OFFICE OF CHIEF LOAD DESPATCHER, SLDC
ODISHA POWER TRANSMISSION CORPORATION LTD
TENDER SPECIFICATION NO. SLDC-01/2023-24

DESIGN, DEVELOPMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF SAMAST SOFTWARE SCHEME WITH DATA CENTRE & DISASTER RECOVERY CENTRE SET UP AND COMPREHENSIVE AMC FOR STATE LOAD DESPATCH CENTER, OPTCL, ODISHA.

(e-tendering mode only)

PART-I

SECTION-I: INSTRUCTION TO BIDDERS

SECTION-II: GENERAL TERMS AND CONDITIONS OF CONTRACT

SECTION-III: LIST OF ANNEXURES

SECTION IV: SCOPE OF WORK

SECTION-V: TECHNICAL SPECIFICATION.

SECTION-VI: COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT

PART-II

SECTION-VII: PRICE BID

Table 1 Schedule of Dates

1	Request for online tender documents	From Date 27.07.2023 (10.00 Hrs) To Date 28.08.2023 (12.30 Hrs)
2	Pre-Bid Meeting	Date: 08.08.23 (11.00 Hrs)
3	Last date of submission of online tender	Date: 28.08.2023 (16.30 Hrs)
4	Date of opening of Tender	Date: 29.08.2023 (11.00 Hrs)

NOTICE INVITING TENDER
OFFICE OF CHIEF LOAD DESPATCHER, SLDC
ODISHA POWER TRANSMISSION CORPORATION LTD
TENDER SPECIFICATION NO. SLDC-01/2023-24

For and on behalf of the STATE LOAD DESPATCH CENTER, OPTCL, the undersigned invites bids from firms for "Design, Development, Supply, Installation, Testing & Commissioning of SAMAST Software Scheme with Data Centre & Disaster Recovery Centre Set up and Comprehensive AMC" under two-part bidding system in e- tendering mode only as per the following details.

Table 2 Tender Details

Sl. No	Tender Specification No.	Description of work	Quantity /Unit	EMD (₹)	Cost of Tender document (₹)	Tender Processing Fee (₹)	Last date of receipt & opening of tender
1.	SLDC-01/2023-24	Design, Development, Supply, Installation, Testing & Commissioning of SAMAST Software Scheme with Data Centre & Disaster Recovery Centre Set up and Comprehensive AMC	1 Lot	1345000	25,000/-+ GST @18% =29500	5000/-+ GST @18%= 5900/-	Dated 28.08.2023 (16.30 Hrs) **&** Dated 29.08.2023 (11.00 Hrs)

The bidders can view the tender documents from Tender Portal free of cost.

TENDER COST:
The bidders who want to submit bids will have to pay non-refundable amount Rs. 29500/- (Rupees Twenty-nine thousand Five hundred) only including GST @ 18%) towards the tender cost, in the form of Demand draft/Pay order, drawn in favour of the Power System, OPTC Ltd, Bhubaneswar. They have to also submit notarized hard copy of GST registration certificate on or before the date & time of opening of techno-commercial bid (Part-I).

TENDER PROCESSING FEE:

The bidders will have to submit non-refundable amount of Rs.5,900/- (Rupees Five thousand nine hundred) only including GST @ 18%) towards the tender processing fee to K.S.E.D.C.Ltd, in e-payment

mode. The e-payment of above amount is to be made to enable the bidder to down load the bid proposal sheets & bid document in electronic mode.

EMD

The Bidder must submit the EMD as per Clause No. 11 of Part-I (ITB)

SUBMISSION OF TENDER COST, TENDER PROCESSING FEE & EMD:

The bidder will deposit the tender cost, tender processing fee & EMD BG prior to last date & time for opening of techno-commercial bid (Part-I) as notified in tender notice.

The demand draft/pay order for tender cost, processing fees are to be Submitted along with the EMD at the office of the undersigned on or before the last date & time of opening of technical bid (Part-I).

The bidders will scan the Demand Draft/Pay order/ Bank guarantee, towards EMD and upload the same in the prescribed form in .gif or .jpg format in addition to sending the original as stated above.

The prospective bidders are advised to register their user ID, Password, company ID from website **www.tenderwizard.com/OPTCL** by clicking on hyper link "Register Me".

Any clarifications regarding the scope of work and technical features of the tender can be had from the undersigned during office hours.

Minimum qualification criteria of bidders: AS STIPULATED IN CLAUSE NO 41.0 SECTION-II, PART-I (G.T.C.C) OF THE TENDER SPECIFICATION.

N.B:-All subsequent addendums / corrigendum to the tender will be hosted in www.tenderwizard.com/ OPTCL only. Interested Bidders are requested to visit e-tender portal for update information of tender (Corrigendum/addendum etc.).

CHIEF LOAD DESPATCHER, SLDC,

BHUBANESWAR

TENDER SPECIFICATION:

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SECTION – II: GENERAL TERMS AND CONDITIONS OF CONTRACT (G.T.C.C.) (COMMERCIAL)

SECTION – III: LIST OF ANNEXURES (COMMERCIAL)

SECTION – IV: SCOPE OF WORK

SECTION – V: TECHNICAL SPECIFICATION

SECTION – VI: SPECIFICATION FOR COMPREHENSIVE AMC OF SAMAST SOFTWARE & HARDWARE INFRASTRUCTURE

PART – II

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COMMERCIAL SPECIFICATION

PART I

SECTION I

INSTRUCTIONS TO BIDDERS

PART I

SECTION I: Instruction to Bidders

Submission of Bids

The bidder will submit the bid in Electronic Mode only i.e. **www.tenderwizard.com/ OPTCL**. The bidder must ensure that the bids are received in the specified website of the OPTCL by the date and time indicated in the Tender notice. Bids submitted by telex/telegram will not be accepted. No request from any bidder to the SLDC, OPTCL to collect the Bids in physical form will be entertained by the SLDC, OPTCL.

The SLDC, OPTCL reserves the right to reject any bid, which is not deposited according to the instruction, stipulated above. The participants to the tender should be registered under GST Laws.

I. For all the users it is mandatory to procure the Digital Signatures of Class-III.

II. Bidders /Suppliers are requested to follow the below steps for Registration:

   i. Click "Register", fill the online registration form.

   ii. Pay the amount of Rs. 2360/- through e-payment in favor of K S E D C Ltd Payable at Bangalore.

   iii. Send the acknowledgment copy for verification.

   iv. As soon as the verification is being done the e-tender user id will be enabled.

III. After viewing Tender Notification, if bidder intends to participate in tender, he has to use his e-tendering User Id and Password which has been received after registration and acquisition of DSCs.

IV. If any Bidder wants to participate in the tender, he will have to follow the instructions given below:

   i. Insert the PKI (which consist of your Digital Signature Certificate) in your System (Note: Make sure that necessary software of PKI be installed in your system).

   ii. Click / Double Click to open the Microsoft Internet Explorer (This icon will be located on the Desktop of the computer).

   iii. Go to Start > Programs > Internet Explorer.

   iv. Type www.tenderwizard.com/OPTCL in the address bar, to access the Login Screen.

   v. Enter e-tender User Id and Password, click on "Go".

   vi. Click on "Click here to login" for selecting the Digital Signature Certificate.

vii. Select the Certificate and enter DSC Password.

viii. Re-enter the e-Procurement User Id Password

V. To make a request for Tender Document Bidders will have to follow below mentioned steps.

i. Click "Un Applied" to view / apply for new tenders.

ii. Click on Request icon for online request.

VI. After making the request Bidders will receive the Tender Documents which can be checked and downloaded by following the below steps:

i. Click to view the tender documents which are received by the user.

ii. Tender document screen appears.

iii. Click "Click here to download" to download the documents.

VII. After completing all the formalities Bidders will have to submit the tender and they must take care of following instructions.

i. Prior to submission, verify whether all the required documents have been attached and uploaded to the particular tender or not.

ii. Note down / take a print of bid control number once it displayed on the screen

VIII. Tender Opening event can be viewed online.

IX. Competitors bid sheets are available in the website for all.

X. For any e-tendering assistant contact help desk number mentioned below.

Bangalore – 080- 40482000.

The participants to the tender should be registered under GST Laws.

1. Division of Specification.

The specification is mainly divided into two parts viz. Part-I & Part-II.

Part-I Consists of

- Section-I Instruction to Bidders.
- Section-II General Terms & conditions of contract.
- Section-III List of Annexures
- Section IV Scope of Work

- Section-V Technical Specification.
- Section-VI Specification for Comprehensive AMC

Part-II Consists of

Section-VII**:** Schedule of prices as per Annexure-V

2. Tenders will be in Two Parts.

The Tenderers are required to submit the tenders in two parts Part-I, technical and commercial and Part-II "Price Bid".

3. Pre-Bid Meeting:

A pre-bid conference shall be held as per the following program. The interested bidders may raise the queries, if any, in writing for the works, 03 days prior to the pre-bid conference, which shall be clarified during the pre-bid conference along with other issues raised in the pre-bid conference. All the clarifications / amendments to the bidding document shall be uploaded in OPTCL's website/e-Tender Portal of OPTCL. Queries after the pre-bid conference will not be entertained. The SLDC, OPTCL shall not be under any obligation to entertain/respond to suggestions made or to incorporate modifications sought for by the prospective bidders during the pre-bid meeting or thereafter.

Table 3 Pre-bid conference venue

Sl No	Date and time of Pre-bid conference	Venue
1	**As indicated in the e-NIT under Table-1**	Conference hall of SLDC,1st Floor, Mancheswar, GRIDCO Colony, OPTCL, Bhubaneswar

i. The bidder or its authorized representative is invited to attend pre-bid meeting to be held on the date, time and location specified at TABLE-1 above in BDS. The purpose of the meeting will be to clarify the exact scope of work, and any issues regarding the bidding documents and the technical specifications for its clarification, if raised at that stage by the bidders. The Purchaser shall not be under any obligation to entertain /respond to suggestions made or to incorporate modifications sought for by the prospective bidders.

ii. Any modification/amendment of the bidding documents shall be made by the Purchaser exclusively through the issue of an amendment pursuant to clause 4

iii. Non-attendance at the pre-bid meeting will not be a cause for disqualification of bidders

but at the same time shall not entitle them to raise any query at a later date.

iv. Any essential requirement not included in the Price Schedules but required for successful commissioning and operation of Works as per scope of Contract shall be indicated by the bidders in the price bid and any additional information shall be submitted before the pre-bid meeting by the date specified in the document.

v. The Purchaser shall make related modifications/amendments as may be considered necessary based on this form in the bidding documents as per provisions mentioned in this clause-4

vi. Bidders shall not be permit to Bid to indicate any additional requirements in the bid for any reason whatsoever after the Purchaser has considered such amendments.

4. Amendment of bidding documents

vii. At any time after pre-bid meeting, but not later than ten (10) days prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issue of an addendum/amendment

viii. The addendum/amendment will be uploaded in the e-tendering portal and all such amendments/addendums will be binding upon them. SLDC, OPTCL shall assume that the information contained therein will have been taken into account by the bidder in its bid. SLDC, OPTCL will bear no responsibility or liability arising out of non-compliance of the same in time or otherwise by the bidder.

ix. In order to afford prospective bidders reasonable time in which to take the addendum/amendment into account in preparing their bids, SLDC, OPTCL may, at its discretion, extend the deadline for the submission of bids.

x. In order to afford prospective bidders reasonable time in which to take the addendum/amendment into account in preparing their bids, SLDC, OPTCL may, at its discretion, extend the deadline for the submission of bids.

xi. For the information of bidders, the addendum/ amendments shall be uploaded on the e-tendering portal. The bidders may visit the website from time to time in their own interest.

5. Opening of Bids.

i. The part-I will be opened on the date and time fixed by the SLDC, OPTCL for opening of bids in electronic mode in presence of such of the Tenderers or their authorized representatives [limited to one person only] on the due date of opening of tender who opt remain present. After scrutiny of the technical particulars and other commercial terms,

clarifications, if required, will be sought for from the bidders. The Tenderers will be allowed 15 days' time for such activity.

ii. On receipt of technical clarification, the bids will be reviewed, evaluated and those not in conformity with the technical Specification / qualifying experience, will be rejected. If any of the technical proposals requires modification to make them comparable, discussion will be held with the participating bidders.

iii. All the responsive bidders will be given opportunity to submit the revised technical and revised price proposals as a follow up to the clarification (modification if any) published through corrigendum on the technical proposals. The qualified bidders will be given opportunity to submit revised price proposals within 15 days from the date of such discussion and publishing the corrigendum or within time frame mutually agreed, whichever is earlier.

iv. When the revised price proposals are received, the original price proposals will be returned to the bidders unopened along with their original technical proposals. Only the revised technical and price proposals will be considered for bid evaluation. The price bids [Part-II] of such of the Tenderers, whose tenders have been found to be technically and commercially acceptable, including those supplementary revised price bids, submitted subsequently, will be opened in the presence of the bidder's representative on a date and time which will be intimated to all technically and commercially acceptable Tenderers.

v. The bidders are required to furnish sufficient information to the Purchaser to establish their qualification, capacity to manufacture and/or supply the materials/perform the work. Such information will include details of bidder's experience, its financial, managerial and technical capabilities.

vi. The bidders are also required to furnish details of availability of appropriate technical staff and capability to perform after sales services. The above information will be considered during scrutiny and evaluation of bids and any bid which does not satisfactorily meet these requirements, will not be considered for price bid evaluation.

vii. The price bids of the technically and otherwise acceptable bids will only be evaluated as per the norms applicable in terms of this Specification.

6. Purchaser's Right Regarding Alteration of Quantities Tendered.

i. Deviation to the revised scope of works is not permissible under the contract. However, at any time during the execution of the contract, SLDC, OPTCL reserve the right to vary the quantity of any item with reference to the BOQ to any extent within the limit of ±25% of the BOQ of the LOA at the same unit rate and terms conditions contained in the LOA.

However, any increase in the BOQ quantity of an item beyond 25% of the BoQ of the LOA shall be lower of price available in BoQ (i.e. in LOA) or Rate Contract or Cost Data.

ii. In case a new item(s) are required during the execution of the contract for which unit rates are not available in BOQ, the same shall be the least of the available Rate Contract Price or Cost Data Price or Average unit rate of the same items from works awarded during last one year as available with SLDC, OPTCL.

iii. The increase in quantity w.r.t items in BOQ or inclusion of new item(s), however, shall always be subject to the prior approval of the competent authority.

iv. Accordingly, the Contract price shall be adjusted based on the approved unit rates for the variation in quantities as above.

7. Procedure and opening time of tenders.

Tenders will be opened in the office of the Chief of Load dispatch Centre. OPTCL on the specified date and time in presence of the Tenderers or their authorized representatives [limited to one person only] in case of each bidder who may desire to be present, at the time of opening the bids.

8. Bidder's Liberty to deviate from Specification.

The Tenderer may deviate from the specification while quoting, if in his opinion, such deviation is in line with the Developers, manufacturer's standard practice and conducive to a better and more economical offer. All such deviations should however be clearly indicated giving full justifications for such deviation. [Read with Clause-9, Section-II of the Specification]. Such deviations may be accepted if purchaser is fully convinced and satisfied or else bidder's proposal will be rejected. Acceptance of this deviation is purely under the discretion of the purchaser.

9. Purchaser's right to accept/reject bids:

The purchaser reserves the right to reject any or all the tenders without assigning any reasons what so ever if it is in the interest of SLDC, OPTCL, under the existing circumstances. [Read with clause-10, Section-II of the specification].

10. Mode of submission of Tenders.

i. Tenders will be submitted in electronic mode only. (www.tenderwizard.com/OPTCL)

ii. Telegraphic **or FAX tenders** will not be accepted under any circumstances.

11. Earnest money deposit:

The tender will be accompanied by Earnest Money deposit of value specified in the notice

inviting tenders against bid. Tenders without the required EMD as indicated at **Annexure-VIII** will be rejected out rightly.

The earnest money deposit will be furnished in one of the following forms subject to the conditions mentioned below:

i. **Bank Draft**: -To be drawn in favor of Power System, OPTC Ltd, Bhubaneswar.

ii. Bank Guarantee from any Nationalized/Scheduled Bank strictly as per enclosed proforma vide **Annexure-VI** to be executed on non-judicial stamp paper worth Rs.29.00 or as applicable, as per prevailing laws in force and to be accompanied by the confirmation letter of the issuing Bank Branch along with conformation through SFMS.

NOTE:

i. The validity of the EMD in the form of Bank Guarantee will be at least for 240 days from the date of opening of tender failing which the tender will be liable for rejection

ii. No interest will be paid on the Earnest Money Deposit.

iii. The Earnest Money Deposit shall be furnished in any one of the forms indicated above (i.e., Through Bank Draft, Bank Guarantee).

iv. No adjustment towards EMD will be permitted against any outstanding amount with the SLDC/OPTCL.

v. The chart showing particulars of EMD to be furnished by Tenderers of different categories is placed at Annexure-VIII.

vi. In the case of un- successful tenderer, the EMD will be refunded after the tender is decided. In the case of successful Tenderer, this will be refunded only after furnishing of security money referred to a clause-19 of Section-II.

vii. Suits, if any, arising out of this clause will be filed in a Court of law to which the jurisdiction of High Court of ODISHA extends.

viii. EMD will be forfeited if the tenderer fails to accept the letter of intent and/or purchase order issued in his favor or to execute the order, placed on them.

ix. Tenders not accompanied by Earnest Money will be disqualified.

12. Validity of the Bids: -

The tenders should be kept valid for a period of **180** days from the date of opening of the tender, failing which the tenders will be rejected.

13.Price: -

i. Tenderers are requested to quote- 'FIRM' Price. No deviation from FIRM PRICE will be entertained irrespective of deviation as in clause No.9 of section -II Part- I.

ii. The price quoted by the bidder for comprehensive AMC shall not be less than 20% of Hardware + Software quoted price, failing which the bidder will be disqualified for the competitive bidding.

14.Revision of tender price by Bidders: -

i. After opening of tenders and within the validity of period, no reduction or enhancement in price will be entertained. If there is any change in price, the tender will stand rejected and the EMD deposited will be forfeited.

ii. After opening of price bid if the validity period is not sufficient to place purchase order, the tenderer may be asked by the purchaser to extend the validity period of the bid under the same terms and condition as per the original tender.

iii. However, the tender is free to change any or all conditions including price except delivery period of their bids at their own risk, if they are asked by the purchaser to extend the validity period of the bid prior to opening of price bid.

15.Tenderers to be fully conversant with the clauses of the Specification: -

Tenderers are expected to be fully conversant with the meaning of all the clauses of the specification before submitted their tenders. In case of doubt regarding the meaning of any clause, the tenderer may seek clarification in writing from the Chief Load Despatcher, SLDC. This, however, does not entitle the Tenderer to ask for time beyond due date, fixed for receipt of tender.

16.Documents to Accompany Part-I Bids.

Tenderers are required to submit tenders in the following manner:

i. Declaration Form. [As per Annexure-I]

ii. Earnest Money. [As per Annexure-VIII], Tender Cost.

iii. Technical specification and Guaranteed Technical Particulars conforming to the Purchaser's Specification along with drawings, literatures and all other required Annexures, duly filled in.

iv. Photostat copies of type test certificates of software modules, Hardware materials/equipment offered as stipulated in the Technical Specification.

v. Abstract of Terms & conditions in prescribed proforma as per Annexure-II.

vi. General Terms & Conditions of supply offer as per Section-II,Part-I of the Specification.

vii. List of orders executed for similar software modules, hardware materials/equipment during preceding 5(five) years indicating the customer's name, Purchase Order No. & Date, date of supply and date of commissioning etc.

viii. Data on experience as per [As per Annexure IX] and Clause-7 of Section-II of the Specification.

ix. GST Compliance Rating. The GST Identification Number (GSTIN) under GST Laws and permanent account number [PAN] of the firm under Income tax Act are required.

x. Audited Balance sheet & profit loss accounts of the bidder, for past (3) three years.

xi. Schedule of quantity and delivery in the prescribed Proforma vide Annexure, as appended.

xii. List of Orders in hand to be executed.

xiii. Deviation schedule.

xiv. The bidder should not have any pending litigation or arbitration with SLDC/ OPTCL/GRIDCO with regard to any project or related activity. The bidder should certify/declare the same in unequivocal terms by way of an affidavit duly sworn before a magistrate/notary.

17. Documents/Papers to accompany in Part-II Bid.

Part – II, Section-VII of the tender will consist of the Schedule of prices in the prescribed proforma.

18. Conditional Offer:

Conditional offer will not be accepted.

19. General: -

i. In the event of discrepancy or arithmetical error in the schedule of price, the decision of the purchaser will be final and binding on the Tenderer.

ii. For evaluation, the price mentioned in words will be taken if there is any difference in figures and words in the price bid.

iii. Notice inviting tender will form part of this specification.

iv. The price bids of the technically and otherwise acceptable bids will only be evaluated. The EMD of others, if any, will be returned to the bidders.

v. It should be distinctly understood that the part-II of the bid will contain only details/documents relating to price, as outlined in clause-17 mentioned herein above. Inclusion of any of the documents/information etc. will render the bid liable for rejection.

20. Expenses against FAT:

Expenses of SLDC, OPTCL's representative for witnessing the inspection & testing of the offered Software module, Hardware equipment/ materials during inspection and testing at developer's/ manufacturer's work place.

The testing and inspection of the equipment/ materials / software at Developer's/ manufacturer works are in the scope of work of the Supplier/bidder.

SLDC, OPTCL inspecting officer, / authorized representative by SLDC, OPTCL on receipt of offer for inspection from the bidder/supplier, proceeds to the manufacturer works/premises to witness the Type/Acceptance/Routine test.

Important:

It is hereby informed to all the bidders that the relevant clauses of the contract specification, pertaining to inspection and testing of equipment/materials / software, are hereby supplemented with following additional terms and conditions.

The expenses under the following heads, in respect of SLDC, OPTCL's representative for witnessing the inspection & testing of the offered equipment/materials/software at the inspection and testing site, will be borne by the supplier/bidder.

a. Hotel Accommodation:

Single room accommodation in 4-star hotel for the SLDC, OPTCL/ authorized representative by SLDC, OPTCL inspecting officer of the rank of Assistant General Manager (Grade E-6) and above.

Single room accommodation in 3-star hotel for the SLDC, OPTCL inspecting officer of the rank below Assistant General Manager (Grade E-6).

N.B.: It is the responsibility of the supplier to arrange the hotel accommodation matching with their inspection and testing schedule, so that the inspecting officer can check-in the hotel one day prior to the date of inspection and check out after the completion of the inspection, subject to availability of the return travel ticket. In case of extended duration of inspection or non-availability of the return travel ticket, Developer supplier/manufacturer will arrange for the extended stay of the inspecting officer in the Hotel accordingly. In case there is no hotel with prescribed standard in and around the place of inspection, the Developer supplier/manufacturer will suggest alternative suitable arrangement at the time of offer for inspection, which is subjected to acceptability of SLDC, OPTCL inspecting officer.

b. Journey of the inspecting officer authorized representative by SLDC, OPTCL:

i To and from travel expenditure from the Head Quarters of the inspecting officer to the place of inspection/testing will be borne by the bidder supplier/ manufacturer. Journey from the Head Quarters of the inspecting officer to the nearest Air Port by train (Ist/IInd A.C) & A/C Taxi then by Air to the place of inspection/testing or to the nearest place of inspection/testing and then by train (Ist/IInd A.C) & A/C taxi to the place of inspection/testing will be arranged by the bidder supplier/manufacturer.

ii For train journey, inspecting officer of the rank Assistant General Manager and above will be provided with 1st class AC ticket and inspecting officer below the rank of Assistant General Manager will be provided with 2nd class AC ticket.

iii The Air-ticket / train-ticket booking/cancellation is the responsibility of the supplier / supplier.

iv Moreover, if during the journey there is an unavoidable necessity for intermediate travel by road/ waterway/sea-route, the bidder/supplier will provide suitable conveyance to the inspecting officer for travel this stretch of journey or bear the cost towards this. Any such possibilities will be duly intimated to SLDC, OPTCL at the time of their offer for inspection.

c. Local Conveyance:

At the place of the inspection/testing, for local journey of the inspecting officer between hotel and inspection/testing site and or any other places, Air-conditioned four-wheeler vehicle in good condition will be provided by the bidder/ supplier/ manufacturer.

d. Following points are also to be considered:

All the above expenses will be deemed to be included in the bidder's quoted price for that

i Supplier/bidder/manufacturer may assume that only in 40% of the inspection and testing offer cases, SLDC, OPTCL inspecting officer, not below the rank of Assistant General Manager will do the due inspection.

ii Bidder/supplier/manufacturer will judiciously plan the inspection/testing schedule and place of inspection/testing, so that optimum number of inspection/testing and minimum time will be required to cover all the equipment/materials of the relevant contract package.

iii It will be the responsibility of the Bidder/Supplier to organize the above tour related matters of SLDC, OPTCL inspecting officer including the matters related to overseas inspection/testing, if any.

21.EVENTS OF DEFAULT:

Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract:

Contractor fails or refuses to deliver materials/equipment or to execute work conforming to the technical specifications or otherwise or fails to execute the works assigned to them within the period specified in LOA or any extension thereof.

a. Contractor becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Contractor's creditors file any petition relating to bankruptcy of Contractor;

b. Contractor otherwise fails or refuses to perform or observe any term or condition of the Contract and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Contractor of notice of such failure from SLDC, OPTCL.

c. Contractor fails or refuses to pay any amount due under the Contracts.

22.TERMINATION OF CONTRACT ON SLDC, OPTCL'S INITIATIVE:

a The SLDC,OPTCL reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under clause entitled 'Contractor's Default'. The SLDC,OPTCL shall in such an event give fifteen (15) day's notice in writing to the Contractor of his decision to do so.

b The Contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and Contracts to the extent they are related to the work terminated and terms satisfactory to SLDC,OPTCL, stop all further sub-contracting or purchasing activity related to the work terminated, and assist SLDC,OPTCL in maintenance, protection, and disposition of the works acquired under the Contract by SLDC,OPTCL.

c In the event of such a termination the Contractor shall be paid compensation, equitable and reasonable, dictated by the circumstances prevalent at the time of termination.

23. CONTRACTOR'S DEFAULT:

If the Contractor shall neglect to execute the works with due diligence and expedition or shall refuse or neglect to comply with any reasonable order given to him, in writing by the Engineer-In-Charge in connection with the works or shall contravene the provisions of the Contract, SLDC, OPTCL may give notice in writing to the Contractor to make good the failure, negligence or contravention complained of. Should the Contractor fail to comply with

the notice within thirty (30) days from the date of serving the notice, then and in such case SLDC ,OPTCL shall be at liberty to employ other workmen and forthwith execute such part of the works as the Contractor may have neglected to do or if SLDC, OPTCL shall think fit, without prejudice to any other right he may have under the Contract to take the work wholly or in part out of the Contractor's hands and re-Contract with any other person or persons to complete the works or any part thereof and in that event SLDC ,OPTCL shall have free use of all Contractors equipment that may have been at the time on the site in connection with the works without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the Contractor over the same, and SLDC ,OPTCL shall be entitled to retain and apply any balance which may otherwise be due on the Contract by him to the Contractor, or such part thereof as may be necessary, to the payment of the cost of executing the said part of the works or of completing the works as the case may be. If the cost of completing of works or executing part thereof as aforesaid shall exceed the balance due to the Contractor, the Contractor shall pay such excess. Such payment of excess amount shall be independent of the price reduction schedule for delay, which the Contractor shall have to pay if the completion of works is delayed.

In addition, such action by SLDC ,OPTCL as aforesaid shall not relieve the Contractor of his liability to price reduction schedule for delay in completion of works as defined in this Section.

Such action by SLDC ,OPTCL as aforesaid under this clause shall not entitle the Contractor to reduce the value of the Contract performance Guarantee nor the time thereof. The Contract Performance Guarantee shall be valid for the full value and for the full period of the Contract including guarantee period.

24. SUSPENSION OF WORK:

a The SLDC ,OPTCL reserves the right to suspend and reinstate execution of the whole or any part of the works without invalidating the provisions of the Contract. Orders for suspension or reinstatement of the works will be issued by the Engineer-In-Charge to the Contractor in writing. The time for completion of the works will be extended for a period equal to duration of the suspension.

b Any necessary and demonstrable cost incurred by the Contractor as a result of such suspension of the works will be paid by SLDC ,OPTCL, provided such costs are substantiated to the satisfaction of the Engineer-In-Charge. The SLDC ,OPTCL shall not be responsible for any liabilities if suspension or delay is due to some default on the part of the contractor or his sub-contractor.

25.Litigation/Arbitration

a Bidder has to furnish detailed information on any litigation or arbitration arising out of contracts completed or under execution by it over the last five years. A consistent history of litigation by or against the bidder may result in rejection of bid.

b The bidder should not have any pending litigation or arbitration with SLDC, OPTCL with regard to any project or related activity. The bidder should certify/declare the same in unequivocal terms by way of an affidavit duly sworn before a magistrate or notary. Bid furnished by the bidder will not be eligible for consideration if it is not accompanied by the affidavit. Further, the bid/LOA/LOI will liable for outright rejection/cancellation at any stage if any information contrary to the affidavit/declaration is detected.

26.Short closure conditions

Closing conditions shall be implemented in case both the owner and Software Provider have conditions that must be met or waived, and may also include joint conditions. Conditions may include any of the following:

a. Closing certificates that state representations and warranties have been satisfied by both parties.
b. Each party's representations and warranties are valid as of the closing and/or signing date
c. Provision of fully executed ancillary documents by both parties
d. Deal specific conditions by the buyer that specific issues are addressed, such as pending liabilities
e. Joint condition that no pending litigation would prevent the deal from closing
f. Joint condition that the transaction is legal by law

Failure to meet any of the obligations gives either party the right to terminate the transaction.

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PART-I

SECTION-II

GENERAL TERMS AND CONDITIONS OF CONTRACT [G.T.C.C.]

PART-I

SECTION-II :GENERAL TERMS AND CONDITIONS OF CONTRACT [G.T.C.C.]

1.0 Scope of the contract:

The scope of the contract shall be Development and implementation of following SAMAST software modules, Supply and Installation of IT hardware's, AMC as per the specification, and rendering services in accordance with the technical specification and bill of quantity.

a. Meter (Master) Data Management

b. Scheduling and Generation dispatch

c. Energy Accounting

d. Deviation Settlement Mechanism

e. Open Access transaction management system

f. Outage planning management

g. MIS Dashboard and data management and reporting

h. Dynamic and interactive Website for SLDC

i. Mobile Application

2.0 Definition of terms:

For the purpose of this specification and General Terms and Conditions of contract [GTCC], the following words will have the meanings hereby indicated, except where otherwise described or defined.

i. "The Bidder" means any eligible FARM or COMPANY registered under Company act 1956 (Amended in 2013) or Limited Liability Partnership (LLP) registered under the LLP Act, 2008 and should have been in operation in India, whose primary business is software development and implementation and must have relevant experience in Data Centre Hardware and software installation as on the date of bid opening and will have their registered offices in India.

ii. "The Purchaser" will mean the CHIEF LOAD DESPATCHER for and on behalf of SLDC, OPTCL., Bhubaneswar.

iii. "Joint Venture / Consortium "shall mean a commercial enterprise undertaken jointly by two or more parties which otherwise retain their distinct identities. In this tender, only two members are allowed in case of JV.

iv. "The Lead Bidder" shall mean the party in a Joint Venture/ Consortium having the primary responsibility for successful implementation of the project

v. "The Engineer" shall mean the Engineer appointed by the Purchaser for the purpose of this contract.

vi. "Limited Liability Partnership (LLP)" shall mean an alternative corporate business firm that gives the benefits of limited liabilities of a company and the flexibility of a partnership

vii. "Purchaser's Representative" shall mean any person or persons or consulting firm appointed and remunerated by the Purchaser to supervise, inspect, test and examine workmanship and materials of the equipment to be supplied.

viii. "The supplier" shall mean the bidder whose bid has been accepted by the purchaser and will include the bidder's executives, administrators, successors and permit Bed assignees.

ix. "Software / Equipment" shall mean and include all IT / OT services, machinery, apparatus, materials, and articles to be provided under the contract by the suppliers.

x. "Contract Price" shall mean the sum named in or calculated the bid.

xi. "General Condition" shall mean these General Terms and Conditions of Contract.

xii. "The Specification" shall mean both the technical as well as commercial parts of the specification annexed to or issued with GTCC and will include the schedules and drawings, attached there to as well as all samples and pattern, if any.

xiii. "Month" shall mean "Calendar month".

xiv. Writing" shall include any manuscript, type written, printed or other statement reproduction in any visible form and whether under seal or under hand.

xv. "Basic Price (Taxable value for Goods & Services) at the point of destination" shall mean the price quoted by the bidder for equipment, material & services at the consignee's store/site. The cost is inclusive of packing, forwarding, freight, insurance and all expenses and taxes & duties at the end of the supplier excluding Goods & Service Tax. The Goods & Service Tax will be shown in a separate column item wise alongside the Basic Price quoted at the applicable rate in the Tax Invoice. The applicable rate of GST will refer to the HSN/SAC code of the material/service supplied. The Basic Price and GST thereon will be the "FOR Destination Price" as quoted by the bidder.

xvi. The term "Contract document" shall mean and include GTCC, specifications, schedules, drawings, form of tender, Notice Inviting Tender, covering letter, schedule of prices or the final General Conditions, any special conditions, applicable to the particular contract.

xvii. Terms and conditions not herein defined shall have the same meaning as are assigned to them in the Indian Contract Act, failing that in the Odisha General Clauses Act.

3.0 Manner of execution:

All software modules and hardware equipment's supplied under the contract will be Designed, developed /manufactured/procured in the manner, set out in the specification, or where not set out, to the reasonable satisfaction of the Purchaser / Purchaser's representative.

4.0 Inspection and Testing:

(i) The purchaser's representative will be entitled at all reasonable times during development / manufacture to inspect, examine and test at the supplier's premises, the software / development environment /materials and workmanship of all software module /equipment/materials to be supplied under this contract and if part of the said software module /equipment/material is being manufactured in other premises, the supplier will obtain for the purchaser's representative permission to inspect, examine and test as if the software module /equipment/material were being developed/manufactured in the supplier's premises. Such inspection, examination and testing will not relieve the supplier from his obligations under the contract.

(ii) The supplier will give to the purchaser adequate time/notice (at least clear 15 days for inside the state suppliers and 20 days for outside the state suppliers) in writing for inspection of materials indicating the place at which the equipment/material is ready for testing and inspection and will also furnish the Test Certificate, and certification document, from Govt. approved agency with authenticity letter along with the offer for inspection. A packing list along with the offer, indicating the quantity which can be delivered in full truck load/Mini truck load to facilitate issue of dispatch instruction will also be furnished.

(iii) Where the contract provides for test at the Premises of the supplier or any of his sub-suppliers, the supplier will provide such assistance, labour, materials, electricity, fuel and instruments, as may be required or as may be reasonably demanded by the Purchaser's representative to carry out such tests efficiently. The supplier is required to produce routine test Certificate, before offering their materials/equipment for inspection & testing. The test house/laboratory where tests are to be carried out must be approved by the Govt. A letter pertaining to Govt. approved agency must be furnished to the purchaser along with the offer for inspection.

(iv) After completion of the tests, the Purchaser's representative will forward the test results to the Purchaser. If the test results conform to the specific standard and specification, the Purchaser will approve the test results and communicate the same to the supplier in writing. The supplier will provide at least five copies of the test certificates to the Purchaser.

(v) The Purchaser has the right to have the tests carried out at his own cost by an independent agency whenever there is dispute regarding the quality of supply.

(vi) If the firm fails to present the offered items for inspection/testing as per their inspection call due to any reason(s) during the visit of inspecting officer at the testing site, the firm will have to bear all expenses towards repetition of inspection and testing of the total offered quantity or part thereof.

5.0 Training facilities.

The supplier will provide all possible facilities for training of Purchaser's Technical personnel, when deputed by the Purchaser for acquiring firsthand knowledge in software and hardware, its erection, commissioning and for its proper operation & maintenance in service, wherein it is thought necessary by the purchaser. The training will be imparted as per the plan detailed in technical specifications Section- V

6.0 Rejection of Software module/ hardware Materials.

In the event any of the software/ equipment /material / services supplied / provided by the developer/manufacturer is found non-compliant / defective due to faulty development, design, bad workmanship, bad materials used or otherwise not in conformity with the requirements of the Specification, the Purchaser will either reject the Software module, /equipment/material or ask the developer/supplier in writing to rectify or replace the defective Software module/ equipment/material free of cost to the purchaser. The Supplier/Developer on receipt of such notification will either rectify or replace the non-compliant /defective software/ equipment/material free of cost to the purchaser within 15 days from the date of issue of such notification by the purchaser. If the supplier fails to do so, the Purchaser may:-

i At its option replace or rectify such non-compliant/defective Software module /equipment /materials and recover the extra costs so involved from the bidder/supplier plus fifteen percent and/or.

ii Terminate the contract for balance work/supplies, with enforcement of penalty Clause as per contract for the un-delivered goods and with forfeiture of Performance Guarantee/ Composite Bank guarantee.

iii Acquire the non-compliant/defective software/hardware equipment/materials at reduced price, considered equitable under the circumstances.

