(22)

para(5)
Annexure-V

Capital Investment Plans In Telangana State Load Despatch Centre (TGSLDC) of TGTRANSCO for FY2024-25 to FY 2028-2029 control period.

1. **Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal.**

   a. **Brief Outline:**

   - The SCADA/EMS systems are the eyes and ears of Grid operators and act as platform for information dissemination of real time generation and load schedules.
   - The SCADA/EMS system constitutes various Hardwares and Softwares for SCADA/EMS functionality viz., Application, Communication-Front End, ICCP, WEB, Replica data server, Historian server, Video-projection system, storage devices, Firewalls, Routers, Switches etc.
   - The capital investment for Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad may be categorised under System Replacement and for Establishment of SCADA/EMS system as Backup SLDC at Warangal as System Expansion.

   b. **Objective & Justification:**

   Objectives:

   - The state of art SCADA/EMS system provide visibility, decision making facilities for system operator in the operation and control of real time system for the reliable, efficient, and secure Grid operations.
   - Maintaining the power system in a secure and stable operating state by continuously monitoring the power flowing in the lines and voltage magnitudes at the buses.
   - Maintaining the frequency within allowable limits.
   - Maintaining the tie-line power close to the scheduled values.
   - Optimization, Operational Planning and Maintenance Scheduling
   - Maintenance scheduling of generation and transmission systems.
   - Optimal control of the power system using both preventive and corrective control actions.

Justification:

- The previous Upgradation (existing SCADA) was taken up at regional level for SRLDC, Kerala, Telangana, A.P & Pondicherry in 2012 & SCADA system was commissioned in Telangana in 2015-16.
- Even though several advanced features facilitating increased Grid Management requirements were incorporated in the existing SCADA system, which was commissioned in 2015-16, it has become insufficient to accommodate faster rate of Grid expansion necessitating faster and complex Grid management activities.
- In the light of continuous reforms in Power sector, real time Grid management activities are becoming complex and require decision making platforms updated with latest visualization and capable of handling big data and compliant to cyber security requirements.
- Further, as part of disaster management each state should have main SLDC and fully functional replica as Backup SLDC as per report of task force (Satnam committee) & based on recommendations of Forum of Load dispatchers (FOLD) on implementation of Pradhan committee report.
- Accordingly, after deliberations at national level, it has been proposed to go ahead with the Upgradation of existing SCADA/EMS system at Main Control Centre and Establishment of SCADA/EMS system at Backup Control Centre.

c. **Architecture:**

- The conceptual system architecture of Main and Backup Control Centers of Telangana SLDC at Hyderabad and Warangal comprising Servers, devices and their interconnections is attached as Annexure-I.

d. **Detailed cost estimate:**

- The cost estimate for the project is Rs.96,48,55,606/- (Rupees Ninety-Six Crore Forty-Eight Lakhs Fifty-Five Thousand Six Hundred and Six Only) inclusive of Annual Maintenance Charges for a period of 7 years (1-year DLP and 6 years AMC)

and is based on least quote received for Telangana Main and Backup SLDC communicated by SRLDC/Grid-India.

- The cost is inclusive of upgradation/Establishment cost & inclusive of Annual Maintenance Charges for a period of 7 years (1-year DLP and 6 years AMC) as detailed in Annexure-II.

e. Financing plan & Phasing of expenditure:

- The Administrative and Technical approval was accorded for upgradation of SCADA/EMS system and Establishment of SCADA/EMS at Backup SLDC at an estimated price of Rs.96,48,55,606/- and T.O.O.(CE-SLDC) Ms.No.1644, dated 02.05.2023 (Annexure-III) for the same was issued accordingly.
- The capital expenditure may be met with a funding tie up with REC/PFC/Other Banks.
- For FY 2024-25, 85% payment on project will be made as per the contract.
- For FY 2025-26, Balance 15% payment of project cost will be made as per the contract.

f. Project Implementation Schedule:

- The tenders were called in the month of march-2023 by GRID-INDIA, Pre bid meetings were concluded. Vendors requested time for placing commercial bids.
- The tentative project implementation schedule from the date of letter of award is herewith attached as Annexure-IV.
- The detailed Implementation schedule will be finalised after award of the contract.

g. Physical benefits of the Scheme:

- Latest State of art SCADA/EMS system comprising hardware & softwares with cyber security features and other software tools for enhancing the decision making & implementation capabilities of the System Operator are envisaged under this scheme.

h. Financial benefits of the scheme.

- The financial benefits are not directly visible/measurable and are intangible in nature.

- This project with advanced SCADA system and software will improve the grid operator's visibility and efficiency in grid operation thereby benefiting all the stakeholders by means of despatching quality power in an economic manner.

Further, it is to submit that, Subsequent to Administrative & Technical approval of the project by TGTRANSCO Board, A Letter dt:25.07.2023 (Annexure-V) was addressed to Hon'ble Secretary, TSERC for investment approval for the work "upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal. Consequent hereto TSERC vide Lr dated 29.09.2023 (Annexure-VI) raised certain queries and the reply was furnished by Telangana SLDC vide Lr dated 01.11.2023 (Annexure-VII). The hon'ble TSERC vide Lr dated 20.12.2023 (Annexure-VIII) sought further information and the same was furnished by Telangana SLDC vide Lr dated 08.01.2024 (Annexure-IX) and the Hon'ble commission's approval of Rs.62.16 Crores was accorded vide approval number.02/2023-24 (Annexure-X)

2. **Construction of building & providing infrastructure for Backup SLDC (50% payment is proposed to be made in FY 2023-24).**
   a. **Brief Outline:**
      - The project capital investment may be categorized under the System Expansion group.
      - The Project constitutes construction of a building, meeting infrastructural needs of a Backup SLDC.
   b. **Justification:**
      - As part of disaster management each state should have main SLDC and fully functional replica as Backup SLDC as per report of task force (Satnam committee) & based on recommendations of Forum of Load dispatchers (FOLD) on implementation of Pradhan committee report.
      - Main and Backup SLDC were proposed. Consequent to bifurcation of erstwhile Andhra Pradesh State, the main SLDC equipment was allotted to Telangana SLDC and Backup SLDC equipment was allotted to residual AP. The main SLDC equipment is commissioned in A Block, Annex Building, Vidyuth Soudha, Hyderabad and presently there is no Backup SLDC.
      - Hence, construction of Backup SLDC is proposed.
   c. **Objective:**
      - To have full fledged Backup SLDC building wherein parallel Grid operations to Main SLDC will be carried out. In case of any incident /event at the Main SLDC, the Backup SLDC shall come into operation with minimal down time/ instantly.
   d. **Proposed location layout drawing:**
      - The layout pertaining to construction of Backup SLDC in the premises of 220kV Warangal substation in Warangal urban district is attached as Annexure-XI
   e. **Detailed cost estimate:**
      - The Cost estimates arrived for the construction of backup SLDC is Rs.9,31,24,366/-.
      - Tenders were called for an amount of Rs:7,30,74,366/-

f. **Financing & Phasing of expenditure:**

- The Administrative was accorded for an amount of Rs.9,31,24,366/- which includes lumpsum provisions for Municipal Water supply, Furniture, Firefighting, Station Transformer, VRF AC System, Surveillance cameras, Telecommunication system, etc.
- The capital expenditure may be met with a funding tie up with REC/PFC or any Financial institution/banks.
- Letter of intent was issued to M/S. SLV Builders, Saidabad Colony, Hyderabad.

g. **Project Implementation Schedule:**

- The date of handing over site to M/S SLV Builders is 15.11.2023 with a period of completion of 9 months i.e.., The due date for completion of the work is 14.08.2024.

h. **Physical benefits of the Scheme:**

- Latest State of art SCADA/EMS system comprising hardware & softwares with cyber security features and other software tools for enhancing the decision making & implementation capabilities of the System Operator are envisaged under this scheme.

i. **Financial benefits of the Scheme:**

- The financial benefits of Construction of Backup SLDC and Establishment of SCADA/EMS system at Backup SLDC are not directly visible/measurable and are intangible in nature.

3. Implementation of Automatic Generation Control (AGC) at TGSLDC

a. Brief Outline:

- Automatic Generation Control (AGC) is a crucial aspect of power system operation that involves the automatic adjustment of power generation to maintain the balance between electricity generation and consumption. The primary goal of AGC is to ensure the stability and reliability of the power grid by continuously adjusting the output of generating units.
- Introduction to AGC:
  - AGC is a control mechanism used in power systems to automatically regulate the output of generators in response to changes in load and other system conditions.
  - Maintaining a balance between generation and demand is vital for the stability and reliability of the power grid.
- Basic Components of AGC:
  - Sensors: Monitoring devices measure key parameters such as system frequency, tie-line power, and generator outputs.
  - Controller: Analyses the feedback from sensors and determines the required adjustments to the generator setpoints.
  - Actuators: Mechanisms that adjust the generator outputs based on the control signals from the controller.
- AGC Operation:
  - Frequency Sensing: AGC often uses the system frequency as a primary feedback signal. Deviations from the nominal frequency indicate imbalances between generation and load.
  - Tie-Line Power Control: In interconnected power systems, AGC adjusts the power flow over tie-lines between different regions to maintain balance.
- Benefits of AGC:
  - Grid Stability: Ensures that the grid operates at a stable frequency and voltage.

- Reliability: Reduces the risk of power outages and blackouts by quickly responding to changes in demand and generation.

b. Objectives;

- Load-Frequency Control (LFC): The main goal of AGC is to ensure that the frequency of the power system remains within acceptable limits. Changes in load and generation affect the system frequency, and AGC adjusts the output of generators to maintain frequency stability. LFC is essential for the reliable operation of interconnected power systems.
- Maintaining Power System Stability: AGC helps in maintaining the stability of the power system by adjusting the generation to match the load. Sudden imbalances between generation and load can lead to instability, and AGC helps in quickly responding to restore the equilibrium.
- Minimizing Area Control Error (ACE): ACE represents the difference between the actual frequency and the scheduled frequency, adjusted for tie-line deviations. The objective of AGC is to minimize ACE by adjusting the generation within the control area.
- Economic Operation: In addition to frequency control, AGC is often designed to optimize the economic operation of power systems. This involves minimizing the overall cost of generation, which includes fuel costs, maintenance costs, and other operating expenses.
- Optimizing Generation Dispatch: AGC optimally dispatches generation resources to ensure that the most economical and reliable generators are utilized. This involves making real-time decisions to balance the load and generation while considering the operating constraints of individual generators.
- Minimizing Tie-Line Power Flows: In interconnected power systems, AGC also aims to minimize the power flows on tie-lines between different control areas. This helps in maintaining a stable and secure operation of the entire power grid.
- Adaptability to Changes: AGC systems should be capable of adapting to sudden changes in load or generation, as well as

unforeseen disturbances or faults in the power system. Rapid response to these changes is essential to maintain the overall stability of the system.

c. **Justification:**

- AGC is essential for maintaining a balance between electrical generation and load demand. This is critical for keeping the system frequency within acceptable limits, ensuring the stability of the power grid.
- The Stability of the power system is directly related to the maintenance of system frequency. AGC plays a crucial role in preventing large and rapid frequency deviations caused by sudden changes in load or unexpected generator outages.
- AGC contributes to the overall reliability of the power grid by responding quickly to changes in load and generation. This helps prevent disturbances and mitigates the risk of cascading failures that could lead to widespread outages.
- AGC is designed to respond rapidly to disturbances, whether they are sudden changes in load or unexpected generator trips. This fast response is critical for stabilizing the grid and minimizing the impact of disturbances on system performance.
- AGC actively monitors and controls the power system to prevent instabilities, such as voltage collapses or frequency excursions. This proactive control is necessary for grid reliability and the prevention of disruptive events.

d. **Cost Estimates:**

- Out of the total project cost of Rs. 5,20,81,323/-(100%), Approximately 90% or less i.e Rs.4,68,73,191/- would be funded by PSDF and TGTRANSCO will bear Rs. 27,36,000.00 or more and TGGENCO will bare Rs. 24,72,132.00 or more respectively based on sanction. The cost estimation TGTRANSCO portion is arrived based on the quotation obtained from MIS Hitachi Energy India Limited.

e. **Financing Plan:**

- AGC is proposed under 5.1(c) of PSDF schemes in which 90% or Lesser of total Cost would be funded by PSDF and remaining

10% or more depending upon the sanction of the fund has to borne by TGTRANSCO.

f. **Financial Benefits:**

- The financial benefits of Automatic Generation Control stem from its ability to optimize power generation, prevent imbalances, improve grid reliability, and enhance the overall efficiency of the power system. These benefits contribute to cost savings, better asset management, and a more economically viable and sustainable electricity supply.

