94,211.00	21,68,94,211.00
3	Auxiliary Power Supply	Lot	1	1,26,25,603.00	1,26,25,603.00
4	Mandatory spares inventory at Control centers	Lot	1	2,92,62,194.00	2,92,62,194.00
5	Services (integration and supply)	Lot	1	14,78,24,833.00	14,78,24,833.00
6	Training	Lot	1	48,37,350.00	48,37,350.00
7	Annual Maintenance contract including Defect Liability Period	Lot	1	31,97,86,509.00	31,97,86,509.00
8	Relocation and commissioning at new location	Lot	1	60,27,970.00	60,27,970.00
Grand Total					96,48,55,606.00

(Rupees Ninety-Six Crore Forty-Eight Lakhs Fifty-Five Thousand Six Hundred and Six only)

Inclusions in above description: -

1. Software includes SCADA, ADMS, ICCP, CFE, EMS, DSA, DTS, PDS, Web server, OPC server & client, SMS and E-mail, COTS etc.
2. Computer system hardware include Servers, WAN routers with firewalls, SAN, NAS, Networking Switches, Laptops, GPS, Workstations, VPD, Printers, digital displays, Furniture etc.,
3. Auxiliary Power supply includes UPS systems, Batteries, I/O ACDBs, Power distribution and cabling etc.
4. Mandatory spares are for SCADA/EMS system, VPS, Auxiliary Power Supply etc.
5. Services include integration with control centers, other applications, existing RTUs, Cyber Security Audits, SMS, Dismantling and Buy back etc.

6. Training includes that on System hardware and software, database and displays, application software, dispatcher operator training, NMS, Cyber security, VAPT, DTS, ICCP, Auxiliary power supply etc.

7. AMC includes AMC for SCADA/EMS system for a period of 7 Years (1Y(DLP)+6Y (AMC)), ICCP Integration for 7 years, SIX Monthly Cyber Security Audits, Patch management for 7 years, RTU Integration, OPC client function, Yearly training for 5 days for 20 Persons, Printer Cartridges, SMS Service etc.

Sd/-
D.PRABHAKAR RAO
Chairman & Managing Director

//FORWARDED :: BY ORDER//

DIVISIONAL ENGINEER / SCADA