7.0 Experience of Bidders:

The bidders should furnish information regarding experience particularly on the following points:

(i) Name of the software Developer/Equipment manufacturer:

(ii) The supplier/ bidder will procure the hardware from the OEM of reputed firms with availability of service Centre in India.

(iii) Standing of the firm and experience in software development, manufacture of equipment/ material quoted:

(iv) Description of software /equipment/material similar to that quoted, supplied and installed during the last five years with the name(s) of the Organization's to whom supplies were made. wherein, - certificate will be from SLDC/RLDC/NLDC/RPC/Grid India.

(v) Details as to where installed etc.

(vi) Testing facilities at Developers/manufacturer's Premises/works.

(vii) A list of work orders of identical Software/material/equipment offered as per technical specification executed during the last five years along with user's certificate. User's certificate will be legible and must indicate, user's name, address, designation, place of use, and satisfactory performance of the Software/equipment/materials for at least one year from the date of go-live.

(viii) The qualifying criteria for the tender is detailed under subsequent section and will be the guidelines for the selection of bidders. Bids will not be considered if the past software Development/ manufacturing experience is found to be un-satisfactory and bids not accompanying user's performance certificate will be rejected.

8.0 Language and measures:

All documents pertaining to the contract including specifications, schedule, notices, correspondence, operating and maintenance instructions, drawings or any other writing will be written in English language. The metric system of measurement will be used exclusively in this contract.

9.0 Deviation from specification:

It is in the interest of the tenderers to study the specification, specified in the tender schedule thoroughly before tendering so that, if any deviations are made by the Tenderers, (both commercial and Technical), the same are prominently brought out on a separate sheet under heading "Deviations Commercial" and "Deviations Technical".

A list of deviations will be enclosed with the tender. Unless deviations in scope, technical and commercial stipulations are specifically mentioned in the list of deviations, it will be presumed that the tenderer has accepted all the conditions, stipulated in the tender specification, not-withstanding any exemptions mentioned therein.

10.0 Right to reject/accept any tender:

The purchaser reserves the right either to reject or to accept any or all tenders if the situation so warrants in the interest of the purchaser. The purchaser has exclusive right to alter the quantities

of Software/ hardware materials/ equipment / services / AMC at the time of placing final purchase order. After placing of the order, the purchaser may defer the delivery of the Software development/ materials. It may be clearly understood by the Tenderer that the purchaser need not assign any reason for any of the above action [s].

11.0 Supplier to inform himself fully:

The supplier will examine the instructions to tenderers, general conditions of contract, specification and the schedules of quantity and delivery to satisfy himself as to all terms and conditions and circumstances affecting the contract price. He will quote price [s] according to his own views on these matters and understand that no additional allowances except as otherwise provided there in will be admissible. The purchaser will not be responsible for any misunderstanding or incorrect information, obtained by the supplier other than the information given to the supplier in writing by the purchaser.

12.0 Patent rights Etc.

The supplier will indemnify the Purchaser against all claims, actions, suits and proceedings for the infringement of any patent design or copy right protected either in the country of origin or in India by the use of any equipment supplied by the manufacturer. Such indemnity will also cover any use of the equipment, other than for the purpose indicated by or reasonably to be inferred from the specification.

Intellectual Property Rights & Royalties

i. Royalties and fees for patents covering Software / Equipment/Materials, articles, apparatus, devices or processes used in the Works will be deemed to have been included in the Contract Price. The Supplier will satisfy all demands that may be made at any time for such royalties or fees and he alone will be liable for any damages or claims for patent infringements and will keep the Purchaser indemnified in that regard.

ii. The Supplier will, subject to the Purchaser‘s compliance with (iii) indemnify and hold harmless the Purchaser, his successors or assignees, its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney‘s fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of :

   a. The installation of the Works by the Supplier or the use of the Works in the country where the Site is located; and

   b. The sale of the products produced by the Works in any country. Such indemnity will not cover any use of the Works or any part thereof other than for the purpose indicated

by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Works or any part thereof, or any products produced thereby in association or combination with any other Equipment/ Materials not supplied by the Supplier, pursuant to the Contract Agreement.

iii. If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in (ii), the Purchaser will promptly give the Supplier a notice thereof, and the Supplier may at its own expense and in the Purchaser ‘s name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Supplier fails to notify the Purchaser within thirty (30) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser will be free to conduct the same on its own behalf. Unless the Supplier has so failed to notify the Purchaser within the thirty (30) day

iv. The Purchaser will, at the Supplier ‘s request, afford all available assistance to the Supplier in conducting such proceedings or claim, and will be reimbursed by the Supplier for all reasonable expenses incurred in so doing

Advertising: Any advertising stating the subject of this Contract by the Supplier in India or in foreign countries will be subject to approval of the Purchaser prior to the publication. Publication of approved articles, photographs and other similar materials will carry acknowledgment to the Purchaser.

13.0 Delivery:

(i) Time being the essence of the contract; the software/ equipment will be supplied within the delivery period, specified in the contract. The Purchaser, however, reserves the right to reschedule the delivery and change the destination if required. The delivery period will be reckoned from the date of placing the Letter of Intent/Purchase order, as may be specified in LOI/Purchase order.

(ii) The expected completion of the project is estimated as twelve (12) months from the date of awarding the LOA

(iii)The desired delivery period shall be as indicated at **ANNEXURE-XIV**

(iv)The bidder shall supply and install the software modules and hardware materials in sync with each other so that SAT and go-live can be executed seamlessly.

14.0 Dispatch instructions.

i. The hardware materials shall be securely packed and dispatched directly to the specified site at the supplier’s risk.

ii. Loading & unloading of Ordered Materials: It will be the sole responsibility of the supplier for loading and unloading of materials both at the factory site and at the destination site/store. The Purchaser will have no responsibility on this account.

iii. All design document drawings and software source code submitted by the Supplier will be the property of Purchaser. The Purchaser reserves the right to use the same in its future project without any further reference and additional charges to the Supplier for such use. The Purchaser's Design Document, Software Source Code, Drawings, Specification and other information submitted by the Purchaser to the Supplier will remain the property of the Purchaser. They will not, without the consent of the Purchaser, be used, copied or communicated to a third party by the Supplier unless necessary for the purposes of the Contract. Any error in any such Design Document, Source Code drawing/Specification etc. will not absolve the Supplier of his responsibility.

15.0 Supplier's Default Liability

(i) The Purchaser may, upon written notice of default to the supplier, terminate the contract in circumstances detailed hereunder.

(a) If in the judgment of the Purchaser, the supplier fails to make delivery of Software/hardware equipment/material within the time specified in the contract or within the period for which if extension has been granted by the Purchaser in writing in response to written request of the supplier.

(b) If in the judgment of the Purchaser, the supplier fails to comply with any of the provisions of this contract.

(ii) In the event, Purchaser terminates the contract in whole or in part as provided in Clause-15 (i) of this section, the Purchaser reserves the right to purchase upon such terms and in such a manner as he may deem appropriate in relation to the software/equipment/material similar to that terminated and the supplier will be liable to the Purchaser for any additional costs for such similar Software/ equipment/ material and/or for penalty for delay as defined in Clause-22 of this section until such reasonable time as may be required for the final supply of equipment.

(iii) In the event the Purchaser does not terminate the contract as provided in clause 15 (i) of this Section, supplier will be liable to the Purchaser for penalty for delay as set out in Clause-22 of this section until the equipment is accepted. This will be based only on written request of the supplier and written willingness of the Purchaser.

16.0 Force Majeure

The supplier will not be liable for any penalty for delay or for failure to perform the contract for

reasons of force majeure such as acts of god, acts of the public enemy, acts of Govt., Fires, floods, epidemics, Quarantine restrictions, strikes, Freight Embargo and provided that the supplier will within Ten (10) days from the beginning of delay on such account notify the purchaser in writing of the cause of delay. The purchaser will verify the facts and grant such extension, if facts justify.

17.0 Extension of time

If the delivery of Software/ equipment/material /services is delayed due to reasons beyond the control of the supplier, the supplier will without delay give notice to the purchaser in writing of his claim for an extension of time. The purchaser on receipt of such notice may or may not agree to extend the contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract.

18.0 Guarantee period: - **(As per Section VI of Part I).**

The tendered **hardware** items shall be in warranty for 5 (five) years. The tendered software modules shall be in warranty for 1 (one) year after Go-live.

The supplies covered by this specification should be guaranteed for satisfactory operation and against defects in software development, design, IT hardware materials and workmanship during above period from the date of commissioning for hardware and go-lives for software modules of the scope covered under this contract. The above guarantee certificate will be furnished in triplicate to the purchaser for his approval. Any defect noticed during this period should be rectified by the supplier free of cost to the purchaser provided such defects are due to faulty software development /design, bad workmanship or bad materials used, within one month upon written notice from the purchaser failing which provision of Clause 22 (ii) of this section will apply.

(i) The terms and conditions for services during warranty / AMC period is detailed in Section VI of Part I

19.0 B.G. towards security deposit, 100% payment and performance guarantee:

(i) B.G for Development and Installation of Software.

A Composite Bank Guarantee as per the Proforma enclosed at Annexure-VII of the specification for 10% [ten percent] of the Total Landing cost (Taxable Value plus GST thereon) of the purchase order (without AMC), will be furnished from any nationalized/scheduled bank having a place of business at Bhubaneswar, to the office of **Chief Load Despatcher, SLDC**, Bhubaneswar within 30 days from the date of issue of the purchase order, The BG will be executed on non-judicial stamp paper worth of Rs.29.00 [Rupees twenty-nine] only or as per the prevalent rules, valid for a period of 26 months(12 months

implementation + 12 months warranty after go-live +2 months), for scrutiny and acceptance, failing which the purchase order will be liable for cancellation without any further written notices. The BG should be accompanied by a confirmation letter from the concerned bank and should have provision for encashment at Bhubaneswar, before the Bank Guarantee is accepted and all concerned intimated. The B.G should be revalidated as and when intimated to you to cover the entire guarantee period.

(ii) B.G for Supply and Installation of Hardware.

A Composite Bank Guarantee as per the Proforma enclosed at Annexure-VII of the specification for 10% [ten percent] of the Total Landing cost (Taxable Value plus GST thereon) of the purchase order (without AMC), will be furnished from any nationalized/scheduled bank having a place of business at Bhubaneswar, to the office of **Chief Load Despatcher, SLDC**, Bhubaneswar within 30 days from the date of issue of the purchase order,. The BG will be executed on non-judicial stamp paper worth of Rs.29.00 [Rupees twenty nine] only or as per the prevalent rules, valid for a period of 74 months (12 months implementation + 60 months warranty +2 months), for scrutiny and acceptance, failing which the purchase order will be liable for cancellation without any further written notices. The BG should be accompanied by a confirmation letter from the concerned bank and should have provision for encashment at Bhubaneswar, before the Bank Guarantee is accepted and all concerned intimated. The B.G should be revalidated as and when intimated to you to cover the entire guarantee period.

Note: Bidders may submit initially B.G with a validity period of 36 (Thirty six) months, which shall be extended further for a period of 38 (Thirty eight) months against Clause no 19 (ii) above.

(iii) BG FOR AMC: Performance BG will be furnished by the supplier separately against the AMC cost and period as per clause no -20 Section VI of Part I (Comprehensive AMC)

(iv) No interest is payable on any kind of Bank Guarantee.

(v) In case of non-fulfillment of contractual obligation, as required in the detailed purchase order/Specification, the composite Bank guarantee will be forfeited.

20.0 Import License

In case imported materials are offered, no assistance will be given for release of Foreign Exchange. The firm should arrange to import materials from their own quota. Equipment of indigenous origin will be preferred

21.0 Payment terms and conditions:

A. Being a IT hardware infrastructure and software development works contract under GST Laws, the on-account payments will be made as below.

Table 4 Payment terms

Sl.No	Deliverables	Hardware payment	Software Payment
1	Submission of functional design, over all architecture, prepared design documentation and software requirement specification including fields survey and IT infrastructure for implementation of complete software solution and approval of Engineer in Charge of SLDC		10%
2	Demonstration of developed SAMAST software modules for Unit Testing and (System Integration Testing) SIT and approval of Engineer In charge.		30%
3	Supply, Installation and commissioning of IT hardware and associated Items after successful FAT at Data Center and DR and approval of Engineer In charge.	70%	
4	Site Acceptance Test UAT approval of Engineer In charge.		30%
5	Go-Live	30%	30%

21.1 Payment shall be made after submission of the following

i. Contract cum Performance Bank Guarantee at the rate of 10% (Ten per cent) of Total Taxable Value of contract plus GST thereon

ii. Guarantee certificate

iii. TDS / Cess under GST and other Laws will be deducted, as applicable.

iv. Any imposition of new tax or revision of tax will be paid/reimbursed at the time of dispatch, scheduled or actual whichever is lower (i.e. If delivery is within schedule

period, tax variation as applicable will be paid, and if delivery is made beyond schedule date, any additional financial implication due to statutory variation in tax will be to bidder's account).

v. Test certificate by the Purchaser. The software developed by the firm must satisfy all the requirements stipulated in technical specifications.

vi. The payment will be made after due certification and verification thereof by the engineering In charge /Nodal officer.

vii. The terms of payment for Comprehensive AMC of SAMAST will be paid quarterly after due approval of engineering in charge as per Clause 18 of Section VI (Specification for comprehensive AMC)

B. The supplier will furnish contract cum performance Bank Guarantee of appropriate amount for Comprehensive AMC to SLDC, OPTCL as indicated in Clause-19 above, within 30 (Thirty) days from the date of issue of the purchase order.

22.0 Price Reduction Schedule for Delay in Completion of Supply under Purchase Order/Contract

i. If the Supplier fails to deliver the Software/ materials/equipment /complete Development/ installation & commissioning within the delivery schedule, specified in the Purchase Order/Contract including delivery time extension, if any, granted with waiver of Price Reduction Schedule, the Purchaser will recover from the Supplier, Price Reduction Schedule for a sum of half per cent (0.5 per cent) of the Taxable Value of the un-delivered software/ equipment /materials for each calendar week of delay or part thereof. For this purpose, the date of receipted challan will be reckoned as the date of delivery. The total amount of Price Reduction Schedule will not exceed five per cent (5%) of the Taxable Value of the un-delivered software equipment/materials/service. Equipment will be deemed to have been delivered only when all its components, accessories and spares as per technical Specification are also delivered. If certain components, accessories, and spares are not delivered in time, the equipment/materials will be considered delayed until such time as the missing components, accessories and spares are delivered.

ii. During the guarantee period, if the Supplier fails to rectify/replace the equipment/material / install within 15 days from the date of intimation of defect by the purchaser, then the Price Reduction Schedule at the rate of half percent (0.5%) of the Total Taxable Value for each calendar week of delay or part thereof will be recovered by the purchaser. For this purpose, Price Reduction Schedule will be reckoned from the 30th day from the date of issue of letter on defectiveness of equipment/material. The total amount of Price Reduction Schedule in this case will not exceed 10% (TEN PERCENT) of the Purchase Order/Contract amount except GST (i.e.

Total Taxable Value). If the defects, so intimated are not rectified or equipment/materials not replaced by the supplier within the guarantee period, then whole of the C.P.B.G. will be forfeited by the purchaser, without any intimation to the supplier.

iii. **Price reduction Schedule for Comprehensive AMC for SAMAST**: As per clause-18, Section-VI (Specification for comprehensive AMC of SAMAST)

23.0 Insurance

The Supplier will undertake insurance of stores covered by this Specification unless otherwise stated. The responsibility of delivery of the stores at destination in good condition rests with the Supplier. Any claim with the Insurance Company or transport agency arising due to loss or damage in transit must be settled by the supplier. The Supplier will undertake free replacement of materials damaged or lost, which will be reported by the consignee within 30 days of receipt of the materials at destination without waiting for the settlement of their claims with the carriers and underwriters.

24.0 Payment Due from the Supplier

All costs and damages, for which the supplier is liable to the purchaser, will be deducted by the purchaser from any money, due to the supplier, under any of the contract (s), executed with SLDC or OPTCL.

25.0 Rating under Goods and Services Tax and Balance sheet and profit & Loss Account:

The following documents are to be submitted at the time of Tender Submission:

i. Compliance rating under Goods and Services Tax for immediately preceding financial year.
ii. Audited Balance Sheet and Profit & Loss Account of the bidder for the previous three years to assess the financial soundness of the bidder(s).

iii. GST registration certificate and PAN Card Copy.
iv. Tax holiday/exemption certificate under GST or any other Act.
v. TDS exemption certificate under the Income Tax Act or any other act.

26.0 Certificate of Exemption from Goods and Services Tax

Offers with exemption from Goods and Services Tax will be accompanied with authenticated attested Photostat copy of exemption certificate. Any claim towards Goods and Services Tax will be paid on actual basis subject to payment of GST by the supplier. In case Outward supply details of the supplier of Goods in GSTR-1 do not match with GSTR -2 of SLDC, OPTCL on GSTN portal, the same will be adjusted through debit/credit advice issued by SLDC, OPTCL under intimation to the supplier after allowing cooling period of 3 months after the date of supply.

27.0 Supplier's Responsibility.

Notwithstanding anything mentioned in the Specification or subsequent approval or acceptance by the Purchaser, the ultimate responsibility for Software Development, design, manufacture, materials used and satisfactory performance will rest with the Tenderers. The Supplier(s) will be responsible for any discrepancy noticed in the documents, submitted by them along with the bid(s).

28.0 Validity

Prices and conditions contained in the offer should be kept valid for a minimum period of **180** days from the date of opening of the tender, failing which the tender will be rejected.

29.0 Evaluation

i. Evaluation of price bids will be on the basis of the TOTAL FOR DESTINATION PRICE including Goods and Services Tax & other levies as may be applicable. The FORD PRICE will consist of the following components:
   a. Goods and Services Tax
   b. Cost of materials
   c. Other levies, if any.

ii. Comprehensive AMC charges for 5 years.

iii. Any other items, as deemed proper for evaluation by the purchaser.

iv. Loading will be made for items not quoted by the bidder at the highest rate quoted by other bidders unless particular item is included in other items.

v. Any imposition of new tax or revision of tax will be considered between due date of submission of bids and the date of price bid opening.

30.0 Evaluation Procedures of Technical & Price Bid:

30.1 Evaluation of Technical Part of Bid:

a) The bids shall be independently evaluated. Prior to detailed Bid evaluation, SLDC, OPTCL will determine the substantial responsiveness of each Bid with respect to the Qualifying Requirement, Bid Capacity & other Bid Document requirements based on attachments uploaded (in .pdf formats) and Keyed in Schedules (in .XLS formats) contained in the official e-tender portal of ,OPTCL and any other documents required to be furnished as per the clarifications sought for by SLDC,OPTCL. A substantially responsive Bid is one, which conforms to the terms, condition and specification of the Bid Documents including e-tendering provisions without material deviation. A material deviation is one which affects or is likely to affect in a substantial way the scope of work,

quality or performance of the works, or which limits in any substantial way, inconsistent with the Bidding Documents and formats/schedules mentioned in e-tendering provision, SLDC,OPTCL's rights or the Bidders' obligations as envisaged in the Bidding Documents and would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids. Further examination of only such Bids as are determined to be substantially responsive shall be taken up, unless otherwise determined by SLDC,OPTCL may waive any minor informality or non-conformity or irregularity in a bid, which does not constitute a material deviation, provided such waiver, does not prejudice or affect the relative ranking of any Bidder.

b) The complete scope of supplies and work/services has been defined in the Bidding Documents. Only those Bidders who take complete responsibility and who Bid for the complete scope of supplies and work/services as contained in the Bidding Document shall be considered for further evaluation.

c) A bidder may be Technically eligible based on the Qualifying Requirement mentioned above except Bid Capacity Qualification.

d) Thereafter, the price bid of the eligible bidder(s) shall be opened based on the available bid capacity.

30.2 Evaluation of Price Bid:

a) **Opening of Price Part of Bid:** Price Bid of those Bidders, whose Bids are considered Technically responsive and meeting the available Bid Capacity Qualification Criteria shall be opened separately.

b) **Evaluation of Price Bid:** The Bid Price quoted under the different component of the Price Schedule i.e. (i) Develop/Supply, (ii) Erection & Commissioning as quoted by bidder shall be evaluated separately in the following manner.

c) Arithmetical Correction:

i. The price of all such items(s) against which bidder has not quoted rates/amount (viz. items left blank or against which "nil"/ "-" / "0" is indicated) in the schedule will be deemed to have been quoted free of cost or included in other item(s) and covered in the total quoted bid price.

ii. The Bidder should ensure that the unit prices for the same item furnished in various price schedules are consistent with each other. In case of any inconsistency in the Unit prices furnished in the price proposal of the bidder, the same shall be identified by SLDC,OPTCL and SLDC,OPTCL shall consider the highest unit price of the bidder for the purpose of evaluation. However, the contract shall be awarded at the lowest unit price of the bidder. The prices quoted by the Bidders

shall be checked for arithmetic correction, if any, based on rate and amount filled by the Bidder in the respective price schedule.

iii. If there is a discrepancy between unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and total price shall be corrected. If there is a discrepancy in the quantity mentioned by the bidder from the quantity mentioned in the tender, the tendered quantity will prevail.

d) To arrive at the total evaluated prices following methodology shall be applied.

i. Price evaluation shall be made considering the total evaluated price inclusive of CGST plus OGST or IGST as the case may be, at applicable rate.

ii. Price evaluation shall be made considering the Bill of Quantity (BOQ) specified in the Tender Document. In case of any deviation to the BOQ by the bidder, the BOQ specified in the Tender document shall be final and binding on the bidder.

e) Prices received in the price bid sheet (.XLS Format) shall be used for Tabulation / Price Bid Comparison. The soft form of price bid Keyed in to the .XLS format shall be final and binding on the Contractor.

f) The total evaluated prices of all the Bidders, shall be compared to determine the lowest evaluated price.

30.3 E-Reverse Auction procedure shall be resorted to as follows.

Table 5 E-Reverse Auction

STRATEGY FOR E-REVERSE AUCTION	
1	Bidders are required to go through the guide lines given below and submit their acceptance to the same.
2	e-Reverse Auction (RA) will be conducted in e-tender portal of OPTCL on specified date and time, while bidders shall quote from their own offices/places of their choice. Internet connectivity shall be ensured by the respective agencies/bidders themselves.
3	KEONICS shall arrange for demonstration/ training (if not trained earlier) of bidder's nominated person(s), to explain all the rules related to e-Reverse Auction/ Business Rule document to be adopted.
4	The strategy to be used for reverse auction shall be "DYNAMIC TEMPLATE BIDDING"
Procedure for electronic Reverse Auctioning (e-RA):	
5	a. The e-RA shall be conducted on www.tenderwizard.com/OPTCL only. b. Bidder has to submit letter towards agreement to the Process related Terms & Conditions for e-Reverse Auction, as per (Reverse Auction Process Compliance Form at Annexure-XIX). In non-receipt of the same, vendors will not be allowed to participate in e-RA. c. e-RA shall be carried out after opening of Price bids and completion of Price bid evaluation,

	which will be intimated only to the techno-commercially qualified bidders by OPTCL as per procedure given below. d. OPTCL reserves the right to conduct e-RA and it is obligatory on part of bidder(s) invited to participate in e-RA process once they have responded to the techno-commercial bid.
6	Prior intimation/ Notice for RA invitation will be given to techno-commercially qualified bidders regarding the date & time of opening of the e-RA. The start bid price (SBP) for e-Reverse Auction of each bidder under a particular package shall be the L1 evaluated price for the subject package including Taxes & Duties for the total scope for subject Package. Taking the above discovered L1 price as the upper limit e-RA will be conducted to determine the lowest possible price. Reverse Auction will be conducted amongst first 50% of the technically qualified bidders arranged in order of prices from lowest to highest, as L1, L2, L3----------Ln, and L1 price will be discovered. Minimum of 3 bidders shall be eligible for e RA. (e.g. If 4 bidders are financially evaluated then the L1, L2 and L3 bidders shall be eligible for e-RA). Number of bidders eligible for participating in RA would be rounded off to next higher integer value if number of technically qualified bidders is odd (e.g., if 7 bids are technically qualified, then RA will be conducted amongst L1 to L4). However, in case only two bidders are found to be responsive, e-RA would be carried out with both the parties without any elimination. However, OPTCL reserves the right to invite the evaluated L1 bidder for negotiation without conducting the e-RA. In case of price submitted by any bidder is found to be abnormal, OPTCL reserves the right to reject the bid of the bidder(s). Rank of bidders would be displayed as per the total cost to OPTCL, i.e. including Taxes and Duties payable by OPTCL as per the provisions of the biding document & after e-RA process is over.
7	Names of bidders/ vendors shall not be disclosed during the e-RA process. Names of bidders/ vendors shall be anonymously masked in the e-RA process. (i) In case of RA, start/ reference price and step value of decrement shall be indicated to the bidders at the start of the auction. Any participating bidder can bid one or multiple step decrement lower than the prevailing lowest bid at that time. The Bidder shall be able to view Bid Start Price, Bid Decrement Value, Prevailing Lowest Bid value, last Bid Placed by him and time left for bidding. (ii) The step value of decrement in a package to be offered by bidder (the minimum amount of reduction in the total bid price including all taxes & duties during auction), shall be kept at 0.15% of L1 bidder's final evaluated price (or) at approved amount as decided by OPTCL.

	(iii) Bidders can only quote any value lower than their previous quoted price. However, at no stage, increase in Price will be permissible. (iv) At any point during Reverse Auction, bidding Price field (Total price) shall remain enabled for the bidders. The total reverse auction period shall be unlimited and the initial auction period (1st slot) will be of thirty (30) minutes with provision of auto extension by (10) ten minutes from the schedule/ extended closing time. If any fresh lower bid is received in last ten (10) minutes of auction period or extended auction period, the reverse auction process shall get extended automatically for another ten(10) minutes. In case, there is no bid received during schedule/extended slot, Auction shall get closed automatically without further extension. (v) However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the period of e-reverse auction to avoid complication related with internet connectivity, network problem, system crash down, power failure etc.
8	After conclusion of e-Reverse Auction i.e. (Closing Price in Reverse Auction will be taken as offered price by the L1 bidder), decrease in price of individual head of the template shall be considered proportionately on all individual line items of the respective head of the price schedule of the successful L1 bidder. Any bid received at the tender wizard server end subsequent to closure of the e-RA shall be summarily rejected and shall not be considered as a valid bid under whatsoever circumstances. For this purpose, tender wizard server log shall prevail. The bidder shall not involve himself or any of his representatives in price manipulation of any kind directly or indirectly by communicating with other bidders. During Reverse Auction, If no bid is received within the specified time, OPTCL, at its discretion, may decide to close the reverse auction process/ proceed with conventional mode of tendering [Evaluation of Part-II (price bid) submitted by bidders earlier].
9	Consequent upon completion of e-Reverse Auction, OPTCL's decision on award of contract shall be final and binding on the bidders. OPTCL shall be at liberty to call the L1 bidder for further process/ negotiation and also at liberty to cancel the e-reverse auction process/ re-tender at any time, without assigning any reason thereof. OPTCL can decide to reschedule or cancel any reverse auction: the bidders shall be informed accordingly. OPTCL/ Service Provider shall not have any liability to bidders for any interruption or delay in access to the e-Tender site/ Reverse Auction link irrespective of the cause.

31.0 FINANCIAL REQUIREMENTS:

31.1 MINIMUM AVERAGE ANNUAL TURNOVER (MAAT)

The Minimum Average Annual Turnover (MAAT) requirement of the bidder (The Average of Best Three Financial Years out of the Last Five Financial Years preceding to the year of NIT) as indicated in the following Table-Fin-1 shall not be less than **Rs. 20.5 Crore.** In case the Bidder

is in existence for less than three financial years, the average annual turnover shall be sum of turnover in the completed no of financial years divided by three for the purpose of meeting the above criteria. Turnover of the bidding company on standalone basis only (excluding its associate companies on Standalone Basis) shall be considered for arriving at Annual Turnover. While calculating the turnover, only IT Hardware infrastructure /Software development projects shall be taken into consideration.

Note:

i. MAAT is applicable independently for each package/works irrespective of the no. of packages/works in which bidder has participated.

ii. In case of bidder participated through Joint Venture/ Consortium, the MAAT shall be considered together.

Table-Fin-1
MAAT Schedule
(Name of Bidder or Joint Venture/Consortium Partner)

Sl. No	Financial Year	IT Hardware Infrastructure /Software development projects Annual Turnover (excluding associate companies) on Standalone Basis of the Bidder (in INR Crores)	Best Three Years Annual Turnover for IT Hardware infrastructure /Software development (excluding associate companies) on Standalone Basis of the Bidder (in INR Crores)
1			
2			
3			
4			
5			
A. Total of Best Three Years Annual Turnover in IT Hardware Infrastructure /Software development projects			
B. = (A/3) Average of Best Three Years Annual Turnover in IT Hardware Infrastructure /Software development projects			

Note:

1. The bidder has to furnish the certificate from the Chartered Accountant (CA) certifying the Best Three Years Annual Turnover in IT Hardware infrastructure /Software development projects of the company only (excluding its Associated Companies) on Standalone Basis based on audited accounts of the last three Financial Years. In case the bidder has executed any project in Joint Venture/ Consortium, the Best Three Years Annual Turnover in IT Hardware infrastructure

/Software development projects certified by the Chartered Accountant (CA) should reflect his share of the turnover only.

2. In case of Joint Venture/Consortium above (Fin-1) of the Bidder(s) shall be furnished independently by each partner duly certified by Chartered Accountant (CA). However, IT Hardware Infrastructure /Software development projects (excluding Associate Companies) on Standalone Basis for other partner of the Joint Venture/ Consortium not necessarily required.

31.2 LIQUID ASSETS AND ACCESS TO CREDIT FACILITY:

Bidder shall be financially sound and stable. The liquid assets (Cash at Bank & Fixed Deposit) and Un-Utilised credit facility (both Fund & Non Fund based) available from bank(s) duly certified by the Bank(s) - **(Annexure-VII)** within one Month prior to the date of Tender opening, as indicated in the following format should not be less than **Rs. 2 Crore** [**15% (Fifteen Percent) of estimated cost of the package(s)/works]**. For this purpose, the liquid Assets and Un-Utilized Credit facilities of Partners of Joint Venture/Consortium shall be considered together.

Note: Liquid Assets and Credit facilities (Un-Utilized) are applicable independently for each package irrespective of the no. of packages in which bidder has participated.

Table-Fin – 2

(Name of Bidder or Joint Venture/Consortium Partner)

Liquid Assets and Un-Utilised Credit Facility Schedule

Package/ Work Quoted for	Estimated Cost of the Package/ Work (Rs. in Lakh)	Liquid Assets as on …..		Un-Utilised Credit Facility as on ….	
		Description	(Rs. in Cr)	Description	(Rs. in Cr)
		Cash in Hand		Cash Credit	
		Cash at Bank		LC and BG	
		Fixed Deposits		Others (Pl Specify)	
		Total Liquid Assets		Total Un-Utilised Credit Facility	

Grand Total: Total Liquid Assets + Total Un-Utilised Credit Facility.

Note:

(i) The above Table – FIN-2 of the Bidder(s) to be certified by Chartered Accountant (CA). In case of Joint Venture/Consortium above (Fin-2) shall be furnished independently by each partner duly certified by Chartered Accountant (CA).

(ii) The date of position of Liquid Assets and Un-Utilized Credit Facility Schedule Certified by Bank and CA should be same.

31.3 NET WORTH:

Net worth of bidder as per the audited financial results shall be positive on the last day of the preceding financial year.

Net Worth means the sum total of the paid-up share capital and free reserves (excluding reserves created out of the revaluation of assets, write back of depreciation provisions and amalgamation & Capital Reserve) net of P&L A/C (Dr. balance) and miscellaneous expenses to the extent not adjusted or written off.

Table: Fin-3

(Name of Bidder or Joint Venture/Consortium Partner)

Net Worth Schedule as on Dt…..

Sl. No.	Particulars	Amount (In Rs. Crore)
01	Paid-up share capital	
02	Free Reserves excluding the reserves created out of the following; i. Revaluation of assets. ii. Write Back of depreciation Provisions. iii. Amalgamation. iv. Capital Reserve	
03	Less, P&L A/C (Dr. balance)	
04	Less, Miscellaneous expenses to the extent not written off.	
05	Total: (5=1+2-3-4)	

Note:

1. The above (Table Fin – 3) of the Bidder(s) to be certified by Chartered Accountant (CA).
2. In case of Joint Venture/Consortium above (Fin-3) of the Bidder(s) shall be furnished independently by each partners duly certified by Chartered Accountant (CA).
3. In case of a bid submitted by a Joint Venture/Consortium, all the partners together shall be required to meet the MAAT, liquid assets and access to credit facility. In respect of Net Worth criteria, both the partners of Joint Venture/Consortium shall have positive Net Worth.

31.4 BID CAPACITY QUALIFICATION:

A bidder shall meet the following bid capacity Qualification Criteria along with other Technical Qualifying requirement before his bid is considered for opening of the price bid.

i.	Bidder's Bid Capacity	The bid capacity of the bidder shall be considered as 300% of IT Hardware Infrastructure /Software development project's annual turnover (excluding that of Associated Companies) on Standalone Basis in any

		financial year during the last 3 financial years reckoned from the year of NIT, which shall be evaluated by SLDC, OPTCL based on the information furnished by the bidder as per the format **FIN No. 4 & FIN No. 5**.
ii.	Bidder's Participation in the bid	A bidder may participate in the bidding of any of the package(s)/works irrespective of bidder's bid capacity.
iii.	Bidder's Technical Eligibility	Bidder shall be Technically eligible based on the qualifying requirement mentioned under Clause- 4 (Qualifying Requirements (QRs) of Bidder) except Bidders Bid Capacity.
iv.	Bidder's Price Bid Opening Eligibility based on the Bidder's Bid Capacity Qualification.	The bidder shall be eligible for opening of the Price Bid based on the available bid capacity defined as under; **Available bid capacity:** =[(3 x A) –(0.5 x B) – C)], should be equal to or more than the tendered estimated price where , **A**= Highest of IT Hardware Infrastructure /Software development project's Annual Turnover of the Bidder (excluding it's Associated Companies on Standalone Basis) in any financial year during last three financial years as per FIN-4. **B**= Total order Value of ongoing Work Orders/LOAs placed by OPTCL and Other Organizations on the Bidder on the date of opening of the Technical bid excluding those which have been commissioned as per FIN-5. **C**= Package(s)/Works finalized but yet to be awarded in favour of the Bidder by OPTCL (to be computed by OPTCL based on available information). Note: In respect of (B) & (C) above for Joint Venture/ Consortium, share of each partner would be as per agreed profit sharing ratio in the Joint Venture /Consortium Agreement. In absence of the same, it would be considered as equal sharing.
v.	Opening of the Price Bid	The price bid of tender of the Technically eligible bidder(s) shall be on the date and time as decided by the SLDC, OPTCL and communicated to the eligible bidder through tender portal. The price bid of the bidder shall be opened subject to meeting the available bid capacity limit considering Para-iv above. If the evaluated price of the bidder becomes (L-I) which exceeds the available bid capacity, the price bid of the bidder shall not be rejected on bid capacity ground.
vi.	Award for the Contract	After opening of the price bids of all the tender under this e-NIT, the price bids of the responsive bidder(s)

		shall be evaluated adopting the price evaluation methodology to derive the lowest evaluated bidder(s).

Note:
In case of Joint Venture/ Consortium, the bid capacity shall be considered as 300% of highest of IT Hardware Infrastructure /Software development project's annual turnover (excluding it's Associated Companies) on Standalone Basis of the partners together in any financial year during last 3 Financial Years reckoned from the year of NIT, which shall be evaluated by SLDC, OPTCL based on the information furnished by the bidder as per the format **FIN No-4 & FIN No-5**.

Table (FIN-4)

(Name of Bidder or Joint Venture/Consortium Partner)

Bidder's Bid Capacity Schedule (Highest of IT Hardware Infrastructure /Software development project's Annual Turn Over)

Sl. No	Financial Year	For Single entity	For Joint Venture/ Consortium		
		Highest of IT Hardware Infrastructure /Software development project's Annual Turnover of the company only (excluding its Associated Companies) on Standalone Basis of any year during last 03 FY (In Rs. Cr.)	Highest of IT Hardware Infrastructure /Software development project's Annual Turnover of the company only (excluding its Associated Companies) on Standalone Basis of any year during last 03 FY (In Rs. Cr.)of the Lead Partner (In Rs. Cr.)	Highest of IT Hardware Infrastructure /Software development project's Annual Turnover of the company only (excluding its Associated Companies) on Standalone Basis of any year during last 03 FY (In Rs. Cr.)of the Other Partner (In Rs. Cr.)	Total (In Rs. Cr.)
01	FY 2019-20				
02	FY 2020-21				
03	FY 2021-22				

NOTE:

The bidder has to furnish the IT Hardware Infrastructure /Software development highest Annual Turnover Certificate from the Chartered Accountant (CA) based on Audited Account. In case the bidder has executed any project in Joint Venture/ Consortium, the IT Hardware Infrastructure /Software development project's certified the Chartered Accountant (CA) should reflect his share of the project related turnover only. However, project related Turnover (excluding Associate Companies) on Standalone Basis for other partner of the Joint Venture/Consortium not necessarily required.