4. **Implementation of SAMAST (Scheduling, Accounting, Metering and Settlement of Transactions in Electricity) Project in TSSLDC of TGTRANSCO.**

   a. **Brief Outline :**

   - The Project is likely to be taken up during FY 2024-25 to FY 2025-26.
   - The Project has four components:
     - Procurement of ABT Meters (Metering).
     - Development of Software Application Module for Scheduling, Open Access, Billing and SLDC report, Financial Accounting & Statutory Compliance, Project Management and IT Consulting support.
     - Procurement of IT Components such as Database servers, Application server, Operating system, SAN storage, backup software, Antivirus, Oracle Database Licensees, Switches, NAS, Rack, Support series training, Firewall etc., for implementation of SAMAST (Intra State ABT) Project.
     - Implementation of AMR Module which includes procurement of GPRS modems with Ethernet port for data transfer over fiber optic network of GPRS network. Head end system (H&S) for Data acquisition, Meter Data management system, integration, installation and commissioning for implementation of AMR project. This project is necessary for obtaining continuous metered data online for carrying out weekly energy settlements.

   b. **Objective and Justification:**

   Objective:

   - The SAMAST scheme will achieve an efficient mechanism for proper scheduling to settlement of electricity transactions in a transparent manner for the power transactions across intra-state boundaries.
   - To maintain Grid Security and Grid Discipline with safe, secure, and reliable grid operations.
   - DSM (Deviation Settlement Mechanism) as per TSERC Regulations will be enforced for all stakeholders by comparing

Implemented schedules with Actual Generation and drawls. The Stakeholders are TGGENCO, TS DISCOMs, IPPs, CPPs, EHT PDs (Both RE and non-RE) etc.,

Justification:

- The ABT regime introduced by CERC at the national level had a positive impact. Hence, SERCs are advised to introduce ABT regime at state level i.e., implementation of ABT and frequency linked Deviation Settlement Mechanism at state level.
- In present scenario, energy exchanges between TSDISCOMs are only being settled based on marginal cost which is not in line with CERC Deviation Settlement Mechanism.
- No settlement procedure is in place for Intra state generators (except Solar and wind) and full open access consumers, whereas in SAMAST, all Intra State Generators (excluding Solar and wind) having installed capacity of 5MW and above, Distribution licensees, Deemed Distribution licensees and Full Open Access Consumers will be covered under DSM mechanism.

c. **Architecture:**

- The architecture is attached in Annexure-XII.

d. **Detailed cost estimate:**

- The cost estimate for the project is 21.95 (Rupees Twenty-One Crore and Ninety-Five Lakhs Only). The cost is exclusive of Annual Maintenance Contract expenses.

e. **Financing & Phasing of expenditure:**

- The administrative approval was accorded for Implementation of SAMAST Project in TGTRANSCO for an amount of Rs 21.95 Crore in which Rs 12.48 Crore is grant from PSDF and Rs 9.47 Crore will be met from TGTRANSCO own funds. TOO (CE-SLDC) Ms.No.1406 dated 30.05.2022 (Annexure-XIII) for the same was issued accordingly.
- The Phasing of expenditure is enclosed in Annexure -XIV.

f. **Project Implementation Schedule:**

- The tenders were called for Procurement of Energy Meters. The technical evaluation will be carried out shortly and financial bid is yet to be opened.
- The tentative project implementation schedule is herewith attached in Annexure-XV.

g. **Physical benefits of the Scheme:**

- The energy statements will have all the attributes of understandability, reliability, and comparability as enumerated in the standards for financial accounting. The data to be used by various wings of SLDC will be available in centralised servers and the end product of all wings will be readily accessible by other wings of SLDC. The entire data storage system of SLDC will be protected with a proper cyber security protection system in place.

h. **Financial benefits of the Scheme:**

- The financial benefits are not directly visible/measurable and are intangible in nature. The energy statements form the basis for financial settlements. The invoices which will be raised for the charges related to reactive energy, transmission usage, SLDC charges, DSM etc that will be raised by TGTRANSCO will rely on the energy account statements. The speed and accuracy of generation of energy accounting and settlement reports will increase to a great extent.

* The Hon'ble TSERC has accorded approval for extension of timelines for implementation of SAMAST project upto November 2025 vide ref Lr.No. TSERC / Secy / JD(TE)/OSD(TE)/F.No.DSM/D.No.619/23, Dt: 14/09/2023.(Copy Enclosed).

Abstract of Phasing of Expenditure -

Description	FY 2024-25 (in Cr)	FY2025-26 (in Cr)
Meters	The budget will be borne by Transmission wing.	
Software Components	0.873	0.7
Hardware Components	0.7	0.197
Communication Components	0.427	0.475
Infrastructure cost for establishment of data centre	1	0.8

5. Implementation of Demand & Price Forecast solutions at TSSLDC

Demand Forecast is a crucial aspect in power system operation the software solution is required for week ahead, day ahead & Intraday Demand estimation on 15/5 minutes interval for the State of Telangana.

The software solution shall deploy the dynamic and real time demand forecasting and Analytical Solution dashboard for TSSLDC.

The software Shall include the following modules:

A) Short Term Demand Forecasting (in MW)
Intra - day forecast at 15/5 minutes time block
Day ahead forecast at 15/5 minutes time block

B) Medium Term Demand Forecasting (in MW)
Week ahead forecast at 15/5 minutes time block
Month ahead forecast at 15/5 minutes time block.

C) long term Demand Forecasting (in MW)
Year Ahead forecast at 15/5 minutes time block.

D) Power Exchange Price Forecast
Price Forecast in various products DAM, RTM, TAM, GTAM, GDAM, REC, ESCERTS etc

The Major Parameters to be considered for Demand Estimation & Price forecast are as follows.

Demand & Price Forecast: - The week ahead, Day ahead and Intra Day forecast on 15/5 Minutes interval which shall be updated every day based on Artificial Intelligence (AI) broadly considering following inputs.

a) Real time Scada Data.
b) Historical Demand Statistics.
c) Trends of present day, previous day, Holidays, special days like Festivals, weekends etc.,
d) Weather parameters from IMD or reputed organisations.
e) Seasonal variations considering with the Telangana Load Mix.
f) There shall be provision to utilise the RE Generation forecast from SLDC REMC.
g) There should be a provision for accessing Electric Vehicle (EV) and Green Hydrogen Demand.

h) The demand estimated on week ahead, Day ahead, and Intraday can be used for Management of Generation portfolio unit commitment, ESS and cost optimisation to Discoms/beneficiaries based on price forecast on week ahead, day ahead and Intraday.

i) The Demand and Price Forecast accuracy shall be within 2% to 5% on block-to-block basis.

j) Any other relevant parameters

Justification:

TSSLDC is the apex body for maintaining optimum Load Generation balance in a secure and economic manner in the state of Telangana.

The main objectives for Demand forecasting solutions are:

1. To get accurate Demand forecasting based on scientific technique.
2. To plan outages of generating units, Network elements. It ultimately helps to enhance system security and reliability.
3. Optimization of Generator scheduling.

The Demand forecasting solution will review and submit analysis based on statistical and artificial intelligence that can be used for demand forecasting. Appropriate analysis of factors that affect the accuracy of the Demand forecast such as Weather data. The model developed will be suitable for demand forecasting for different time horizons short, medium and Long term and varying Weather conditions and to make decisions that can prevent deviation.

Telangana state has variable mix pattern of load of which Agriculture is around 40% and Lift irrigation is 5-10% in total demand. Further, Telangana state faces highest load variations twice in a year (Both in Khariff & Rabi Season)

The demand variation in 2022-23 during various seasons are as follows: During Summer, Demand varied between 4688 MW (04.05.2022) and 15497 MW (30.03.2023) which is all time highest recorded.

During Monsoon, Demand varied between 3760 MW (13.07.2022) and 13191 MW (26.09.2022). During Winter, Demand varied between 4266 MW (22.11.2022) and 14794 MW (28.02.2023).

During morning Peak, Ramp up of the demand is about 500 MW per block during Peak Season. Within 90-120 minutes about 3500-4000 MW increase in demand must be handled by the System Operator, another important challenge handled by system operator is integration of high RE Generation into the Grid. It is a big challenge to System Operator to plan Load Generation Balance optimally when there are more reserves. As the Telangana state demand has a high mix of Agriculture and Lift loads it is sensitive to sudden variations of demand due to climatic changes. the assessment of demand is highly unexpectable.

The availability of Demand & Price Forecast solutions is highly essential for maintaining optimum Load Generation balance in a secure and economic manner in the state of Telangana.

Cost Estimates:

The estimated cost of the projected is 7,99,00,000.00 (Rupees Seven crores Ninety-Nine lakhs only) or more/less based on the actuals. The cost estimation is arrived based on the highest cost of quotations obtained from various firms. – Annexure-XVI

Software Development & Deployment Cost	
Item Description	**Charges in INR (Excluding GST/ Taxes)**
Deployment of dynamic and real time demand forecasting and Analytical Solution dashboard for TSSLDC for the period of **7 years** from the date of UAT.	**7,99,00,000.00** (Rupees Seven crores Ninety Nine lakhs only)
Application Development Phase 25% of the total cost payable after the final phase of System Integration Test. (SIT) o Implementation Phase: 45% of the total cost payable after successful completion of User Acceptance Test. (UAT) o Operational Phase: 30% of the total cost linked to Intra-day & Day ahead demand forecast accuracy and payable quarterly, maximum up to 12 instalments	

Financing Plan:

Expenditure on procurement of Demand & Price Forecast solutions has to borne by TGSLDC.

Financial benefits:

The financial benefits of using Demand & Price Forecast solutions are the optimal and economical operation of Power system and planning the Load and generation balance in advance outage planning and for overall assessment of power of Telangana state. These benefits contribute to cost savings, better decision making, secure and optimal operation of Grid.

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6. **Capital Investment Scheme details of IT Wing for 2024-25 to 2028-29:**

a. Brief Outline:

- The project will be initiated in the FY 2025-26
- The project contains Installation, Commissioning and Purchasing of Hardware and Software required for running IT applications.

b. Objectives:

- IT Applications are supposed to run on Server Hardware which are designed to run 24x7 without any issues.
- Minimize the downtime of the mission critical applications.
- Applications need to be hosted in multiple nodes so as to meet various Network failures, Power supply failures and Hardware failovers.
- To meet the resources required for the upcoming new Applications.

c. Justification:

- As the existing IT applications are hosted and running in ordinary Desktop Systems which are not designed to work round the clock and are more prone to crash and failures which causes interruptions to live operations.
- There is no redundancy mechanism to meet failovers due to non- availability of necessary Hardware.
- Few of the Applications are being monitored by Higher Officials of the TGTRANSO, TGGENCO, DISCOMS and Ministers of Telangana Govt, these applications cannot have down time.
- And some of the other applications are mission critical such that the non- availability of the applications makes System Operator take incorrect action/decision which leads to huge financial loss.

- As per CERT-In guideless Antivirus, Antimalware, and patch management software's to safeguard the IT Systems are needed.
- Hence it is mandatory to procure necessary Hardware and Software.

d. Architecture:

- The architecture is still under development and design phase to meet future technologies.

e. Tentative Cost Estimate:

- The tentative cost of the project based on the quotation received from the open market for generalized architecture is enclosed in Annexure-XVII

f. Physical Benefits:

- By placing necessary Hardware and Software with advanced technologies, it's easier to maintain, monitor and deploy the applications.
- Besides the above it makes the Developer identify the problems and debug the issues efficiently.

g. Financial Benefits:

- 100% Availability of some of the IT applications and required information/data will assist System Operation to take correct decision to maintain LGBR optimization of power available thereby avoiding loss/penalty for UD/OD and also generate revenue by effective utilization of power, selling and buying power in power markets.

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7. **Telecom Wing;-**

- In view of the establishment of backup control centre at Warangal and upgradation of the existing SCADA, new communication is required to be procured for meeting the communication requirements at Main and backup SLDCs and for Upgradation of existing communication system.

Chief Engineer/SLDC(FAC)

Annexures for Annexure-2

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Annexure -7

SIEMENS

Budgetary Price Indication for SCADA/EMS System of Telengana SLDC							
			Quantity				
Sl. No.	Item Description	Unit	Main CC	Backup CC	Total	Unit Price (Supply, Installation, Insurance & Freight)	Total Price (Supply, Installation, Insurance & Freight)
A	**Software**						
1.1	SCADA	Lot	1	1	2	48,189,560	96,379,120
1.1 (a)	Load Shed Support (LSS) / ADMS	Lot	1	1	2	7,228,800	14,457,600
1.2	ICCP Communication	Lot	1	1	2	included in item 1.1	-
1.3	CFE Communication	Lot	1	1	2	included in item 1.1	-
1.4	EMS Functions					-	-
(a)	State Estimator	Lot	1	1	2	included in item 1.1	-
(b)	Contingency Analysis	Lot	1	1	2	included in item 1.1	-
(c)	Security Enhancement	Lot	1	1	2	included in item 1.1	-
(d)	Optimal Power Flow	Lot	1	1	2	included in item 1.1	-
(e)	Outage Scheduler	Lot	1	1	2	included in item 1.1	-
(f)	Transmission Line/Corridor Capability Monitor (TCM)	Lot	1	1	2	included in item 1.1	-
(g)	Short Circuit Analysis	Lot	1	1	2	included in item 1.1	-
(h)	Automatic Generation Control (AGC)	Lot	1	1	2	included in item 1.1	-
1.5	Dynamic Security Assessment (DSA) Software (at RLDC only)	Lot	0	0	0	7,242,278	-
1.6	Dispatcher Training Simulator	Lot	1	0	1	included in item 1.1	-
1.7	Database development system (PDS) cum test bench for SCADA and ICCP Integration					included in item 1.1	-
(a)	Database development system (PDS)	Lot	1	1	2	included in item 1.1	-
(b)	Test bench for FEP, SCADA and ICCP Integration	Lot	1	1	2	1,680,902	3,361,803
1.8	Web Server Application					-	-
(a)	Software for Data Replica	Lot	1	1	2	959,631	1,919,261
(b)	Software for Web Server	Lot	1	1	2	712,308	1,424,616
(c)	Web Historian and Reporting System	Lot	1	1	2	712,308	1,424,616
1.9	OPC client licenses (SCADA & Historian 5 each) - To take data from outside.	Lot	1	1	2	1,170,209	2,340,417
1.10	SMS & Email Interface	Lot	1	1	2	963,341	1,926,682
1.11	Commercial Off-The-Shelf (COTS) Softwares					-	-
(a)	Historian (Information Storage & retrieval) System along-with GUI as per TS requirement of Historian.	Lot	1	1	2	10,865,243	21,730,486
(b)	Document Management System	Lot	0	0	0	1,375,815	-
(c)	Identity Management Software	Lot	1	1	2	2,063,722	4,127,444
(d)	Network Access Control (NAC)	Lot	1	1	2	2,536,518	5,073,036
(e)	Patch Management Software	Lot	1	1	2	390,112	780,225
(f)	VAPT Tool	Lot	2	1	3	2,063,722	6,191,166
(g)	Virtualisation Software for all the virtual servers envisaged and required under the project along-with centralised management software	Lot	1	1	2	6,065,243	12,130,486
(h)	Operating System for all the servers envisaged and required under the project	Lot	1	1	2	959,631	1,919,261
(i)	Host based intrusion prevention system (HIPS) with centralised management	No.	17	17	34	15,889	540,218
(j)	End Point Security Solution with centralised management	No.	50	36	86	301,756	25,951,004
(k)	Centralised Management and Log Analyser of all FWs	Lot	1	1	2	5,856,145	11,712,290
(l)	Network Management System	Lot	1	1	2	1,680,902	3,361,803
(m)	SIEM (Security Information and Event management)	Lot	1	1	2	3,206,831	6,413,663
(n)	OPC client licenses to be installed outside OT network to exchange data from SCADA & Historian.	No.	2	0	2	367,386	734,772
(o)	Load Forecasting	Lot	1	1	2	included in item 1.1	-
1.12	OPC Server	No.	2	2	4	724,210	2,896,838
1.13	Report Development & Generation Software	Lot	1	1	2	400,063	800,126
						-	-
B	**Computer System Hardware**					-	-
	Servers					-	-
2.1	SCADA/EMS, AGC Applications	No.	2	2	4	1,223,728	4,894,912
2.2	DSA Application (at RLDC only)	No.	0	0	0	1,223,728	-
2.3	ICCP, CFE, OPC Applications					1,223,728	-
(a)	ICCP Applications	No.	2	2	4	1,223,728	4,894,912
(b)	CFE, OPC Applications	No.	2	2	4	1,223,728	4,894,912
(c)	CFE for Private Generators & RE stations	No.	0	0	0	1,223,728	-
2.4	Historian (Information Storage & retrieval) System along-with GUI, Reporting Application	No.	2	2	4	1,423,728	5,694,912
2.5	DTS Servers	No.	2	0	2	1,223,728	2,447,456
2.6	PDS (Test and Development) Servers	No.	2	2	4	1,223,728	4,894,912
2.7	Server for Third Party Applications as per architecture and technical specification	No.	2	2	4	1,708,474	6,833,894
(a)	End Point Security Solution Server					-	-
(b)	Patch management Server					-	-
(c)	NMS server					-	-
(d)	VAPT Server					-	-
2.8	Servers for Management Applications	No.	2	2	4	1,423,728	5,694,912
(a)	Internal Centralised Mangement Server					-	-
(b)	Network Access Control (NAC)					-	-

Budgetary Price Indication for SCADA/EMS System of Telengana SLDC							
			Quantity				
Sl. No.	Item Description	Unit	Main CC	Backup CC	Total	Unit Price (Supply, Installation, Insurance & Freight)	Total Price (Supply, Installation, Insurance & Freight)
(c)	Identity Management Server					-	-
2.9	Servers for Applications in Internal DMZ	No.	2	2	4	1,423,728	5,694,912
(a)	External Centralised Mangement Server					-	-
(b)	Data Replica Server					-	-
(c)	SIEM					-	-
(d)	Document Management System					-	-
2.10	Servers for Applications in External DMZ	No.	2	2	4	1,708,474	6,833,894
(a)	Web Servers					-	-
(b)	End Point Security Solution Server					-	-
(c)	Patch management Server					-	-
(d)	Web Historian and Reporting server					-	-
(e)	OPC Server					-	-
2.11	Server Mangement Console	No.	1	1	2	1,423,728	2,847,456
2.12	Backup Solution	No.	1	1	2	1,223,728	2,447,456
2.13	Storage System					-	-
(a)	SAN System	No.	2	2	4	3,623,454	14,493,816
(b)	NAS System	No.	1	1	2	2,174,072	4,348,145
2.14	WAN Routers with Firewall					-	-
(a)	WAN Router cum Firewall for ICCP Communication	No.	2	2	4	3,408,667	13,634,668
(b)	WAN Router cum Firewall for External World Connectivity	No.	2	2	4	3,408,667	13,634,668
(c)	WAN Router cum firewall for RTU Communication	No.	2	2	4	3,408,667	13,634,668
(d)	Router cum firewall for Remote Consoles	No.	0	0	0	3,408,667	-
(e)	WAN Router cum firewall for PDS	No.	2	2	4	3,408,667	13,634,668
2.15	Switches					-	-
(a)	48 Port L3- LAN switch for SCADA/EMS LAN	No.	2	2	4	670,465	2,681,860
(b)	24 Port L3- LAN switch for Historian & Reporting LAN	No.	2	2	4	595,009	2,380,034
(c)	16 port FC switch for SAN Storage	No.	2	2	4	1,483,794	5,935,176
(d)	24 Port L3- LAN switch for Internal & External DMZ LAN	No.	2	2	4	595,009	2,380,034
(e)	24 Port L3- LAN Switch for Server Management LAN	No.	2	2	4	595,009	2,380,034
(f)	24 Port L3- LAN Switch for ICCP & FEP LAN	No.	2	2	4	595,009	2,380,034
(g)	24 Port L3- LAN Switch for DCPC/Terminal Server LAN	No.	2	2	4	595,009	2,380,034
2.16	Cyber Security Appliances					-	-
(a)	External Firewall with NIPS and centralised mangement	No.	2	2	4	1,450,000	5,800,000
(b)	Internal Firewall with NIPS and centralised mangement	No.	2	2	4	1,450,000	5,800,000
(c)	External Firewall with NIPS for ICCP and RTU and centralised mangement	No.	2	2	4	2,763,724	11,054,896
(d)	Anti-APT	No.	1	1	2	2,063,722	4,127,444
2.17	Laptops					-	-
(a)	Laptop for maintenance	No.	2	1	3	177,320	531,960
(b)	Laptop for DTS	No.	2	0	2	177,320	354,640
(c)	Laptop fot VAPT	No.	1	0	1	177,320	177,320
2.18	Data Concentrator PC (DCPC) with following compoments at each site	Set	0		0	-	-
(a)	Industrial grade Computer with 4 LAN and 2 Serial Ports	No.	0		0	252,320	-
(b)	10/100 Mbps Ethernet switch with RJ 45 Ports (Ports as per site requirement)	No.	0		0	41,990	-
(c)	GPS based time synchronisation system	No.	0		0	146,524	-
(d)	16 Port Splitter	No.	0		0	34,395	-
(e)	32 Port Terminal Servers	No.	0		0	275,163	-
(f)	Panel for Terminal Servers with accessories	No.	0		0	68,791	-
2.19	Workstations					-	-
(a)	Workstation Console without Monitor	No.	0	0	0	223,897	-
(b)	Workstation Console integrated with single Monitor	No.	0	0	0	234,647	-
(c)	Workstation Console integrated with dual Monitors	No.	5	2	7	247,647	1,733,526
(d)	Workstation Console integrated with triple Monitors	No.	1	1	2	260,647	521,293
(e)	DTS Workstation with dual Monitors (Training Console)	No.	4	0	4	247,647	990,587
(f)	Workstation Console integrated with dual Monitors for DSA (at RLDC only)	No.	0	0	0	247,647	-
(g)	All-in-One workstations with CPU (remote console)	No.	0	0	0	923,703	-
(h)	PDS Workstations with dual Monitor	No.	1	1	2	247,647	495,293
2.20	Video Projection System (LED/ Laser) for control room					-	-
(a)	Video Projection System (with each modules of 70" (6*3))	Set	1	0	1	12,382,326	12,382,326
(b)	Video Projection System (with each modules of 70" (3*2))	Set	0	1	1	4,127,442	4,127,442
(c)	55 inch VideoWall with CPU (Wall/Floor mount with Stand)	Nos.	0	0	0	687,907	-
2.21	Printers					-	-
(a)	Color Laser Printer	No.	1	0	1	427,097	427,097
(b)	Multi Functional Printer	No.	2	1	3	249,174	747,521
2.22	Time & Frequency System and External displays					-	-
(a)	Time & Frequency System NavIC(with fallback to GPS) Based	Lot	1	1	2	146,524	293,049
(b)	Digital Display for Date	No.	1	1	2	13,621	27,241
(c)	Digital Display for Day	No.	1	1	2	13,621	27,241
(d)	Digital Display for Time	No.	1	1	2	13,621	27,241
(e)	Digital Display for Frequency	No.	1	1	2	17,198	34,395
(f)	Digital Display for Display of Time Block	No.	1	1	2	13,621	27,241
(g)	Digital Display for Temperature	No.	3	3	6	13,621	81,723