Table- (FIN-5):

(Name of Bidder or Joint Venture/Consortium Partner)

Total Order Value of Ongoing Work Orders/LOAs placed by OPTCL and Other Organizations

Sl No	Name of Organization	Description of work	Contract no & date	Total order Value of ongoing Works placed by OPTCL & Other Organizations (in INR)
1				
2				
3				
			Total, i.e. 'B'=	

NOTE:
The bidder has to furnish the information in Fin No. 5 duly certified by the Chartered Accountant (CA) based on LOAs/Works Orders/NOA excluding those which have been commissioned.

32.0 Joint Venture / Consortium:

The maximum number of members allowed in a Consortium is (2 Two) including Lead member. The parties will have a valid agreement among them. The agreement will clearly specify the following.

- Lead bidder must be Software Developer and other member must be for hardware components only.
- Details of Lead Member and other JV/ consortium members
- Outline the financial strengths, technical strengths and the role and responsibility(s) of each of the members of the consortium.
- The bidder or any member of JV will agree to OPTCL/SLDC's general conditions of contract and all other conditions in the bid including payment, penalty, and guarantee

and implementation schedule.

Bid submitted by a Joint Venture/Consortium Bidder will have following qualifying requirement:

Table 6 JV Qualifying Criteria

Sl. No.	Qualifying Requirements	Remarks
01	Status of Joint Venture/Consortium Partners	• All Partners of Joint Venture/ Consortium will be domiciled companies in India. • Lead partner of the Joint Venture / Consortium should be a Software Development Company. • Both the partners of the Joint Venture/ Consortium together will meet the Technical Qualification & financial qualification criteria. • Such Joint Venture/ consortium will be formed through Joint Venture/Consortium Agreement as per the format and manner specified in the annexure to this Tender Documents.
02	No. of Partner(s)	Maximum number of Partners in a Joint Venture/Consortium is limited to TWO (02) only including the lead partner.
03	Lead Partner of Joint Venture/Consortium	One of the partners fulfilling the Technical and financial qualifying criteria prescribed for lead partner will be nominated as Lead Partner by the Joint Venture/Consortium and the lead partner will be exclusively authorized to incur liabilities and receive instruction for and on behalf of Joint Venture/Consortium and its other partner. This authorization will be evidenced by submitted a power of attorney and Joint Venture/Consortium agreement signed by legally authorized signatories of the partners as per Proforma**.**
04	Liability of the Joint Venture/Consortium Partner(s)	All partners of the Joint Venture/Consortium will be jointly and severally liable for the execution of the Contract.

Note:

a. The bidder should submit an agreement for Joint Venture/ Consortium duly notarized so as to be legally valid and binding on the partners / members.

b. The agreement should contain precise demarcation of the responsibility of both the partners of the Joint Venture/ Consortium in respect of Development, design, supply, construction equipment, key personal, work execution and financing of the project duly indicating the percentage in financing / profit sharing of Joint Venture/ Consortium by each partner.

c. This agreement will be irrevocable and valid till successful completion of the contract and Guarantee and AMC Period.

33.0 Conflict of Interest:

The bidder or any member of JV will not have a conflict of interest. Any Bidder found to be having a conflict of interest will be disqualified. The bidder will be considered to have conflict of interest with one or more parties in this bidding process, if:

a. They have a controlling partner in common.

b. They have a relationship with each other, directly or through common third parties, that puts them in position to have access to information about or influence on the bid of another Bidder.

c. A bidder submits more than one bid in the bidding process.

d. They are involved in Power Trading business or operate as a IPP, CGP, or Renewable Energy Producer

34.0 Third Party Audit (TPA)

a. If OPTCL desires, the project including all software modules and hardware's shall be validated and certified with respect to tender specification and SLDC requirement, by Third Party Agency engaged by SLDC of its own cost.

b. The Third-Party agency shall conduct yearly audit of the SAMAST Project during AMC period.

c. The supplier shall comply the observations (if any) of the TPA during AMC period based on which AMC charges shall be released.

35.0 Cyber Security (VAPT) Test:

The bidder shall clear all vulnerabilities detected in the VAPT conducted by a CERT-IN empaneled audit agency before commissioning of the project as per CEA guidelines. VAPT test shall be conducted once in every year by audit agency to ensure its stability and reliability till end of AMC period. The required cost will be borne by SLDC, OPTCL. Bidder will include the cost of such tests in their offer.

36.0 GO-LIVE Activities:

After the issue of the User's Acceptance Certificates for all applications and after Cyber security conformance testing such as VAPT, the Supplier will commence Go-Live Acceptance Test (after functionality & performance tests for all applications) to ensure that the SAMAST Solution is rolled out in totality and all integration requirements are complied with, in accordance with the timelines specified in the Tender Document and LOA.

37.0 Go-Live Acceptance

a. The Supplier shall give a notice to the SLDC requesting the issue of the Go-Live Acceptance.

b. Certificate along with all the necessary documents to justify Supplier's claim of Readiness for Go-Live.

c. After receipt of the Supplier 's notice, the SLDC shall Issue a Go-Live Acceptance Certificate; or

d. Notify the Supplier in writing of any defect or deficiencies or other reason for the failure of the Go-Live Acceptance Tests.

38.0 Fall Back

If the System or Subsystem fails to pass the SAT or Go-Live even after 3 unsuccessful attempts, then SLDC reserves the right to terminate the Contract and if the Contract is terminated, the Performance Security Deposit will be forfeited. The remaining work shall be carried out by SLDC through any other supplier at the risk and cost of the Bidder.

39.0 The Backup & Restoration

The Backup & Restoration of all data of SAMAST application shall be done as per the decided by the SLDC, OPTCL.

40.0 Sub-Contracting:

Sub-Contracting both software development and hardware supply is not allowed under this contract.

41.0 Minimum Qualification Criteria of Bidders

Bidders would be evaluated on the following criteria as per the guide lines given below by the SLDC, OPTCL Odisha.

The bidder should submit the bid on its own or in Joint Venture/Consortium. The bidder‘s experience as sub-supplier/sub-contracting in any contract will not be taken into account in

determining the bidder's experience for meeting the mandatory Technical and Financial Qualification Criteria and Technical Evaluation Criteria.
The Bidder **MUST MEET ALL** the following qualification criteria and will submit the relevant documentary evidences as indicated below:

41.1 General

i. "The Bidder" means any eligible FARM or COMPANY registered under Company act 1956 (Amended in 2013) or Limited Liability Partnership (LLP) registered under the LLP Act, 2008 and should have been in operation in India, whose primary business is software development and implementation and must have relevant experience in Data Centre Hardware and software installation as on the date of bid opening and will have their registered offices in India.

ii. Bidders to furnish Self-attested copies of work orders with successful completion certificate from the user to prove the following in full shape.

   a. The Bidder (Lead bidder in case of JV) will have successfully implemented minimum **two (2) Software development & implementation project** in RLDC / NLDC / Grid India / RPC / STU / SLDC with minimum cumulative project cost INR 50 lakhs (with GST) in India in the last five (5) years ending the date of submission of bid.

   b. The Bidder (or any member in case of JV) will have completed minimum **two (2) IT infrastructure** in RLDC / NLDC / Grid India / RPC / STU / SLDC with minimum cumulative project cost INR 100 lakhs (with GST) in India in the last five (5) years as on date of submission of bid.

iii. The Bidders (Lead bidder in case of JV/consortium) should have CMMI – Level III maturity at the time of participation in the tender and the appraisal document and certificate will be enclosed with the bid.

iv. Bidders (Lead bidder in case of JV/consortium) shall have a valid ISO 9001:2000 or above and ISO 27001.Other JV partner shall have a valid ISO 9001:2000 or above.

v. Bidders (Lead Bidder in case of JV/consortium) must provide third party Safety Certification ("S" mark) Scheme of electronic sector promoted by STQC certification services, Standardization Testing and Quality Certification directorate, Ministry of Electronics and Information Technology, Govt. of India.

41.2 Technical

i. The bidder (Lead bidder in case of JV) should have experience of completing at least One Project **(or)** two ongoing project in hand **(or)** having AMC for two projects since last two years, similar in nature with **all** the following software module in any RLDC / NLDC / Grid India / RPC / STU / SLDC.

1. **Web based Energy Scheduling**
2. **Energy Accounting**
3. **Deviation Settlement Mechanism/UI**

(AND)

The bidder (Lead bidder in case of JV) should have experience of completing at least One Project **(or)** One ongoing project **(or)** one projects under AMC contract since last two years, similar in nature for **any one** of the following software modules in any RLDC / NLDC / Grid India / RPC / STU / SLDC.

1. **Open Access**
2. **Outage Management**

ii. Copy of Work Order, Purchase Order, Contract Agreement and Go- live / Completion Certificate from the client.

iii. Stand-alone UAT and SAT to be conducted for each software module and also in the integrated mode as per the defined use cases and performance benchmark as specified in the software requirement specifications for final acceptance by SLDC, OPTCL.

iv. The prospective bidder shall be capable to demonstrate to read/access the present MDM facility available at SLDC and ensure to read/access the future AMR/HES solutions to be developed.

v. Technical Presentation:
Bidders will have to Present / demonstrate the technical solution and overall project approach & Methodology, project plan and time schedule for execution of the project and work flows. This will cover following but not limited to aspects of the project. This will be major criteria during evaluation by SLDC, OPTCL.

a) Application Software modules
b) IT Infrastructure
c) Data Migration
d) Integration of real time Scheduling with website

41.3 Financial

i. The firm should have sufficient financial capacity for the execution of the project within OPTCL's desired project implementation schedule. The minimum average annual turnover (MAAT) of the last three years (FY19-20, FY 20-21, FY21-22) for the Bidder will be **INR 20.5 Crores** out of which IT Infrastructure / software development Projects, in last three years (FY19-20, FY 20-21, FY21-22) will be minimum **INR 4 crores** for the single bidder or sum of both the partners in case of JV. In case of JV, the average annual turnover of lead bidder will be minimum INR **12 crores**, the total of the average annual turnover of JV Member (other than Lead bidder) for the last three years (FY19-20, FY 20-21, FY21-22) will be minimum **INR 8.5 crores.**

ii. The Bidder will furnish scanned attested copies of the turnover along with audited profit and loss account and balance sheet for the last three financial years on year wise basis. Financial statements audited by a practicing Chartered Accountant will only be accepted. CA certificate stating the overall turnover details and turnover from IT/IT infrastructure projects for the last three years (FY19-20, FY 20-21, FY21-22) with name, seal and registration number of CA. In addition to the financial statements, Turnover/Net worth Certificate duly certified by the practicing Chartered Accountant to be furnished. Since Unique Documents Identification Number (UDIN) is mandatory for issuing certificate by practicing Chartered Accountants, the UDIN will be clearly specified in the above certificate. An undertaking in the prescribed form will be submitted by the bidder. Stringent action including the black listing of the firm from participating tenders of OPTCL may be taken for furnishing forged documents.

iii. Financial statements of the bidders in the case of limited Companies will be verified

iv. The Bidder will have positive net worth as on 31/03/2022

v. The bidder must have INR 2 crore liquid asset in hand.

vi. Bid capacity must be equal to or more than 20.5 Crores.

42.0 Deployment of Experts

42.1 Personnel Capability

The following mentioned Manpower qualification criteria is required by the bidder/bidders. Supporting documents should be provided along with the bid. The bidder should propose only full-time employees on roll (permanent employees) who have been employed for at least 1 year with bidder as the key professional staff for this project; Contractual employees would not be considered.Declaration to be provided on employment status of the personnel.

Table 7 Manpower Deployment

Sl. N.	Position	Count	Minimum Qualification	Minimum Work Experience
1	Project Manager	1	B.E. /B. Tech	12 (Twelve) years of experience in IT / Power sector with minimum 8 (Eight) years of experience in areas such as power market / power trading / open access / SLDC / IT implementations in power sector. Should have relevant experience in Project Management and System Integration in project of size at least 10Cr.
2	Team Lead - IT Infrastructure	1	B.E. /B. Tech	12 (Twelve) years of experience in IT / Power sector with minimum 8 (Eight) years of experience in Control Center/Data Center implementation.
3	Team Lead –Software	1	B.E. /B. Tech/ MCA	12 (Twelve) years of experience in IT / Power sector with minimum 8 (Eight) years of experience in software development / handling and delivery in the power sector.
4	Power Sector Expert	1	B.E./B. Tech	12 (Twelve) years of experience in power sector with minimum 5 (Five) years of experience in areas such as power market / power trading / open access / SLDC / IT implementations in power sector
5	IT Engineer	8	B.E. /B. Tech withcertification in networking as per latest industrial standards	5 (Five) years of experience in Hardware and Networking and minimum 3 (Three) years in Power Sector. Previousexperience in data center and control center commissioning mandatory.
6	Software Developer	4	B.E. / B. Tech/ MCA	5 (Five) years of experience in IT sector and minimum 3 (Three) years in power sector
7	Software Architect	1	B.E. / B. Tech/ MCA	5 (Five) years of experience in IT sector and minimum 3 (Three) years in power sector

8	DBA	2	B.E. /B. Tech/ MCA	5 (Five) years of experience in IT sector and minimum 3 (Three) years in power sector
9	Power Regulatory Expert	1	B.E./B. Tech	8 (Eight) years of experience in Power Sector in areas such as power market / power trading / open access / SLDC / regulatory
10	Power Sector Analyst	2	B.E./B. Tech	3 (Three) years of experience in Power Sector in areas such as power market / power trading / open access / SLDC / regulatory

a. The bidder needs to submit work plan and manpower deployment plan in the technical proposal. The bidder may change the resources with the required technical skill sets as stated above as per the project requirement. During the Pre-commissioning phase/SAT phase/AMC Phase, in addition to the offsite support, one Software Developer would need to be deployed on full-time basis onsite to ensure:

i. Discussions and review of regulations and relevant orders
ii. Addressing/fixing any production issues or defects
iii. Ensuring 24x7 operation of SAMAST software stack running on server (DC server) at SLDC.
iv. Coordination and resolving integration issues with other systems
v. Maintenance of DC server.
vi. Modifications in reports as required by management for monitoring purpose
vii. Coordination and resolving integration issues with other systems
viii. Bidder must comply all other routine activities viz. Back up, event analysis restoration etc required by SLDC.

43.0 Performance Benchmark

a. All software modules shall adhere to the performance benchmark as specified in Chapter 6 of Section V
b. All hardware components shall adhere to the specifications mentioned in Chapter 2 (2.1) under Section V

44.0 Change Request and control procedure (After Go-Live)

a. SLDC, OPTCL defines additional requirement or changes for a feature

i) Software shall be designed to incorporate such changes in regulation with minimum effort and time.

ii) The scope of this project includes accommodation of necessary modifications / changes which may require time to time for alteration in business logics due to any central or state level policy/guidelines, OERC or CERC regulations/orders/guidelines, policy decision of distribution licensees, decision of SLDC management, etc. These modifications may be reported time to time during implementation phase as well as during support / AMC period. The modifications required as indicated above may be classified in two categories viz.:

b. Minor modification: Modification requiring the efforts up to 10 man-days shall be treated as minor modification requirement.

c. Major modification**:** Any new module/work area development and all other modification requirements arising due to change in operational practice, business logic and regulation, laws, new regulations, procedures etc. which cannot be accommodated within the scope of minor modification (effort exceeding 10 man-days) shall be treated as major modification/ change requirement.

d. Modifications during Warranty / Maintenance period

e. The supplier shall be responsible for accommodating 10 (ten) per year at no extra cost.

f. The bidders are requested to quote man-day rates for change requests/ major changes separately in price bid (mandatory). Man- day rates shall be considered only for major change requests which are not provided as part of original scope of work of this tender. For the efforts of any changes, Supplier's Project Manager/Nodal officer of SLDC shall mutually agree on the additional scope and effort required for finalizing the number of man days.

g. Bugs, lacuna, non-compliance to specifications cannot be treated as a change request.

h. **Impact on Price:**
Bidder shall calculate the necessary price impact and discuss with SLDC before proceeding for change request

i. Change Request Process

Change request approval process:

a. Change request complying above qualification criteria shall be initiated.
b. A change request form is filled up. (A format shown below will be supplied to bidder as part of the contract agreement, ref-Annexure-XV)

c. Initiator (SLDC, OPTCL or Bidder's Project Manager) fills up items number 3,4, 5 in the form.
d. The bidder's project manager fills up item's numbers 1, 2, 6, 7 and 8.
e. Project Manager from SLDC fills up 9,10, and 11.
f. On approval by SLDC, the project manager of bidder proceeds with implementation.

In all respect, the decision of SLDC, OPTCL's is final and no appeals are permitted against it.

45.0 Jurisdiction of the High Court of Odisha

Suits, if any, arising out of this contract will be filed by either Party in a court of Law to which the jurisdiction of High court of Odisha extends.

46.0 Correspondences

i. Any notice to the supplier under the terms of the contract will be served by Registered Post or by hand at the Supplier's Principal Place of Business.

ii. Any notice to the Purchaser will be served at the Purchaser's Principal Office in the same manner.

47.0 Official Address of the Parties to the Contract

The address of the parties to the contract will be specified: -

i. **Purchaser**: CHIEF LOAD DESPATHER
STATE LOAD DESPATCH CENTER,
Bhubaneswar-751022, Odisha.

ii. **Supplier:** Address
Telephone No.
Mail ID Fax No.

48.0 Outright Rejection of Tenders

Tenders will be out rightly rejected if the followings are not complied with.

i. The tenderer will submit the bid in electronic mode only and will submit the tender cost on or before the date and time of opening of technical bid (part-I).

ii. The tenderer will submit the bid in electronic mode only.

iii. The Tender will not be submitted telegraphically or by FAX.

iv. The prescribed EMD will be submitted on or before the date and time of opening of technical bid (Part-I).

v. The Tender will be kept valid for a minimum period of 180 days from the date of opening of tender.

vi. The Tender will be submitted in single stage two part as specified.

vii. The schedule of prices should be filled up fully to indicate the break-up of the prices including taxes and duties. Incomplete submission of this schedule will make the tender liable for rejection.

viii. The Tenderer should quote 'FIRM' price only and the price should be kept valid for a minimum period of 180 days from the date of opening of the tender.

ix. Guaranteed Technical particulars & Abstract of terms and Conditions should be filled in completely.

x. Detailed information on any litigation or arbitration arising out of contract completed or under execution by it over the last five years. A consistent history of litigation by or against the bidder may result in rejection of bid.

xi. The bidder should not have any pending litigation or arbitration with SLDC, OPTCL with regard to any project or related activity. The bidder should certify / declare the same in the unequivocal terms by way of an affidavit duly sworn before a magistrate/notary. Bid furnished by the bidder will not be eligible for consideration if it is not accompanied by the affidavit. Further the bid / LOA/ LOI will be liable for outright rejection/ cancellation at any stage if any information contrary to the affidavit / declaration is detected.

49.0 Documents to be treated as confidential.

The supplier shall treat the details of the specification and other tender documents as private and confidential and these shall not be reproduced without written authorization from the Purchaser.

The Purchaser and the Supplier shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract.

The obligation of a party under above, however, shall not apply to that information which

a. Now or hereafter enters the public domain through no fault of that party

b. Can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party hereto

c. Otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality

The above provisions of this shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Works or any part thereof

The provisions of this shall survive termination, for whatever reason, of the Contract.

50.0 Scheme/Projects

The Software/Hardware/materials/equipment covered in this specification will come under capital works of SLDC with financial support of "PSDF ".

51.0 Effective Date of Contract:

The effective date of contract shall be reckoned from the date of issuance of Letter of Award.

52.0 Engineer-In-Charge's Decision:

i. In respect of all matters which are left to the decision of the Engineer-In-Charge including the granting or with-holding of the certificates, the Engineer-In-Charge shall, if required to do so give in writing a decision thereon.

ii. If, in the opinion of the Contractor, a decision made by the Engineer-In-Charge is not in accordance with the meaning and intent of the Contract, the Contractor may file with the Engineer-In-Charge, within fifteen (15) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered as an acceptance of the Engineer-In-Charge's decision and the decision shall become final and binding.

iii. The Engineer-In-Charges' decision and the filing of the written objection thereto shall be a condition precedent to the right to request arbitration. It is the intent of the Contract that there shall be no delay in the execution of the works and the decision of the Engineer-In-Charge as rendered shall be promptly observed.

53.0 Co-operation Other Contractors & TPIA:

The Contractor shall cooperate with OPTCL's other Contractors, PMC & Third Party Inspecting Agency (TPIA) and freely exchange with them such technical/commercial information as may be necessary for smooth execution of the project in an efficient and timely manner to avoid unnecessary duplication of efforts.

54.0 Project Management Consultant:

The entire project will be monitored by PMC engaged by SLDC for smooth coordination during execution of the project. Bidder will cooperate the PMC as per their roles and responsibility (will be mentioned in bidder's LoA)

55.0 Progress Report On Supply And Utilisation Of Materials/ Equipment:

During the various stages of the work in pursuance of the Contract, the Contractor shall at his own cost submit Monthly Progress Reports of Software development, hardware's /equipment supplied, Utilization of Materials/equipment and status of the materials/equipment in pipeline as may be reasonably required by the Engineer-In-Charge with photographs, test certificates, etc. Such progress reports shall be in the form and size as may be required by the Engineer-In-Charge and

56.0 Limitation Of Liabilities:

The final payment by SLDC, OPTCL in pursuance of the Contract shall mean the release of the Contractor from all his liabilities under the Contract except for liabilities under Guarantee period. Such contractual liabilities and responsibilities of the Contractor shall prevail till expiry of the Latent Defect Warranty period even after the final payment is released.

Notwithstanding anything to the contrary mentioned herein and to the extent permitted by law, the aggregate liability of Contractor to SLDC, OPTCL, whether in contract, tort or otherwise, will be limited to 100% of the contract value.

57.0 Standards:

The Software developed / Materials supplied and works executed under this Contract shall conform to the IEC/IS, and, when no applicable standard is available, to the authoritative standard appropriate to the software/materials/works and such standards shall be the latest issued by the concerned institution.

58.0 Delivery milestones of Hardware and Software

Software module and Hardware materials shall be delivered as per the table given below.

T0- Date of Issue of LoA

Table 8 Delivery Milestones

Sl.No	Activities	Hardware	Software
1	Submission of design, over all architecture, prepared design documentation and software requirement specification including fields survey and IT infrastructure for implementation of complete software solution		T0+1 months
2	Demonstration of developed software modules for FAT		T0+6 months
3	Supply, Installation and commissioning of IT hardware and associated Items at Data Center and DR	T0+7 months	
4	Site Acceptance Test (SAT)		T0+10 months
5	Go-Live	T0+ 12 months	T0+ 12 months

59.0 WORK COMPLETION SCHEDULE:

i. The Bidder shall include in his proposal of program for software developing, supplying and erecting the Materials/equipment covered under this Works in the form of Work Completion Schedule (Bar Chart / PERT) identifying key activities of total work, such as Software development, Supply of Materials/Equipment, erection, Installation, Testing & Commissioning of all works within the contract completion period. The work completion schedule shall be reckoned from the date of issue of Letter of Award.

ii. The Contractor shall submit Work Completion Schedule conforming to the delivery/erection dates for review and approval of OPTCL.

iii. The approved Work Completion Schedule submitted by the contractor shall form part of the contract agreement.

iv. The work completion schedule shall be revised if the reason of delay in completion of works is not attributable to the Contractor.

v. The zero date of the work completion schedule shall be considered the date of LOA.

PART-I

SECTION – III

LIST OF ANNEXURES

SECTION – III: LIST OF ANNEXURES

The following schedules and proforma are annexed to this specification and contained in Section-III as referred to in the relevant clauses.

1	Declaration form	ANNEXURE-I
2	Abstract of terms and conditions to accompany Section-II of Part-I	ANNEXURE-II
3	Schedule of Quantity and Delivery	ANNEXURE-III
4	Abstract of price component [to accompany Part-II of this specification]	ANNEXURE-IV
5	Schedule of prices to accompany Part-II	ANNEXURE-V
6	Bank Guarantee form for earnest money deposit	ANNEXURE-VI
7	Composite Bank Guarantee form for security deposit, payment, and performance	ANNEXURE-VII
8.	Chart showing particulars of E.M.D.	ANNEXURE-VIII
9.	Data on Experience.	ANNEXURE-IX
10.	Schedule of spare parts.	ANNEXURE-X
11.	Schedule of Installations.	ANNEXURE-XI
12	Schedule of deviations (Technical)	ANNEXURE-XII(A)
13.	Schedule of deviations (Commercial)	ANNEXURE-XII(B)
14	Litigation /Arbitration	ANNEXURE-XIII
15	Delivery Schedule	ANNEXURE-XIV
16	Change Request Format	ANNEXURE-XV

ANNEXURE-I: DECLARATION FORM

ANNEXURE-II: ABSTRACT OF GTCC

ABSTRACT OF GENERAL TERMS AND CONDITIONS OF CONTRACT [COMMERCIAL] TO ACCOMPANY PART-I :
(To be filled up by the tenderer as indicated in the excel sheet for "Abstract of price component & other commercial terms")

ANNEXURE-III: SCHEDULE OF QUANTITY & DELIVERY

SCHEDULE OF QUANTITY AND DELIVERY ALONG WITH INSTALLATION & COMMISSIONING

SCHEDULE OF QUANTITY & DELIVERY

Table 9 Schedule of quantity

Sr. No.	Description	Unit	Quantity
1.00 Data Centre Hardware			
1.01	Database Server	Nos.	2
1.02	Application Server	Nos.	2
1.03	Communication (API) Server	Nos.	2
1.04	Web Server	Nos.	2
1.05	Backup Management Server with Backup & Recovery Management Software (Commvault backup agent)	No.	1
1.06	42 U Server / Network Rack	Nos.	2
1.07	NAS (with Minimum 15TB Usable data storage as per technical specification)	No	1
1.08	Storage Area Network (SAN) based Storage Solution with Minimum 15TB Usable data storage as per technical specification S	No.	1
1.09	SAN Switches	Nos.	2
1.10	24 Port (Layer 3) 1G Network Switch as per Technical Specification	Nos.	4
1.11	Router as per technical specification (AMR)	Nos.	2
1.12	Firewall with HA license as per technical specification (UTM)	No.	1
1.13	KVM Switch 16 Port with 17” Console	No.	1

Sr. No.	Description	Unit	Quantity
1.14	Server Management Console for centralize monitoring, NMS, Patch Management Etc. along with Network Management Software, Patch Management Software, End point Protection of Servers & Clients (As per Technical Specification for required nos of nodes at DC & DR)	Lot	1
1.15	GPS Time Synchronization system (These will be configured as dual redundant)	Nos.	2
1.16	RDBMS Software (robust RDBMS with configuration and development cost), Enterprise edition.	Lot	1
1.17	Antivirus for all servers/Laptop/Workstation etc.	Nos.	15
1.18	Linux OS License for Servers (Latest Edition)	Nos.	11
1.19	Virtualization software platform with high availability and resilience for 8 nodes.	No.	1
2.00 DISASTER RECOVERY CENTER Hardware			
2.01	DR Server	Nos	2
2.02	NAS (with Minimum 15TB Usable data storage as per technical specification)	No	1
2.03	24 Port (Layer 3) 1G Network Switch as per Technical Specification	No	1
2.04	Router as per technical specification	No.	1
2.05	Firewall with HA license as per technical specification	No.	1
2.06	UPS System (5 kVA) with 2 hours backup.	No	1
3.00 SLDC OPTCL Hardware			
3.01	Workstation with Windows 10 Pro OS, MS Office, PDF Reader cum Editor	Nos	4
3.02	Multifunction Printer	Nos	1
4.00 SAMAST Software Module			
4.01	ABT scheduling system	Nos.	1

Sr. No.	Description	Unit	Quantity
4.02	Open Access transaction management system for Open Access (OA) with payment Accounting.	Nos.	1
4.03	Outage Management System (Transmission Outage Planning)	Nos.	1
4.05	Energy accounting system	Nos.	1
4.05	Settlement system (Deviation, Reactive, Congestion)	Nos.	1
4.06	Integrated MIS, Dashboard, Reporting and Data Integration.	Nos.	1
4.07	Meter/ Master Data Management software module with data Archival & Retrieval.	Nos.	1
4.08	Design and development of dynamic and interactive website of SLDC	Nos	1
4.09	Mobile Application	Nos	1
5.00 Training			
5.01	Training for personnel at Generating/ Transmission/ Utility substation	No of user	50
5.02	Training programs for system users	No of user	25
5.03	Training program for system hardware and software support team	No of user	10
	Group Subtotal		
6.00 AMC and Audit			
6.01	5 year AMC for the entire project including Disaster Recovery Centre and DC Hardware, commencing from one year after Go-live.	Lot	1
`6.02	Cyber audit from CERT-IN 3rd party empaneled supplier for 5 year during AMC period	Year	5
6.03	VAPT test by empaneled agencies	Nos	7

Signature of Tenderer with seal of Company

ANNEXURE-IV: ABSTRACT OF PRICE COMPONENT

Abstract of price component [to accompany Part-II of this specification]

(To be filled up by the tenderer as indicated in the excel sheet)

NB:- Abstract of price component will be done for Software/equipment/material offered, for development/installation, testing & commissioning and AMC charges, if any. All the above prices will be taken during bid price evaluation.

ANNEXURE-V: SCHEDULE OF PRICE

SCHEDULE OF PRICE……. TENDER SPECIFICATION No…….

(To be filled up by the tenderer as indicated in the excel sheet**)**

1. The tenderer should fill up the price schedule properly in excel file in e-tender mode. The tender will be rejected, if the price bid is not submitted in accordance with the price schedule. No post tender correspondence will be entertained on break-up of prices. Also, the supplier should agree for delivery at the desired site.
2. The Tenderer will give an undertaking in part-I of the bid that, entire implication of lower tax and input tax credit benefit have been fully passed on to the purchaser as per anti-profiteering and other provisions under GST Laws while quoting the tender price.
3. Conditional offers will not be acceptable.

Signature of Tenderer

Name, Designation and Seal

ANNEXURE-VI: BG FOR EMD

PROFORMA FOR BANK GUARANTEE FORM FOR EARNEST MONEY DEPOSIT

(To be Stamped in accordance with Stamp Act and the Non-Judicial Stamp Paper of appropriate value should be in the name of Issuing Bank)

Ref No: …….

Bank Guarantee No. …….

Date:……

BG Amount:…….

Validity Period:……..

This Guarantee Bond is executed this…… day of …… by us the…… Bank at …… , P.O…… , Dist……, State…… and Code No……..

Whereas the ODISHA POWER TRANSMISSION CORPORATION Limited, Janpath, Bhubaneswar, a company constituted under the Companies Act-1956 (hereinafter called SLDC, OPTCL) has invited Tender vide e-NIT No……. Dated…… for the purpose of …… work under Package(s) No……../ purchase of ---------- .

1. Now, therefore, in accordance with Notice Inviting Tender (e-NIT) No…….. Dated …… of SLDC, OPTCL, Ms/Shri……Address……..... Wish / wishes to participate in the said tender and as a Bank Guarantee for the sum of Rs……. [Rupees in ***words***----------] valid for a period of …….days is required to be submitted by the bidder, as per Tender Specification, we the _____) [indicate the name, Address & Code of the bank] [hereinafter referred to as "Bank"] at the request of Ms/Shri…….... [hereinafter referred to as "Bidder"] do hereby unequivocally and unconditionally guarantee and undertake to pay during the above said period on written request by the <Tender Issuing Authority, SLDC, ODISHA POWER TRANSMISSION CORPORATION Ltd. , Bhubaneswar an amount not exceeding Rs……. to SLDC, OPTCL., without any reservation. The guarantee would remain valid up to …….. [Date] and if any further extension to this is required, the same will be extended on receiving instruction from ---------- ---------- on whose behalf this Bank Guarantee has been issued.

2. We, the _____ [indicate the name of the Bank, Address, Code] do hereby further undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from SLDC, OPTCL. Any such demand made on the Bank will be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee will be restricted to an amount not exceeding Rs…… (Rupees in words……)

3. We undertake to pay to SLDC, OPTCL any money so demanded not withstanding any dispute or disputes so raised by the bidder in any suit or proceeding instituted/pending before any court or tribunal

relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond will be a valid discharge of our liability for payment thereunder and the bidder will have no claim against us for making such payment.

4. We, the _____ Bank further agree that the guarantee herein contained will remain in full force and effect during the aforesaid period of _____ days [in words]…….. (as per Tender Specification) and it will continue to be so enforceable till all the dues of SLDC, OPTCL under or by virtue of the said Bid have been fully paid and its claims satisfied or discharged or till SLDC, OPTCL certifies that the terms and conditions of the said Bid have been fully and properly carried out by the said bidder and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us or our Branch Office at Bhubaneswar <Mention Name, Address & Code of the Branch Office at Bhubaneswar of Issuing Bank> in writing on or before _____ we will be discharged from all liability under this guarantee thereafter.

5. We the _____ Bank further agree with SLDC, OPTCL that SLDC, OPTCL will have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Bid or to extend time of performance by the said Bidder from time to time or to postpone for any time or from time to time any of the powers exercisable by SLDC, OPTCL against the said Bidder and to forbear or enforce any of the terms and conditions relating to the said Bid and we will not be relieved from our liability by reason of any such variation, postponement or extension granted to the Bidder or for any forbearance, act or omission on the part of SLDC, OPTCL or any indulgence by SLDC, OPTCL to the said Bidder or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of so relieving us.

6 This guarantee will not be discharged due to the change in the name, style and constitution of the Bank and/or of the Bidder.

7 We _____ [indicate the name of Bank, Address &Code] lastly undertake not to revoke this guarantee during its currency except with the previous consent of SLDC, OPTCL in writing .

8. We, the _____Bank (Name, Address & Code) further agree that this guarantee will also be invokable at our place of business at ---------- Branch of **Bhubaneswar** (indicate Name, Address & Code of the Branch at Bhubaneswar) in the State of Odisha."

" Notwithstanding anything contained herein"

a) Our liability under the bank guarantee will not exceed Rs.----------(Rupees in words----------) only.

b) This Bank guarantee will be valid up to ----------.

c) We or our Branch at Bhubaneswar <Mention Name, Address & Code…….> will be liable to pay guaranteed amount or any part thereof under this guarantee only if you serve upon us at--------- Branch

of Bhubaneswar a written claim or demand on or before ……..,

The Bank Guarantee is issued in paper form and Advice transmit Bed through SFMS with required details to the beneficiary's advising bank (ICICI Bank Bhubaneswar, IFSC Code ICIC0000061).

Dated, the _____Day of _____

For _____ [Indicate name of Bank]

Signature ……
Full name …….
Designation ……
Power of Attorney No. …….
Date…….
Seal of the Bank…….

WITNESS: (SIGNATURE WITH NAME AND ADDRESS)
(1)
Signature ……
Full name …….
(2)
Signature ……
Full name …….

N.B.:
1. Name of the Bidder.: ……
2. BG No & Date :……
3. Amount (In Rs.):……
4. Validity up to :……
5. E-NIT No……..
6. Package/Works No……..
7. Name, Address & Code of Issuing Bank:……
8. Name, Address & Code Bhubaneswar Branch of the Issuing Bank:……
9. The Bank Guarantee will be accepted after getting SFMS advice as per details below.

Format for SFMS details

(The Unique Identifier for field 7037 is "SLDC/ OPTCL541405793")

Table 10 Format for SFMS details

Sl. No	PARTICULARS	TYPE	DETAILS
1	Type of Bank Guarantee	Mandatory	EMD
2	Currency & Amount	Mandatory	
3	Validity Period (from—to --)	Mandatory	
4	Effective Date	Mandatory	
5	End date of lodgment of Claim	Mandatory	
6	Place of lodgment of claim	Mandatory	Bhubaneswar, Branch Name------ of Bhubaneswar Branch code------- of Bhubaneswar Branch Address ------ at Bhubaneswar
7	Issuing Branch IFSC Code	Mandatory	
8	Issuing Branch name & address	Mandatory	
9	Name of applicant and its details	Mandatory	
10	Name of Beneficiary and its details	Mandatory	
11	Beneficiary's Bank/Branch and IFSC Code	Mandatory	ICICI Bank Ltd IFSC Code-ICIC0000061
12	Beneficiary's Bank/Branch name and address	Mandatory	ICICI Bank Ltd Bhubaneswar Main Branch, Bhubaneswar
13	Sender to receiver information	Mandatory	
14	Purpose of Guarantee	Mandatory	EMD
15	Reference/Description of the underlined tender/contract	Mandatory	NIT No

ANNEXURE-VII: CPBG

[PROFORMA FOR COMPOSITE BANK GUARANTEE FOR SECURITY DEPOSIT PAYMENT AND PERFORMANCE]-

(To be stamped in accordance with Stamp Act and the Non-Judicial stamp paper of appropriate value should be in the name of the Issuing Bank.)