SIEMENS

Budgetary Price Indication for SCADA/EMS System of Telengana SLDC							
			Quantity				
Sl. No.	Item Description	Unit	Main CC	Backup CC	Total	Unit Price (Supply, Installation, Insurance & Freight)	Total Price (Supply, Installation, Insurance & Freight)
(h)	Digital Display for Relative Humidity	No.	3	3	6	13,621	81,723
2.23	**Furniture**					-	-
(a)	U-Type Operator Workstations desk (per cubicle 9-10 feet)	No.	0	0	0	687,907	-
(b)	Operator Workstations desk					-	-
(i)	Motorized	No.	0	0	0	687,907	-
(ii)	Normal	No.	0	3	3	137,581	412,744
(c)	Chairs	No.	17	11	28	34,395	963,070
2.24	Weather Sensors for Server Room	Lot	1	1	2	137,581	275,163
2.25	Link Load Balancer	No.	2	2	4	309,919	1,239,678
2.26	Smart Server Rack	No.	3	3	6	1,368,048	8,208,289
2.27	IP based KVM System	No.	1	1	2	Inlcuded in 2.26	-
2.28	Centralized Keyboard & Mouse Control Solution (CKMC)	Set	3	1	4	977,066	3,908,264
2.29	External HDD - 4 TB	No.	1	1	2	21,713	43,425
C	**Auxiliary Power Supply**					-	-
3.1	60 kVA UPS System					-	-
(a)	60 kVA (48 kW at 0.8 pf) UPS system running in parallel	Nos.	2	0	2	2,642,294	5,284,588
(b)	VRLA type Battery banks for above UPS (each bank of 115.2 kVAH)	Nos.	2	0	2	included above	-
(c)	Input ACDB (250 kVA rating)	No.	1	0	1	435,919	435,919
(d)	Output ACDB (200 kVA rating)	No.	1	0	1	365,919	365,919
3.2	40 kVA UPS System					-	-
(a)	40 kVA (32 kW at 0.8 pf) UPS system running in parallel	Nos.	0	2	2	2,378,065	4,756,129
(b)	VRLA type Battery banks for above UPS (each bank of 76.8 kVAH)	Nos.	0	2	2	108,563	217,126
(c)	Input ACDB (150 kVA rating)	No.	0	1	1	235,919	235,919
(d)	Output ACDB (100 kVA rating)	No.	0	1	1	235,919	235,919
3.3	DG System					-	-
(i)	50 KVA DG Set	No.	0	0	0	1,255,023	-
(ii)	100 KVA DG Set	No.	0	0	0	2,008,037	-
(iii)	320 kVA DG Set	No.	0	0	0	3,212,859	-
3.4	Accessories for maintenance of VRLA type batteries	Set	1	1	2	137,642	275,284
3.5	Power Distribution and cabling work required to establish UPS	Lot	1	1	2	409,400	818,800
D	Mandatory Spares inventory at Control Centers (As per Technical Specification)					-	-
(a)	SCADA/EMS system	Lot	1	1	2	10,283,741	20,567,482
(b)	VPS Spares	Lot	1	1	2	2,675,990	5,351,980
(c)	Auxiliary Power Supply system for the control centres wherever applicable	Lot	1	1	2	1,142,464	2,284,928
(d)	Mandatory Spares for DG Set & AMF Panel wherever applicable (for control panel)	Lot	1	1	2	528,902	1,057,804
E	**Test Equipment for RTU**					-	-
(a)	Master Station cum RTU simulator & Protocol Analyser Software tool.	Lot	0	0	0	1,116,841	-
(b)	Laptop PC for above software tools alongwith interfacing hardware	Lot	0	0	0	461,392	-
F	**Services (Integration and supply)**					-	-
4.1	Integration with Control Centres on ICCP	Nos.	6	6	12	287,014	3,444,165
4.2	Integration with other applications					-	-
(a)	Market and Metering Applications	Lot	1	1	2	574,027	1,148,055
(b)	Scheduling software	Lot	1	1	2	574,027	1,148,055
4.3	Integration of SCADA/EMS system with OPC/Modbus/ Web services	No.	0	0	0	861,041	-
4.4	Existing RTU Integration	No.	833	833	1666	81,572	135,899,488
4.5	Integration Existing RTU with Data Concentrator Cum Protocol Convertor	Lot	0		0	143,507	-
4.6	Cyber Security Audit by CERT -IN certified Auditors during FAT	Nos.	1	1	2	887,907	1,775,815
4.7	Cyber Security Audit by CERT -IN certified Auditors during SAT	Nos.	1	1	2	887,907	1,775,815
4.8	SMS integration with service provider & Email integration with owner email system	Lot	1	1	2	708,680	1,417,360
4.9	Dismantling and Buyback of existing SCADA/EMS system	Lot	1	1	2	608,040	1,216,080
4.10	Warehouse storage of all supplied system under the project (as per actual)	Monthly	0	0	0	152,363	-
G	**Training**					-	-
5.1	Computer System Hardware & Software	Lot	1		1	428,400	428,400
5.2	Database & Display	Lot	1		1	428,400	428,400
5.3	Application Software Training	Lot	1		1	428,400	428,400
5.4	Dispatcher/Operator Training	Lot	1		1	428,400	428,400
5.5	Training on NMS	Lot	1		1	624,750	624,750
5.6	Cyber Security and VAPT	Lot	1		1	624,750	624,750
5.7	Dispatcher Training Simulator	Lot	1		1	624,750	624,750
5.8	Terminal/DCPC/ICCP Server Course	Lot	1		1	624,750	624,750
5.9	Auxialiry Power Supply	Lot	1		1	624,750	624,750
	Total Price (Supply and Services)						

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Budgetary Price Indication for SCADA/EMS System of Telengana SLDC							
			Quantity				
Sl. No.	Item Description	Unit	Main CC	Backup CC	Total	Unit Price (Supply, Installation, Insurance & Freight)	Total Price (Supply, Installation, Insurance & Freight)
H	**Annual Maintenance Contract Including DLP**					-	-
6.1	Annual maintenance contract of SCADA/EMS System and all the equipments supplied in the project for a period of 7 years (1 year DLP and 6 years AMC)	year	7	7	14	10,517,256	147,241,588
6.2	ICCP Integration for 7 years (as per actual)	Nos.	5	5	10	441,185	4,411,850
6.3	Six Monthly Cyber Security Audit by Cert-IN certified Auditors	Nos.	14	14	28	889,907	24,917,405
6.4	Patch Mangment including Signature updates for all Cyber security equipments for 7 years	Lot	1	1	2	1,058,781	2,117,561
6.5	RTU Integration (as per actual)	No.	833	833	1666	81,572	135,899,488
6.6	OPC client function (per user) in SCADA Server	No.	5	5	10	220,592	2,205,919
6.7	Integration with OPC/Modbus/Web Services/SAMAST	No.	0	0	0	220,592	-
6.8	Yearly Training on SCADA/EMS for 5 Days for 20 people (as per actual)	lot	1		1	1,180,469	1,180,469
6.9	Unit Rate for Catridges					-	-
(a)	Cyan/Magenta/Yellow (Set of All)	No.	1	1	2	36,283	72,567
(b)	Black	No.	1	1	2	26,308	52,617
6.10	Unit Rate for Drum					-	-
(a)	Cyan/Magenta/Yellow (Set of All)	No.	1	1	2	36,283	72,567
(b)	Black	No.	1	1	2	26,308	52,617
6.11	SMS Service with a provision of 1 Lakh messages annually (carry forward facility)	year	7	0	7	223,123	1,561,861
I	**Relocation and Commissioning at New Location (Optional)**					-	-
(i)	All the systems supplied under this project except VPS and APS	Lot	1	1	2	1,738,985	3,477,970
(ii)	Video Projection System	Lot	1	1	2	850,000	1,700,000
(iii)	Auxiliary Power Supply	Lot	1	1	2	425,000	850,000
	Total Price (AMC and DLP)						
	Grand Total Price (Supply, Services and AMC (sum of H))						
	Total Budgetary Price (After Buy-Back)						964,855,606

Note:	"THIS IS A BUDGETARY PRICE INDICATION BASED ON PRELIMINARY INFORMATION, THUS IS PURELY INDICATIVE AND DOES NOT CONSTITUTE AN OFFER OR COMMITMENT NOR DOES IT CONTAIN ANY REPRESENTATION OR WARRANTY ON SIEMENS PART. SHOULD THERE BE A REQUIREMENT TO PROGRESS THIS TRANSACTION PLEASE REVERT BACK WITH DETAILS AND SPECIFICATIONS AND WE SHALL ADDRESS THE REQUEST APPROPRIATELY AT THAT TIME AND SUBJECT TO ALL INTERNAL APPROVALS AS MAYBE REQUIRED BY US."

(54) Annexure - III

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 ICCP protocol (i.e. new control centers are exchanging data on secure ICCP and existing on plain ICCP and/or Secure ICCP protocol). Supplied system shall support simultaneous multiple bit encryption for SSL certificates for secure ICCP 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 ICCP protocol with Distribution Companies.

f. Data exchange with URTDSM & Renewable Energy Control centers either on ICCP 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

61

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

63

Appendix-E: Project Implementation Schedule – (Andhra Pradesh, Kerala, Telangana, Tamil Nadu)

S No.	Task Name	Task Completion by	Months after Letter of Award (LOA)																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(SCADA /EMS System & Aux Power Supply)		20 Months																				
1	Letter of Award (LOA)	0 days																				
2	Testing of RTU and ICCP	4th Month																				
3	Engineering	7th Month																				
4	Data Base Development	9th Month																				
5	Factory Testing of Equipments (Auxiliary Power Supply System & SCADA/EMS Control Centre)	12th Month																				
6	Supply, Installation and Commissioning of Equipments (Auxiliary Power Supply System & SCADA/EMS Control Centre)	14th Month																				
7	Site Acceptance Testing of Equipments (Auxiliary Power Supply System & SCADA/EMS Control Centre)	17th Month																				
8	Parallel Operation of Existing System and New System & Availability Test	20th Month																				
9	Taking Over	20th Month																				

Annexure - V

By Reg. Post Ack. Due

TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA:: HYDERABAD - 82
Website:https://tstransco.in CIN No.U40102TS2014SGC094248

From
The Chief Engineer/SLDC,
TSTRANSCO,
Vidyut Soudha,
Hyderabad – 500082,
Telangana.