Ref No:- …….
Bank Guarantee No. …….
Date: ……
BG Amount:…….
Validity Period:……..

This Guarantee Bond is executed this…… day of …… by us the…… Bank at …… , P.O…… , Dist……., State…… and Code No……..

Whereas the ODISHA POWER TRANSMISSION CORPORATION Limited, Janpath, Bhubaneswar, a company constituted under the Companies Act-1956 (hereinafter called SLDC, OPTCL) has issued Letter of Award (LOA) No…… Dated…… for the purpose of …… work under Package No……. (herein after called "the Agreement") to M/s/Shri …….. , Address…….. (herein after called the "Supplier") for supply, erection, installation & commissioning and associated civil works under the above LoA and whereas SLDC, OPTCL has agreed (1) to exempt demand of security deposit under the terms and conditions of the LOA (2) to release payment of the cost of the Contract Price to the Supplier on furnishing by the Supplier to SLDC, OPTCL a Contract Performance Bank Guarantee (CPBG) of the value of 10% of the Contract Price of the said Agreement.

1. Now therefore, in accordance with the terms and conditions of LOA No. _____ dated _____ for the due fulfillment by the said Supplier of the terms and conditions contained in the said agreement, on production of a Bank Guarantee for Rs._____ (Rupees_____) only, we the bank _____ [Indicate bank Name , Address & Code] (hereinafter referred to as "the Bank") at the request of M/s/Shri _____ supplier do hereby undertake to pay to SLDC, OPTCL, an amount not exceeding Rs._____ (Rupees _____) only .

2. We, the _____ Bank [indicate the name of the Bank, Address & Code] do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from SLDC, OPTCL. Any such demand made on the bank will be conclusive as regards the amount due and payable by the bank under this guarantee. However, our liability under this guarantee will be restricted to an amount not exceeding Rs. _____(Rupees---------- In Words).

3. We, the …… Bank also undertake to pay to SLDC, OPTCL any money so demanded not withstanding any dispute or disputes raised by the Supplier in any suit or proceeding instituted / pending

before any court or tribunal relating thereto, our liability under this present being absolute and irrevocable. The payment so made by us under this bond will be a valid discharge of our liability for payment thereunder and the Supplier will have no claim against us for making such payment.

4. We, the _____ Bank further agree that the guarantee herein contained will remain in full force and effect during the aforesaid period of _____ days and it will continue to be so enforceable till all the dues of SLDC, OPTCL under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till SLDC, OPTCL certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said supplier and accordingly discharges this guarantee.

   Unless a demand or claim under this guarantee is made on us or our Branch Office at Bhubaneswar <Mention Name, Address & Code of the Branch Office at Bhubaneswar of issuing Bank> in writing on or before …… (Date), we will be discharged from all liability under this guarantee thereafter.

5. We, the _____ Bank [indicate the name of the Bank, Address & Code] further agree with the Board that SLDC, OPTCL will have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Bid or to extend time or performance by the said supplier(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by SLDC, OPTCL against the said supplier(s) and to forbear or enforce any of the terms and conditions relating to the said Bid and we will not be relieved from our liability by reason of any such variation postponement or extension being granted to the said supplier(s) or for any forbearance, act or omission on the part of SLDC, OPTCL or any indulgence by SLDC, OPTCL to the said supplier(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have the effect of so relieving us.

6. This guarantee will not be discharged due to the change in the name, style or constitution of the Bank and/or of the supplier(s).

7. We, the _____ Bank [indicate the name of the bank, Address & Code] lastly undertake not to revoke this guarantee during its currency except with the previous consent of SLDC, OPTCL in writing.

8. We, the _____Bank (Name, Address & Code) further agree that this guarantee will also be invokable at our place of business at **Bhubaneswar** (indicate Name, Address & Code of the Branch at Bhubaneswar) in the State of Odisha.

"Not withstanding anything contained herein"

a) Our liability under the bank guarantee will not exceed Rs.----------(Rupees in words----------) only.

b) This Bank guarantee will be valid up to ----------.

c) We or our Branch at **Bhubaneswar** <Mention Name, Address & Code…….> will be liable to pay

guaranteed amount or any part thereof under this guarantee only if you serve upon us at--------- Branch of Bhubaneswar a written claim or demand on or before ……..,

The Bank Guarantee is issued in paper form and Advice transmit Bed through SFMS with required details to the beneficiary's advising bank (**ICICI Bank Bhubaneswar**, IFSC Code ICIC0000061).

Dated, the _____Day of _____
For _____ [Indicate name of Bank]

Signature……..

Full Name…….

Designation……..

Power Of Attorney……..

Dated……

Seal of the Bank……..

WITNESS: (SIGNATURE WITH NAME AND ADDRESS)

1.Signature…….

Full Name…….

2. Signature…….

Full Name…….

N.B.:

1. Name of the Supplier.: ……
2. BG No & Date :……
3. Amount (In Rs.):……
4. Validity up to :……
5. LOA No……..
6. Package No……..
7. Name, Address & Code of Issuing Bank:……
8. Name, Address & Code of Bhubaneswar Branch of the Issuing Bank:……
10. The Bank Guarantee will be accepted after getting SFMS advice as per details below.

Format for SFMS details

(The Unique Identifier for field 7037 is "SLDC, OPTCL541405793")

Sl. No	PARTICULARS	TYPE	DETAILS
1	Type of Bank Guarantee	Mandatory	Contract Performance
2	Currency & Amount	Mandatory	
3	Validity Period(from—to --)	Mandatory	
4	Effective Date	Mandatory	
5	End date of lodgment of Claim	Mandatory	
6	Place of lodgment of claim	Mandatory	Bhubaneswar, Branch Name------ of Bhubaneswar Branch code------- of Bhubaneswar Branch Address ------ at Bhubaneswar
7	Issuing Branch IFSC Code	Mandatory	
8	Issuing Branch name & address	Mandatory	
9	Name of applicant and its details	Mandatory	
10	Name of Beneficiary and its details	Mandatory	
11	Beneficiary's Bank/Branch and IFSC Code	Mandatory	ICICI Bank Ltd IFSC Code-ICIC0000061
12	Beneficiary's Bank/Branch name and address	Mandatory	ICICI Bank Ltd Bhubaneswar Main Branch, Bhubaneswar
13	Sender to receiver information	Mandatory	
14	Purpose of Guarantee	Mandatory	Contract Performance
15	Reference/Description of the underlined tender/contract	Mandatory	LOA No----

ANNEXURE-VIII: EMD

CHART SHOWING PARTICULARS OF EARNEST MONEY DEPOSIT FURNISHABLE BY TENDERERS-

Table 11 Earnest Money Deposit

1.	Central and State Government Undertakings	Exempted
2.	All other inside & outside state units.	The amount of EMD as specified in the specification /Tender Notice in shape of bank guarantee /DD.

NB: - REFUND OF E.M.D.

[a] In case of unsuccessful tenderers, the EMD will be refunded immediately after the tender is decided. In case of successful tenderer, this will be refunded only after furnishing of Composite Bank Guarantee referred to in clause No.18 of Section-II of this specification.

Suits, if any, arising out of EMD will be filed in a court of law to which the jurisdiction of High Court of ODISHA extends.

[b] Earnest Money will be forfeited if the tenderer fails to accept the letter of intent/purchase order, issued in his favour or revises the bid price[s] within the validity period of Bid.

ANNEXURE-IX: EXPERIENCE

DATA ON EXPERIENCE

(a) Name of the Software Developer & Hardware Manufacturer.

(b) Standing of the firm as Software Developer/manufacturer of Hardware /equipment quoted.

(c) Description of software / equipment similar to that quoted [supplied and installed during the last five years with the name of the organizations to whom supply was made].

(d) Details as to where implemented / installed etc.

(e) Software Development and Testing facilities suppliers premises.

(f) A list of purchase orders, executed during last three years.

(g) A list of similar Software /Hardware/ equipment of specified Architecture/ Design, Developed /manufactured, tested and commissioned which are in successful operation for at least one year from the date of commissioning with legible user's certificate. User's full complete postal address/fax/phone must be indicated. (Refer clause No.7 of the Part-I, Section-II of the specification).

Place:

Date:

Signature of tenderer

Name, Designation, Seal

ANNEXURE-X: SPARE PARTS (Not applicable)

SCHEDULE OF SPARE PARTS FOR FIVE YEARS OF NORMAL OPERATION & MAINTENANCE DURING AMC

Table 12 Spare Parts

SL. No	Particulars	Quantity	Unit delivery rate	Total price

Place:

Date: Signature of Tenderer

Name, Designation, Seal

Note: Bidders to include the cost of all spare parts required during AMC in the AMC price schedule.

ANNEXURE-XI: SCHEDULE OF INSTALLATIONS

SCHEDULE OF INSTALLATIONS.

Table 13 Schedule Of Installations.

Software/Hardware	Projects/Scheme	Place of installation and complete postal address	Year of commissioning

Place: -

Date

Signature of Tenderer:

Name, Designation, Seal

ANNEXURE-XII: DEVIATION

DEVIATION SCHEDULE.

Tenderer will enter below particulars of his alternative proposal for deviation from the specification, if any.

TO ACCOMPANY PART-I

(To be filled up by the tenderer as indicated in the excel sheet**)**

A. Technical deviations TO ACCOMPANY PART-I

(To be filled up by the tenderer as indicated in the excel sheet**)**

B. Commercial deviations.TO ACCOMPANY PART-I

(To be filled up by the tenderer as indicated in the excel sheet**)**

ANNEXURE-XIII: LITIGATION

LITIGATION HISTORY

Table 14 Litigation History

Year.	Award for or against bidder	Name of client, cause of litigation and matter in dispute	Disputed amount (current value in Rs.)

Place: -

Date

Signature of Tenderer:
Name, Designation, Seal

ANNEXURE-XIV: DELIVERY SCHEDULE

Delivery Schedule

Table 15 Delivery Schedule

Activity	Start Date	End Date	Duration	Risks/ Dependancies

Place: -

Date

Signature of Tenderer:
Name, Designation, Seal

ANNEXURE-XV: CHANGE REQUEST FORMAT

Change Request Form Format

State Load Despatch Centre, OPTCL

1. **Project Name: Sub System Name: Module Name:**
2. **Request Number & Date of Request:**
3. **Requester:**

   Requester Email Id/ Contact Phone Number
   Requester Project Role: End User / Project Coordinator/Vendor PM etc.

   Name, Designation and Signature of the Requester:

   Clause number, para etc.>

4. **Subject/Reference:**

   <Deviation reference to the scope viz. Name of Requirements Document, clause number, para etc.>
5. **Description of Change:**

   Problem definition
6. **Proposed Changes:**

   High level explanation of solution

7. **Impact Analysis:**

   Resources, Schedules and modifications as a result of the Change – locations where software needs to be updated – changes in database to be taken care of - impact on on-going training and handholding etc.

8. **Effort Estimation:**

   Number of person-days
9. **Evaluation for Acceptance of Change Request:**

   Evaluation Comments
   Name, Designation and Signature of Evaluator
   Date of Evaluation
10. **Priority:** High / Medium / Low
11. **Approved:** Yes / No

    Name, Designation and Signature of Approver
    Date of Approval
    Expected Date of Start of Work
    Expected Date of Completion Work

PART-I

SECTION IV

SCOPE OF WORK FOR DESIGN, DEVELOPMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF SAMAST SOFTWARE SCHEME WITH DATA CENTRE & DISASTER RECOVERY CENTRE SET UP FOR STATE LOAD DESPATCH CENTER, OPTCL, ODISHA.

SECTION IV: SCOPE OF WORK

FOR DESIGN, DEVELOPMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF SAMAST SOFTWARE SCHEME WITH DATA CENTRE & DISASTER RECOVERY CENTRE SET UP FOR STATE LOAD DESPATCH CENTER, OPTCL, ODISHA..

Scope of Work:

The major scope of the project is listed below, which is not exhaustive and covers only the major requirement. Any changes that may require on account of changes in the rules and regulations and any item not listed specifically herein but required for fulfilling the objectives will be deemed to be included in the scope.

1. Implementation of a robust, scalable, and transparent IT/ Software and Hardware framework for Web based Scheduling, Accounting, Metering and Settlement of Energy Transactions (SMAST) scheme along with automated software modules for other business processes like Meter/Master Data Management, Open Access / Collective Transaction Processing, Outage Management, Web Site for SLDC, OPTCL, Mobile Application including, establishment of Data Centre and Disaster Recovery Centre.
2. Completion of installation, commissioning, and configuration of all the software at primary Data Centre and DR and all required integration of Hardware and Software, with requisite Factory Acceptance Test (FAT)/User Acceptance Test (UAT), Site Acceptance test (SAT), Vulnerability Assessment test and rectification of any issues.
3. Automation of Intrastate Scheduling related workflows in SLDC with self-service web portal access for all beneficiaries such as Generators, DISCOMs and open access consumers etc. to make their injection/ drawal requests and declare generation capacities. This will include:

   (i) Obtaining the availability of intrastate generators through secured web interface and correlation with hydro availability as decided from time to time from the inputs from storage management module etc.

   (ii) Calculation of Merit Order for Dispatch on daily basis based on price of power available from different sources. Provision to assign price for hydro stations based on logic considering factors spill threat and other requirements as decided by Govt of Odisha.

   (iii) Automated rule-based preparation of internal generation plan and optimum block wise LGB with market component considering the open access transactions already available, ATC etc.

   (iv) Interfacing with appropriate external servers of OPTCL, RLDC, NOAR, NLDC, Energy Exchange etc. for automation of scheduling after approval on day ahead basis and real time basis so as to reduce manual intervention and elimination of errors.

(v) Tools for managing ancillary service and MBED etc. as per upcoming regulations.

(vi) Verification of entitlement based on the DC of the ISGS in the dashboard of SLDC control room operators

(vii) The user interface provided for LD Operators will be user friendly for making appropriate modifications in the schedules before uploading. Tools for facilitating verification and modification will be provided in the dashboard of SLDC Operator.

(viii) Provision for stakeholders to view their schedules online and make revisions on real time which will result in a transparent scheduling and revision process.

(ix) Provision for sending customized notification via SMS, email and web page pop up corresponding to the changes/ revisions in schedules/ availability from any source etc. without limitation on the number of messages and users.

4. Automation of Interstate Scheduling related workflows in SLDC including computation of availability of generators, auxiliary consumption etc.
5. Managing intrastate LTOA/MTOA/STOA/ and processing application for interstate OA/collective transactions
   (i) Development of an OA portal along with Payment Gateway to be linked with NOAR will be provided.
   (ii) Automation of registration and issuing NOC for Open access consumers through self-service web portal in coordination with NOAR portal, RLDC portal etc. Provision for issuing consents by DISCOM/STU, making payments of applicable charges, data validation etc. for paperless issue of consent from SLDC through the web portal.
6. Comprehensive solution for demand forecast, for operation planning and scheduling as detailed in this document
7. Automated Energy Accounting for the state including Generators, DISCOMs and other state embedded beneficiaries.
   (i) Integration with SLDC, OPTCL Web application servers such as ERP, etc.
   (ii) Preparation of the daily reports, monthly consolidation, certification etc. in different formats as detailed in this document. Categorization of different sources such as thermal, hydro, renewables, solar, wind, SHEPs, etc. are to be provided.
   (i) Automation of the verification process for certification of REC
   (ii) ATC computation of intra state transmission system
8. Revamping of SLDC web site and automated data updating in the SLDC website including historical data and current data streaming

9. Cyber security compliance for the entire system during the contract period. The application must conform to the Confidentiality-Integrity-Availability (CIA) triad norms.
10. Supplier will provide comprehensive support to SLDC to meet up with service levels for the solution to be measured on monthly basis, in accordance with the Service Level Agreement (SLA).
11. Complete Implementation means centralized Data Center Disaster, Recovery Centre and the complete package of SAMAST software stack as detailed in Section V. Further, comprehensive AMC means full responsibility to undertake effective & efficient maintenance activities as specified. This includes all incidentals/ services/ materials/ manpower/ permissions/ liaison/ licenses/ spares/ consumables etc., whether explicitly listed or implicitly required for the satisfactory completion and performance of the System as per thespecifications, meeting international codes and standards.
12. It is proposed to implement a system capable of downloading remote Meter stored data to carry out Energy Auditing/ Accounting/ Billing/ Deviation charge (UI) , Grid Loss calculations, Load Forecasting etc. using energy inter-exchanges data from IEMs between various entities connected/ served by SLDC,OPTCL (i.e. between intrastate distribution companies/Utilities/licensees/Deemed Licensees, State's Thermal Power Plants, State's HydroPower Plants, Transmission System, etc.), with Open Access Customers, CPPs, IPPs etc.
13. The project envisages to have a comprehensive Reporting System suitable for Interface EnergyMeters (IEMs) data and to generate required MIS reports at centralized Data Centre (DC) and to further disseminate the online data & offline/ stored data at DC, processed, correctedor otherwise, as may be required by concerned local / remote users (DISCOMs, GENCOMs etc.).
14. At present there are about 2600 Energy Meters (IEMs) including existing and replacement for billing and audit purposes, installed at about 286 locations within the State. At present, there are 50 Nos of interface points with inter-state transmission system. Some additional locations/ interface points may also come up during commissioning of the project or after commissioning of the project. The software module must be scalable to accommodate at least 5000 meters in future. IEMs have been installed by PGCIL at these interface points with inter-state transmission system. The slot wisedata of these IEMs is hosted by ERLDC on its website and the said data is required to be captured by the proposed software module to compile drawal of the state from the Eastern Grid to facilitate SLDC, OPTCL to validate/ cross check the drawl of the state computed by ERPC on daily/ slot wise basis. Energy Accounts issued by ERPC are to be used to compute intra-state transmission losses on slot wise/ daily/ weekly/ monthly basis.

The software should have the provision to capture the collected data of IEMs installed through HES/AMR (falling in the jurisdiction of SLDC, SLDC). Necessarylink/ support to collect the

data of these IEMs would be provided by SLDC, OPTCL.

15. Thorough knowledge of Availability Based Tariff scheme/ Deviation Settlement Mechanism,associated details of regulatory regime etc. as well as capacity, capability & honest willingness to understand & implement the user requirements relating to Scheduling, Unscheduled Interchange (UI)/Deviation, Open access, transaction settlement, Grid Loss Calculations, Transmission level energy audit etc. and additional day to day requirements of SLDC/RLDC.

16. The successful bidder will prepare detailed Project implementation schedule (Pert/Gantt chart) and submit to SLDC, OPTCL for approval before execution of work.

17. The successful bidder would have to ensure the integration of existing communicable IEMs with the envisaged DC system to the extent possible which would be required till the time these existing IEMs are progressively replaced with the new ones under the Project. During implementation/transition phase, the successful bidder would have to also ensure that the newones IEMs data is available in readable format from HES/AMR (under separate project) for integration withexisting software.

18. Details of Comprehensive AMC & Service Level Agreement are as Scope of Warranty & AMC Section VI of Part 1 of this document.

19. The bidder has to ensure that the system proposed will be conforming to the requirements ofcyber security, reliability, Data integrity and consistency and all modern techniques used in any modern IT system.

20. Training Requirements of the Owner's (SLDC, OPTCL) personnel will be as per the Training sectionof this document.

21. The scope includes recurring, non-recurring, license, permissions, liaison etc along with the fees, charges, etc. if any for all hardware, software, installation, etc. for commissioning, warranty period and for the AMC period.

22. The bidder will also be responsible for incidentals related/ unrelated which maycrop up to complete the project within the agreed timelines. Any permission, license/ tripartite agreement with the communication service provider to be executed, etc. if required to be obtained for the Project from any competent authorities, as may be prescribed/ required for itsuse/ for performance enhancement/ achieving Service Levels, should be in the name of SLDC, OPTCL.

23. However, any reasonable assistance required by bidder from the Purchaser so that any licenses/ permissions, etc. as may be required, will be provided, but any expenditure on this account will have to be borne by the bidder. All such support required from SLDC, OPTCL mustbe brought out clearly in the proposed solution. However, such activity should be undertaken in time bound manner so as not to delay the Project commissioning from the proposed schedule.

24. The Maintenance of the system supplied & installed by the bidder will be comprehensive and all the spares required during maintenance period will be provided by the Supplier at no additionalcost to the Purchaser. At the end of the Comprehensive AMC, all the faulty equipment will begot rectified by the bidder before handing over the same to Purchaser. Further, the hardware/software support for entire warranty and AMC period must be provided by the bidder and its corresponding back-end arrangements with OEM must be declared in the contract. AMC period may also be extended on mutually agreed terms if required at later stage.
25. The proposed solution must ensure adequate data security (starting from meters to DC), datastorage and system redundancy as per relevant standards.
26. Demonstration/ Presentation: Before opening of Price Bids, all the participating bidders will be called upon to give demonstration along with presentation on their proposed solution/ system in SLDC, OPTCL, for accessing software capability and parameters available from the multiple meters simultaneously and the result of the demonstration/ testing will be part of technical qualification criteria.

27. In short, the bidder will have absolute responsibility for the Project from Start to Finish, for End to End complete Solution for Implementation and during warranty and AMC period, which would be further extendable as mutually agreedterms if required at later stage. This includes but not limited to sites surveys, planning, design, detailed engineering, procurement, manufacture, assembly, factory testing, packing, supply & delivery at site, handling, insurance of all types/ events/ purposes & storageat sites along with all the accessories, interfacing requirements i.e. wires/ cables/ connectors/ Terminal blocks/ enclosures/ cabinets, lock & key arrangement, site preparations, earthing, erection, installation, integration, networking, testing at site, end to end testing, guaranteed availability tests, performance testing, commissioning, training, purchaser's capacity building to independently handle, maintain & further develop the system,finally handing over (however custody of the implemented equipment/ sub-systems/ system will be of Purchaser from the day it is paid for/ declared commissioned)
28. Project after the expire of AMC period, the bidder should have the willingness to extend the

AMC contract for further period as per mutual agreement, supporting & providing the necessary information to the Purchaser / third party incase AMC agreement is not extended by any party due to any reason. Implementation and AMC also includes further development of the system, the need for which may evolve duringworking with the system, due to new requirements or due to change in policies.

29. The supplier will ensure that the supplied equipment have been got tested as per relevant contemporary Indian or International Security Standards e.g. IT and IT related elements againstISO/IEC 15408 standards, for Information Security Management System against ISO 27000 series Standards,

30. The supplier will allow the Purchaser and/or its designated agencies to inspect the hardware, software, design, development, manufacturing, facility and supply chain and subjectall software to a security /threat check any time during the supplies of equipment. A record ofall supply chains of the products (hardware/software) will be given to the Purchaser. In case of any deliberate attempt for a security breach at the time of procurement or at a later stage after deployment/installation of the equipment or during maintenance, liability and criminal proceedings can be initiated against the Supplier as per guidelines of DoT and any other Government department.

31. The bidder will ensure to carry out Cyber Security Audit twice in a Financial Year during theentire currency of project work including warrantee & AMC period, from a third party CERT-In empaneled suppliers and cyber auditor must be changed from time to time. The security related requirements of the equipment will be as per DoT (Department of Telecommunication)guidelines and all similar security requirements as amended by DoT and CEA/CERC /NCIIPC on time-to-time basis will be followed/complied by the supplier at no additional cost to Purchaser till the implementation of the project. Network forensics, Network hardening, Network penetration test, Risk assessment, Actions to fix problems and to prevent such problems from reoccurring etc. will be covered under cyber audit. Further, implementation ofthe suggested measures will be addressed within stipulated time period, with no cost implication to Purchaser.

32. The Supplier will ensure that all the documents, including software details are supplied to the Purchaser in English language. A record of all the software updation and changes will begiven to the Purchaser and any major updation and changes will be done with the prior approval of the Purchaser. During maintenance period the Supplier will keep a record of alloperation and maintenance procedure in the form of manual and will also maintain a record of all command logs (actual command given, who gave the command, time & date and from where) for a period of 12 months. The same information will be stored/retained

in a non- online mode. A list of all User ID linked with name and other details of the user duly certifiedby the Purchaser will also be maintained.

33. The involvement of the bidder will not cease with the commissioning of the system or will not be limited to Comprehensive AMC of the commissioned system only, but bidder will haveto remain committed and evolve the functions/ functionalities of the system during pre or postcommissioning in partnership with SLDC, OPTCL.

PART-I

SECTION – V

TECHNICAL SPECIFICATIONS

SCHEDULE OF TECHNICAL REQUIREMENTS AND DETAILED TECHNICAL SPECIFICATIONS FOR DESIGN, DEVELOPMENT, SUPPLY, INSTALLATION, TESTING & COMMISSIONING OF SAMAST SOFTWARE SCHEME WITH DATA CENTRE & DISASTER RECOVERY CENTRE SET UP FOR STATE LOAD DESPATCH CENTER, OPTCL, ODISHA.

ABBRIVATION

Acronyms	Definitions
ABT	Availability Based Tariff
ALDC	Area Load Dispatch Centre
AMC	Annual Maintenance Contract
AMI	Advanced Metering Infrastructure
AMR	Automated Meter Reading
API	Application Program Interface
ARR	Annual Revenue Requirement
ATC	Available Transfer Capability
BIOS	Basic Input / Output System
CDCS	Central Data Collection System
CEA	Central Electricity Authority
CEO	Chief Executive Officer
CERC	Central Electricity Regulatory Commission
CIM	Common Information Model
CMRI	Common Meter Reading Instruments
COD	Commercial Operation Date
CPP	Captive Power Plant
CPU	Central Processing Unit
CT	Current Transformer
CVT	Capacitor Voltage Transformer
DBMS	Database Management System
DC	Declared Capacity
DCU	Data Concentrator Unit
DISCOM	Distribution Company
DLMS	Device Language Message Specification
DPR	Detailed Project Report
DSM	Deviation Settlement Mechanism

Acronyms	Definitions
DVD-ROM	Digital Versatile Disc Read-only memory
DVD-RW	Digital Versatile Disc Re-Writable
EA	Electricity Authority
EHT	Extra High Tension
EMASS	Energy Metering Accounting and Settlement System
EMS	Energy Management System
ERLDC	Eastern Region Load Dispatch Centre
ERP	Enterprise Resource Planning
ERPC	Eastern Regional Power Committee
FC-AL	Fiber Channel Arbitrated Loop
FOR	Forum of Regulators
Gbps	Gigabytes per second
G-DAM	Green Day-ahead market
G-TAM	Green Term-ahead market
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Global System for Mobile
HES	Head End Server
HT	High Tension
HTTP	Hypertext Transfer Protocol
HV	High Voltage
HVDC	High Voltage Direct Current
I/O	Input-Output
ICCP	Inter Control Centre Protocol
ICU	Interface Converter Unit
IDS	Intrusion Detection System
IEM	Interface Energy Meter

Acronyms	Definitions
IMS	Information Management System
ISTS	Intra-state Transmission System
IPP	Independent Power Producer
IPS	Intrusion Prevention System
ISMS	Information Security Management System
ISP	Internet Service Provider
IT	Information Technology
JITPL	Jindal India Thermal Power Ltd.
Kv	Kilovolt
KVM	keyboard, video, and mouse
KYC	Know Your Consumer
LDC	Load Dispatch Centre
LT	Low Tension
LTOA	Long Term Open Access
LUN	Logical Unit Number
MIS	Management information system
Mgmt.	Management
MPLS	Multiprotocol Label Switching
MTOA	Medium Term Open Access
MTPS	Mejia Thermal Power Station
MU	Million Unit
NEFT	National Electronic Funds Transfer
NLDC	National Load Dispatch Centre
NL-SATA	Near Line Serial AT Attachment
NPC	National Power Committee
OA	Open Access
OEM	Original Equipment Manufacturer
OHPC	Odisha Hydro Power Corporation Ltd

Acronyms	Definitions
OPGC	Odisha Power Generation Corporation
OPGW	Optical Ground Wire
OS	Operating System
PCI	Peripheral Component Interconnect
PDU	Protocol Data Unit
POSOCO	Power System Operation Corporation
PPA	Power Purchase Agreement
PSDF	Power System Development Fund
PT	Potential Transformer
QCA	Quality Control and Assurance
QCA	Qualified coordinating agency
RAID	Redundant Array of Independent Disks
RE	Renewable Energy
REC	Renewable Energy Certificate
REMC	Renewable Energy Management centre
RES	Renewable Energy Sources
REST	Representational State Transfer
RLDC	Regional Load Dispatch Centre
RPC	Regional Power Committee
RPM	Revolutions per minute
RRF	Renewable Regulatory Fund
RTGS	Real Time Gross Settlement
S/S	Substation
SAMAST	Scheduling, Accounting, Metering and Settlement of Transactions in Electricity
SAN	Storage Area Network
SAS	Statistical Analysis System
SCADA	Supervisory Control and Data Acquisition

Acronyms	Definitions
SGS	State Generating stations
SHP	Small Hydro Project
SLDC	State Load Dispatch Centre
SRS	Software Requirements Specification
SSD	Solid State Drive
SSGS	State Sector Generating Stations
STOA	Short Term Open Access
STPS	Super Thermal Power Station
STU	State Transmission Utility
TDS	Tax Deducted at Source
TFT	Thin-film Transistor
TOD	Time of Day
TOU	Time of Use
TRAS	Tertiary Reserve Ancillary service
TSTPP	Talcher Super Thermal Power Plant
UI	Unscheduled Interchange
UPS	Uninterrupted Power Supply
URS	User Requirement Specifications
UTM	Unified Threat Management
VAP	Vulnerability Assessment and Penetration Testing
WBES	Web based Energy Scheduling
WEG	Wind Energy Generator

SECTION – V: TECHNICAL SPECIFICATIONS

The technical specifications are broadly elaborated in following chapters

Sl. No	Chapter
1	Software and Hardware Standards & Requirements
2	Hardware at Data Centre & DR
3	SAMAST Software Stack
4	API integration of third-party application /Data Integration
5	Detail architecture of development, testing & production phase of software modules:
6	Documentation Management
7	Test plan and procedure FAT & SAT/UAT
8	Training and Capacity Building Requirement
9	Backup and Restoration

1.0 CHAPTER 1: Software and Hardware Standards & Requirements

The software supplied should support redundant servers for database, applications, web servers for online users. Storage device to store data for minimum 7 years shall be in the form of SAN. The bidder has to ensure that the system proposed will be conforming to the requirements of cyber security, reliability, Data integrity and consistency and all modern techniques used in any modern IT system. The system should be user friendly graphical user interface. There would be frequent requirements to modify the calculation, logic as per changes in various regulations / SLDC requirements, hence the system proposed should have configurable workflow and rules engine to make it flexible enough to enable users in SLDC to modify the work flow and rules using graphical user interface without the need to have knowledge of programming languages.

1.1 Software Details

The Supplier will adopt the following preferred software platform / environment for developing the solution:

Bidder to establish different environment setup for development, production, testing and Training as per the direction of Engineering in charge of SLDC for SAMAST project.

Table 16 Platform/ Environment for Development of Solution.

Development Platform	Angular, React, Dot.net, MVC , PHP, Java, Node.JS, Python
Architectural Approach	N Tier
Web Server	IIS, Apache, Apache Tomcat, JBoss, Node
Application Server Operating System	Linux
Web Server Operating System	Linux
Database Server Operating System	Linux
Standard Database	Oracle/MS Server
Security Technologies	SSL, Data Encryption
Application Communication technologies	http, https, xml, SOAP, WSDL, UDDI

Reputed RDMS software database viz. Oracle, MS Server database being utilized in RLDC/SLDC/NLDC.

1.2 Software Requirement Specification

Software's will be Web based application. All the additional plugin / server software licensing cost will be included in scope and taken care by the bidder. Supplier will develop the following Software modules and their Software Requirement Specifications are specified below:

1.2.1 Meter (Master) Data Management

1.2.2 Scheduling and Generation dispatch

1.2.3 Energy Accounting & Settlement

1.2.4 Deviation Settlement Mechanism

1.2.5 Open Access transaction management system

1.2.6 Outage planning management

1.2.7 Integrated MIS, Dashboard, Reporting and Data Integration.

1.2.8 Dynamic and interactive Website for SLDC

1.2.9 Mobile Application

1.3 General Features of Software: -

a. The software will have role base access.

b. The software will have authentication and authorization with single sign–on.

c. The integrated operation software will be user friendly, scalable etc. Some of the features of the application are as:

i. All logs should be highlighted with a notification.

ii. Uniformity/Standard should be maintained for all data base.

iii. Nomenclature/ Aliases should be decided by the supplier and SLDC

iv. Common front end for all the modules

v. Integration of all the modules with each other

vi. Integration of any other related third-party application in the common front end.

vii. Upgrading the modules as per extant and amended regulations of CERC/OERC.

viii. Output of all these modules should be configured with the other modules of SAMAST.

ix. The software shall be designed in extensible manner so that it can accommodate future changes and could be easily maintained.

x. The software will have facility to add/block/edit users having different levels of rights and authorizations.

xi. The software design shall take care of system performance tuning & other configuration details as may be required.

xii. The software shall prompt alerts and /or confirmation before any major changes like marking for deletion, updating etc.

xiii. Software shall have usual GUI and operating aids like Tool Tips, Menu that are not conflicting with the end user browser settings.

xiv. The software shall have compatibility with PC and Mobile based internet browsers such

as Microsoft Internet Explorer, Mozilla Firefox, Google Chrome and Safari etc.

xv. There shall be facility for import / export of data through Excel sheet / Open office spread sheet/csv files.

xvi. Option for exporting reports to PDF and excel / csv formats.

xvii. Suitable scheduling of back-up (application and database) through the application/ automatically as per the requirement of data security.

xviii. The developed software shall have the facility to register requirement/ modification and bugs reported by various users during operation.

xix. The system developed shall have facility of help by way of FAQs and User Documentation to the users of the system.

xx. The software shall have provision for sending auto-generated e-mails/SMS, as identified by the system administrator.

xxi. The software shall maintain the version details and changes carried out in respective version. These details shall be available to all users.

xxii. Audit: The system shall provide defined audit trail of various activities performed by the users as required.

xxiii. The solution must have option of working on multiple windows simultaneously.

xxiv. System must have proven capacity for simultaneous use of users trouble free and in real time.