To
The Secretary,
T.S. Electricity Regulatory Commission,
5th Floor, Singareni Bhavan,
Lakdi-ka-pool, Hyderabad – 500004,
Telangana.

Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA-Upgra../D.No 96 /2023.Dt: 25 .07.2023

Sir,

Sub:

TSSLDC- Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal – Investment approval –Requested -Reg.

Ref:

1. Approved Note File by CMD/TSTRANSCO vide Regd No.738, dated: 28.04.2023
2. T.O.O (CE-SLDC) Ms.No.1644, Dated: 02.05.2023
3. Approved Note File by CMD/TSTRANSCO vide Regd No.1248,dated:15.07.2023

* * * * * *

TSTRANSCO has accorded administrative approval for Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal for an amount of Rs. 96,48,55,606.00 (Rupees Ninety-Six Crore Forty-Eight Lakhs Fifty-Five Thousand Six Hundred and Six only).

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**

The Project will be executed with financial assistance from funding agencies viz M/s. PFC/M/s. REC/ Other Banks.

In this connection, the detailed project report of the scheme is submitted herewith for commission's perusal and according the investment approval to take up the Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal.

In view of the above, it is requested to accord the investment approval for the scheme and Commission Reference Number (CRN) may please be allotted.

Enclosure: Detailed Project Report (DPR)

Yours faithfully,

25/7

Chief Engineer /TS SLDC

Copy Submitted to:

The Director (Grid Operations) /TS TRANSCO -for favor of information.

Annexure - VI

TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
#11-4-660, 5th Floor, Singareni Bhavan, Red Hills, Hyderabad-500 004
Email: secy@tserc.gov.in

FROM

Secretary
T S E R C
5th Floor, Singareni Bhavan
Red Hills, Hyderabad -500004

To

The Chief Engineer, TSSLDC
Vidyut Soudha
Hyderabad—500082

Lr.No. TSERC/Secy/JD(TE)/F.No. E-611760/D. No. 657/23, Dt: 29/09/2023.

Sir,

Sub:--TSERC- TSSLDC investment proposals for the work "upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & establishment of SCADA/EMS system as backup SLDC at Warangal" - Certain information sought for-Reg.

Ref:-1). Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA-Upgra../ D.No. 96/2023, DT 25.07.2023

@@@

With reference to the above cited, I am directed by the Commission to seek the following information for the work "upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & establishment of SCADA/EMS system as backup SLDC at Warangal"

a) TSSLDC has to furnish the information regarding tender inviting authority, whether the tenders were called at centralized level for all SLDCs or for individual TSSLDC only.

b) TSSLDC has to furnish the details and justification for the cost shown against the software, hardware (details of the hardware to be procured like no of computers/others purchasing etc.,), mandatory spares, services

c) TSSLDC has to furnish the details and justification for allotting Rs. 31.97 Crs towards AMC, which is 1/3rd of the estimate cost.

DE/PPLNG
DE/SCADA
DE/SHPT
DE/MOPP-2
DE/RE-II
DE/DSGS

SE/SLDC

d) Whether the proposed system is implemented in other states, if implemented furnish the cost of other states

e) Details for auxiliary power supply and justification for allocating 1.26 Crs towards it.

In view of the above the information may be submitted at an early date.

Yours Sincerely,

Commission Secretary (FAC)

Copy to:

P.O O/o to Chairman
P.S. to Member Technical
P.S. to Member Finance

Annexure -VII

By Reg. Post Ack. Due

TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA:: HYDERABAD - 82
Website:https://tstransco.in CIN No.U40102TS2014SGC094248

From
The Chief Engineer/SLDC,
TSTRANSCO,
Vidyut Soudha,
Hyderabad – 500082,
Telangana.

To
The Secretary,
T.S. Electricity Regulatory Commission,
5th Floor, Singareni Bhavan,
Red Hills, Hyderabad – 500004,
Telangana.

Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA-Upgra../D.No 214/2023,Dt: 01.11.2023

Sir,

Sub:

TSLDC investment proposal for the work "Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal" – Information furnished -Reg.

Ref:

1. Approved Note File by CMD/TSTRANSCO vide Regd No.738, dated: 28.04.2023
2. T.O.O (CE-SLDC) Ms.No.1644, Dated: 02.05.2023
3. Approved Note File by CMD/TSTRANSCO vide Regd No.1248 , dated:15.07.2023
4. Lr.No.TSERC/Secy/JD(TE)/F.No.E-611760/D.No.657/23,Dt:29.09.23

* * * * * *

The Point wise reply to the information sought vide ref(4) cited for the work "Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad &Establishment of SCADA/EMS system as Backup SLDC at Warangal" is herewith submitted as follows:

a) **TSLDC has to furnish the information regarding tender inviting authority, whether the tenders were called at centralized level for all SLDCs or for individual TSLDC only.**

Reply:

I. SLDC, TSTRANCO entered agreement with POSOCO (Presently ,Grid Controller of India Limited) for Upgradation/replacement of SCADA/EMS system wherein the latter is responsible for the following:

- NIT Cost Estimate
- Issuance of NIT
- Bid-Opening
- Evaluation of Bid

- Preparation & Approval of recommended report
- Post Bid discussions with bidder
- Letter of Intent on Individual State wise etc.,

II. Tenders were called at centralized level for SRLDC and all SLDCs in the southern region (i.e, Telangana, Tamil Nadu, Andhra Pradesh, Kerala, and Puducherry) except Karnataka SLDC by Grid Controller of India Ltd. (Formerly known as Power System Operation Corporation Ltd.) (A Government of India Enterprise).

III. Earlier also in ULDC Scheme of 1998 and SCADA upgradation project of 2012, we went along with Southern region states and SRLDC under consultancy with M/s PGCIL.

IV. The e-procurement notice (Invitation for Bids) for the Upgradation/Replacement of SCADA/EMS project was published on 06.03.2023 in GRID-INDIA's website, on e-procurement Portal(https://eprocurement.mjunction.in/) and on Government of India's Central Public Procurement Portal (https://eprocure.gov.in)

b) TSLDC has to furnish the details and justification for the cost shown against the software, hardware(details of the hardware to be procured like no of computers/others purchasing etc.,) mandatory spares, services.
Reply:

Software, Hardware & Mandatory Spares:

I. It is to submit that, The Budgetary Estimate towards software, hardware, mandatory spares and services are as per the quotations communicated by SRLDC/GRID-INDIA based on estimates received from M/s Siemens & M/s GE. The Budgetary estimates are as follows:
   - M/s Siemens quoted Rs.96,48,55,606/- (R upees Ninety-Six Crore Forty-Eight Lakhs Fifty-Five Thousand Six Hundred and Six only)
   - M/s GE quoted Rs.143,02,07,462/- (Rupees One Hundred Forty-Three Crore Two Lakhs Seven Thousand Four Hundred and Sixty-Two)

II. Further SRLDC/GRID-INDIA informed that even after repeated reminders budgetary proposal was not received from M/s OSI & M/s HITACHI.

III. The budgetary estimate is based on the least quotation i.e., M/s Siemens quote.

Mandatory Spares inventory at Control Centres:

The Mandatory spares inventory at Main and Backup SLDC includes the following and estimated price details of the same in the annexure attached.

- SCADA/EMS system
- VPS Spares
- Auxiliary Power Supply system,etc

Services (Integration and supply):

The major cost component under this section constitutes the number of Existing RTU integration with the proposed SCADA upgradation system and the cost details of this service(Integration and supply portion is attached as annexure.

c) **TSLDC has to furnish the details and justification for allotting Rs.31.97 Crs towards AMC, which is 1/3rd of the estimated cost.**
Reply:

1. As per Technical Specification, "The AMC price shall be kept 30% of the total contract price and shall be uniformly distributed over 7 years (i.e., 1 year DLP and 6 years AMC)".
2. The above clause was incorporated so as to commit the Vendor with more responsibility towards maintaining the system over the AMC period, in view of SLDC's current and previous experiences with vendors who tend to shy away from their responsibilities if major portion of the contract price is paid upfront.
3. As per Technical Specification, during entire contract period, 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 Owner. Replacement shall be of either same or higher configuration keeping required performance specified under the contract and from same OEMs.
4. The Contractor shall provide Two Nos engineers (for each Main & Backup Control Centres) who have experience and skill to maintain the SCADA/EMS system to the desired level of availability during AMC period and shall be qualified personnel having at least 2 years of experience in the SCADA/EMS system including one-year experience in the delivered SCADA/EMS system. The persons deputed shall be a permanent employee on the direct pay roll of the contractor

   The major portion of the offered price under this section constitutes the following:

   - AMC of SCADA/EMS System and equipments for a period of 7 years(1 year DLP and 6 years AMC)

IV. The details of Hardware, Software, Auxiliary Power Supply, Mandatory Spares, Services(Integration & Supply),Training & Annual Maintenance Contract etc., to be procured along with Estimated Price details is herewith attached as Annexure.

V. In contrast to SCADA upgradation project commissioned in 2016, The following are the additional Software, Hardware & Services considered in proposed Replacement/upgradation project:

Software:

1. Load Shed Support (LSS)/ADMS
2. Automatic Generation Control (AGC), Short Circuit Analysis & Security Enhancement in Energy Management System Applications.
3. OPC client & Server Licenses
4. Network Access Control
5. Vulnerability And Penetration Test (VAPT) tools
6. Host based Intrusion Prevention System(HIPS) with Centralised management
7. Log Analyser for all Firewalls
8. SIEM(Security Information and Event Management)
9. Virtualisation software for virtual servers envisaged along with centralised management etc.

Hardware:

1. Servers on which the aforementioned software applications are hosted.
2. Wide Area Network(WAN) Routers Cum Firewall for Inter Control Centre Protocol (ICCP), External world connectivity, RTU communication etc.
3. External Firewall with Network Intrusion Prevention System(NIPS) for ICCP and RTU & Centralised Management.
4. Anti-Advance Persistence Threat(APT)
5. Laptops for Maintenance, Dispactch Training Simulator(DTS) & VAPT etc

The relatively-high budgetary price for software & hardware portions may be attributed to the following conditions of Technical Specification apart from the aforementioned software & hardware items:

1. All the supplied system shall be under OEM (Hardware and Software) warranty & support till the completion of entire contract period.
2. Bidder has to provide latest version of SCADA/EMS Application Software before the start of Site Acceptance Test (SAT) without any cost implication etc.