2.0 Chapter 2: Hardware Architecture for Data Centre and DR

i. Typical hardware requirements for a centralized data center (DC) are as under:

a) This section describes the technical requirements of all the hardware & basic design philosophy of IT System envisaged in the BOQ for Data Center at DC for and DR establishment of IT infrastructure for SAMAST project at SLDC, OPTCL. The minimum technical specifications for hardware of all equipment are specified in following sections. sections and the bidder have to submit the details of the supplied hardware along with the bid as per GTP format attached in Annexure-III. The Bidder shall assess the adequacy of hardware specified in the BOQ & if any additional hardware or higher end hardware configurations are required to meet all the requirements of the technical specifications, the same shall be included in the offer. The Bidder's proposal shall include necessary calculations to clearly establish that the proposed hardware meets the functional and performance requirements of the technical specification.

b) The proposed system shall include redundant Application, Database, Web & Communication/API servers. They shall work on 100% load sharing basis. In case of failure of one server other should take over the load of it.

c) Hardware configuration shall involve redundant server configuration at DC in two tier structure/level, where Main & Redundant Servers and other critical hardware shall be kept in two different locations and shall be configured in HA mode (Active – Active mode). At Tier 3 level, Disaster Recovery System shall provide the complete backup of the Application SW & Database to provide critical system recovery protection. Keeping in view of ensuring adequate protection of the backup data of main IT System at DC, DR System shall be hosted at different premises other than the DC System location. SAMAST Data Center (Main IT System at DC) & DR System are proposed to be connected for data communication through Fiber Optic communication medium.

d) For storage of complete database of the system, SAN Storage system is to be provided (storage sizing to be done for availability of usable storage capacity for 7 years data storage). SAN shall connect with database servers over Fibre Channel using redundant SAN Switch. SAN Storage system shall store the complete database using RAID **configuration**. Database of the system on SAN shall contain all the data of ABT, Reports, Open Access, Automated Meter Reading and other software system in any one of the provided Standard RDBMS i.e Oracle, , MS-SQL Server, MySQL etc.

e) For backup of the database available at SAN Storage & image backup of the Servers, NAS has be provided.

f) All the Equipment at Data Center shall be connected through 1G redundant LAN. Switches & Routers are to be provided for establishment of Local area network & wide area network connectivity & to secure the system traffic based on the predetermined rules & efficient network data traffic movement.

g) Unified threat management (UTM) devices to provide all the network security functions (i.e., firewall, IDS/IPS, antivirus etc.) in one device. UTM are to be provided to monitor

& control the incoming & outgoing network traffic based on predetermined cyber security rules & requirements for the implemented IT infrastructure at DC.

h) Dual redundant GPS is to be provided for time synchronization of the complete system and to synchronize the DC's Server time, which will also time synchronize with hardware at Sub- Stations for ensuring end to end time synchronization from ABT meter up to SAMAST IT system at DC. The GPS system will be in redundant configuration. In case of failure of one system, the other one should take over the entire work automatically.

i) All the servers and networking equipment (Firewalls, LAN equipment etc.) shall be mounted in rack panel.

j) Disaster Recovery (DR) System is required to be installed at different location other than DC through suitable data communication connectivity probably through Fiber optic communication medium for efficient & reliable data transfer from SAMAST main IT Infra System to DR & vice-versa. DR System primarily comprises NAS Storage system (storage sizing to be done for availability of usable storage capacity for 7-year data storage) with Data Management Server & network equipment's to have connectivity with Main DC.

k) The bidders may optimize the requirement of hardware for servers for various applications, which can be combined with redundancy.

l) A general schematic of hardware layout and interface with software applications at DC and DR is presented in Figure below: -

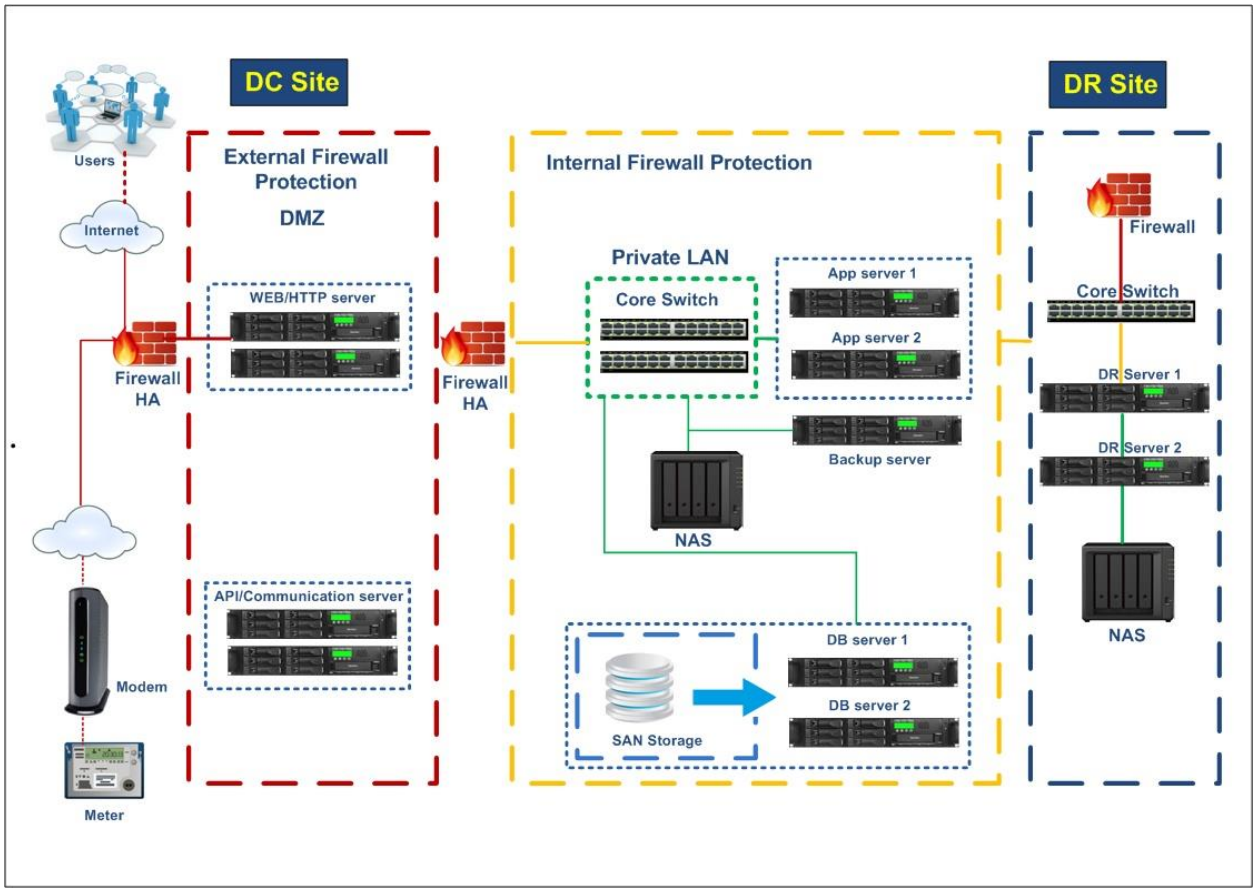


Figure 1 Typical schematic of hardware layout and interface

Table 17 Configuration of the required Servers

Sl. No.	Server	Type of configuration	Purpose
1	Application Servers	Redundant, High Availability	For Installation of all Applications of SAMAST IT Solutions
2	Database Servers	Redundant, High Availability	Management of complete database System
3	Web Servers	Redundant, High Availability (Active-Active)	For installing HTTP Server Software which acts as a web Server that is used for serving HTTP requests
4	Backup Management Servers	Non-Redundant	For Installation of Backup Software – For backup & restoration of the Database & images of Servers

2.1 Configuration of other Required Hardware for the Implementation of SAMAST

Table 18 Configuration of other Required Hardware

Sl. No.	Equipment	Type of Configuration	Purpose
1.	NMS /Server Management Console	Non-Redundant	Network Management System for Monitoring, Managing, Configuring etc of DC equipment as well as Field equipment viz DCUs, gateway switches IEMs etc (to be installed by SLDC,OPTCL). Patch Management Application, Centralized Console for Anti-Virus & other Security Software & Appliance configuration & management.
2.	SAN Storage	Non-Redundant. and Configured for 100 % availability	For Complete System Database Storage & Data base Management
3.	NAS Storage	Non-Redundant	Backup storage of Database from SAN & image backup of Servers. Backup Equipment at DC & DR Site
4.	Switch (L-3 Switch)	Redundant	Switch:- For establishment of LAN for network connectivity of IT Equipment of Data Center
5.	SAN Switch	Redundant	For providing HA connectivity between SAN Switch & Database Servers
6.	Firewall(UTM)	Redundant, High Availability (Active-Active)	To monitor & Control the incoming & outgoing network traffic based on predetermined cyber security rules & requirements

7.	GPS	Redundant	For Time Synchronization of the Servers at Centralized Data Centre
8.	Server Rack with Patch Panel	Non-Redundant	For installation of Servers, Network Equipment, KVM & GPS at Data Center
9.	KVM Switch with console	Non-Redundant	For Servers Operation Management
10.	Workstation	Non-Redundant	Clients at SLDC
11.	High Performance Laptop	Non-Redundant	For Field and DC
12.	Multifunction Printers	Non-Redundant	Various printing work at SLDC

2.2 The main objective of the proposed solution is to achieve the following but not limited to:

a. Achieving High Availability of the Applications and databases.
b. Achieving High Availability of Web Servers.
c. Software is to be tested on the supplied hardware for required functionality and performance.
d. Centralized backup and restoration along with data archival.
e. Network performance monitoring & server health monitoring for better visibility of the overall infrastructure.
f. Fulfilling DR (disaster recovery) objective.
g. Cyber security of System as per CERT-IN guidelines.

2.3 Design of the solution must satisfy the following but not limited to:

a. The solution aims to achieve the high availability and redundancy of servers deployed at DC.
b. Database Servers will connect to SAN storage through redundant SAN Switch over fiber channel to achieve high availability. There must be multiple path connectivity onto the storage to eliminate single point of failure from storage to hosts.
c. Considering the volume of data to be stored for running all the applications as well as estimated data sizing in 7 years down the line, storage conforming to the minimum specification as detailed in subsequent chapters with high-speed disk drives of minimum 10TB usable space in RAID configuration to be offered. This should be expandable up to 100% than the provided storage capacity in SAN Storage system without replacement of main equipment.
d. Secured access to application servers and database servers to prevent unauthorized or unwanted access and protecting data through automated backup technology to restore in minimum downtime in case of any disaster.
e. The Backup Server will execute the schedule backup of all the Servers and the databases from physical DB servers and will store in a separate NAS Volume. For this purpose, separate NAS conforming to the minimum specification as detailed in subsequent chapters to be provided. NAS as detailed herein to be provided will be acting as the central storage for all types of backups and archived data.
f. The backup application to be provided should be capable of providing automated, scheduled backup of the Servers data (file system) and bare metal backup of Servers, suitable for recovery of entire Servers to its last good state during any failure with minimum downtime.
g. The bidder will ensure that at the time of final approval of hardware configuration and

BOQ, all the hardware is as per the latest industry standard models and that

h. the equipment manufacturer has not established a date for termination of its production/service and consumables are available with more than one supplier locally. Any hardware changes, except version upgrade in same series, proposed after contract agreement shall be subject to the following: -

- Such changes/updates shall be proposed and approval shall be obtained from Purchaser along with the approval of Drawings/documents.
- The proposed equipment shall be equivalent or with better features than the equipment offered during bidding /included in the Contract.
- Changes/updates proposed will be at no additional cost to the employer.
- Complete justification along with a comparative statement showing the original and the proposed hardware features/parameters including brochures shall be submitted to the employer for review and approval.

Minimum Technical specification of various equipment are mentioned below

2.4 Servers

The Servers shall have provision for expansion of the Processor, auxiliary memory and Main memory (RAM) by 100% of the delivered capacity. This expandability shall be possible at site with addition of plug-in modules only. Servers shall be mounted in a rack (panel) and a single rack mountable LED monitor, keyboard and mouse using an KVM switch to access all servers & peripherals in the panel. However, the grouping of servers in a rack shall be such that the primary and backup servers for a system function are located in different racks. All servers shall have dual redundant power supplies, capable to operate on single power supply module. And there shall not be any interruptions in the operation of servers when there is a failover between the two AC Power Supply of the server.

2.4.1 COMMON SPECIFICATION FOR SERVERS:

Table 19 Common Specification for Servers:

S. No.	Item	Characteristic/Features
1	Servers	All Servers Make & Model should be of same OEM and of Same Type. All servers shall be of reputed make like HP, Dell, Fujitsu, Lenovo, IBM or equivalent.
2	Form Factor	Max. 2U rack mounted with sliding rails
3	Disks supported	12 x 3.5” OR 8 X 2.5” SAS, SATA, nearline SAS, SSD
4	RAID Controller	12Gbps PCIe 3.0, Min 2 GB cache support for RAID 0, 1, 5, 10, 50
5	DVD writer	Internal or external DVD RW
6	I/O slots	Min.2 Nos. PCIe 3.0 Slots, Max. supported up to 6 Nos. PCIe 3.0

7	Console I/O	Keyboard, Mouse, 2 USB, IP-KVM/Console compatible ports
8	Ethernet ports	Minimum 2 x 1G Base-T
9	10/ 25G support	Should optionally support 10/25Gbps Ethernet
10	FC ports	Should optionally support 16Gbps Fibre Channel
11	Power Supply	Redundant, Hot Swappable Power Supply, Input Power Supply – 230V AC
12	Power & temperature	Real-time power meter, graphing, thresholds, alerts & capping with historical power counters. Temperature monitoring & graphing
13	Management	OEM Specific Standard Management Software & Hardware support
14	Server security	-Protection from pre-OS boot firmware execution - Silicon-based Hardware Root of Trust - Cryptographically signed firmware updates - Secure default passwords - Persistent event logging including user activity - Secure alerting - Automatic BIOS recovery - Secure system erase of internal storage devices - UEFI Secure Boot
15	Connectors and Cables.	All necessary power cables and connectors of OEM make only are to be provided.
16	Display	Should be able to connect with the monitor provided
17	Implementation	All the Servers to be installed in a Single /Two Racks and should be controlled by one Keyboard, Mouse through the Console /KVM switch.
18	Warranty & Support	5years OEM warranty - 5-year parts, 5-year labor, 5-year onsite support

2.4.2 DATABASE SERVERS

Table 20 Database Servers

S. No.	Item	Characteristic/Features
1	Server Type	Rack Mount / Blade
A	Processor	64 Bit, Latest Generation, 1 x Intel Xeon, gold 5220 processor, 3 GHz or better, Min. 8 Cores
B	Number of Processor/Core	2* 8 Core/16T
2	CPU/Clock Speed	Minimum 3 GHz or above
3	RAM	Installed RAM: Min. 128 GB DDR4, 2666Mhz or better
4	Hard Disc	2x 1.8 TB SAS 10K,12GBPS, Hot pluggable. Support for RAID configurable 0, 1,5,6,10. At max 75% of bays will be populated with disk and At least 25% spare drive bays should be available
5	RAID Controller	12Gbps PCIe 3.0, Min 2 GB cache support for RAID 1, 5, 10, 50
6	Optical Drive	DVD R/W Drive
7	OS Compatibility	Windows Server Latest Edition/ Linux (RHEL) Enterprise Latest Edition with full Virtualization support
8	Supports SNMP v1/v2/v3	Yes
9	Supports both IPv4 and IPv6	Yes
10	Interfaces	
A	I/O Ports	Should Support 1xDB-9 Serial Port, Standard VGA Port
B	USB Ports	4 port (At least 2 USB 3.0 port)
C	Ethernet ports	4 x 1Gbps Ethernet Ports, Should Support 10 GBPS dual ethernet port
D	Expansion slots	2 x PCIe gen 3.0 slots
11	SAN Connectivity	Should provide 16GBps dual port Fiber Card
12	Power Supply	Redundant, Hot Swappable, 230V AC Input
13	Warranty and Support	5 years OEM warranty - 5-year parts, 5-year labor, 5-year onsite support.

2.4.3 APPLICATION SERVERS/ COMMUNICATION SERVER

Table 21 Application Servers/ Communication Server

S. No.	Item	Characteristic/Features
1	Server Type	Rack Mount / Blade
A	Processor	64 Bit, Latest Generation, 1 x Intel Xeon 3 GHz or better, Min. 8 Cores
B	Number of Processor/Core	2* 8 Core/16T
2	CPU/Clock Speed	Minimum 3 GHz or above
3	RAM	Installed RAM: Min. 128 GB DDR4, 2666Mhz or Better
4	Hard Disc	2 x1.2TB,10K,12GBPS, SAS Hot Pluggable/Swappable with RAID 1 Support for RAID configurable 0, 1,5,6,10. At max 75% of bays will be populated with disk and At least 25% spare drive bays should be available
5	Optical Drive	DVD R/W Drive
6	OS Compatibility	Windows Server Latest stable Edition/ Linux (RHEL) Enterprise Latest stable Edition.
7	Supports SNMP v1/v2/v3	Yes
8	Supports both IPv4 and IPv6	Yes
9	Interfaces	
A	I/O Ports	Should Support1xDB-9 Serial Port, Standard VGA Port
B	USB Ports	4 port (At least 2 USB 3.0 port)
C	Ethernet ports	4 x 1Gbps Ethernet Ports, Should Support 10 Gbps dual ethernet port
D	Expansion slots	2 x PCIe gen 3.0 slots
10	Power Supply	Redundant, Hot Swappable, 230V AC Input
11	Warranty and Support	5 years OEM warranty - 5-year parts, 5-year labor, 5-year onsite support.

2.4.4 WEB/ DR / BACKUP MANAGEMENT SERVER

Table 22 Web / DR / Backup Management Server

S. No.	Item	Characteristic/Features
1	Server Type	Rack Mount / Blade
A	Processor	64 Bit, Latest Generation, 1 x Intel Xeon 3 GHz or better, Min. 8 Cores
B	Number of Processor/Core	2* 8 Core/16T
2	CPU/Clock Speed	Minimum 3 GHz or above Internal interconnect: Up to 9.6 GT/s
3	RAM	Installed RAM for Web Server: Min.64 GB DDR4, 2666Mhz or better
		Installed RAM for Backup Server & DR Server : Min.32 GB DDR4, 2666Mhz or Better
	Hard Disc	For Web Server : 2 x 1.2TB, 10K, 12GBPS, SAS Hot Pluggable/Swappable with RAID 1 For Backup Server & DR Server : 2 x 1.2TB, 10K, 12GBPS, SAS Hot Pluggable Support for RAID configurable 0, 1,5,6,10. At max 75% of bays will be populated with disk and At least 25% spare drive bays should be available
5	Optical Drive	DVD R/W Drive
6	OS Compatibility	Windows Server Latest Edition/ Linux (RHEL) Enterprise Latest Edition with full Virtualization support
7	Supports SNMP v1/v2/v3	Yes
8	Supports both IPv4 and IPv6	Yes
9	Interfaces	
A	I/O Ports	Should Support 1xDB-9 Serial Port, Standard VGA Port
B	USB Ports	4 port (At least 2 USB 3.0 port)
C	Ethernet ports	4 x 1Gbps Ethernet Ports, Should Support 10 Gbps dual ethernet port

D	Expansion slots	2 x PCIe gen 3.0 slots
10	Power Supply	Redundant, Hot Swappable, 230V AC Input
11	Warranty and Support	5years OEM warranty - 5-year parts, 5-year labor, 5-year onsite support.

The above-mentioned server specification is minimum requirement, if the vender ABT application requires higher configuration then vender has to quote for the same. After supply of material during commissioning or during observation period if any server hardware/software up gradation required then it will be in vender's scope.

2.5 NAS (Network Area Storage)

A NAS (Network Area Storage) based storage will be provided for minimum 7 Years Data storage & will be sized adequately for storage capacity. NAS is being used for keeping data backup i.e. file level backup, application backup and database backup. NAS capability shall be scalable up to 100% of the delivered NAS. The NAS should have replication feature for replication of data to disaster recovery site. NAS shall be of reputed make like HP, Dell, Fujitsu, IBM or equivalent.

The followings are various backup requirements for NAS box:

- Various Applications and Databases hosted in the servers.
- Development/testing databases.
- Image Backup of the Servers
- Any others backup required for the Systems.

Table 23 NAS (Network Area Storage)

S. No.	Item	Characteristic/ Features
1	OS Support	Support for multiple operating systems connecting to it, including of Windows, UNIX, Linux, etc. with virtualization
2.a	Processor	Minimum 1 x Intel Xeon-Bronze 3104 or better
2.b	Processor Sockets HDD Bays	Minimum 14 X 3.5" drive bays
2.c	CPU/Clock Speed	1.7 GHz or better
3	RAM	Installed RAM: 32 GB

4.a	Hard Disk	Minimum 10 TB usable capacity in RAID with Hot pluggable disks
4.b	Drive types and capacities	Support for NL-SAS and SATA; NL-SAS 7.2K RPM – 1TB, 2TB, 4TB, 6TB, 8TB,12TB
5	RAID Controller	Internal RAID Controller with minimum 2GB Cache
6	Supports both IPv4 and IPv6	Yes
7	Supports SNMP v1/v2/v3	Yes
8	Network Interfaces	
A	Ethernet ports	Minimum 1 GBPS dual ethernet port
B	Network Interface	Minimum 2port x 1G Should support 2Port x 10G Ethernet Card
9	Power Supply	Redundant (1+1), Hot pluggable, 230V AC Input
10	Fans	Standard redundant cooling fans
11	Management	Management console to be provided by same OEM
12	Data Protection Features	Replication, Snapshots
13	Rack Support	Rack mountable with support for optional tool less maintenance, cable management arm
14	Slots	Min. 2 x PCIe 3.0 slots
15	Protocols Supported :	CIFS,NFS (v2, v3, v4.1), FTP, SMB (2.0, 2.1, 3.0, 3.02 and 3.1.1) iSCSI, HTTP/HTTPS, WebDAV
16	Form factor	Min. 2U Rack Mount System

17	Back Up and recovery Software/Agent	• Licensed Back Up agent/software for setting up backup and recovery solution shall be provided as per follows: • The back software must support application backup for, Oracle MySQL, MS SQL, PostgreSQL etc. • The software/agent should support full, incremental, differential backup. • The software should support reduction of data volume by deduplication/ compression. • The software must integrate with all kind of hypervisor to backup different platforms like VMware, Hyper V, RHEV etc. • The software should have the capacity to restore any backup and run any server from the backup.
		• License for 6 TB front end active capacity or for the full volume shall be provided • Backup & Replication Software OEM should be on Leader Quadrant in Gartner for at least last 5 years
18	Warranty and Support	5 years standard OEM warranty

2.6 SAN (Storage Area Network)

A SAN (Storage Area Network) based storage shall be provided for minimum 7 Years Data storage & shall be sized adequately for storage capacity. SAN storage capability shall be scalable up to 100% of the delivered SAN. The SAN should have replication feature for replication of data to disaster recovery site. This shall be of reputed make like HP, Dell, Fujitsu, IBM or equivalent.

The following are various storage requirements for SAN box:

i. Various Applications and Databases hosted in the servers
ii. Development/testing databases
iii. Any others backup required for the Systems.

Minimum requirement of SAN configuration is mentioned below:

Table 24 SAN (Storage Area Network)

Sl. No.	Item	Characteristic/Features
1	Feature	Dual controller with dual 230 V AC Input Power Supply. The storage should support connectivity with current latest version of windows/Linux/VmWare etc.
2	Storage Capacity	Minimum 15 TB usable capacity in RAID with Hot pluggable redundant SAS 10 K RPM disks, Solid State Array
3	Spare HDD	1 Disk should be configured for hot spare
4	Expandability	50% spare slots required
5	RAID	Capable for RAID 0,1,5,6,10 configuration
6	SAN Type and Interface ports	Fiber channel - Minimum 4 x 16 Gbps Fiber channel Ports per controller should be available for connecting with Data base (host) servers.
7	Snapshot feature	Snapshot feature enabled with required licenses for whole capacity
8	Replication	Optional Storage to Storage Replication feature
9	Thin provisioning	Thin provisioning capacity enabled with required license for whole capacity
10	Hard Drives	10K or more rpm based on Solution, hot swappable
11	Back Up Agent	Should be compatible with supplied backup agent/software for image/incremental back up.
12	Management	The storage will support CLI, Web and rest API based management
13	Preferred Manufacturer	Leader’s quadrant of Latest Gartner’s Magic quadrant Report
14	Number of Controllers	2 Minimum
15	Controller Cache	Min 8GB per controller

16	Availability	There must not be any single point of failure in entire storage solution. Storage solution must have minimum dual active controllers
17	Warranty and Support	5 years standard OEM warranty

2.7 SAN Switches

Table 25 SAN Switches

Sr. No.	SAN Switches Specifications
Architecture/Scalability/Performance/Management/Availability:	
1	Minimum Dual SAN switches will be configured where each SAN switch will be configured with minimum of 12 Ports.
2	Required scalability will not be achieved by either by cascading the number of switches or shall be offered within the common chassis only
3	Should deliver 32 Gbit/Sec Non-blocking architecture with 1:1 performance for up to 24 ports in a energy-efficient fashion
4	Should protect existing device investments with auto-sensing 8, 16, and 32 Gbit/sec capabilities.
5	The switch shall support different port types such as F_Port, E_Port, M_Port, D_Port.
6	The switch should be rack mountable
7	Offered SAN Switch shall support less than 900 nanosecond for port to port latency with no contention.
8	The switch shall provide Aggregate bandwidth of 768 Gbit/sec end to end.
9	Switch shall have support for web based management and should also support CLI.
10	The switch should have USB port for firmware download, support save, and configuration upload/download.
11	Offered SAN switches shall be highly efficient in power consumption.
12	Switch shall support POST and online/offline diagnostics, including RAS trace logging, environmental monitoring, non-disruptive daemon restart, FCping and Pathinfo (FC traceroute), port mirroring (SPAN port).
Intelligent Networking:	
13	Offered SAN switch shall support services such as Quality of Service (QoS) to help optimize application performance in consolidated, virtual environments. It should be possible to define high, medium and low priority QOS zones to expedite high-priority traffic
14	The switch shall be able to support ISL trunk up to 256 Gbit/sec between a pair of switches for optimal bandwidth utilization and load balancing.
15	SAN switch shall support to restrict data flow from less critical hosts at preset bandwidths.
16	It should be possible to isolate the high bandwidth data flows traffic to specific ISLs by using simple zoning
17	The Switch should be configured with the Zoning and will support ISL Trucking features when cascading more than 2 numbers of SAN switches into a single fabric.

18	Offered SAN switches shall support to measure the top bandwidth-consuming traffic in real time for a specific port or a fabric which should detail the physical or virtual device.

2.8 L-3 Switch & Router

The System shall have dual LAN architecture. All LANs shall be configured as redundant. All equipment will have dual LAN connectivity. For Network connectivity of the Data Center IT infrastructure, 1G Network Switches shall be provided. Routers shall be provided for connectivity with Existing SCADA/EMS System at SLDC, For connectivity with AMR/Metering System, Disaster Recovery System and any other external system with which Data exchange/communication is envisaged in the project. These shall be of reputed make like CISCO, Dell, Hewlett Packard or equivalent.

SWITCH (Layer -3 managed Switch)

Table 26 Layer -3 managed Switch

S. No.	Item	Characteristic/ Features
1	Type	Rack Mount / Blade
2	Physical	Ports : At least 24 x 1G Base T ports. 4 x fixed SFP+ Ports
3	Stack	Stacking using dual 1GbE ports (copper or fiber)
4	Uplink	Should have provision for at least 2 SFP/SFP+ uplink
5	MAC address	Should support at least 15000 MAC addresses
6	Switching capacity	Should support at least 128 Gbps
7	Throughput	95 Mpps or better (64-byte packets)
8	Routing table	512 entries
9	Power Supply	Dual Hot swappable Redundant 230V AC Input Power Supply
10	Warranty	5 Year standard OEM warranty

Router :

Table 27 Router specifications

Sl. No.	Item	Characteristic/ Features
1	Feature	
A	High performance routing for data exchange with external world	Yes
B	Layer-2 Switching & Layer-3 routing and dynamic discovery of routing	Yes
C	Throughput	Minimum 2 Mbps or better
D	Features to support:	QoS, MPLS, Security, Broadband, Multiservice, Voice IP2IP Gateway
E	Routing Protocols:	IP, OSPF,IP Forwarding VLAN & MPLS, PPPetc..
F	Network protocols:	TCP/IP, IPv6 OSI, Telnet, UDP, DSCP
2	Inbuilt Security Features	
A	Data encryption supported	DES (56 Bites) 3des(168 Bites) and hashing algorithm like MD5 and SHA-1
B	Filtering of packets	Based on source addressed, destination address, protocol type, users, port No., URL
C	Filtering of protocols	FTP, SMTP, HTTP, SNMP, UDC, ICMP, RPC, DNS, DHCP, ARP etc.
D	VPN tunnels support	100 IPSec
3	Network management using SNMP Protocol	Yes, using SNMPv1, v2 & v3
4	Interface	
A	LAN Ports	1G , Minimum 2
B	WAN Ports	Minimum 2x 1G, Ethernet WAN Ports
5	Mounting	Rack Mounted
6	Power Supply	Redundant 230V AC Input
7	Warranty and Support	5 Year standard OEM warranty

2.9 FIREWALL (UTM)

The Firewall should have two separate hardware boxes to be configured in HA mode. Firewall should include Intrusion Detection and Prevention system to detect and prevent intrusion, worm, virus etc. Definition updates for virus, signatures, software patches etc. which should be done up to completion of Maintenance period. The firewall must separate Internet from DMZ. The application and data base server must be in DMZ. **However, any improvement of the network structure to accommodate cyber security recommendation can be suggested by the bidder**. The firewall settings and network set-up should be in line with CERT-In guidelines. This will be of reputed make like CISCO, Sophos, Hewlett Packard or equivalent.

The following strategies will be followed for secure configuration of firewalls.

i. Clean-up rule.
ii. Place a 'Deny Any-Any' rule at the end of the rule base.
iii. Never create an 'Allow any-any' rule.
iv. Allow rules should be created only for required services. This will result in all traffic being disallowed, unless specifically allowed.
v. Lockdown/stealth rule.
vi. All traffic destined for the firewall itself should be disallowed.
vii. Anti-spoofing rule.
viii. Place anti-spoofing rule as per RFC 1918 and 2827.
ix. Enable DoS/DDoS features on Firewall
x. Enable application level filtering of firewall
xi. Enable Web block policy.

Table 28 Firewall

Sl. No.	Item	Characteristics / Features
	General features	
1	License Requirement	UTM with HA license will be provided, i.e. Two Hardware Box will be provided in HA (Active- Active). License will be valid for 5years.
2	Data encryption support	DES, 3DES, AES (128, 192, 256-bit), MD5, SHA- 1, SHA-2/DH Groups 1, 2, 5, 14
3	High Availability & Load Balancing	Yes

4	NAT modes	1:1, 1: many, many:1, many: many, flexible NAT (overlapping IPs), PAT, transparent mode
5	IP address assignment feature	Static, (DHCP, PPPoE, L2TP and PPTP client), Internal DHCP server, DHCP relay
6	Support VoIP protocols	Full H.323v1-5, SIP, gatekeeper support, outbound bandwidth management, VoIP over WLAN deep inspection security, full interoperability with most VoIP gateway and communications devices
7	IPv6 features	IPv6-enabled inspection services for applications based on HTTP, FTP, SMTP, ICMP, TCP, and UDP
8	Management and monitoring	Web GUI (HTTP, HTTPS), Command Line (SSH, Console), SNMP v3: Global management with firewall manager
9	IPSec NAT Traversal	Yes
10	Redundant VPN gateway	Yes
11	Encryption/authentication/ D H group	DES, 3DES, AES (128, 192, 256-bit), MD5, SHA- 1, SHA-2/DH Groups 1, 2, 5, 14
12	Routing	OSPF, RIP Pv1/v2, static routes, policy-based routing, Multicast
13	DoS & DDoS prevention	Yes
14	Key Exchange	Key Exchange IKE, IKEv2, Manual Key, PKI (X.509), L2TP over IPSec
15	Dead peer detection	Yes
16	DHCP over VPN	Yes

17	Zone Security	Yes
18	Deep Packet Inspection Service	Gateway Anti-Virus, Anti-Spyware, Intrusion Prevention and Application Intelligence and Control
19	Wireless standards	802.11 a/b/g/n, WPA2, WPA, TKIP, 802.1x, EAP- PEAP, EAP-TTLS
20	Content filtering service	(CFS) HTTP URL,HTTPS IP, keyword and content scanning ActiveX, Java Applet, and cookie blocking bandwidth management on filtering categories, allow/forbid lists.
21	Antivirus, anti worm, anti spam and anti-spyware protection	Yes
22	System logging & monitoring	Analyzer, Local Log, Syslog
23	Stateful packet inspection	Yes
24	Global VPN client platforms supported	Windows 10 / Microsoft latest Windows client operating system
25	SSL VPN platforms supported	Microsoft Windows latest OS, Mac 10.4+, Linux
26	Mobile platforms supported	iOS 4.2 and higher, Android 4.0 and higher
27	Management & Reporting functionality	The solution should have minimum 100 GB of internal storage for logging & reporting functionality
28	Power Supply	230V AC Input
29	Mounting Arrangement	Rack Mount
30	Warranty / Support	5 Year comprehensive support with update
Sizing Parameters for each Firewall		
1	No. of users	Unlimited
2	Maximum connections	3 Million
3	New connections per Sec.	130K

4	Minimum Firewall throughput	4 Gbps
5	Minimum IPS throughput for real world traffic or enterprise mix traffic	400Mbps
6	Minimum 3DES/AES VPN throughput	IPSec VPN throughput: minimum 1500 Mbps
7	No. of VLANs (802.1q)	25
8	VPN clients	300
9	Full DPI performance	NGFW performance 110 Mbps
10	Interfaces	8-port 10/100/1000, 2-port 10 Gigabit SFP Ethernet (SFP+), USB, 1 console interface
11	Nodes Supported	Unrestricted

2.10 Server Rack/Network Panel for Housing of Server, Network Equipment & GPS along with KVM switch & Screen

The Bidder will provide Panel/ Enclosures / Racks for housing of servers and networking equipment meeting the following requirements:

a) The enclosures shall be finished inside and out.
b) The enclosures shall be free standing; floor mounted and shall not exceed 220 cm in height.
c) The enclosure shall be built up as a 48.26 cm (19-inch) rack-mounted system with hinged units provided as necessary.
d) The structural frame of the panels shall be of cold rolled sheet steel of thickness not less than 3 mm for the weight bearing members of the panels such as base frame, front sheet & door frames and 2mm for sides, door, top and bottom portions.
e) Maintenance access to the hardware and wiring shall be through lockable, full height, frond doors.
f) Provisions for top and bottom cable entry shall be provided with wiring gaskets and stuffing glands on cabinet mounting plates.
g) Signal and safety ground networks within the enclosure shallbe provided. The safety ground shall be isolated from the signal ground and shall be connected by the Bidder to the ground network and to the ground wire of the ac power input. The signal ground shall terminate at a separate stud connection sized for a lugged 16 mm^2 ground wire. Each ground network shall be a copper bus bar, braid or cable. Use of the enclosure frame, skins or chassis mounting hardware for the ground network is not acceptable.
h) All enclosures shall be supplied with 230 V AC, 50 Hz, single-phase convenience out-lets

compliant with local Indian standards.

i) All enclosures shall be provided with an internal maintenance lamp, gaskets and eyelets for bundling and routing internal wearing.

j) All enclosures shall be indoor, dust-proof with rodent protection, and meet ISO-IP41 class specifications.

k) All materials used in the enclosures including cable insulation or sheathing, wire troughs, terminal blocks, and enclosure trim shall be made of flame retardant material and will not produce toxic gasses under fire conditions.

l) Document Holder shall be provided inside the cabinet so as to keep test report, drawing, maintenance register etc

This shall be of reputed make like COSMOS, Netrack, APW, Selrack, PENTAIR, Emerson or equivalent.

Table 29 Server Rack/Network Panel

Sl. No.	Specifications / Key Features / Parameters
1	19" Rack: 42Ux 600mmwidth x 1000mm depth, Alloy Aluminum extruded frame fully Allen bolted construction all x,y,z axis, metal top vented all along the width and depth , 4 fan provision and cable entry provision covered with cover plate edge protected rubber grommet provide/bottom cover cable entry provision covered with cover plate edge protected rubber grommet provide , 3 pairs of support channel and castor provision at bottom side. Powder coated finish Texture Matt - 60 to 80uM
2	Side panels are detachable with slam latches ventilation slot on side panels, full vented top cover & bottom cover with the cable entry provision.
3	Front perforated metal single door with cam lock & key
4	Rear mesh Single door with cam lock & key
5	Castors - 1Set
6	Front panel mounting hardware. -1No.
7	230V A/C 90 CFM fan mounted on top cover - 4 Nos.
8	Earthing Kit - 1No.
9	PDU 10 sockets 6/16 A Sockets with MCB - 2 Nos.(Reputed Make i.e. Anchor etc.)
10	Monitor Tray 700mm D -1Nos.
11	Warranty: 5 Year Onsite Support Warranty

2.11 KVM SWITCH with Screen/CONSOLE

Table 30 KVM SWITCH with Screen/CONSOLE

S. No.	Characteristic/ Features
1	Minimum 16 -ports console to connect all the servers, with a common mouse, keyboard in a rack tray.
2	Dual Interface - supports computers and console with PS/2 or USB keyboards and mouse
3	Multiplatform support - Windows, Linux
4	Supports multimedia USB keyboards for PC
5	USB interface detection
6	USB I PS/2 keyboard and mouse emulation - computers boot even when the console focus is elsewhere
7	KVM Console : 17" LCD Monitor with Keyboard & Mouse
8	This shall be of reputed make like ATEN, Rariton, ACL, Avocent or equivalent.
9	Warranty and Support : 5 years standard OEM warranty

2.12 Workstation/ Server Management Console (Network Management System cum Centralized management console):

It will consist of a with 23" LED monitors, a single keyboard and a mouse. All Workstation will support full-graphics displays. The Bidder will provide all other interface hardware, such as cables, switches and connectors as required. These will be of reputed make like Dell, HP, Lenova, Fujitsu, IBM or equivalent.

Table 31 Workstation/ Server Management Console

Sl. No.	Item	Characteristic/Features
1	OS	Licensed Windows 10 Pro or latest
a	Processor	For Server Management Console(NMS):-Intel (R) Core (TM) i7 8th generation or above Workstation:- Intel (R) Core (TM) i5 8th generation
b	Clock Speed	3.0 GHz or above

c	RAM	For Server Management Console(NMS):-Intel Installed RAM: 32GB, Expandable up to 128 GB Workstation:- Installed RAM: 8 GB, Expandable upto 64 GB
d	Hard Disc	1 TB SATA
e	Storage Drive	DVD+/- RW (Latest version)
2	Interfaces	
a	Ethernet Ports	02 Nos. 1 Gbps Ports
b	I/O Ports	Should Support 1 x DB-9 Serial Port
c	USB Ports	4 (At least 2 USB 3.0)
d	Graphics controller	Intel HD Graphics/AMD Radeon/ NVDIA 2 GB
3	User Interface	
a	Monitor	For Server Management Console(NMS):-Two 23"Wide Screen , Resolution (1920x1080) Workstation:- 23 "Wide Screen , Resolution (1920x1080)
b	Keyboard	Yes, USB Keyboard
c	Mouse	Yes, USB Optical Mouse
d	Speakers	External dual speaker
e	Display Ports	For Server Management Console (NMS):- Display Port for monitor, atleast 2 HDMI Port, 1 VGA Port Workstation:- 1 HDMI Port / 1 VGA Port
5	Mounting	Desktop Mounting
6	Power Supply	Standard Minimum 250 W, Input PS- 230 VAC
7	Utility Softwares	• MS Office • PDF reader cum editor
8	Warranty and Support	5 Years standard OEM warranty, Onsite Support

2.13 MFP (Multi-Function Printer):

To be provided for document printing function requirement i.e. Status/ Reports etc. at SLDC. These Colored and Black & White printing MFPs are to be integrated with overall System over LAN. These will be of reputed make like Canon, HP, EPSON, Xerox or equivalent.

Table 32 MFP (Multi-Function Printer):

S. No.	Item	Characteristics / Features
1	Functions	i) Print, ii) Scan, iii) Copy, iv) Fax
2	Paper size	A4/Letter/Legal
3	Print speed	30 pages/minute of A4/Letter/Legal size
4	Print resolution	1200x1200 dpi
5	Scan resolution	600x600 dpi
6	Paper weight	75-200 GSM
7	First page out time	12 sec for Black & White
8	Duty cycle	100000 pages per month
9	Paper handling capacity	Minimum 500 sheets of input tray & 500 sheets of output tray
10	AutomaticDuplex Printing	Yes
11	Landscape and portrait orientation	Yes
12	Interface	1G Dual LAN ports
13	Power supply	220-240 V, 50/60 Hz
14	Warranty	5Year Standard OEM Warranty

2.14 GPS Time Synchronization system

A dual redundant Satellite based GPS (Global Positioning System) clock along with its accessories shall be implemented at SLDC and integrated with Data Center LAN. In case of failure of one system, the other one should take over the entire work automatically. It shall be used to synchronize DC Equipment time with standard reference time via satellite so that synchronization of servers/ clients in Data Center is possible on continuous basis. The Application Server / DC Server shall in turn synchronize the time with all the meters while acquiring online data from them. If DC clock synch signal is not available to substation equipment , it as a second source should be able to synchronize with the station GPS, if available. This will be of reputed make like Hathaway, Arbiter, Meinberg, SEL, SERTEL, ACEB or equivalent.

Table 33 GPS Time Synchronization system

Sl. No.	Item	Characteristics / Features
GPS Receiver		

1	General Features:	
A	Timing Accuracy	<30 ns (with respect to UTC/USNO) with Selective availability & tracking 12 satellites
B	Input frequency	1575.42 MHZ L1 C/A code
C	Positioning Accuracy	< 25m
D	Acquisition time	Hot Start < 15 sec, Warm Start < 40sec, Cold Start< 150sec
E	Detection of loss of signal from source	GPS lost Alarm output will be provided through SNMP
F	Internal Time base Stability	1ppm
G	Time Return after reacquisition of signal	Within 90 sec of reacquisition of signal, the time returns to within 1.5 micro-second of UTP
H	Reverting to internal time base upon loss of UTC source	Yes
I	GPS Panel displays Year & Time in the Year &Time in the format DDD: HH:SS where hour Display Format(00 to 23 hour) & Date Format (DD:MM:YY)	LCD Display: Local /UTC time and date Day of the year, days of the week, Position latitude, longitude Status of the GPS receiver, Current data format of COM2. Day Display Format:- MONDAY thru SUNDAY Date Display Format:- DD/MM/ YY Time Display Format:- HH:MM:SS
3	Interfaces and Configuration:	
A	Network Connectivity – Two EthernetPort,10/100/1000 Mb ps; supporting NTP/SNTP	Yes
B	Input Power Supply	110 -240V AC
4	Warranty	01 Year Standard Onsite Support
GPS ANTENNA		
1	Type	Active L1.GPS,25 dB gain
2	Antenna Cable	RG 6/ RG 8 (Optional coaxial cable)
3	Min. length -50 Meters.	150 meters

4	Antenna feeder surge protection device	GPS.(LDY-TK)

2.15 5 kVA ONLINE UPS SYSTEM /120 MINUTES BACK UP for DR

Table 34 5 kVA Online Ups System

Sl. No.	Item	Characteristics / Features
1.	POWER RATING 5 KVA	BATTERY BACKUP 120 MINUTES SMF BATTERY BATTERY DETAILS 7400 VAH Minimum BATTERY STAND MS RACK TYPE.
2.	UPS TYPE	True Online Double Conversion IGBT based latest Technology.
3.	INPUT PARAMETERS	Nominal- 415V ± 15% at 100% load Frequency Range- 47 to 53Hz Phase- Three Phase, Input Power Factor ≥0.99
4.	OUTPUT PARAMETERS	Voltage- 230.V AC Voltage Regulation- ± 1% Typical Frequency- 50Hz Frequency regulation: ± 0.05Hz in free running mode and ± 3Hz in sync mode. Phase-Single Phase Wave Form- True Sine wave Harmonic Distortion- < 2% with Linear load < 5% on Non Linear Load. Power Factor: 0.8 Lagging Crest factor: 3:1. Efficiency: Inverter >90%.
5.	D.C.PARAMETERS	Voltage ≥180V DC DC Ripple: < 1%. Battery Isolation from DC Bus.
6.	INVERTER	Sine wave PWM Technology with IGBT as switching devices. Overload rating: 110% for 30mints/150% for 10 sec.
7.	CHARGER	Has automatic float cum boost charging capability with settable float & boost charging voltages and Current levels and boost charger timer.

2.16 System Management Software Products

Network Management System cum Centralized Management Console (NMS-cum- CMC):

Network management System cum Centralized management console (NMS-cum- CMC) shall be used for integrated monitoring and configuration of the firewall and network elements.

The NMS cum CMC Server shall have the following Network Management capabilities:

i. Security Management to protect systems and network from unauthorized access, manage user access, authorizing rights and privileges.

ii. Inventory Management to collect information about computers in the system such as processors, memory, peripherals and processes running on computers.

iii. Performance Management to monitor system and network performance.

iv. Fault Management to recognize, log, identify and inform fault on network and connected machines, nodes, devices.

The network management platform proposed shall be capable of managing an infrastructure that consists of multi supplier network elements (Router, switch, Mux etc).

The network management platform proposed shall be capable of managing an infrastructure that consists of multi supplier network elements (Router, switch, Mux etc). The network management software will be based on the secured version of Simple Network Management Protocol (SNMP) for fault management and performance monitoring platform for long term performance management and trending. The NMS system will have a simple browser based user interface to provide all the pertinent information about the system. The Network Management System shall monitor the performance, resource usages and error statistics of all the servers, workstations, routers and LAN devices. IT asset inventory management with Discover and maintain IT asset inventory with efficient auto-discovery feature should be provided with the server. External Asset management software/tool if required is to be provided by the bidder for discovering IT assets from Windows, Linux as well as printers, routers, switches etc. This shall be of reputed make like NEX, IBM, HP, Dell, Microsoft, or equivalent.

Table 35 System Management Software products

Sl. No.	Specification/Description
1	Network management Server cum Centralized management console (NMS-cum-CMC) shall be used for integrated monitoring and configuration of the firewall and network elements at DC end as well as Field end viz DCUs, gateway switches, Meter etc.
2	Network Management capabilities: (SW)
A	Security Management to protect systems and network from unauthorized access, manage user access, authorizing rights and privileges.
B	Inventory Management to collect information about computers in the system such as processors, memory, peripherals and processes running on computers.
C	Performance Management to monitor system and network performance.
D	Fault Management to recognize, log, identify and inform fault on network and connected machines, nodes, devices
3	The network management software shall be based on the secured version of Simple Network Management Protocol (SNMP) for fault management and performance monitoring platform for long term performance management and trending.
4	The NMS system shall have a simple browser based user interface to provide all the pertinent information about the system.
5	The Network management system shall monitor the performance, resource usages and error statistics of all the servers, workstations, routers and LAN devices.
6	IT asset inventory management with Discover and maintain IT asset inventory with efficient auto-discovery feature should be provided with the Server/Workstation.
7	**Standard 6 year support for Software maintenance & patch update till completion of warranty & AMC period**

2.17 Backup & Archival Software / Backup System

The system shall consist of Back-Up Server and required NAS storage. The system shall maintain automatic backup copies of all applications/software and databases without requiring any manual intervention, so that system operations may continue in the event of Server, device, or software failure. The backup data shall be updated with the current contents of the primary data as configured in the back up agent/software. The backup system shall be provided with a backup agent/ software for taking image backup and incremental backup of the installed system. The backup frequency should be configurable and should not affect the live application performance. In case of contingency, the Backup agent/software shall have the capability to run any application on any other server (subject to meeting minimum hardware requirement to run the specified application) from the backup data taken in the storage.

Table 36 Back-Up Server

Sl. No	General specification/ features
1	Backup software must support GUI with centralized management / single interface for management of all backup activities.
2	The offered software must support advanced sharing of different media across the environment (disk and optical)
3	The offered software must support multiple level of backups including full, incremental, differential and synthetic full
4	The offered software must include following application and database backup without the need of temporary disk space for MS SQL, Oracle. , MySQL, PostgreSQL etc.
5	The software must keep single copy across server backup & file archival with the help of block-level de-duplication for data across different electronic data repository for storage optimization.
6	The software must be able to compress and encrypt data at the client-side and this feature should be available even during de-duplication.
7	The offered software must support complete integration of server backup, virtual machine backup, archival and replication solution with a single console to manage all the solutions
8	Backup solution must support multi tenancy feature for creation of distinct data zones.
9	The offered software must support flat file data archival with seamless access for Windows / Linux.
10	The offered software solution must support ipv4 and ipv6 addressing system.
11	The offered software solution must have capability to do trend analysis for capacity planning of backup environment.

12	Proposed software must support secure protection for business-critical data through source-side deduplication, policy-based scheduling, and intelligent bandwidth throttling.
13	Backup software must support policy-based data protection, deduplication, compliance and discovery, reporting, and analytics features.
14	The backup & archival software should be offered for following license capacity; - 10 TB application & database backup license
15	**Standard 6 year support for Software maintenance & patch update till completion of warranty & AMC period**

2.18 Anti-Virus Software

All workstation and servers will be provided with the latest antivirus software as on date of supply. The antivirus software will have the capability of having its virus definitions updated from time to time. This shall be of reputed make like McAfee, Nortan, Microsoft, Symantec or equivalent.

Table 37 Antivirus software

Sl. NO.	COMPONENTS	DESCRIPTIONS
1	Environment	The solution must provide single platform for complete server protection over physical, virtual (server/desktop)
2	Defense mechanism	Provides layered defense against advanced attacks and shields against known vulnerabilities in web and enterprise applications and operating systems.
3	Malware protection	Web reputation prevents access to malicious web sites
4	Platform support	Protects a wide range of platforms: Windows, Linux etc
5	Self defense	The proposed solution provides self-defending servers; with multiple integrated modules below providing a line of defense at the server: firewall, anti-malware ,hips, application control etc.
6	Warranty & Support	Standard 6 Year OEM support for update till completion of warranty & AMC period

2.19 Patch Management

The bidder shall be responsible for providing updates/patches for the software products supplied under the project. All other patches of third party product like Operating System and Anti-virus shall be tested by the Bidder prior to installing in the employer's network. A secure patch management and deployment system is to be established which shall be provided with single point of Internet connectivity. Internet connectivity shall be provided by the Employer. All the

patches will be downloaded through this single point of connection.
The Bidder shall provide a mechanism for patch management so that it is known that what patches have been applied, what all patches are pending but available with us and what is the recent release of patches for the various products. Any patch will be applied only with consent of the Purchaser's representative. This shall be of reputed make like McAfee, Nortan, Microsoft, Symantec or equivalent.

Table 38 Patch Management

Sl. No.	Description
1	Deployment - Transparently deploy Windows OS patch or application (.exe, .msi) to multiple Windows machines simultaneously. Deployments can install, uninstall, execute scripts, reboot, copy files, sleep, send messages, etc. Instructions and files are sent to the target computer, executed, monitored, and reported
2	Should support Remote locations deployment
3	Should have Scripting support
4	Should be able to create package as needed or download the same.
5	Should be able to notify by Email on completion.
6	Standard 6 Year support till completion of warranty/AMC period

2.20 Environmental Conditions

Equipment located in the computer/ control room will operate over an ambient temperature range of 16°C to 30°C, with a maximum rate of change of 5°C per hour. Relative humidity will range from 20% to 80% non-condensing. Further, all Hardware to be supplied under the project will be RoHS complaint (Restriction of Hazardous Substance) in Electrical & Electronics Equipment.

2.21 Acoustic Noise Level

The noise level of any equipment located in the server room will not exceed 60 dbA measurements at three feet from the enclosure. The noise level of equipment located Sound- deadening enclosures shall outside the server room will not exceed 50 dbA three feet from the enclosure. Sound-deadening enclosures shall be provided where necessary to meet these requirements.

2.22 General Construction Requirements

The enclosures/panels used for mounting or placement of equipments, shall be constructed in accordance with the following requirements.

2.22.1 Panels

In case the equipment are mounted in panel type of enclosures, then such enclosures shall be finished inside and out. All cabinet metal shall be thoroughly cleaned and sanded to obtain a clean, smooth finish. All surfaces shall be treated to resist rust and to form a bond between the metal and the paint.

Moving assemblies within the enclosure, such as swing frames or extension slides, shall be designed such that full movement of the assembly is possible without bending or distortion of the enclosure or the moving assembly. Enclosures shall not require fastening to the floor to preclude tipping of the enclosure when the moving assembly is extended. No cables shall be visible, all cables shall be properly clamped, and all entries shall be properly sealed to prevent access by rodents.

Cooling air shall be drawn from the conditioned air within the room. Ducted or directed cooling air to the enclosures will not be supplied by Purchaser.

All wiring shall use copper conductors. Conductors in multi core cables shall be individually colour coded.

Wiring within the enclosures shall be neatly arranged and securely fastened to the enclosure by non-conductive fasteners. Wiring between all stationary and moveable components, such as wiring across hinges or to components mounted on extension slides, shall allow for full movement of the component without binding or chafing of the wire.

All materials used in the enclosures including cable insulation or sheathing, wire troughs, terminal blocks, and enclosure trim shall be made of flame retardant material and shall not produce toxic gasses under fire conditions.

The finish colours of all enclosures/panels will be finalized during detailed engineering.

2.22.2 Enclosure Grounding

A safety ground in accordance with Indian standards shall be provided within each enclosure and will connect to the ground (green) wire of the ac power input.

2.22.3 Interconnections and device interfaces

Servers and peripheral devices are connected to each other on a local area network (LAN) using Cat

6 cable and accessories. All signals cabling between component units of the computer systems shall be supplied by the Bidder. Plug-type connectors with captive fasteners shall be used for all signal interconnections. Both ends of each interconnection cable shall be marked with the cable number and the identifying number and location of each of the cable's terminations through suitable cable /wire tagging. Each cable shall be continuous between components; no intermediate splices or connectors shall be used. Terminations shall be entirely within the enclosure. Supply and lying of power cable from UPS room of SLDC to various device locations shall be the responsibility of the Bidder.

2.23 General Software and Hardware Requirement

2.23.1 General Software Requirements

All software will meet the following general software requirements: -

A. Software updates: - Software which shall be provided as a part of present scope will receive updates, patches, bugs, fixes to keep software up to date all the time. The firmware/software upgrade may include

A.1. General software updates.

A.2 Adding new features and functionalities, such as supporting new data format and communication protocols.

A.3 Fixing bugs and deficiencies.

- The Supplier shall keep SLDC, OPTCL informed of the latest software updates of revisions available after the system is shipped.
- Users shall be able to perform the necessary software update in the field.

B. Software Security Requirements at Delivery: - The development of the software for MDM system will be done in consultation with SLDC. Software at delivery will meet following requirements in accordance with general software security assurance practices.

B.1 Security Tested and Configured: -All software and associated application software modules shall be the most secure version of the software available at the time of start of the Factory Acceptance Test. The delivered software shall be tested to ensure the followings:

- Free of computer viruses, worms, Trojan horses, and other software contaminants
- Unused services are disabled / removed; this includes device drivers for devices not included in the hardware.
- Unused networking protocols.
- Unused administrative utilities, diagnostics, network management, or system management functions.
- Administrative utilities, diagnostics, network management, or system management functions or workstations unused by administrators.
- Backups of files, databases, and programs, used during system installation/upgrade but not needed in the operational system.
- Accounts that are not End -User Administrator will be removed, this include any guest accounts (with and without passwords) or default administrator or maintenance accounts other than the initial system administrator account for Procurement Entity or any guest accounts or default administrator or maintenance accounts for any third party software.

B.2 Maximum Initial Security Settings: - The software shall be shipped with all security settings

at their maximum setting. All software shall be delivered with all the latest relevant patches installed. All security-related parameters and options shall be placed at their most restrictive settings at the delivery, i.e. affording the access and execution privileges to the smallest class of users consistent with meeting the functional specifications, and restricting their rights to the narrowest range of privileges.

B.3 No Automatic Downloading and Execution of Executable Code: - It shall not be possible to download any executable code into the DC and execute the downloaded software code automatically without system administrator's (SLDC) approval. All software shall be removed that would otherwise make it possible to execute a scripting language (such as Active X, Java, Java scripts, etc.), including software in the browser and e-mail processor, where applicable.

B.4 File Access Control: - The DC software shall support controlled access privileges for files, including at least access, read, write, execute and combinations of these. The access privileges for each user can only be assigned by system administrator of DC as the case may be, and shall be assigned on an individual user account basis. The default access privileges for each new user account shall be no access to any file on the system at all. No user, including system administrator, shall be given the privilege of modifying operating system files and other files that are never supposed to change while the system is running.

B.5 Free of "Electronic Self-Help" Enabled Software: -It will be strictly prohibited for delivered software to contain embedded faults or back- door mechanisms that allow the software manufacturer to remotely disable some or all of the functions of the software, or affect their performance, or in any way degrade its operation (so-called "electronic self- help" in the terms of the Uniform Computer Information Transactions Act). The software shall not contain any mechanism that automatically disables some of all of its functions or degrades their operation on a certain date or upon the occurrence of a specific event.

B.6 Application Software Modification: -Modifications in application software to comply with the prevailing CERC/OERC regulations for energy accounting and/or to implement the decisions at the ERPC, SLDC, OPTCL level shall be in the scope of the supplier. These modifications shall be considered as a part of Scope. The modification shall be done in consultation with SLDC.

C. Configuration, Credentials with proper documentation: - After implementation of the project, Table Structures, data structure and of all the functional modules (with proper detail documentation) with ER diagram/Table description diagram shall be handed over to SLDC, OPTCL. Interface for any required changes in the configuration for ex. Addition/deletion of interface points, data extraction in the required format etc.

As per SLDC, OPTCL requirement, all the credential (user name & password) of any software (Standard/customized)/hardware/OS/database developed should be shared with SLDC, OPTCL through proper channel.

Execute all documents that may be necessary to effectively transfer the ownership and title, including OEM warranties in respect of all leased equipment and handover the list of all IT Assets, passwords at all locations to the Purchaser.

D. Essential characteristic of system:- Target system provides following essential properties

a) **Accessibility:** The system should able to provide all access to all data in open format which is generated by all entities which is required for decision making irrespective of the support of supplier who has supplied the component.

b) **Durability:** The system should provide full data guarantee irrespective of any type of hardware, network or any such failure. The system should sustain for all types of failure and provide plan to overcome from such failures. The system should also ensure that there should not be any data loss due to operating conditions.

c) **Security:** The system should ensure be foolproof for any security hacks.

d) **Scalability:** The system should be scalable system at each level so that scalability should be achieved by adding component not by replacing them.

e) **Functional Completeness**: The target system should be fully functionally complete and provide data & processing for all external systems like accounts and finance.

f) **Performance:** The system should have real time response and such measures should be provided for each level

g) **External interfaces**: The system should be able to interact with external system like SCADA/EMS and GIS system to accomplish total system optimization. It should also accommodate the external system and should provide uniform data views.

h) **Standard:** The component which will be used to provide build the system should indicate and maintain standards.

i) **Maintainability:** The system can be fully maintained by the SLDC,OPTCL in future.

The supplier should provide the full configurable software, data dictionary, data flows, documentation to incorporate new changes as well as operations, adequate training at each level.

E. General Hardware Requirements

Complete Software System including MDM will meet the following hardware requirements.

a) **Operating Environment**:- DC and DR hardware will be supplied that will be suitable to operate in environment under climate conditions of Bhubaneswar / Orissa without any significant effect on its performance.

b) **Security Requirements**:- DC and DR hardware and packaging design will meet physical security requirements like measures to prevent unauthorized access to certain system hardware components.

c) **Network Monitoring Tool**:- MIS Reports: Bidder shall submit the following reports on a weekly basis in a mutually decided format.

- Summary of issues/complaints logged with the OEMs.
- Summary of changes undertaken in the Data Centre including major changes like configuration changes, patch upgrades etc.

- Summary of any configuration changes or any service/hardware installed in primary Data centre.
- Summary of system's rebooted.
- Detail report of issues/complaints which are un-resolved with appropriate reason.
- All relevant reports required for calculation of SLAs.
- Consolidated report for resource wise availability and resource utilization.
- Report showing resource wise exceed of pre-defined threshold parameter.

F. System Security & Cyber Security

Third party security audit by CERT-in certified auditor is to be done prior to commissioning or Go Live whichever is earlier. Ensuring compliance with CERT-in standards for all software modules has to be ensured by Supplier prior to handing over. Supplier/Supplier will document and implement a Cyber Security Policy in line with CERT-In latest guidelines (http://www.cert- in.org.in) to secure the system and the Supplier will keep updating the Security settings as per the revised guidelines of CERT-In at time to time. Below listed basic strategies shall be followed by the Supplier for making the entire Control Centre immune to Cyber-attacks.

- All the Hardware, OS and application software shall be hardened.
- Network partition and DMZ through use of Firewall as required maximizing the security of SAMAST Data Center System while facilitating access for data and information to all stake holders.
- All default user id & passwords shall be changed.
- All log in/log out and cable plug in/plug out shall also be logged in the System.
- Prevent unauthorized users from reading or writing data or files, executing programs or performing operations without appropriate privileges
- Document all user sign on procedure
- Record all network traffic for detecting unauthorized activity, unusual activity and attempts to defeat system security (Supplier to propose and document what constitutes normal activity/traffic)
- Supplier must identify and list the entire network and other protocols that communicate with physical systems and limit what is not required.
- No user shall be allowed to access remote network zones other than the adjacent zone.
- In normal condition all USB ports of all servers/workstations shall be disabled.

G.<u>Scope of SLDC, OPTCL</u>

i) Installation and testing of energy meters.

ii) Providing connectivity as detailed:
   a. An ethernet port shall be provided for the same at terminal equipment's (SDH/Router/Switch) at the Datacenter and DR
   b. Wired Broadband Internet (An ethernet port at modem at DC & DR).

iii) SIM with data plan for GSM Modem. (Where no other communication channels are available)

iv) The cooling and power (UPS Power)

v) Internet connectivity with public IP at DC and DR

H.Scope of the supplier:

(1) The Supplier shall meet the SLA for the networking elements, including replacement of the defective/ or end-of-life parts, throughout the entire Warranty and AMC/ATS period.

(2) Availability of meter data shall be calculated based on the downtime of all meters aggregated over the assessment period, excluding the downtime due to defect of meters, feeders or machine outages, outage of communication channel, but including failure of networking components supplied by the supplier.

3.0 Chapter-3: SAMAST Software stack

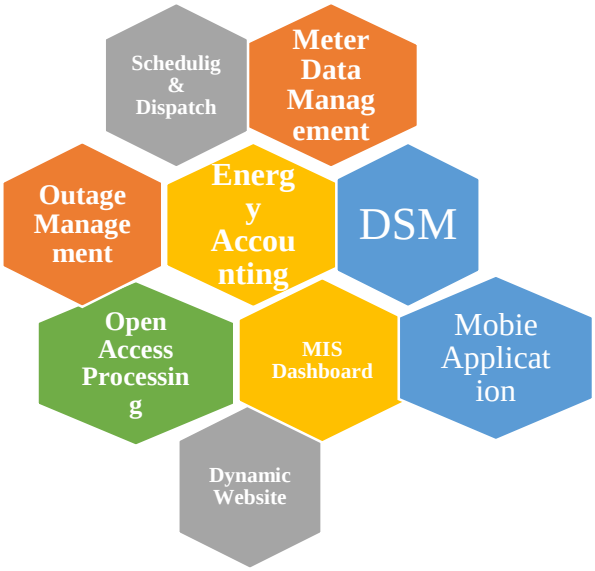


Figure 2 SAMAST Software stack

3.1 Module-1 Scheduling and Generation dispatch

General Over view:

Scope of the software module

i. Provision to capture details of generators like name, total installed capacity, unit wise installed capacity and auxiliary consumption, ramp-up and ramp-down values, technical minimum etc. category of the generating station (Thermal, Hydro RE-Solar, Non-Solar-wind/SHP/Co-gen, LHP)/ and CGP/IPP along with share of GRIDCO/other beneficiaries as per the PPA/PSA.

ii. Incorporate provisions of day ahead and current day scheduling basis decentralized and centralizedMOD principles and relevant CERC and OERC regulations and subsequent amendments thereof.

iii. Provide web access to stakeholders i.e. GRIDCO, Generators, Discoms, for submission of DC, requisitions/ reporting etc.

iv. Provision to upload/ add/edit generator/ state entity (Discom) wise allocation from available sources (ISGS/SGS).

v. System shall have features for entering inputs like Ramp Up, Ramp Down, Technical Maximum / Minimum of generation etc.

vi. Provision to Recommend SLDC for surrender/ schedule in real-time, on the available power from intra- state and inter-state generators on basis the MOD stack.

vii. System shall have inbuilt provision of validating DC input at the time of submission. System shall not allow generators to submit DC more than the ex-bus capacity.

viii. Entitlement shall be prepared based on share allocation for DISCOMs/Beneficiary as approved by OERC. DISCOM/ beneficiary shall be able to submit requisition.

ix. Provision for DISCOM / Beneficiary to view entitlement and submit requisition as 'day-ahead' or 'revised' requisition for the current day, i.e., for 'day of operation' or for 'day-ahead' as per timelines specified in State Grid Code.

x. Details of transmission constraints/grid incidents to be incorporated in real-time for suspension of deviation settlement mechanism. Report of transmission constraints/grid incidents to be prepared in real-time basis.

xi. Provision to capture inter-state schedules from RLDC (LTA, MTOA, STOA, Exchange, DAM, G-DAM & RTM etc.) and generate implemented injection schedules for intra-state generators and drawal schedule for distribution utilities (by incorporating the source wise Inter-state OA drawl schedule of the embedded buyers of each discom) after capturing the implemented schedules of intra-state OA transactions from the OA module.

xii. Provision to integrate the details of source wise schedule (RE/Non RE) of the inter-state generating stations having LTA/MTOA with GRIDCO and the power scheduled to GRIDCO through STOA vide G-DAM G-TAM, REMC as in the WBES of ERLDC for ascertaining the RE(Solar, Non Solar-Wind LHP) and Non RE breakup of the power scheduled to GRIDCO through inter-state transactions which can be simultaneously summed up with the RE/Non RE break up of intra-state generating stations scheduling power to GRIDCO. This would help in determining the RE /Non-RE break-up of the scheduled power available in the GRIDCO Pool for monitoring the RPO of GRIDCO.

xiii. Daily and Monthly Reports not limited to DC received, DC accepted-Scheduled Generation, Implemented Schedules of buyers and Discoms including open access for any specific period, but also reports as per the requirements of SLDC on as when required basis both in view as well as downloadable editable formats.

xiv. There shall have provision to make certain consolidated reports in display mode /downloadable editable formats mode as per the requirements of SLDC for access by the registered users of the portal along with provision to migrate certain reports like final daily/weekly/monthly/period specified approved schedules etc. to SLDC website for access by general public at large as per the regulatory requirements and customized needs of SLDC.

xv. Integration with Energy Accounting and Open Access modules for seamless data transfer

for timely issuance of energy accounts.

xvi. Dashboard for SLDC and Generator/ DISCOMs to view real-time scheduling activities along with providing the dashboard view only to SLDC for viewing the status of block wise power surplus/deficit available due to under/over requisition with respect to the DISCOM entitlement so as to enable the system operator in optimizing the real time decision making.

Functional Requirements:

The objective of this module is to implement a web based online ABT scheduling system (Portal) for Intrastate scheduling as per OERC / CERC regulations in force and subsequent amendments therein.

Scheduling of power essentially involves collecting availability data from state generating stations, IPPs, State's share entitlement from ISGS and other sources and allocating to constituents/beneficiaries as per their respective share, decided by OERC. Other collateral subjects that need to be considered while scheduling are Open Access transactions, Data from Demand forecast, ATC declaration, Real time revision of schedules by SLDC System operators subject to Power regulations, Ancillary Market services, statutory changes in force and as amended from time to time.

I Configuration of generating stations

The details of registered entities in Open Access module shall be auto migrated to scheduling module. Provision to input some additional parameters as detailed in the table below shall be kept this module. The software shall have a portal for configuring the details of Generators/IPPS/RE Sources/ Developer/ OA Customers/QCA, having following details:

Table 39 Configuration of generating stations

Sl.no.	Field Name	Source
1	Name of Generator.	To be entered by the user.
2	Address of the Generator or Project	To be entered by the user.
3	Unit wise particulars- Installed capacity, Auxiliary consumption, Ex-bus capacity	To be entered by the user.
4	ABT Meter installed at Generator. (Yes/No)	To be entered by the user.
5	Meter Sr. No. (Main)	To be fetched from metering module/ with a provision to upload valid document, validated by SLDC during registration.

6	Meter Sr. No. (Check)	To be fetched from metering module/ with a provision to upload valid document, validated by SLDC during registration.
7	Connected to feeder/circuit with Voltage level.	To be fetched
8	Whether a consumer of Discom- Discom details/ contract demand with the Discom	To be entered by the user.
9	Type of generator- Fuel type (Thermal, Hydro, RE-Solar/Non solar, LHP as the case may be)	To be displayed
10	Capacity of generator in MW	To be entered by the user.
11	Unit wise date of commissioning / date of commercial operation	With a provision to upload valid document, validated by SLDC during registration.
12	Existing OA details- (LTA, MTOA/GNA with the Reserved capacity/contacted Quantum in MW, duration of such contract - from date and to date. Drawee entity particulars with whom the contract/PPA has been signed (Nature of Drawee entity i.e. Whether it is state utility or a consumer of state Discom with the name of the Discom	To be entered by the user. With a provision to upload valid document, validated by SLDC during registration.

*In addition to above parameters/details any other requirements of SLDC on as and when need basis

II Scheduling

This software module will enable users to submit Declared Capacity (DC) and Requisition/ Punching; Publish / View / Download Dispatch and Drawal schedules with provisions for Revision on Day Ahead and Real time basis. (In line with scheduling method of ERLDC).

Provision shall be there to mention the reasons of such revision in the remark column as an optional field.

Scheduling is a timeline activity, and any post-facto correction of schedules will be permitted by system administrator to limited supervisory users through additional password configuration. These corrections/modifications will be logged and archived appropriately to identify, report and scrutinize such cases at a later date in audit trail.

The proposed web-based energy scheduling software shall be modular, menu-based, web enabled application. The software shall have provision for interfacing with ERLDC server to archive the State's entitlement share from ISGS and inter-state open access/ collective transactions of state

embedded entities on real time basis. All user interaction will be through appropriate interfaces after due authentication only. The application will manage all data using RDMS database. Apart from facilitating a uniform approach to scheduling activity, web-based scheduling software will encourage transparent participation from stakeholders through a structured and user-friendly interface. The application will be capable of simultaneous interaction in a multi-user environment.

The software will facilitate SLDC to prepare Day-ahead/ current day Schedules as per IEGC 2010 (or any later version)/ OGC Regulations, currently in force and subsequent amendments thereof. It will also facilitate the Constituent (Authenticated Users) members to Submit / revise Declared Capacity (DC) and requisition and View / Download Schedules and related information as per respective members' roles & privileges.

The Supplier will provide application process interface (API) for addition, modification, replacing modules as per regulatory requirement to facilitate user updating.

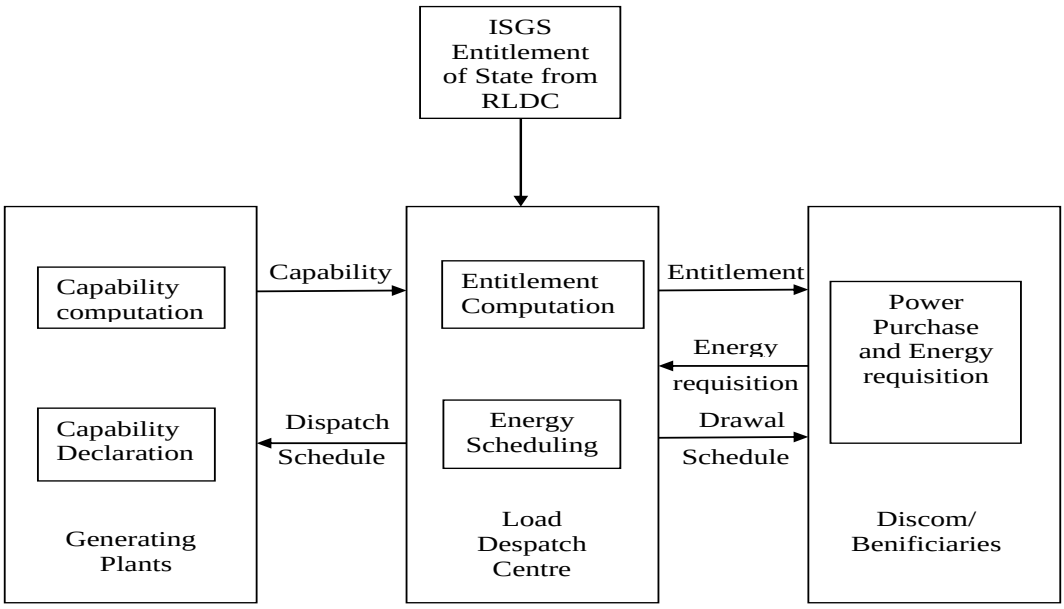
III Scheduling Process:

i) Inputs

The inputs that will be provided to the system are:

Technical maximum, Ex-bus PP capacity of generator, technical minimum, ramp up and ramp down rates, type of fuel used-for distinguishing the type of RE source such as Solar, Non solar, LHP from the State's pool power (for cap rate), type of ownership, commercial operation date (to find firm or infirm power), normative plant availability factor, normative plant auxiliary consumption, annual fixed charges, energy charge rate, etc., of generating stations

a) Capability declaration by SGS/IPPs/LTOA /MTOA customers
b) State's ISGS entitlement from ISGS
c) Discom's Share/ Entitlement Table
d) Requisition by Discom/beneficiaries
e) Applicable system losses (Transmission, Distribution, ISTS)
f) Open access approved quantum, period, injection point details, drawal point details



*Scope of Load Dispatch Center

Figure 3 Entity engagement chart for dealing with the power LTA and MTOA of the beneficiaries/state/Discom with the generating stations.

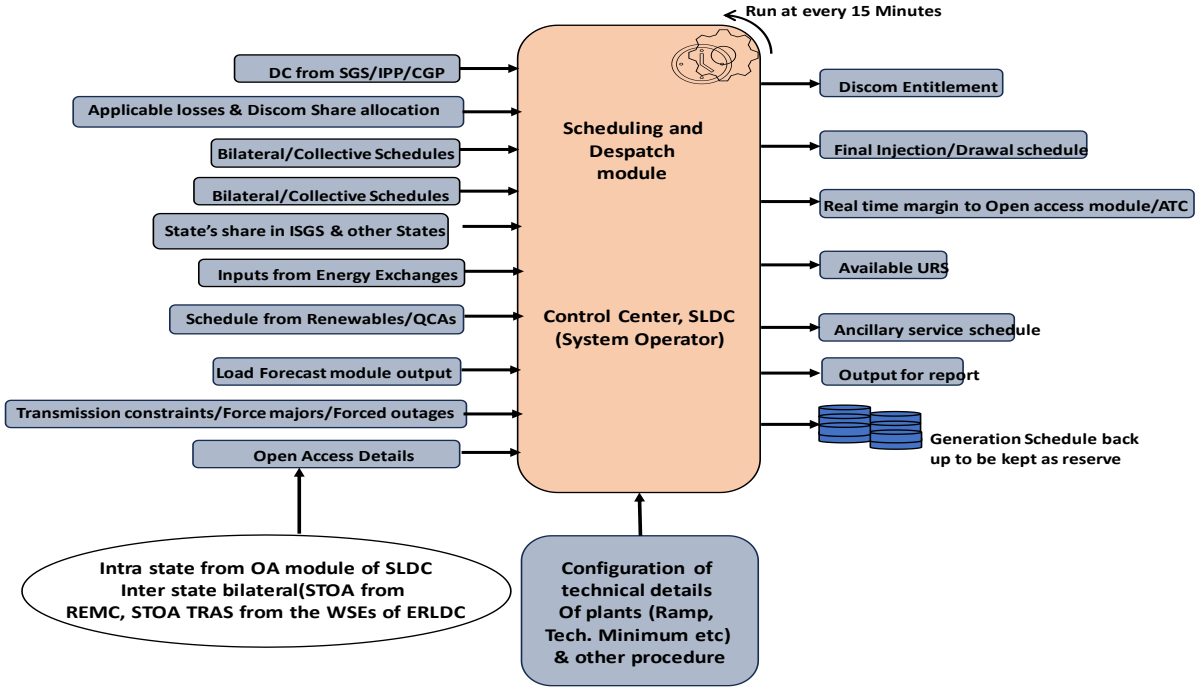


Figure 4 Scheduling &Dispatch Module

ii) Output

The outputs expected form the scheduling module are:

a) Entitlement of beneficiaries
b) Dispatch schedule for generating plants
c) State's drawal schedule from ISGS.
d) Drawal schedule for Discoms/beneficiaries
e) OA Dispatch schedules for OA generating plants
f) OA drawal schedules for OA consumers
g) Consolidated dispatch schedule for generating plants
h) Consolidated drawal schedule for beneficiaries
i) Implemented declared capability
j) Implemented dispatch schedule
k) Implemented drawal schedule.