- RTU Integration as per actual
- Six Monthly Cyber Security Audit by Cert-IN certified Auditors etc.

d) **Whether the proposed system is implemented in other states, if implemented furnish the cost of other states.**
Reply:

Yes, the proposed system is being implemented in other state SLDCs (i.e Andhra Pradesh, Kerala, Tamil Nadu, Puduchery and SRLDC) and the budgetary estimate cost of SCADA system of each state is tabulated below:

Sl.No	SLDC	Budgetary Cost (in Rupees)
1	**Andhra Pradesh**	**95,95,09,134/-**
2	**Kerala**	**87,07,63,364/-**
3	**Tamil Nadu**	**104,45,37,690/-**
4	Puducherry	**3,96,06,439/-**
5	**SRLDC**	**98,83,39,911/-**
6	**Telangana**	**96,48,55,606/-**

e) **Details for auxiliary power supply and justification for allotting 1.26 Crs towards it.**
Reply:

As stated earlier, the amount allotted under this head is based on budgetary quotation received from M/s Siemens and the details of Auxiliary Power Supply are as follows:

- 2 Nos, 60 kVA (48 kW at 0.8 pf) UPS System is proposed for Main SLDC at Hyderabad , together with Input & Output ACDBs of 250 kVA & 200 kVA ratings respectively and VRLA type Battery banks for above UPS (each bank of 115.2 kVAH)
- 2 Nos, 40 kVA (32 kW at 0.8 pf) UPS system is proposed for Backup SLDC at Warangal, together with Input & Output ACDBs of 150 kVA & 100 kVA ratings respectively and VRLA type Battery banks for above UPS (each bank of 76.8 kVAH).

The price breakup under this head is available in the annexure.

Yours Sincerely,

1/11/23

Chief Engineer /TSLDC

Copy Submitted to:
The Director (Grid Operations) /TS TRANSCO -for favor of information.

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Annexure – VIII

(26)

TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
#11-4-660, 5th Floor, Singareni Bhavan, Red Hills, Hyderabad-500 004
Email: secy@tserc.gov.in

From
Secretary
T S E R C
5th Floor, Singareni Bhavan
Red Hills, Hyderabad -500004

To
The Chief Engineer, TSSLDC
Vidyut Soudha
Hyderabad—500082

Lr.No. TSERC/Secy/JD(TE)/F.No. E-611760/D. No. 825/23, Dt : 20/12/2023.

Sir,

Sub:-TSERC- TSSLDC investment proposals for the work "upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & establishment of SCADA/EMS system as backup SLDC at Warangal" - Certain information sought for-Reg.

Ref:-1). Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA-Upgra../ D.No. 96/2023, Dt 25.07.2023
2). Lr.No.TSERC/Secy/JD(TE)/F.No.E-611760/D.No.657/23, DT 29.09.2023
3). Lr.No.CE(SLDC)/ SE(SLDC)/ DE(SCADA)/ F.SCADA-Upgr./ D.No.214 / 2023, Dt 01.11.2023

@@@

With reference to the above cited, I am directed by the Commission to seek the following information for the work "upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & establishment of SCADA/EMS system as backup SLDC at Warangal"

a) TSSLDC has to clarify whether the above investment proposal is included in the TSTRANSCO Resource Plan and Capital Investment Plan for 5th & 6th control periods or not
b) TSSLDC has to furnish the information on whether the proposed Capital Investment will be shown in TSTRANSCO assets (GFA) or in TSSLDC assets for claiming the depreciation etc., and also furnish the information on source of funds

In view of the above the information may be submitted at an early date.

Yours Sincerely,

20/12/2023

Commission Secretary

CE/SLDC
TSTRANSCO
Inward No. 2879
21 DEC 2023
CE/SLDC

Copy to:
P.O O/o to Chairman
P.S. to Member Technical
P.S. to Member Finance

DE/PPLNG
DE/SCADA
DE/SHIFT
DE/MOPP-2
DE/RE-II
DE/DSGS
SE/SLDC

ADE-2
22/12

(22)

(28) Annexure - IX

By Reg. Post Ack. Due

TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA:: HYDERABAD - 82
Website:https://tstransco.in CIN No.U40102TS2014SGC094248

From
The Chief Engineer/SLDC,
TSTRANSCO,
Vidyut Soudha,
Hyderabad – 500082,
Telangana.

To
The Secretary,
T.S. Electricity Regulatory Commission,
5th Floor, Singareni Bhavan,
Red Hills, Hyderabad – 500004,
Telangana.

Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F. Upgrd/D.No260 /23,Dt:08.01.24

Sir,

Sub: TSLDC investment proposal for the work "Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal" – Information furnished -Reg.

Ref: 1. Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA UPG/D.No.96/2023, Dt:25.07.2023
2. Lr.No.TSERC/Secy/JD(TE)/F.No.E-611760/D.No.657/23,Dt:29.09.23
3. Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA UPG/D.No.214 /2023,Dt:01.11.2023.
4. Lr.No.TSERC/Secy/JD(TE)/F.No.E-/D.No.825/23,Dt:20.12.23

* * * * * *

The Point wise reply to the information sought vide ref(4) cited for the work "Upgradation of existing SCADA/EMS system at Main SLDC, Hyderabad & Establishment of SCADA/EMS system as Backup SLDC at Warangal" are herewith submitted as follows:

a) SLDC to clarify whether the above investment proposal is included in the TSTransco resource plan and Capital Investment Plan for 5th& 6th control periods or not.

TSSLDC Response:-The proposal will be included in 5th Capital Investment

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Plan of SLDC. The proposal is not included in TSTransco resource plan and Capital Investment Plan for 5th& 6th control period.

b) SLDC has to furnish the information on whether the proposed Capital investment will be shown in TSTransco assets (GFA) or in TSSLDC assets for claiming the depreciation etc., and also the information on source of funds.

TSSLDC Response:- The proposed investment will be shown in SLDC assets and depreciation will be claimed accordingly. The above scheme is being tied up with PFC/REC

Yours Sincerely,

8/1/24

CHIEF ENGINEER/SLDC

O/C

AE/Scada

Copy Submitted to: The Director (Grid Operations) /TS TRANSCO -for favor of Information

Director Grid Opn. * TSTRANSCO, V/S, Hyd. *

Telangana State Electricity Regulatory Commission * 5th Floor Hyd. *

9 JAN 2024

Annexure-X

Inward No. 1374

CE/SLDC

CHAIRMAN & MANAGING DIRECTOR
782
23 MAR 2024
TSTRANSCO

JMD/F, CE/IT
Dir/GO

TELANGANA STATE ELECTRICITY REGULATORY COMMISSION

#11-4-660, 5th Floor, Singareni Bhavan, Redhills, Hyderabad - 500 004

FROM
Commission Secretary
T S E R C
5th Floor, Singareni Bhavan
Red Hills, Hyderabad -500004

To
The Chairman & Managing Director
TSTRANSCO
Vidyut Soudha
Hyderabad—500082

Lr.No. TSERC/Secy/Tariff/ F.No. E-611760 / D. No. 196 /24, Dt: 21/03/2024.

Sir,

Sub:-TSERC - TSSLDC investment proposals for the work "upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & establishment of SCADA/EMS system as backup SLDC at Warangal" - according of approval- Regarding-

Ref:- 1). Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA-Upgra../D.No. 96/2023, Dt 25.07.2023
2). T.O.O. (CE-SLDC)/Ms.No.1644, Dated 02.05.2023
3). Lr.No.TSERC/Secy/JD(TE)/F.No. E-611760/D.No. 657/23, Dt 29.09.2023
4). Lr.No.CE(SLDC)/SE(SLDC)/DE(SCADA)/F.SCADA-Upgra../D.No. 214/2023,Dt 01.11.2023
5). Lr.No.TSERC/Secy/JD(TE)/F.No. E-611760/ D.No.825/23, Dt 20.12.2023
6). Lr.No.CE(SLDC)/ SE(SLDC)/ DE(SCADA)/ F. Upgrd/ D.No. 261/23, Dt 08.01.2024

@@@

With reference to the above cited, I am directed to communicate the Commission's approval for TSSLDC investment proposals for the work "upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & establishment of SCADA/EMS system as backup SLDC at Warangal" for an estimated amount of Rs 62.16 Crores. Approval is accorded for the following scope of works.

CE/SLDC
TSTRANSCO
Inward No. 316
27 MAR 2024
SE/SLDC
SE/EBC
PESHI
CE/SLDC

DE/PPLNG
DE/SCADA
DE/SHIFT
DE/MOPP-2
DE/RE-II
DE/DSGS
SE/SLDC

SNO	Description	UNIT	Qty	RATE (Rs)	Amount (Rs)
1	Software	Lot	1	22,75,96,936	22,75,96,936
2	Computer system hardware	Lot	1	21,68,94,211	21,68,94,211
3	Mandatory spares inventory at control centres	Lot	1	2,92,62,194	2,92,62,194
4	Services (integration and supply)	Lot	1	14,78,24,833	14,78,24,833
	Grand Total				62,15,78,174

Or say Rs. 62.16 Crs

COMMISSION REFERENCE NUMBER (CRN) TST/ TS/ upgradation of existing SCADA/EMS system at main SLDC, Hyderabad & establishment of SCADA/EMS system as backup SLDC at Warangal. Approval No. 02/2023-24

The above scheme has been approved by the Commission. Further the Commission directs TSSLDC, to submit half yearly reports on works and expenditure at the end of September and March during the years of implementation so as to facilitate monitoring progress of works as per the Revised Investment Guide Lines and TSSLDC should follow the procedure while awarding the works.

Yours sincerely,

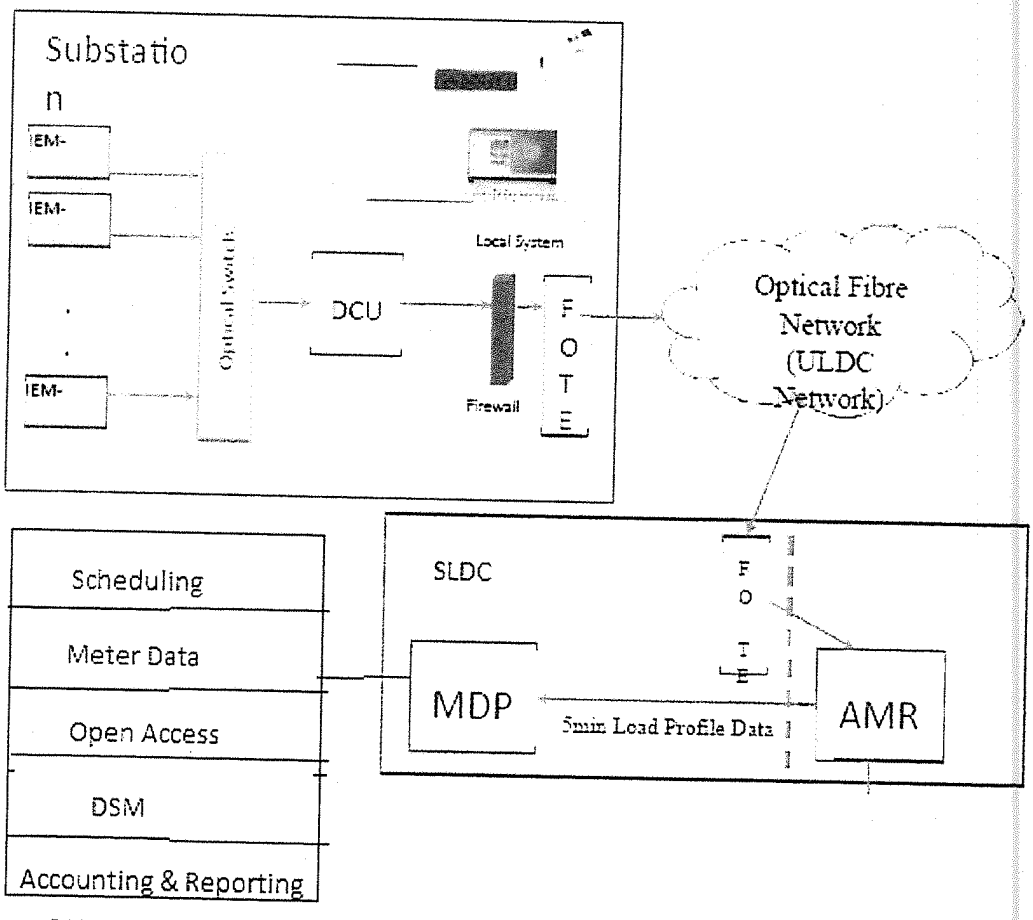
Commission Secretary

Copy to:

The Chief Engineer, TSSLDC, Vidyut Soudha, Hyderabad

Annexure-XII

Architecture



(86) Annexure – XIII

No.10/1/2014-OM-(Vol-V) [234849]
Government of India
Ministry of Power
Shram Shakti Bhawan, Rafi Marg, New Delhi-110001
****

Dated 24 March, 2022

To

Chief Engineer (SLDC)
Transmission Corporation of Telangana Limited
Room No: 611, A- Block, Vidyut Soudha, Khairatabad
Hyderabad – 500082

Subject: **Sanction of a grant from PSDF towards Implementation of SAMAST (Scheduling, Accounting, Metering and Settlement of Transactions in Electricity) in Telangana (Proposal ID-185).**

Ref: Scheme of Telangana for funding from PSDF (Project Proposal Number-PSDF/TSTRANSCO-08/Oct-17/185).