IV Scheduling concepts addressed

a) Capability declaration
b) Entitlement
c) Requisition
d) Considering applicable system losses (Transmission, Distribution, ISTS)
e) Day ahead dispatch and drawal scheduling
f) Same day dispatch and drawal scheduling
g) Surplus handling
h) Approval of Implemented schedules
i) Mis-declaration audit
j) Suspension of ABT
k) Curtailment
l) Scheduling approved OA contracts, bilateral (long, medium, and short term) and collective transactions.
m) Ex-Bus periphery of the power plant will be used for the purpose of scheduling.
n) List of Users:

The following designated users of scheduling system will be provided with login ID and password using which they can perform their functions.

i. State Load Despatch Centre Users:
   a. LD Admin: This user will have all rights including authentication of entries made by other users, and different checks and validations as per the requirement
   b. LD Operator: This user will have the permission for data entry and scheduling on day ahead and real time basis and any such other requirements.

ii. Power Plant Users: These users can perform their functions like submission of declared capability, view and download of dispatch schedule, deviation charges, state energy account, payment of deviation charges, etc.,

iii. Discom User: Discom can perform its functions like view and download entitlement of Discom, submit day ahead drawal request and revisions for same day and day ahead, view and download drawal schedule, deviation charges, state energy account, payment of deviation charges, etc.,

iv. Open Access Applicant Users: LTOA & MTOA users can perform their functions like submission of quantum they want to avail from approved quantum, while for STOA users the approved quantum in the OA module shall automatically get scheduled, view and download dispatch schedule of seller, drawal schedule of buyer, deviation charges, payment of deviation charges, etc.,

v. All configurations will have a validity period.

vi. Short Term Open Access configuration details will be fetched from Open Access Module.

V Scheduling and Dispatch Module with revisions

General description

(i) The Scheduling and Dispatch module will need to have the relevant functionalities to aid SLDC in implementing the Scheduling process flow as per the Scheduling and Dispatch Code of CERC/OERC and Guidelines for the operation of Merit Order Dispatch (MOD). This module will receive data from other relevant software modules. Some of the provisions of the MOD guidelines are as follows:

a) Periodicity and Date of preparation of MOD Stack.
b) Basis of preparation of MOD Stack, including the Variable Charge to be considered.
c) Guidelines for operating the Generating Units.
d) Guidelines for Capacity Declaration by Generating Units.
e) Guidelines for Zero Schedule instructions to the Generating Units.
f) Guidelines for Reserve Shut Down (RSD) instructions to the Generating Units.
g) Identification of 'Must Run' Stations, and guidelines for operating Hydro Stations
h) Technical Minimum of Generating Units.

(ii) The designing of functionalities of Scheduling and Dispatch module will be developed as per the procedure defined under Scheduling and Dispatch Code. The Supplier will refer to the final Scheduling and Dispatch Code as and when finalized by the OERC/CERC and the subsequent amendments thereof to be followed.

(iii) SLDC will prepare generator wise Merit Order Stack for Day Ahead scheduling process for each month and Centralized Merit Order Stack for Intra-Day operation in an approved format.

(iv) Scheduling and Despatch module Software Requirements. The Scheduling and Despatch

software module will aid SLDC in performing the following activities.

a) Provision for granting remote/ online access to Generators, Licensees and other users for carrying out various activities related to day-ahead / current- day scheduling.
b) Provision to capture details of generators and users (like name, total installed capacity, unit wise capacity and auxiliary consumption, ramp-up and ramp-down values, technical minimum, etc.
c) Availability Submission: Each SGS / generator will need to submit, the ex-power plant Declared Capacity (DC) in MW (at 5 minutes/15-minute/Regulations specific time block interval) foreseen for the next day, i.e., from 0000 Hrs to 2400 Hrs of the following day.
d) Each generator will be able to submit DC as 'day-ahead' or 'revised' declaration for the concerned day, i.e., for 'day of operation' or for 'day-ahead' as per relevant regulation/ timelines specified in the State Grid Code.
e) System will have feature for entering inputs like Ramp Up, Ramp Down, Technical Maximum / Minimum of generation etc.
f) System will have inbuilt provision of validating DC input at the time of submission. System will not allow generators to submit DC more than the ex-bus capacity.
g) In case where generator is supplying power to entities other than the state discoms through open access, provision will be made to capture injection schedule against specific drawee entities.
h) Gate closure provision will be available.
i) The scheduling and dispatch module will be able to generate Seller/Buyer schedule comprising of 96/288-time blocks, each of 15/5-minute/Regulations specific time block interval duration starting from 00:00 hours (IST) ending with 24:00 hours (IST). The first-time block of scheduling period will commence from 00:00 hours (IST) to 00:15 hours (IST), second time block of scheduling period will commence from 00:15 hours (IST) to 00:30hours (IST) and so on or any such other period as specified by the Commission.
j) Entitlement & Requisition: Entitlement will be prepared based on share allocation for Discom / Beneficiary requisition and Discom/ beneficiary will be able to submit requisition.
    i. Once the availability from SGS /IPPs and ISGS Entitlement for State from RLDC are received, system will prepare entitlement for each discom / Beneficiary based on the share allocation.
    ii. Each Discom / Beneficiary will be able to view entitlement and submit requisition as 'day-ahead' or 'revised' requisition for the current day, i.e., for 'day of operation' or for 'day-ahead' as per timelines specified in State Grid Code.
    iii. Available URS power to be displayed generator wise (injecting entity)/ discom wise

(drawee entity) in real-time incorporating RLDC URS data.

k) Intra-day revisions and intra-day Scheduling of Buyers and Sellers

l) Display of real time schedules.

m) Issue Dispatch or Curtailment instructions during real time operation with provision to incorporate the schedule of the generators due to backing down instruction of SLDC considering the declared ramp rate and the logic provided by SLDC.

n) Provision to capture /upload Entitlement/ Drawal Schedule from RLDC simultaneously. RLDC schedule will be automatically updated in the state software for further scheduling to respective Discom.

o) The entity wise drawl/injection schedule shall be fetched from the formats /platforms of all power exchanges for different type of market segments (DAM, GDAM, RTM etc.) both on day ahead and real time basis and subsequently it shall be able to get migrated to the drawl/injection schedules under respective discom with appropriate and distinct transaction specific identifiable tagging of the buyer/seller/type of OA.

p) Provision for Application Program Interface (APIs) for sharing the data from Scheduling and Dispatch module to DSM software application /any third-party applications if required.

q) Email communication of schedules and re-schedules to state entities and other parties involved in state pool account.

r) The output of the scheduling process will be Dispatch Schedule of Generating Stations/Sellers, Drawal Schedule of Discoms/Buyers and Open Access Consumers, State's drawal schedule from ISGS. The list of forms and formats that needs to be generated under Scheduling and dispatch module are given in table below.

Table 40 List of Forms in Scheduling and Despatch Module

Sl. No	Particulars
1	Registration Form for Sellers for Scheduling and Re-Scheduling
2	Registration Form for Buyer for Scheduling and Re Scheduling
3	Submission of Day Ahead Drawal at User Periphery
4	Submission of Unit-wise Ex-bus Day Ahead Availability by Seller
5	Day Ahead Drawal Schedule of Buyer by SLDC at User periphery
6	Intra-day Drawal Revision at User periphery by Buyer
7	Intra Day Declared Capacity of Seller unit wise (at Ex-bus periphery)
8	Final Drawal Schedule of Buyer at User periphery

(v) The entitlements, requisitions, and schedules will be rounded off to the nearest two decimal, to have a resolution of 0.01MW for Buyers and Sellers and reference frequency will be rounded off to the nearest two decimal to have resolution of 0.01Hz as mandated by the applicable regulations and amendments from time to time.

(vi) The Buyer Schedule will be based on De-Centralized Merit Order Stack for Day Ahead scheduling process and Centralized Merit Order Stack for Intra-Day considering the principles specified.

(vii) In case of break down/ forced outage of any utilities, the stand-by power as allocated by SLDC against that generator will be allocated to the utilities in the proportion of their share in that generator as per the Orders of the Commission. Further there shall be provision for the generators to punch the details of unit wise forced outage and the reasons of tripping/backing down along with revised declared capacity for auto migration to the DSM module.

(viii) The Scheduling and Dispatch module will have provisions for display of the following parameters in real-time for the participating users and will be able to download the schedule/revisions of the same in formats such as .CSV,.PDF,.XML, .XLSX and .XLS etc.

a) Declared capacity (DC)
b) Entitlement in 15/5 Minute time block from SLDC
c) Bilateral and Collective Transaction Schedules
d) Drawal Schedule of the Buyers, including Open Access
e) Generation Schedule of the Sellers (IPPs, CPPs, Intrastate Open access)

(ix) The Real Time scheduling data from the Scheduling and Dispatch module will be

accessible to view by the public. However, only users will be able to schedule or re-schedule the drawal or generation schedule over the internet in a secured way whose user access has been approved by the SLDC after due registration process.

(x) Schedule / Revisions:

a) Software to be equipped with logics to create schedule as per Merit Order and as per provisions of IEGC / OGC without any manual intervention.

b) Injection schedule entity wise will be computed as per the requirement of beneficiaries considering the technical minimum and ramping up / down if required. Drawal schedule of the discoms will be computed on the basis of requisition and considering the bilateral/ collective transactions of power if any and technical minimum, ramping up / down for the generators if required.

c) Injection and drawal schedule of all intra-state entities to be prepared in real-time including RLDC/ Power Exchange real-time revisions for scheduling and despatch of power. This will be an automatic process and it will not require any manual intervention. There will not be a time delay of more than 60 sec for updating RLDC real-time scheduling data.

d) Any Bilateral / collective transaction schedule for any entity will be directly uploaded and the same will be displayed on website (generator wise / Discom specific drawee entity wise as per user requirement).

e) Economic merit order to be selected automatically for surrender/thermal backing/URS power scheduling based on their variable charges. Surrender/ URS of scheduled Power will be done in line with ERLDC procedures, applicable GRID Code and shall be configurable as per the operational requirement of SLDC.

(xi) Activity log with time stamping to be maintained for each transaction of all entities and to be displayed entity wise/category wise/for all entities together as per requirement of system operation.

(xii) Details of transmission constraints/grid incidents to be incorporated in real-time for suspension of deviation settlement in accordance with Intrastate DSM as and when it is notified. Report of transmission constraints/grid incidents to be prepared in real time by integrating with outage module.

(xiii) All injection and drawl schedules finalized to be automatically migrated to Energy Accounting and Deviation Settlement module week-wise / month-wise for preparation of deviation settlement account and monthly energy account.

(xiv) Integration of Scheduling System with an internal e-mailing server through SLDC email accounts for facilitating two-way communications between SLDC and the injecting/drawee entities.

(xv) Provision of SMS/e-mail for each revision from any entity. Also, a flash on the screen

along with an alarming notification for SLDC and concerned entity for each revision either from SLDC or from drawee /injecting entity.

(xvi) Provision for archival of data older than 7 days for smoother Scheduling System Operation. This process will make sure only weekly data is present in database and rest is archived. Archived data must be readily available and accessible for all other purposes.

(xvii) Treatment of loss in case of scheduling of LTOA/MTOA and STOA will be customized based on OERC/CERC regulations/orders/notifications.

(xviii) Reports

a. Time block wise DC/SG/ injection schedule/ drawl schedule for all entities to be displayed in a report form in real-time so that, it may integrated in the SCADA system for display of real-time deviation from schedule.

b. Reports for drawal schedule including SGS, Bi-lateral, share projects, MTOA, and Energy Exchange, RE to be displayed in real-time category wise.

c. Reports in line with RLDC formats.

d. Daily, weekly, Monthly, period specific Reports on DC, Injection Schedule & Implemented Schedule

e. Energy Loss due to Transmission Constraint

All the above provisions, procedures and workflows shall be in compliance with and configurable as per the OERC/CERC Regulations and Rules, Orders/ directives of state/Union governments in force from time to time and case specific operational requirements of SLDC.

3.2 Module-2 Meter / Master Data Management (MDM) Software

i. Meter data: The SEMs (ABT type) record active energy (export & import separately), reactive energy and other parameters in 15 minutes/ 5 minutes/ regulation specified time intervals. The SEMs (ABT type) are installed at the interface points. The SEMs (ABT type) data is collected at SLDC either from Advanced Meter Infrastructure (AMI) system or other electronic means e.g., email, web portal etc.

ii. This module covers collection of energy meter data from all meters (ABT/Non ABT) installed at interface points and the upcoming ABT meter data from data acquisition software (HES/AMI) to be installed at DC as well as through email, web-portal and other electronic medium, checking of data for its completeness and correctness and processing of data for the purpose of computation of Energy Accounting

iii. The Software should be able to fetch the Meter data from AMI server automatically and will validate in the MDAS for further processing in MDM The software will have following features tailor-made to serve the various requirements of SLDC.

iv. System will prepare a database during configuration taking into account the details of location

(Area/District/DISCOM etc.) and details of each meter (Start time, stop time, feeder point, MF, Account types, DISCOM etc.) to be defined by user, along with incorporation of inter-DISCOM sharing feeders etc. which shall be used to generate various reports.

v. System will have the feature to integrate and fetch data from AMI system and also provide option for MRI upload from remote location by registered users (from Meter Site /Sub-station site).

vi. System should be able to check data for its completeness and correctness. The data uploaded will be checked for completeness and missing data reports will be generated for collecting the meter data through email/Portal/AMI from the Sub-station.

vii. System should be capable to read data of all kinds of meters automatically. Further SLDC may provide the meter manufacturer software if necessary.

viii. System will have the interface for configuration of ABT meters details such as location of installation - Entity & sub-entity name, feeder name, Meter - Sr. No, Accuracy Class, CT/PT ratio etc. On the basis of details entered by the User, Multiplying Factor (MF) will be computed automatically and will be stored in the database along with time stamp and modifier details. System should have the feature for manual entry of total energy data (which should be equally divided in the time blocks of the specified period)), MF etc. for a meter, if required, with configured adequate approval.

ix. System will allow uploading meter data from installed energy meters of interface points on Grid sub-station level manually as per approved authorisation from SLDC in the software.

x. System will have the interface for configuring / linking the ABT meters with polarity to the entities. Also, categorize and prioritize meters as Main, Check, Audit & Standby which will be used while computing energy for any interface point / entity.

xi. System should be capable of maintaining the history of meters and service points like transformers, CT, PT, MF, feeders etc.

xii. Provision to enter month end final energy readings for each interface point. Provision for entering multiple set of readings due to change in energy meter during the month. While entering manual energy readings, standard validations will be provided to validate current month reading against last month reading,

xiii. Provision for manual entry of auxiliary power consumption at sub-station level by designated users and with additional feature of uploading the excel sheet of auxiliary consumption of different substations. (The Auxiliary energy should be equally divided in the time blocks of the specified period)

xiv. Fetching of CGS/GRIDCO SEM data available in ERLDC website for calculation of transmission losses, DSM and for such other purposes. It should be able to fetch and modify all kinds of text files (Tertiary, Frequency, OPGC, DULUNGA etc.) from ERLDC website for accounting purpose as defined by SLDC. Further provision should also be available for manual processing of above data in this application server.

xv. Software will have the provision to read 15minutes/5minutes or regulation specified blockwise all parameters (e.g. active export, import values, reactive high / low, midnight values, VA, voltage etc.) and update the same in the database as per the period defined by the user and use of the same for various necessary reports.

xvi. The software should have provision of authentication based on user roles (like user management). Admin role should have access to edit/modify/create all module functionalities.

xvii. The software should have provision to view all desired parameters (like active MWH, Reactive power MVARH, VA, voltage etc.) in a customised and formatted way (in tabular as well as graphical view).

xviii. The software should have provision to generate graphical and tabular report based on meter output data.

xix. The software should have provision to calculate the fictitious meter power reading in MWH, MVAR, VA etc. for selected fictitious meters for a particular date range as per logic defined by SLDC.

xx. The proposed software is required to be integrated with existing meters (ABT/Non ABT) data and with the data acquisition software to be installed at SLDC for ABT meter data acquisition (AMI). The file generated through the data acquisition software is to be uploaded in the database. Presently AMI facility is not provided at all the interface point, therefore software will also have the provision for automatic downloading of load survey data from email/ portal and converting into readable format XML / NPC/CSV/ascii etc. and uploading the same into database, in addition to updating meter data from the system.

xxi. Data migration from existing system: -

The objective of this data migration strategy is to seamlessly transfer data from multiple sources, including legacy software systems, Excel spreadsheets files, and database, to state-of-the art new SAMAST applications.

The supplier shall be responsible for successful migration of data from existing system to the new system during the contract period. The migration process will ensure the continuity and integrity of the data while leveraging the advanced features and functionalities of the new software. The process encompasses data extraction, transformation, and loading, adhering to stringent data quality and security standards throughout the migration process.

xxii. The system will be able to read in XML, NPC, text format etc. for ABT meter data and store it in database, to be integrated with the Metering module. The system will also be capable to read meter data of any other meters installed at interface points.

xxiii. Event reports must be generated by extracting the events recorded in the meters for all the interface points as per SLDC requirement weekly/monthly/yearly/user defined period etc.

xxiv. The software should have the provision to display one or more meter data in the same window

for analysis purpose in tabular and graphical view. (For all Parameters)

xxv. The system will be capable to generate the following reports. –

a) Data Non-availability report
b) Injection/drawal report of sellers / buyers
c) Any other report based on meter parameters as required by SLDC
d) Dynamic report: User defined report using available meter data parameters.
e) Analytical report: Feature to display same meter data or different meter data of different periods in a single window and generation of the same.

xxvi. The module should have a dashboard feature displaying various information and shortcuts as defined by SLDC.

xxvii. All the above functions and reports should have the print option at every steps/window and save options in formats like csv, pdf, xls, text, word format etc.

3.3 Module-3 Energy Accounting

Development and Implementation of State Energy Accounting Module:

A. State Energy Account

B. State Reactive Energy Account

C. State Transmission Loss

A. **State energy Account:**

The module will implement solution, which can generate provisional and final statement for State utility in line with SEA (State Energy Accounts). The Energy Account of all entities (SGS, IPP, CPP, ISGS, Renewable Generators, DISCOMs etc), will be the output of this module.

Energy Accounting Management for EBC (Energy Billing Centre)

The objective of this module is to implement solution which can generate provisional and final statement of energy drawal/injection for State utilities in line with SEA (State Energy Accounts)

a) Software should be flexible enough to configure and process both 15/ 5-minute or regulation specified block wise meter data for compliance with future requirements.
b) Software should be able to generate various reports by processing all the parameters available in MDM module (Energy meter dump data as received from either AMI or other electronic means like email, portal etc.) along with the flexibility of modifying and generating new reports as per requirement.
c) System should able to generate reports for block wise (15 minutes /5 minutes/ or any) active export and import values, reactive energy, VA, phase wise current, phase wise voltage etc. values for all interface points using the meter data (Main, Check ,Audit and Standby).
d) Solution should compute the accounting by default on main meter along with provision for, selection facility to select/reject the Main/Check/ Standby meter that has to be considered

for billing on approval basis (in case of time synchronisation, duplicate rows etc.), when required. In case of absence/ any issues in main meter data, check meter data should be selected for billing automatically along with provision to consider Audit/Standby meter data (by managing parameters) and incorporating loss.

e) Software will generate Main-Check comparison report and Main-Check-Audit-Standby comparison report for each entity, indicating the percentage difference weekly/monthly/ user defined period.

f) Software will have provision to generate Tabular/Graphical comparison of two or more meters for different parameters in weekly/monthly/ user defined period in a single window for analysis purpose.

g) Solution should also be able to generate high voltage, low voltage, Average voltage, maximum loading, minimum loading , Average loading, Total loading reports etc. for each interface points/Entity/ Substation/ Area wise and voltage level wise etc, along with date and time of occurrence as per logic given by SLDC, weekly/monthly/yearly/ User defined period. The minimum value considered should be zero and other than zero.

   i. The Substation wise voltage reports generated should always be by considering the energy meter with no critical events (like PT fuse fail, Under voltage, Missing potential etc.) or managing such events as per user requirement.

   ii. The above Loading reports should always be generated by considering the meters and estimations used in billing procedure.

h) Software should have features for addition, deletion, estimation, selection etc features for user identified events during certain periods due to various reasons as per the logic provided by SLDC, using one or more meter data. This feature should be accompanied by a comments/remarks section which may later be generated as a report (Billing Information Report) for the billing period. This feature should be accompanied by the frequency of computation like weekly/monthly/yearly/user defined period etc.

i) Provision must be provided in the software for calculation of energy drawal for a particular interface point considering various energy meter data and implementing various logics by SLDC.

j) Software must generate a report of transformer loss by considering the energy meter data of HV and LV side calculated for selected period and line loss considering both end meter data.

k) Software must be able to calculate Simultaneous Maximum Demand (SMD) of each DISCOM separately and State as a whole. And also Grid wise Maximum/ Minimum/ Average demand of a month/ range specified period along with date and time of occurrence.

l) Event reports must be generated by extracting the events recorded in the meters for all the interface points as per SLDC requirement viz. weekly/ monthly/ yearly/ user defined period etc.

For the above events fetched from meter data, the software should display a window for user approval w.r.t. events (like time set request/duplication of dates/meter power off/under voltage/Low potential/CT terminal Open etc.) to consider Check/Standby/Audit meter instead of Main Meter in the billing procedure. The said selections and respective reasons/comments should be incorporated in the Billing Information report.

m) The Station consumption (auxiliary) report should be generated for each billing cycle, which should be subtracted from total energy consumption of DISCOMs. (The Auxiliary energy should be equally divided in the time blocks of the specified period)

n) Provision to generate Frequency (SEM data as extracted from ERLDC site) report showing the percentage of frequency occurs in various ranges defined by user and maximum/ minimum/ Average frequency, weekly/ monthly/ yearly/ user defined period .

o) Provision to generate monthly/ range specified Energy Abstract covering Energy inputs, Voltage/ load profile, OA energy, Net Energy etc. for each Entity/Discom/State etc.

p) Provision for tailor-made reports as per user requirement for Substation/Entity/DISCOMs etc. considering Active import, Active Export, Net Active (Import-Export) etc. and logics defined by user.

q) Implement dynamic report feature to apply user-defined filter criteria and generate reports at State, Discom, sub-station, transformer, feeder, consumer level, etc.

r) **Bill revisions:** Provision should be available for bill revisions at different points of time with regard to various reasons/ issues, which should be mentioned during re-billing as re-bill reason and an abstract should be generated for each billing cycle mentioning the no. of revisions with reasons with date and time, user account etc.

The software should maintain the history of each bill revisions

s) **Net energy bill statement:** A consolidated report should be generated after Final DISCOM billing for BST bill purpose, mentioning the Net DISCOM energy consumption (Excluding Station consumption), SOLAR import, Net Open Access energy (Min. Of Actual Vs schedule), and also have the provisions to accommodate revisions.

The software should be able to compute block wise OA energy by comparing the OA schedule and Actual energy drawal from meter data, for determining the quantum of OA of the customer as per the logic defined by SLDC. This will be used as input for Discom Net Energy Statement and Wheeling computation.

While preparing the above statement for Discoms, various Solar, CGP etc. Energy injection/drawal, as applicable shall also be taken into account for final Energy statement.

t) **Wheeling bill:** A consolidated report must be generated for each DISCOM separately after Final DISCOM billing for wheeling bill purpose, mentioning the Net DISCOM energy consumption (Excluding Station consumption), 33/11kv export (Solar, CGP etc.), Net Open

Access energy (Min. Of Actual Vs schedule) etc, and also have the provisions to accommodate revisions. The said bill will be as per OERC regulation and following amendments.

u) **Power banking**: System should have feature to address banking of power for RE generators as per OERC regulations like banked energy, withdrawn energy, compute lapsed energy and generate associated reports.

v) **REC Account:** Development of a module to prepare report of monthly/ yearly/ Range Specified energy data i.e. Energy Injection Report (EIR) for REC (MWh) issued by NLDC, Total Energy Generated in a month, Aux Consumption, Self-Consumption, Opening & Closing Balance of REC of the REG registered in State/NLDC.

System should have feature to address the energy accounting for Open Access Consumers (OAC) as per OERC regulations and generate associated reports.

B. **State Reactive Account (SRA):** The software should have the provision for generation of Monthly / weekly/user specified State Reactive Account (SRA) in accordance with OERC / CERC regulations in force and subsequent amendments thereof, which comprises of monthly / weekly /user specified reactive energy charges payable / receivable by the Discoms, Open Access Customers and Open Access Generators and other such entities based on actual net reactive energy drawn /injected under high and low voltage condition

a) The software will maintain the Reactive energy pool account by settlement of Reactive Energy Charges considering the Regional Reactive charge amount obtained from REC Pool Account of RLDC. The respective reports shall be generated as per user requirement.

b) The software shall have a mechanism to verify the Regional Reactive Charges computed by ERPC and regional reactive amount computed by ERLDC for pool balancing of reactive energy charges

c) System will also generate detailed day-wise net reactive energy injection / drawal during low voltage and high voltage condition in KVARH and summary statement for each DISCOM(s), OAC, OAG, each DISCOMs embedded OAC and OAG

d) Provision should be available for Reactive energy charge bill revisions at different points of time with regard to various reasons/ issues, which should be mentioned during re-billing as re-bill reason and an abstract should be generated for each billing cycle mentioning the no. of revisions with reasons with date and time, user account etc. A notification should be generated for revision of reactive bill after each revision of reactive energy accounting.

e) The software should maintain the history of each reactive energy bill revisions

f) Entity wise Bill Statement must be generated for each billing cycle (monthly/ weekly/ regulation specified) and also for subsequent revisions.

g) **Supplementary reports:** System will be able to develop following reports as per

OERC / CERC regulations:

i. **State Energy Account (SEA):** Monthly / Regulation Specified/ User Specified State Energy Account (SEA) to be prepared as required by SLDC for the billing and settlement of Capacity Charges and Energy Charges. After due approval of appropriate user, the said report should be displayed in website.

ii. Monthly/ Regulation Specified/ User Specified SEA report will comprise of availability of generating stations and Ex-Bus energy scheduled to DISCOMs from generating stations (SGS, ISGS, CPPs, and REGs) including energy purchase / sale by the OPTCL under MTOA/ STOA / Bilateral / Collective transactions.

iii. System will be integrated with scheduling module to automatically exchange data of final Declared Capacity (DC), Requisitions, Implemented Schedule etc.

iv. System will have the interface for recording COD status, Auxiliary Consumption, Normative DC and PLF etc. to be used for computation for SEA

v. In addition to SEA, system will also generate following reports

a. Computation of Plant Availability Factor (PAFM) achieved during the month and cumulative during the FY in percentage (%) for each SSGS as per PPA contracts/ OERC regulations/ CERC regulations/ logic provided by SLDC for which the energy accounting module must be integrated with Scheduling module. Provision of report revision for various reasons must be present along with saving of said history.

b. Details of energy entitlement to DISCOMs which includes month- wise and day-wise or user specified entitlements.

c. Firm and Infirm energy purchased by DISCOMs from CPP and other sources.

d. Details of bilateral / collective transactions details for power purchase, sale and banking from various sources on Short Term and Medium-Term basis.

e. Other details like share allocation, drawal schedule, etc. will be made available.

f. All the reports must be month wise basis or user specified dates.

g. All the major accounts / reports will be posted on website automatically after internal approvals.

h. Integration of Energy accounting with an internal e-mailing server through SLDC email accounts for facilitating two-way communications between SLDC and transmission / generator / DISCOMs users.

i. Email / SMS notifications to be sent to users on generation of major reports.

j. The said module should have a dashboard feature displaying various information and shortcuts as defined by SLDC.

C. **Transmission Loss Account:** System should be capable of computing monthly/ user specified

loss (% and KWh) on 132kV/ 220kV/ 400kV/765 kV etc. as per CERC/OERC Regulations using all G-T, T-D and other energy handled within intra-state. The loss data will be migrated and used in Scheduling module for day-ahead scheduling. In addition, the software should provide summary report indicating the net injection from SSGS and ISGS, net drawal by the Discoms/ other entities and loss in Kwh& % round off and Meter wise details of net injection from SSGS & ISGS and net drawal by the Discoms and OAC's etc..

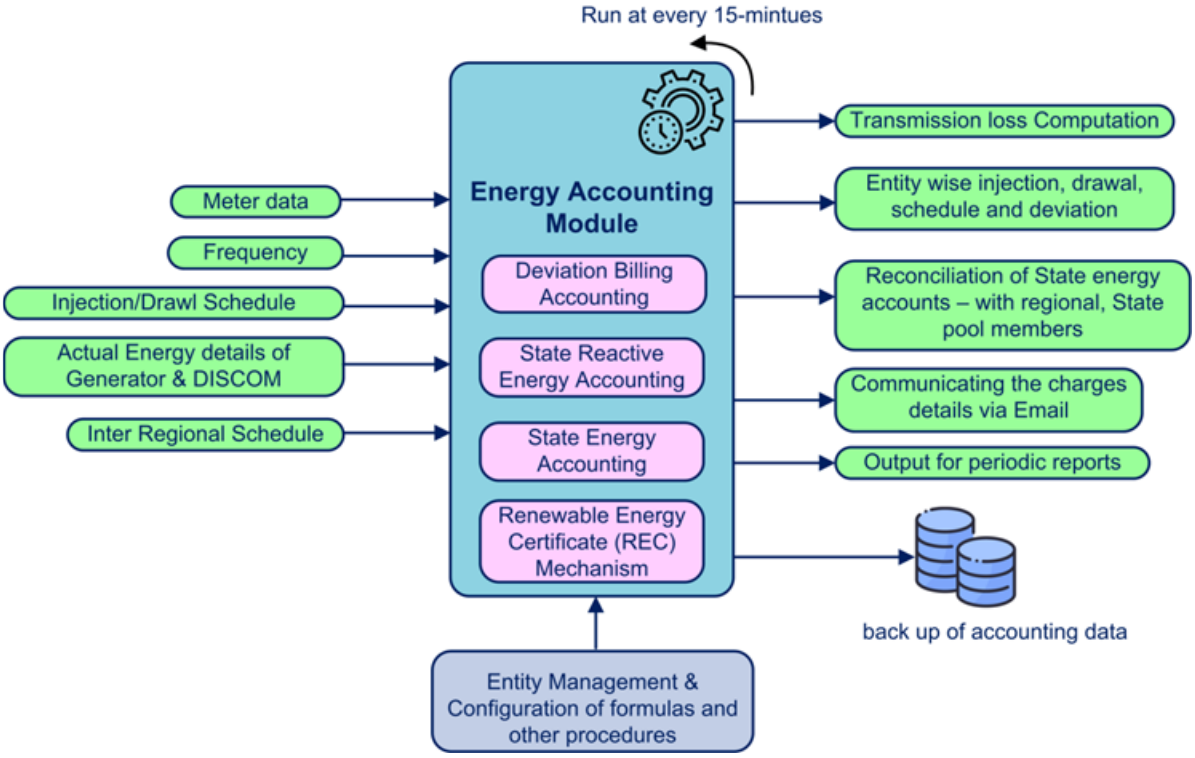


Figure 5 Energy Accounting Module

REC Mechanism Features:

I. The software will have the provision for configuration of Renewable Energy Generators qualified for REC mechanism. The details required to be configured are Name of RE Generator, Type, Address, installed capacity, location of installation, connectivity details, Accreditation No, Registration No., date of registration, Validity from Date & Validity to date, Metering details, sale details, applicability of REC/RRF mechanism etc.

II. The software will have the interface for entering the monthly energy injection received from concerned wing/ real time of Renewable Energy Generators (Wind Electric Generators (WEG's), Solar Generators, Small Hydro, Biomass and others) at the common metering point generator-wise and Discom agreement-wise, energy purchased by Gridco,

and energy wheeled to DISCOMs for own use / third party sale as furnished by respective DISCOMs.

III. The software will be able to generate the following reports –

a. Summary report indicating the total installed capacity for wind, solar, biomass, biogas or any REG type.

b. Report indicating the configuration details for each REG grouped into type of renewable power.

c. Monthly / weekly energy injection report for each type of renewable energy generation.

d. Any other report required by SLDC.

3.4 Module-4 Deviation Settlement Mechanism (DSM) Deviation Accounting and Additional DSM Charges and Settlement Module:

This module should be capable for generation of daily/ weekly/ monthly/ yearly or user specified Deviation Bills.

i) State Deviation Settlement Account (SDSA): This modules objective is to prepare Monthly / weekly / user specified State Deviation Settlement Account (SDSA) by SLDC for the billing and settlement of Deviation charges. It comprises of monthly / weekly / user specified Deviation energy as a deviation in actual net generation / drawal from scheduled generation / Drawal and corresponding Deviation charges payable / receivable by the respective entities (SGS, IPPs, CGP's, Discoms and OACs).

ii) Computation of deviation charges will be as per the OERC / CERC regulations in force and subsequent amendments thereof. The State DSM Pool account shall be prepared considering the above deviation charges and Regional Deviation charges (payable/receivable) amount obtained from the Regional DSM account prepared by ERPC.

iii) System will be able to compute energy settlement (if any, in place of DSM) for open access customers as per OERC/ CERC procedure.

iv) System will be integrated with scheduling module to automatically exchange data of Implemented Schedule. It will use Frequency, ABT meter data in 15 / 5 minutes or regulation specified block wise for computation of Deviation charges.

v) The system should be able to access frequency, ACP and GRIDCO drawal etc. data from ERLDC/NLDC/ Energy Exchange website for deviation calculation as per OERC/CERC regulation. Further provision should also be available for manual processing of above data in this application server.

vi) In addition to SDSA, system will also generate following reports (weekly/monthly/user specified)

a. Detail statement of Day-wise and total Deviation (weekly/monthly/user specified) for each entity, which include Scheduled Energy, actual energy, Deviation Charges, additional Deviation Charges, Reference charge rate etc.
b. Deviation Pool Summary indicating adjusted Deviation Charges, Capping Amount, Additional Deviation Charges, net amount payable & receivable by the Intra-state Entities and GRIDCO for intra state transaction.
c. Details of mis-declaration of Declared Capability by State generating Station (if any).
d. Details of Time-Blocks of suspension of Deviation due to transmission constraints and grid disturbances.
e. Block wise details of Deviation Charges for each entity.
f. Deviation status report, Report on entity wise deviation amount paid and received monthly in tabular form, Bill Summary report & Quarterly Reconciliation Report in tabular form to be generated
g. System will be able to maintain and generate a report of DSM charges paid/received by entities along with withstanding amount and interests to be paid.
h. Entity wise Bill Statement shall be generated for each billing cycle (monthly/ weekly/ regulation specified) and also for subsequent revisions.

vii) Congestion charges/ Account for intra-state entities:
   a. Provision in software to maintain/ capture details/ time interval of congestion period as notified by RLDC/ SLDC.
   b. Software should have the provision to calculate congestion charges for intra-state entities for the congestion period as per OERC/CERC regulation.

viii) Billing, Collection and Disbursement: System will have feature of recording the payment received against Deviation Charges and Reactive Energy Charges. Maintaining the State Deviation Pool Account and State Reactive Pool Account. The principal and interest component of each Intra-state entity will be maintained separately. Generate report indicating the payment received or due on the entities or any other report required by SLDC.

ix) All the major accounts (SEA, SDSA, SRA etc.) will be posted on website automatically after internal approvals.

x) Integration of Settlement System with an internal e-mailing server through SLDC email accounts for facilitating two-way communications between SLDC and transmission / generator / discom etc. users.

xi) Email / SMS notifications to be sent to users on generation of major accounts - SEA, SDSA, SRA etc.

xii) The said module should have a dashboard feature displaying various information and shortcuts as defined by SLDC.

Deviation Bill Preparation Module:

This module should be capable of generating UI/DSM bill as per the OERC/CERC Regulations and amendments from time to time, for Generators/ Buyers/ Discoms/ OA customers etc.