Sir,

The undersigned is directed to convey the approval of competent authority for the sanction of a grant from PSDF under Para 5.1(c) of the guidelines towards a proposal for Implementation of SAMAST (Scheduling, Accounting, Metering and Settlement of Transactions in Electricity) in Telangana. The sanction is being made subsequent to the approval of the Monitoring Committee in its meeting dated 27th January 2022 and the sanctioned grant is equivalent to an amount of Rs.12.48 Crore (Rupees Twelve Crore Forty-Eight Lakh only) and shall be governed as per the guidelines/procedures for funding from PSDF.

2. The scope of work, the estimated cost of the project and the amount of grant sanctioned from PSDF are as given below:

Sl. No	Scope of work	Cost Estimate2 Proposed by Entity (in Rs. Crore)	Cost Estimate Approved from PSDF (in Rs. Crore)	Amount of Grant Sanctioned from PSDF (in Rs. Crore)
(i)	Implementation of SAMAST (Scheduling, Accounting, Metering And Settlement of Transactions in Electricity) in Telangana.	27.45	13.87	12.48 (90% of the accepted cost estimated as per clause 6.3 (ii) of the PSDF guidelines)
Total Grant Sanctioned				**12.48**

3. The terms and conditions for the implementation of the aforesaid proposal shall be as below:

(i) The items sanctioned for funding from PSDF are as per the recommendations of the Appraisal Committee.

(ii) No tariff shall be claimed by TSTRANSCO for the portion of the proposal funded from PSDF.

Contd....2/-.

24/3/2022

(iii) TSTRANSCO shall refund the amount of grant in case of transfer/disposal of the facility being created under this proposal to any other scheme for funding.

(iv) TSTRANSCO shall specifically mention if, for the project under the proposal, the grant from any other agency is being taken/proposed to be taken.

(v) The grant shall be refunded back to PSDF in case of non-utilization of the grant within one year of release of instalment.

(vi) Expenditure beyond Rs.12.48 Crore shall be provided by TSTRANSCO from their own resources.

(vii) TSTRANSCO shall ensure that as assured by TSTRANSCO in the proposal, the project gets completed within 36 (Thirty-Six) months from the date of release of the first instalment.

(viii) TSTRANSCO and the Government of Telangana will sign a tripartite agreement with the Nodal Agency for PSDF (NLDC) as per the Format C3 of the Guidelines/Procedures for funding from PSDF.

(ix) The entity shall sign the tri/bipartite Agreement with the nodal agency of PSDF (NLDC) within the time limit of 3 months from the date of issue of this Sanction order by MoP, failing which the sanction of grant for the proposal shall be treated as cancelled.

(x) The funds shall be disbursed in accordance with the approved guidelines/procedures for funding from PSDF issued by MOP.

(xi) The TSTRANSCO shall abide by all the procedures outlined in the approved guidelines/procedures for funding from PSDF.

Yours faithfully,

(Raja Ramaswamy)
Under Secretary to the Govt. of India
Tel: 011-23719229

Copy to:

1. Secretary, Ministry of Power
2. Addl. Secretary & Financial Advisor, Ministry of Power
3. Chairperson, Central Electricity Authority
4. CMD, POSOCO
5. Joint Secretary (OM and R&R), Ministry of Power
6. Joint Secretary, Dept. of Expenditure, Ministry of Finance
7. Joint Secretary, Ministry of New and Renewable Energy
8. Adviser (Energy), NITI Aayog
9. CMD, TSTRANSCO, Telangana
10. Chairman, Telangana Electricity Regulatory Commission
11. Special Chief Secretary (Energy), Govt. of Telangana

TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA::HYDERABAD
Website:transco.telangana.gov.in CIN No.U40102TG2014SGC094248

TSTRANSCO – PSD Fund – Implementation of Scheduling, Accounting, Metering and Settlement of Transactions in Electricity (SAMAST) in TSTRANSCO, Telangana – Approval accorded - Regarding.

T.O.O.(CE-SLDC)Ms.No.1406 Dt:30.05.2022

Read the following:-

ORDER:

A Detailed Project Report (DPR) for implementation of Scheduling, Accounting, Metering and Settlement of Transactions in Electricity (SAMAST) in TSTRANSCO, Telangana for an amount of Rs.27.15 Crores was sent to Secretary, PSDF, POSOCO, New Delhi.

2. Based on the DPR, the Ministry of Power, Government of India vide its sanction order No.10/1/2014-OM (VOI-V)[234849] dated 24-03-2022 has sanctioned an amount of Rs.13.87 Crores which includes grant of Rs.12.48 Crores (90% of sanctioned cost estimate as per Para 6.3 (ii) of PSDF operational guidelines) is sanctioned as grant to TSTRANSCO. The same was communicated by the Nodal Agency i.e NLDC vide email dated 11.04.2022.

3. The salient features of the PSDF sanction are as follows:

i) The items sanctioned for funding from PSDF are as per the recommendations of Appraisal Committee communicated through Letter Ref:NLDC-PSDF/TSTRANSCO-185/2021-22 dated 6th January, 2022.

ii) No tariff shall be claimed by TSTRANSCO for the portion of the scheme funded from PSDF.

iii) TSTRANSCO shall refund the amount of grant in case of transfer/disposal of the facility being created under this proposal to any other scheme for funding.

iv) TSTRANSCO shall specifically mention if for the project under the proposal, the grant from any other agency is being taken/proposed to be taken.

v) The grant shall be refunded back to PSDF in case of non-utilization of the grant within one year of release of instalment.

vi) Expenditure beyond Rs.12.48 Crores shall be provided by TSTRANSCO from their own resources.

vii) TSTRANSCO shall ensure that as assured by TSTRANSCO in the project, the project gets completed within 36 months (Thirty Six) from the date of release of the first instalment.

viii) TSTRANSCO and the Government of Telangana will sign a tripartite agreement with the nodal agency for PSDF (NLDC) as per the Format C3 of the Guidelines/Procedures for funding from PSDF.

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ix) The entity shall sign the tri/bipatriate agreement with the nodal agency of PSDF(NLDC) within the time limit of 3 months from the date of issue of this sanction order by Mop,failing which the sanction of grant for the proposal shall be treated as cancelled.

x) The funds shall be disbursed in accordance with the approved guidelines/ procedures for funding from PSDF issued by MOP.

xi) The TSTRANSCO shall abide by all the procedures outlined in the approved guidelines/procedures for funding from PSDF.

4. The total expenditure of the project works out to Rs 21.95 Cr including the grant of Rs 12.48 Cr from PSDF in which the grant of Rs 3.48 Cr is for Transmission wing and Rs 9.00 Cr is for SLDC.

5. The expenditure beyond Rs 12.48 Cr is estimated to be Rs 9.47 Cr the details of which are given below and is to be met from Transmission/SLDC funds.

Sl No	Item	Amount (In Rs Cr)
1	10% of the funds of the total sanctioned amount by PSDF which has to be met from TSTRANSCO funds. **(Rs 12.48 Cr out of Rs 13.87Cr is sanctioned. Balance Rs 1.39 Cr is to be borne by TSTRANSCO in which Rs 0.66 Cr is to be borne by Transmission wing for SEM meters and Communication Components and 0.73 Cr is to be borne by SLDC for Hardware Components- II and Software Components)**	1.39
2	Short fall of Funds towards Hardware Components –II, Software components and Communication Components. **(Rs 10 Cr out of Rs 12.37Cr is sanctioned in which Rs 0.63 Cr for Communication components is to be borne by Transmission wing and Rs 1.74 Cr for Software and Hardware Components –II is to be borne by SLDC.)**	2.37
3	Cost of additional meters are to be procured (Considering new metering points in TSTRANSCO network including Substations under construction, all HV side meters , new G-T meters for Generating Stations. (709 meters X Rs 55,165 / meter = 3.91Cr). **(To be borne by Transmission wing)**	3.91
4	Infrastructure cost for erection of server room as per the Building Management System(BMS) Norms (Rates arrived on the basis of approved cost for establishment of Data Center for SAP in Vidyut Soudha in 2015-16 with a price escalation of 50%. The agreement copy is enclosed). **(To be borne by SLDC.)**	1.80
	Total Cost	9.47

6. The additional expenditure beyond the grant will be met from the funds of Transmission wing amounts to Rs 5.20C r (0.66+0.63+3.91 as shown in table above) and by SLDC amounts to Rs 4.27 Cr(0.73+1.74+1.80 as shown in table above)

7. After careful consideration, TSTRANSCO accords approval for the scheme "Implementation of Scheduling, Accounting, Metering and Settlement of Transactions in Electricity (SAMAST) in TSTRANSCO, Telangana for an amount of Rs 21.95 Cr in which Rs 12.48 Cr is grant from PSDF and Rs 9.47 Cr is to be met from TSTRANSCO own funds.

8. Scheme will be taken up during FY 2022-23, 2023-24 and 2024-25.

9. This order is issued with the concurrence of Joint Managing Director/ TSTRANSCO vide **Regd. No.2325, dt:23.05.2022**

(BY ORDER AND IN THE NAME OF TRANSMISSION CORPORATION OF TELANGANA LIMITED)

Sd/-

CHAIRMAN AND MANAGING DIRECTOR
TSTRANSCO

To :
Chief Engineer/SLDC/TSTRANSCO/VS/Hyd.

Copy to :
Executive Diretor/Comml/TSPCC/VS/Hyd
Executive Director / Finance /VS/Hyd
Chief Engineer/(Comml&RAC)/VS/Hyd
Chief General Manager/ HRD / VS/Hyd
Chief Engineer/Transmission/ VS/Hyd
Chief Engineer/Power Systems / VS /Hyd
Chief Engineer/P&MM/ VS / Hyd
Chief Engineer/Telecom/ VS /Hyd
Chief Engineer/Civil/ VS /Hyd
Chief Engineer/Construction /VS /Hyd
Chief Engineer/Metro Zone / Hyd.
Chief Engineer/Rural Zone / Hyd.
Chief Engineer/Warangal Zone
Chief Engineer/Karimnagar Zone
Chief Engineer/400kV/VS/Hyd.
Chief Engineer/Lift Irrigation Schemes/VS/Hyd.
FA & CCA (Accounts&CFO)/ VS /Hyderabad.
Superintending Engineer/Tech to the CMD /TSTRANSCO/VS/ Hyd
The Executive Engineer/Stores/ Erragadda/Hyd
Divisional Engineer/Tech to the Director (Transmission)/VS / Hyd.
Divisional Engineer/Tech to the Director (Projects)/VS / Hyd.
Assistant Divisional Engineer/T to the Director (Lift Irrigation Schemes)/VS/Hyd.
Assistant Engineer/Tech to the Director (Grid Operation)/VS/Hyd.
P.S. to the Joint Managing Director (Finance, Comml. & HRD) /V.S./Hyd.

//Forwarded by Order //

Divisional Engineer
Energy Billing Center/SLDC

Annexure XIV

Abstract of Phasing of Expenditure -

Description	FY 2024-25 (in Cr)	FY 2025-26(in Cr)
Meters	The budget will be borne by Transmission wing.	
Software Components	0.873	0.7
Hardware Components	0.7	0.197
Communication Components	0.427	0.475
Infrastructure cost for establishment of data centre	1	0.8

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Detailed Plan and Timelines for implementation of SAMAST Project.

Month	Procurement of ABT Energy meters with time synchronization and 15/5 minute integration period for replacement of G-T and T-D boundary points	Procurement of IT componenets like servers, Firewalls,Storage, Switches and Softwares	Development of Software module for Scheduling, Open Access,Energy Accounting, Financial Accounting, Billing and SLDC reporting etc.	Procurement of communication componenets like servers,Modems and DCUs for implementation of AMR module
Aug-23	Tenders are floated			
Sep-23	OEMs had communicated certain remarks for specification. Subsequently Corrigendum was issued to the specification.			
Oct-23				
Nov-23				
Dec-23				
Jan-24				
Feb-24	Technical evaluation will be carried out.			
Mar-24	PO will be Placed		Tenders will be floated	By this time the laying of OFC cable may be completed. AMR Specification will be finalised,tender document will be prepared,budget sanction will be obtained.
Apr-24				
May-24			Finalization of tenders and awarding of works.	
Jun-24				Tender will be floated
Jul-24	Completion of replacement of meters at G-T and T-D boundary points	Finalisation of harware specification, preparation of tender document and obtaining budget sanction.		
Aug-24			Development of IT application	Finalization of Tenders.
Sep-24				
Oct-24		Finalization of Tenders		PO will be placed
Nov-24				Supply and Installation of Hardware componenets
Dec-24		PO will be placed		
Jan-25				
Feb-25		Supply of hardware componenets,testing and installation.		
Mar-25				
Apr-25				
May-25			Testing of Application Software	
Jun-25				Testing of field data to control centre.
Jul-25				
Aug-25			Generating Reports	
Sep-25				Generating Reports
Oct-25				
Nov-25			**Go live**	

Kreate

Annexure XVI

Budgetary Quotation

A: Software Development & Deployment Cost	
Item Description	**Charges in INR (Excluding GST/ Taxes)**
Deployment of dynamic and real time demand forecasting and Analytical Solution dashboard for TSSLDC for the period of **7 years** from the date of UAT. o Application Development Phase: 25% of the total cost payable after the final phase of System Integration Test. (SIT) o Implementation Phase: 45% of the total cost payable after successful completion of User Acceptance Test. (UAT) o Operational Phase: 30% of the total cost linked to Intra-day & Day ahead demand forecast accuracy and payable quarterly, maximum up to 12 instalments	**7,99,00,000.00** (Rupees Seven crores Ninety Nine lakhs only)

• Note: Above quoted price is excluding GST, other taxes and duties.

Annexure -3

S.No	Product Details	Qty	Total Price
1	Product: Centralized log & analysis appliance - 2x GE RJ45, 4TB storage, up to 25GB/Day of logs.FAZ-150G	1	4,68,052.00
2	License: FortiCare Premium Support SKU: FC-10-L150G-247-02-36	1	2,29,250.00
3	License: FortiGuard IOC and Outbreak Detection Service SKU:FC-10-L150G-661-02-12	1	3,43,980.00
4	Product: Sandboxing Appliance - 4 x GE RJ45, 1 Win10, 1 Win7, 1 Office16. Upgradable to max 6 VMs. Model No.FSA-500F	1	15,26,028.00
5	License: Sandbox Threat Intelligence (Antivirus, IPS, Web Filtering, File Query, Industrial Security, SandBox Engine) plus FortiCare Premium. SKU:FC10-FS5HF-499-02-36	1	14,57,488.00
6	Product: FortiWeb-400E, 4 x GE RJ45 ports, 4 x SFP GbE ports, 8GB RAM, 1 x 480GB SSD Storage. Single PSU. Model No.FWB-400E	1	15,38,300.00
7	License: Advanced Bundle (FortiCare Premium plus AV, FortiWeb Security Service, IP Reputation, FortiSandbox Cloud Service, Credential Stuffing Defense Service and Threat Analytics). SKU:FC-10-W04HE-580-02-36	1	30,13,828.00
8	Product: FortiSwitch-124F is a performance/price competitive switch with 24x GE port + 4x SFP+ port + 1x RJ45 console. Fanless design. Model No.FS-124F	1	66,124.00
9	Product: Nutanix Hardware Platform. NX-1365-G9, 3 Nodes Configuration. Nutanix Software * Foundation - Hypervisor Agnostic Installer * Controller VM * Prism Management * Starter License Entitlement. SKU: NX-1365-G9, Support 36 Months	1	70,27,376.00
	TOTAL		**1,41,32126.00**

Annexure-3

Status of capital works at SLDC in 4th Control Period			
Sl.No	**Works**	**Status as on 07.10.2023**	**Present Status**
1	Creation of Backup SLDC	Unified Replacement/Upgradation of SCADA systems in Southern Region for Main and Back-Up SLDC is taken up with proposed commissiong by 2025.Tenders are floated by SRLDC and Pre bid queries of vendors are under discussion	Unified Replacement/Upgradation of SCADA systems in Southern Region for Main and Back-Up SLDC is taken up with proposed commissiong by 2025.Tenders are floated by SRLDC and Pre bid meetings were concluded. Vendors requested 45 days time for placing commercial bids
2	Construction of Backup SLDC	In order to meet the commissioning timelines of 2025, Construction process of Back-up SLDC building at Warangal is initiated.	In order to meet the commissioning timelines of 2025, Construction process of Back-up SLDC building at Warangal is initiated and plinth construction is under progress.
3	Meeting hall & Video conference rooms	Proposal will be taken up in 5th Control period	Proposal will be taken up in 5th Control period
4	AGC	Proposal for obtaining PSDF funding was sent.	PSDF committee has returned the proposals due to lack of funds for a period of one year.
5	Projects(SAMAST AMR)	Preparation of Scope of Work is under process	Tenders are floated development of IT Applications for all modules of SAMAST. Pre-bid meeting was concluded and corrigendum is issued. The technical demonstration of the Interface Energy Meters is Completed and Price bids are Opened and PO is yet to be Placed.
6	Telecom Equipments for Back Up SLDC & REMC Project	Procurement of Communciation equipment is under process	Proposal will be taken up in the 5th Control period`

O/c

DE/Scada

CE/SLDC

Justification for Major Capital Works Completed in SLDC for FY 2023-24

1. Procurement of 1 No Intel NUC CPU etc.,
   - An indent was received from O/o. Deputy Chief Minister, Finance & Planning, Energy for procurement of 1 No intel NUCi7 12th Generation CPU and related accessories to visualize real time Power System parameters and the same was procured and commissioned.

2. Purchase of 2 Nos Fortinet Firewalls:
   - The 2 Nos 100F Fortigate Firewalls for SCADA system were procured and successfully commissioned since the End of Support was declared by the vendor. Further Firewalls upgrade was required to mitigate new emerging cyber threats and for enhancing cybersecurity posture.

3. Procurement of Various Furnitures for use in SLDC
   - Various meetings are being organized in SLDC VC room & Meeting hall in 5th Floor, higher officials from TG Transco, CEA, GRID-INDIA, PowerGrid etc attend these meetings. In addition, meetings were also being organized for EBC wing in these rooms.
   - Chairs are procured to replace chairs.

4. Providing of MS Staircase for Emergency exit for SLDC
   - There was no emergency exit for SLDC and was also a requirement for ISMS implementation. So emergency exit was provided through MS Staircase works was taken up and is commissioned in the FY 2023-24.

O/c
DE/Scada

CE/SLDC(FAC)

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Appendix-E: Project Implementation Schedule – (Andhra Pradesh, Kerala, Telangana, Tamil Nadu)

S No.	Task Name	Task Completion by	Months after Letter of Award (LOA)																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
(SCADA /EMS System & Aux Power Supply)		20 Months																				
1	Letter of Award (LOA)	0 days																				
2	Testing of RTU and ICCP	4th Month																				
3	Engineering	7th Month																				
4	Data Base Development	9th Month																				
5	Factory Testing of Equipments (Auxiliary Power Supply System & SCADA/EMS Control Centre)	12th Month																				
6	Supply, Installation and Commissioning of Equipments (Auxiliary Power Supply System & SCADA/EMS Control Centre)	14th Month																				
7	Site Acceptance Testing of Equipments (Auxiliary Power Supply System & SCADA/EMS Control Centre)	17th Month																				
8	Parallel Operation of Existing System and New System & Availability Test	20th Month																				
9	Taking Over	20th Month																				

Implementation of Automatic Generation Control (AGC)

Description of Work	*Approval of the scheme for financial assistance from PSDF fund*	*Procurement of Material (including of bid preparation, bidding period, evaluation, approval & supplies)*	*Commissioning of Material*
M1			
M2			
M3			
M4			
M5			
M6			
M7			
M8			
M9			
M10			
M11			
M12			
M13			
M14			
M15			
M16			
M17			
M18			
M19			
M20			
M21			
M22			
M23			
M24			
M25			
M26			
M27			
M28			
M29			
M30			
M31			
M32			
M33			
M34			
M35			
M36			

Project Completion Schedule Chart of SAMAST

Sl No	Project Implementation Schedule for SAMAST (Scheduling, Accounting , Metering and Settlement of Transactions in Electricity)	Task completion in	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	SAMAST	15 Months															
2	**Software Components.** Development of IT applications for all modules of SAMAST	13 Months															
1	**Procurement of Hardware components-I** PO placed. Supply of Energy Meters and erection at G-T and T-D boundary points.	4 months															
3	**Hardware components :** Supply and erction of hardware like servers, storage, firewall etcrequired for implementation of SAMAST	4 Months															
4	**Communication Components** Supply,Installation, Testing & Commissioning of Automated Meter Reading (AMR)	3 Months															

Detailed Plan and Timelines for implementation of SAMAST Project.

Month	Procurement of ABT Energy meters with time synchronization and 15/5 minute integration period for replacement of G-T and T-D boundary points	Procurement of IT componenets like servers, Firewalls,Storage, Switches and Softwares	Development of Software module for Scheduling, Open Access,Energy Accounting, Financial Accounting, Billing and SLDC reporting etc.	Procurement of communication componenets like servers,Modems and DCUs for implementation of AMR module
Aug-24				
Sep-24			Finalization of tenders and awarding of works.	
Oct-24			Development and Testing of IT applications	
Nov-24				
Dec-24	Completion of replacement of meters at G-T and T-D boundary points	Finalization of Tenders		
Jan-25		PO will be placed		Preparation of Specification
Feb-25		Supply of hardware componenets,testing and installation.		Finalisation of tenders
Mar-25				PO will be placed
Apr-25				
May-25				Supply and Installation of Hardware componenets
Jun-25				
Jul-25				
Aug-25				Testing and finalisation
Sep-25				
Oct-25				
Nov-25			**Go live**	