The module to be designed for recording details of payments related to energy imbalance settlement such as amount, mode of payment, date of payment, etc. The module will have general ledger, accounts payable, accounts receivable and will generate necessary reports as desired by SLDC, OPTCL.

DSM Bill Revisions: Provision should be available for bill revisions at different points of time with regard to various reasons/ issues, which should be mentioned during re-billing as re-bill reason and an abstract should be generated for each billing cycle mentioning the no. of revisions with re-bill reasons with date and time, user account etc.

The software should maintain the history of each bill revisions

Payments Accounting Module:

SLDC, as per OERC/ CERC regulations, collects One time/ Monthly/ Annual fees and charges from generators/ open access entities/ drawing entities for the services pertaining to various functions like scheduling operations, open access approvals, energy accounting, DSM and Reactive billing etc. The objective of this module is to manage all such transactions at one place by aggregating relevant information from various functional modules for the purpose of accounting and audit. Following functionalities should be developed:

a. Feature of calculation and verification of all kinds of fees & charges as per the OERC /CERC orders for SLDC.
b. Provision of managing user/ beneficiary records, share allocation data (ISGS/ MTOA/ LTOA/ STOA etc.), generating station installed capacities, transmission licensee circuit Kms. and other data for the calculation and verification of SLDC charges as per the OERC /CERC regulations.
c. Repository of weekly/ monthly/ annually or user specified bills for all registered beneficiaries.
d. Pool account management, receipts, disbursements, delay payment charges etc.
e. Provision to generate revised bills.
f. Entry, verification and approval of payments made towards the generated bills.
g. Payment entry and approval.
h. SLDC annual charges management.
i. TDS/ GST and Reconciliation.
j. Billing Summary which includes details of current bill along with arrears/dues/outstanding if any and Payment reports.
k. **Log Module:** This module should be capable of logging all types of events with time stamping e.g., Server H/w Problem, UPS tripping, User Login/Log out Timings etc.

l. **Administrator Module*:*** For one Time Critical Data, User Management and permission etc.

m. **Pool Account:** This module should be capable of:

Maintaining, producing, monitoring Deviation System Pool account, Congestion Charge pool Account, Reactive Energy Pool Account, Interest Charge on the said Pool accounts etc. accommodating subsequent revisions and revision reason.

n. Validation of State Active & Reactive Energy account of State (Energy imported from ISGS & other inter-state energy charges)

o. Monthly Energy account of LTOA, STOA, MTOA Customers for recovery of Transmission charges as per prevailing regulations.

All the above functions and reports of all the modules should have the print option at every steps/window and save options in formats like csv, pdf, xls, text, word format etc.

All the modules should have the provisions for custom defined reports which can be created at user end.

All the modules should have interlinking that needs to be displayed in the Dashboard of each module as WORK QUEUE as per requirement of SLDC.

The system should prompt consequences and conformation before doing any major changes such as deleting, updating etc.

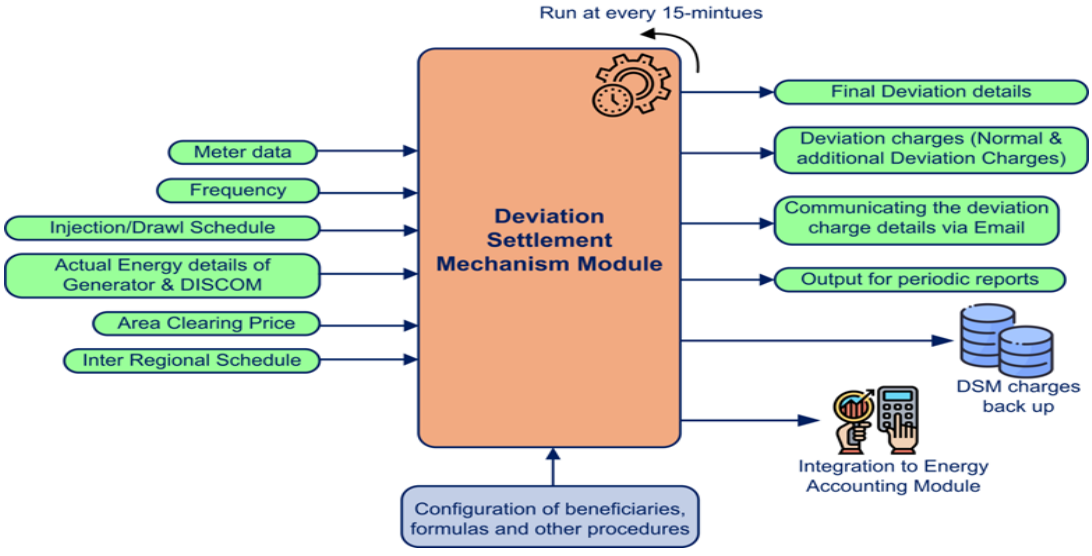


Figure 6 Deviation Settlement Module Input /Output diagram

3.5 Module-5 Open Access transaction management (Short term / Medium term/ Long Term) Module with payments accounting.

General Provisions:

Develop workflow based online system for facilitating registration of intra-state entities/ OA customers, submission and approval of OA applications with the following provisions.

1. Processing of applications for intra-state STOA/MTOA/LTA by SLDC/STU as per the applicable regulations of appropriate Regulatory commissions from time to time.
2. Processing the applications for issuance of concurrence by SLDC/STU for inter-state STOA bilateral transactions.
3. Processing the applications for issue of NOC for inter-state LTA/MTOA as applicable.
4. To realign the features of the software module in accordance with change in rules, regulations and orders of governments /appropriate Regulatory commissions from time to time.(eg.Full-fledged implementation of GNA Regulations of CERC and Green Energy Open access Rules of MOP, Govt. of India)
5. Registration facility for STU, CERC registered traders and Open Access customers for intra-state and inter-state categories in line with OERC / CERC regulatory formats for specific duration, quantum, corridor, etc with In-built validation and escalation mechanism to be incorporated to ensure that applications are processed by the respective approving authority within the specified time limit in accordance with the relevant OERC/CERC regulations and orders.
6. Feature of linking application with registrations with necessary in-built validations
7. Provision to validate and process the application as per the allotment priority as stipulated by the relevant OERC regulations and orders for granting permission for short term open access transaction as per availability of transmission Margin for STOA.
8. Web access to the Distribution Licensees (only for granting the consent with in the cut-off date as applicable) so as to enable the OA customers for seeking the consent of the distribution licensee prior to submission of OA application to SLDC. Facility with rights of the distribution licensee to send back the application to the applicant by applicable cutoff date for communicating deficiency or defect in application. Also there shall be Facility to direct the application to SLDC if the Distribution Licensee does not grant the consent by the cutoff date or otherwise.
9. Web access to the STU only for granting the consent to SLDC. Only after the success of the above work flow, the application shall reach SLDC with a parallel notification to the STU and if the STU does not grant its consent within 3 working days, then SLDC shall approves the application.
10. Ability to capture details like TTC, ATC, LTOA, MTOA etc. for CTU-STU corridors, various Zones within State for calculating margin for various open access categories.

11. Develop provisions for calculation of different open access charges applicable to OA applicants andgeneration of applicable payment schedules.
12. Integration with NOAR application of fetching registration and NOC approvals.
13. Provision to incorporate the approved transactions details in day-ahead/intra-day scheduling in accordance with the provisions of the relevant OERC regulations and orders in respect of intra-state ABT/CERC Regulations as applicable.
14. Provision to incorporate real time curtailment of implemented schedules arising out of system constraints along with the down ward revision/surrender requests received from the STOA customers thereby facilitating the issuance of revised STOA approval/ schedule in accordance with the provisions of the relevant OERC regulations/Amendments and orders in respect of intra-state ABT
15. Generation of energy accounts for Open Access entities as per period specific/entity specific requirements of SLDC/Users.
16. Details of approved/concurrence or rejected open access schedule transaction details with time andblock wise in summarized form for specific period.
17. Provision for calculating/generating bill for the wheeling charges against the inter-state bilateral transactions of the STOA customers having their point of connection with a voltage level of distribution system (33kv and below)
18. Details of customer wise payment schedule including the transmission charges, wheeling charges, cross subsidy surcharges, etc. and operating charges along with scheduling details (requested and accepted) for specific period of open access with a provision for generating consolidated monthly/Time period specific report comprising all such details.
19. Web access to OA customers for filling in the details of payment made by them against the OA charges such as transmission charges, wheeling charges, application fee, operating charges and TDS details (if any) for facilitating further refund/reconciliation and disbursement along with provision for generation of monthly consolidated statement of such records. Auto tracking of the outstanding dues of the applicant and not allowing to punch new applications in case of such outstanding amount.
20. Dashboard for SLDC with a provision for generating customized view of the entity wise as well as monthly/date wise/ Discom wise OA transaction details (details of requested/implemented schedule and payment of OA charges with outstanding dues considering the calculation methodology for applicable delay payment surcharge.)
21. Facility to view the status of application vis-a-vis consent/approval pending with whom and for what /approved etc at each step

22. All the payments to be made through single payment gateway system only from the bank account of the applicant registered with the portal through any acceptable means of payment instruments like Net banking, cards, Drafts, cheques while keeping record of such payments.

Functionalities

The software module is to create a Portal / Registry for SLDC for processing of Intra-state Open Access approval and to issue NOC for Inter-state Open Access transactions with a single payment Gateway for payment of all charges related to Open Access Transactions. The Portal will provide access to Users such as all Licensees i.e. STU (All Zones), all Discoms and Open Access Customers such as Trader/ /Power Exchange/Discom/ Generator/ Consumer applying for Medium/Short Term Open Access and NOC.

Following Modules to be developed to manage Open Access Transaction

1. Registration
2. Application Dashboard
3. Payment
4. Reporting and Analytics
5. Admin

1. **Registration Module:**
   The users listed above shall get themselves registered in the portal by submitting the following details.
   a. **Demographic Details-**Name of the Utility, Parent Company Name as per PAN, Postal Address of the Utility, User Category (PX/Trader/STU-Specific Zone/Distribution Licensee/CGP/IPP/State Generator, Utility Type (Injecting/Drawee/Both).
   b. **Injecting/Drawee Details-**Total Installed Capacity (MW), Auxiliary Consumption (MW), Ex bus quantum (MW) along with unit wise details like fuel type and COD particulars/First time charging Certificate etc along with provision to upload the supporting documents-in case of injecting utility
   c. **Connectivity Details-**Voltage Level and feeder Name at point of connection, connected with (STU/ Distribution Licensee), Name of Distribution Licensee with whom the utility has connected and Contract demand in MW, Documentary proof of connectivity Certificate, System study report of STU with validity period (automatic notification when system study expires), Uploading of Single Line Diagram
   d. **Metering details-**for uploading valid document bearing the main meter and check meter serial nos jointly signed by STU/DISCOM along with the SLD clearly showing the metering points.
   e. **Contact Details-**Name, Designation, Mobile No, Email id (primary and Secondary)
   f. **Financial Details-**PAN, TAN, GSTIN, Bank Account Details with IFSC Code/Cancelled Cheque and uploading the relevant Documents.
   g. **Waiver Details-** RE Utility with source of generation /State Utility (GRIDCO).
   h. Additional documents if any

2. **Application Dashboard:**
   a. Submission of Application: It shall be capable of allowing the applicants to submit /

edit/withdraw an application for open access and to upload various documents like payment details of application fees, Consent of the buyer and seller, PPA's/PSA's etc in accordance with the OERC/CERC applicable regulations as the case may and subsequent amendments from time to time their in.

b. Tracking of Application: It shall allow users to track the applications as submitted above in the following modes.
c. View Status: to view the current status of the application
d. View Application details: to view the application details related to capacity, period & time block etc.
e. View transactions: to view the application information for different application category including Pending, Approved, Rejected, Scheduled and revised applications and reasons in case of revision/rejection.
f. Search: to see the Application details related to applied maximum ceiling, date of application, approval/rejection date and time block etc. Software should be able to check the quantum and duration of power sold / purchase by the seller / buyer through power exchange / bilateral mode. The Applicant cannot be able to apply the quantum of power more than its capacity / contract demand through power exchange/bilateral put together
g. Message: to view Message received for various processes/documents deficiency.
h. SLDC shall be able to issue approval/concurrence or seek for more information from the applicant as per the applicable regulations while STU and distribution licensees shall be able to access and issue their consent/denial thereof.
i. There shall be a sub section for allowing the applicants to submit their surrender/downward revision/relinquishment request along with quantum and time period against their already approved transactions and accordingly SLDC shall be able to issue revised approvals in accordance with the applicable regulatory provisions and time limits laid down in the GRID Codes.
j. There shall be provisions for SLDC to revise an approved transaction in real time basis in case of transmission constraints and other force majeure conditions as per the regulations and Grid Codes applicable.
k. All the audit trail of the aforesaid activities shall be time stamped and saved in the system software ready for future access.
l. Provision shall be there for uploading and down loading of various documents/ approvals in excel and pdf formats as desired by the Users.

3. **Payment Module:**
   a. Shall be capable of allowing the applicants to make payments from their registered bank account against different heads of open access charges like application fees, Transmission charges, Wheeling Charges, Scheduling Charges and any other charges as per the applicable rules and regulations.

b. Shall have scope for reconciliation and disbursement of different charges by SLDC to different entities.
c. Shall be able to calculate and keep track and facilitate SLDC suitably in making the refunds arising out of revisions/curtailments due to surrender/relinquishments/transmission constraints and other reasons as applicable by the rules and regulations.
d. Shall be capable of generating reports related to entity wise payment receipts under specific charges of open access along with TDS particulars, UTR no, Date etc as per the configurable requirements desired by SLDC.
e. Shall be capable of identifying and enlisting the defaulters there by calculating the delay payment penalties while being able to generate such reports and auto notifications to the defaulting entities on weekly /monthly basis.
f. Shall be capable of retrieving and interpreting the formats of reconciliation/payment details of all the power exchanges of India and RLDC's on monthly/weekly basis so as to consolidate and generate reports on as and when required basis.

4. **Reporting and Analytics:**

a. Application/Approval detail Report: This Report lists all the applications applied/approved between the specified dates listing the details of the injection/drawal points, quantum applied/approved, region, time blocks, Open access charges applicable and the routes etc.
b. Payment Receipt and Disbursement Report: This report shows the details of the amount received and to be disbursed to different entities involved the transaction for which Applications are processed /approved during a particular time period.
c. Payment Disbursed: This report shows the details of the payment disbursed for a particular month of the year.
d. Quantum View Report: Shows the surplus margin available in the State Network to be approved for all the applications in the approval also the margin available for each customer for a specific open access transaction after deducting the already approved open access quantum from the maximum allowed /permissible ceiling.
e. User Tracking Report: This report details the processing done by any user identified by login between the specified dates.
f. User Permissions Report: This report shows the different users of the application and their privileges.
g. Refund Report: This report shows the amount to be refund/reconciliation during a particular month of the year against any surrender or curtailment of power for any particular approval.
h. ATC Report: This report shows the Available Transfer Capability for an Element/corridor(s) during the specified dates.
i. All the approvals shall be downloadable in pdf format for easy access by the applicants and the STU whereas the approvals involving the charges of distribution licensees shall be downloadable by the distribution licensees.
j. The system software shall be capable of communicating the approvals with the scheduling

module for generating consolidated time block wise approved schedules for the open access customers. Further, it shall be capable of organizing these schedules discom wise for any particular time period as desired by SLDC/any User. It should also be able to generate entity wise report considering the energy source (differentiating RE-Solar/Non-Solar/ LHP and Conventional sources for any time period on as and when basis as per the customized requirements of SLDC.

k. There shall be provision to generate the consolidated time block wise as well as entity wise abstract for both injecting and drawee entities at defined points of injection and drawl taking in to account the applicable losses thereof along with group captive wheeling details.

l. Facility for uploading the historical data in the data base and enabling populating in SLDC website as per the requirements defined by SLDC.

5. **Admin**

There shall be provision to make a repository of the approved open access charges like Application fees, Scheduling charges, Charges STU and Distribution licensees, Losses for STU and Distribution licensees applicable for a time period as notified by appropriate commissions keeping the modifying rights lying with SLDC along with updating the bank holiday list. Other configuring rights like changing various parameters/information related to but not restricted to the entity's details shall be provided to SLDC/other users as per the operational requirements that may arise from time to time.

6. **Platform Integration**:

a. The Open Access web portal shall be integrated with existing website of SLDC. A link shall be provided on the existing website of SLDC by clicking on which, user/applicant shall be redirected to the login page of web portal. After entering the user id and password successfully from this option, open access portal will get opened and user can work accordingly.

b. Provision shall me made to follow a standard practice for seamless integration with the various platforms/Reports of NOAR, GOAR, RLDC, Power Exchange platforms for better data retrieval and unique identification of entities.

7. **Software/web portal availability:** Software/web portal shall be designed/maintained in such a way so that, it remains available for applicants/users for more than 99.99% of the time.

8. All the above provisions, procedures and work flows shall be in compliance with and configurable as per the applicable regulations by OERC/CERC and the rules orders/directives of state/Union governments in force from time to time and case specific operational requirements of SLDC.

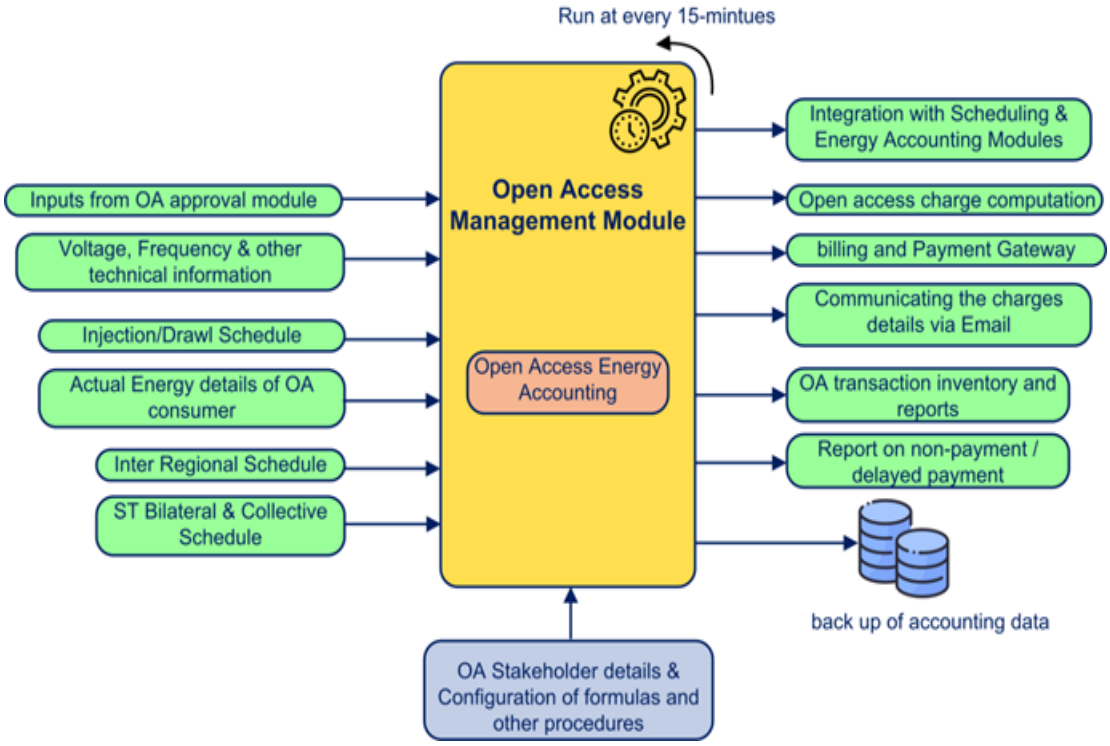


Figure 7 Input / Output Diagram for Open Access Management Process

Cross Subsidy Charges Billing for OA consumers

The approved OA Schedule such as Bilateral, Collective and Intra-state transactions and actual drawal will be the inputs for preparing cross subsidy surcharge bill by the SLDC for Discoms.

3.6 Module-6 Outage planning Management including First time charging approval for New Connectivity.

Outage Planning Procedure & Scope

i. Annual Outage Planning

Annual outage planning for state transmission system elements (Lines/ Tfr. and other) report shall be prepared and finalized by OPTCL as per the provision of OGC/ IEGC and implemented on real time basis.

ii. Real time outage planning

a. Intra-state transmission elements:

The designated officer of OPTCL shall submit the shutdown proposal to SLDC on web-based on-line application for planning and managing outages before three days. In case

there will be any area load interruption due to the outageproposal, consent of the DISCOM authority shall to be attached with the proposal. SLDC after scrutiny considering system stability and other factors shall allow the outage proposal. For 400kV and above transmission element outage, SLDC shall forward the proposal to ERLDC for concurrence and allow after ERLDC concurrence.

b. Inter-state transmission elements:

The designated officer shall submit the proposal by 12.00 hr of 6th day (preferably working day otherwise on previous working day) of previous month to SLDC for availing shutdown of any Inter-state transmission elements owned by OPTCL / intra-state transmission elements above 400 kV Voltage level. SLDC shall upload the proposal in ERLDC portal for approval. The proposal will be approved in the Outage meeting of ERPC. After approval by ERPC, the designated officer will submit requisition for shut down on D-4 basis (Four working days in advance for shut down proposed on the Dth day). The requisitions will be forwarded to ERLDC for final approval, which will be communicated by ERLDC on D-1 basis after detailed study. Approval is intimated before one day to the authority.

c. Inter-regional transmission elements:

The designated officer shall submit the proposal by12.00 hr of 4th day (preferably working day otherwise on previous working day) of previous month to SLDC. SLDC shall upload the proposal in ERLDC portal for approval. The proposal will be approved through Outage meeting of ERPC / NLDC. Subsequent to approval by ERPC / NLDC, the designated officer will submit requisition for shut down on D-4 basis (Four working days in advance for shut down proposed on the Dth day). The requisitions will be forwarded to ERLDC for final approval, which will be communicated by ERLDC on D-1 basis after detailed study. Approval shall be intimated before one day to the authority.

d. Emergency shutdown of transmission elements:

The designated officer shall submit the proposal to SLDC on real time. SLDC shall allow the proposal in case of intra-state transmission elements.

In case of Intra–State transmission elements of 400KV and above / Inter-state / Inter-Regional tie line, the designated officer shall submit the proposal to SLDC on real time with proper proof (Photograph of affected portion with time stamp) which will be forwarded to ERLDC for approval.

e. Generator outage planning:

Hydro stations shall avail unit shut down between November to June of the year for annual maintenance for a period of one month. Thermal generator shall avail shut down during monsoon season. Outage proposal of thermal generators shall be approved in the Yearly LGBR (Load Generation Balance Report) Meeting of ERPC held normally during December to January every year. Any alteration in the outage program if required by the Generating entity has to be approved by ERPC in the Monthly OCC Meetings.

f. First time charging approval in case of New Connectivity and outage planning required there of:

In case of new connectivity of Inter-regional /Inter-state tie line and intra-state transmission elements of Voltage level 400KV & above, outage permission required for new connectivity will be given by ERLDC only after issue of first-time charging approval by them. The necessary formats for application of first time charging of above said elements is available at SLDC Website.

Similarly, in case of intra – state transmission elements, Generators & CGPs , outage permission required for new connectivity will be given by SLDC, only after issue of first-time charging approval. The necessary formats for application of first time charging for intra – State elements is available at SLDC Website.

Objective of Software: -

The objective of this module is to design, develop and implement a web-based on-line application for planning and managing outages (shutdowns) along with emergency shutdowns for faulty transmission elements of transmission system for maintenance or other purposes. Also, shall have provision for first time charging approval for transmission elements in case of new connectivity as per provision under OGC/IEGC. This application would be hosted on server(s) located at SLDC. This system will facilitate SLDC, in receiving shutdown requests from field offices, processing and approving such requests and keeping track of elements which are out of service at any specific instance.

Functionality:

I Creation of master database of transmission elements (Lines & Transformers etc.):

Master data base & updating data base of all transmission elements (power transformers, Auto Transformers, ICTs, Reactors, Buses, Bus section, Bay, Circuit Breaker, Auto Reclosure, Generators and transmission lines etc.) at various voltage (765KV/400KV/220KV/132KV) levels within SLDC control area. SLDC will provide necessary details of existing power transformers and transmission lines to the Service Provider in MS Excel / MS Word documents. The transmission elements will be captured along with basic parameters, such as:

a) For power transformers: Name of the sub-station**,** voltage ratio, MVA capacity, identification number, Maintenance Division etc.

b) For transmission lines: Name of both end sub-stations & in case of T-connected lines name of three end sub-stations, Voltage level, D/C/S/C conductor configuration, identification number, corridor(s) to which it belongs to (These specific inputs will be provided by SLDC), Line length, Maintenance division, DISCOM area etc.

II The database will be created with assistance of SLDC officials with information available/ collected by SLDC. The database will be validated by Nodal Officer. Further modifications, additions or deletions facilities shall be available for SLDC.

III Creation of shutdown request: Various transmission users will be able to view list of transmission elements available in the system and raise request for shutdown of specific transmission element for certain duration (from Date/Time to Date/Time) and purpose of shutdown etc as per prescribed format provided by SLDC with uploading facility for supporting documents.

a. Prior to final submission of shutdown request information, user shall have a preview of data entered and asked for confirmation or edit, print option in formats like PDF, Excel, word etc of said request should be available.
b. There shall have provision to add/change/cancel /approve the request up to a certain date in a month/certain days before the commencement of the shutdown.
c. System shall be able to generate popup indication if defined number of elements are already out in the same/nearby corridor (This business logic will be provided by SLDC)
d. Integration of this system with an internal e-mailing system for facilitating two-way communications between SLDC and transmission utilities.
e. Users will be able to record tripping of transmission element with reasons. Relay indication & time (tripping & charging/Faulty) and restored details of those elements.
f. Users access for above operations (other than SLDC member) shall be given to specific users with limited operations/functions as defined by SLDC.
g. This module should have provision to add the faulty declared transmission elements to the Forced Outage list.

IV Processing of requests by SLDC: Concerned officials in SLDC shall have provision to view the requests of shutdown by users from various transmission utilities and record approval/rejection/modification/ deferment in requests for shutdown with remark (optional).

a. The module will have in-built validation and escalation mechanism to ensure that applications are processed by the respective approving authority within the specified time limit (inputs to be provided by SLDC).
b. SLDC shall have facilities to record tripping of specific transmission element with relay indications & time (tripping & charging) and restoration details of those elements.
c. On approval of any shutdown, message shall be sent to the requisitioning user along with respective division/circle/zone through an internal e-mailing system integrated with the system.

d. Users shall have provision to record the time of availing the approved shutdown followed by charging time of the said element after completion of shutdown work (LC procedure) with a remark (optional).

V SLDC Administrator shall have the following facilities:

a. Create/change/remove users (user management):

b. Add/delete/modify/any element users:

c. Allow users to submit/change their requests after due date:

d. Manually enter a request on behalf of transmission utility

e. Add approval status based on discussions in OCC meeting and

f. Permission to different user access.

VI The business logics for this module process flow, request form template for shutdown, timelines and escalation matrix for approval, technical details like categorizing transmission elements into corridors etc. Will be provided by SLDC.

VII Other features:

a. The system and flow will be user friendly and designed in manner to accommodate future changes.

b. The system shall have the provision of role-based access to the user so that data pertaining to specific user only are accessible.

c. The system will have well-defined SLDC data.

d. Data validation will be provided on server as well as client (work station) side.

e. The system shall have provision for backup and recovery procedure/option for database.

f. The system will have provision for audit trail functionality. The system will log database transactions (add, delete, modify) and maintain user, application related logs and error trapping.

g. The system will prompt consequence and confirmation before any major changes like deleting, updating etc.

VIII **First time charging approval in case of New Connectivity:**

a. **Creation of FTC request:** Various transmission users/authorities will be able to raise request for new connectivity of transmission elements (Grid Sub-stations/ line/ CGP unit/transformer etc.) or any modification in existing transmission elements etc as per prescribed format provided by SLDC (with uploading facility for supporting documents) .

b. **Processing of requests by SLDC:** Concerned officials in SLDC shall have provision to

view the requests of FTC requests by users from various transmission utilities and record approval/rejection/modification in requests for new connectivity.

c. History shall be maintained in case of any change (LILO/ T-connections) in transmission line configurations and accordingly database of transmission elements shall be updated automatically.

d. This module shall have provision: In case of new connectivity (First Time Charging) of any Transmission elements (line/transformer/bay etc.), Generators & CGPs in the system shall be added in the database automatically.

e. This module shall be integrated/linked with Energy accounting module with appropriate approval of SLDC.

IX REPORTS

Following is the tentative list of key reports expected to be generated from this module. The exact number of reports and content of each report will be finalized in consultation with SLDC during development phase.

i. For OPTCL & Other transmission utilities if any

a) List of various transmission elements with all relevant details & specifications.

b) Requests made by individual users from transmission utilities.

c) Approved/rejected shutdowns by SLDC with reason/remarks.

d) Pending requests for shutdowns from transmission utilities.

e) Planned& Forced Outage, Emergency outage & tripping history and other reports of elements week wise, month wise and year wise or user specified dates along with graphical views.

f) List of First-time charging elements with all relevant details & specifications and other related reports of elements week wise, month wise and year wise or user specified dates.

ii. For SLDC

a. Requests made by individual users from transmission utilities with all relevant details & specifications (Voltage level/Grid/type of element/LR basis/ DISCOM area etc.)

b. Approved/rejected shutdowns by SLDC

c. Pending requests for shutdowns from transmission utilities

d. Tripping details filled by SLDC & Users (Voltage level/Grid/type of element/LR basis/ DISCOM area etc.)

e. Outage schedule of elements (Grid Substation or sub-division/division/circle/zone wise etc.)

f. Report of outages taken during a period with tags (annual planned, forced emergency, tripping details etc.) Voltage level/Grid/type of element/LR basis/Zone wise with graphical views.)

g. List of First-time charging elements and other related reports of elements week wise,

month wise and year wise or user specified dates. (Inter regional/Intra state/ Interstate, Voltage level, Grid/ type of element/ DISCOM area etc.)

h. The outage time thus system calculated from restoration time & time of tripping should be

facilitated for custom hour interruption report.

iii. For SLDC Administrator

a. Consolidated requests from transmission utilities
b. Tripping details as filled by SLDC & Users from field end.
c. List of elements that cannot be taken under shutdown due to other elements being already out (if such criteria is set)
d. Consolidated report of approved shut downs
e. Any other type of complex or selected field reports.

The said module should have a dashboard feature displaying various information summary & shortcuts (links) as defined by SLDC.

All above functions & reports should have the print option at every steps/window and save options in formats like PDF, Excel, word etc.

All reports should be generated for daily/weekly/monthly/annually or range specified along with a graphical view.

3.7 Module-7 MIS Dashboard and data management

Integrated MIS/Dashboard for SLDC, OPTCL

Objective of Software: -

There will reporting from each module under the solution catering to the SLDC requirement, but these modules warrant the integrated MIS /Dashboard platform should be able to undertake the following: -

i. Single platform to pull Enterprise Dashboard/Reporting requirement across all the functional modules
ii. Data Integration & Management (including connecting to Scheduling system, Open Access system, SCADA, EASS, Energy Accounting, Load dispatch and others as deemed necessary)

Functionality

The integrated MIS module should have following functionalities / features:

1. Ability to generate standard reports (formats will be defined by SLDC)
2. Ability to generate dynamic reports:
   a. User should be able to select fields/parameters dynamically and generate the report
   b. User should be able to generate own customised report and save it for future reference

c. User should be able to export the report in pdf/ excel formats

3. Ability to provide dynamic dashboard with graphical and tabular representation for top and middle management
4. MIS module should be compatible with prevailing mobile devices
5. Ability to incorporate formulas in report formats
6. Ability to provide filtering and selection capabilities in reports with easy-to-integrate metadata/common action elements such as radio buttons, drop-down/combination boxes, check boxes and sliders
7. Ability to send reports / alerts via e-mail
8. MIS module should have facility for multiple viewing of data (summary level to lowest level with drill down feature)
9. Users should be able to view MIS reports / dashboards on all major web browsers."

3.8 Module-8 Dynamic and interactive Website for SLDC

The objective of this module is to design, develop and implement a dynamic interactive content management system website for SLDC. This module will have the desired functionality for extraction of summary data/ reports from the software modules of the proposed SAMAST software and display the same on the website for stakeholder access. The customized website for SLDC will be based on the industry practices and fulfilling the functional requirements to perform the following activities. SLDC Website will be a part of web application portal and will present information intended to be in public domain without logging in. If logged in, it will present dashboard/interface based on role of user.

I . SLDC Homepage.

a) The layout and main content of the home page will be designed in consultation with SLDC;

b) Provide menu links/ tabs for SLDC's key functional areas (About Us, Scheduling, Open Access, Energy Accounting, Real Time Data, SCADA, Grid, Reports, Useful Links, Documents Repository etc.);

c) The home page of SLDC website will have provision to display latest news/ messages/ alerts.

d) Display of current schedule, revision and demand met on the Homepage.

II SLDC website will have provision to display organization structure, information about formation of SLDC, roles and responsibilities, contact list of SLDC officials and other relevant information pertaining to SLDC.

III Create provision for displaying Generation and Drawal Summary along with Generator wise Declared Capacity (DC), Scheduled Generation (SG), Actual Generation (AG), Discom wise Requisition, Scheduled Drawal (SD) and Actual Drawal (AD) etc. on the web-site.

IV Integration of SCADA system with Scheduling module and website to display real-time generation and drawal information. Supplier will develop necessary data extraction interfaces for consuming the data shared through Application Programming Interfaces (APIs) or standard interfaces i.e. OPC/ ICCP from SCADA system. SLDC will provide access / authorization to OEM system, necessary communication network facilities and any other facility/infrastructure required to support data integration requirement. Supplier will implement a "data diode" for SCADA interface for guarantee cyber security requirement.

V Create provision to display monthly TTC / ATC details, Intra-state / Inter-state open access / NOC approvals/refusals/pending, merit order stack, charges for STOA transactions, etc. on the website.

VI Create web-inter face for monitoring TTC / ATC violation status.

VII Create links to RLDC website for downloading daily reports, scheduling data, graphs and other information available on RLDC website.

VIII Create provision to display DC, entitlements, SG, Un-requisitioned surplus, STOA,

transmission constraints, implemented schedule etc.

IX Create web interface / web-link on the website for open access applicants/ consumers for registration.

X Create provision to display approved outages, tripping data, availability information etc.

XI Create provision to upload relevant documents / office orders / OERC / CERC / CEA regulations on website by authorized users. Documents will be listed under various categories as per requirements of SLDC.

XII Provision to display/documents/ notices and circulars listed date-wise.

XIII Provision to integrate any other module relating to SLDC activities developed in-house/other agency.

XIV Supplier will follow the Government of India guidelines to ensure proper standardization of all content. Website will have clean and professional design.

XV Implement/ configure Role-based and module-based access rights for end users to protect the content from unauthorized access.

XVI Admin section must be protected by username and password and using salted encryption and MFA. At database level also, password will be stored in encrypted format. The admin will be able to add links / sub-links in the website.

XVII Conduct security audit of website from CERT-In empaneled agency.

Reports consolidation and transmission:

i. Based on the Demand, generation and Energy computation, various reports will be prepared by the system, format for which will be provided by SLDC.

ii. Automatic email facility to the various authorities after verification by Control room officials.

iii. Automatic updating of SLDC website.

iv. All the reports will be available in Microsoft excel/PDF/HTML etc.

v. Software will be able to upload the historical data in the database and software will also be able to transfer data in predefined format in excel for day-to-day requirement.

vi. User will be able to select fields/parameters dynamically and generate the reports.

vii. User will be able to export the report in pdf / excel formats

viii. Software will be able to cater to various requirements of different types of reports required for Odisha Legislative Assembly/ Lok Sabha questions, RTI, reporting to various agencies

like State Regulatory Commission, RLDC, ERPC, NLDC etc. from time to time and on need-based basis.

ix. ABT Meter Reading details will be shared to consumers.

x. Ability to send reports / alerts via email.

xi. Users will be able to view MIS reports on all major web browsers. MIS module will be made compatible with mobile devices.

xii. Control Room Management:

a) E-Logbook - facilitates automation of logbook. It will provide option for creating logbook to keep track of Shift Users, Statistics, Issues, Outages, Tripping, Scheduling, Violation Message, Approved Shutdown activities during the shift.

b) Will provide an end-to-end management of tripping, shutdown, line, bus, outages etc.

c) Will provide an interactive real-time dashboard for all tracking outages of the important power elements which can be customized as per user preferences.

d) Code generation for creating Opening/Anti-Theft code/third party opening/ Closing Codes.

e) Violation messages issue and Letter generation

f) Facilitate Duty Roaster Creation and manage Control shift user in log book

g) Provide Shift Summary Report for keeping track of control room attendance log.

h) Integrate with SCADA

i) Provide a mechanism for Line Clearance and Outage Workflow.

Reporting Requirement for all modules of SAMAST software stack

Scheduled data is required for user defined pre-formatted reports and same will be facilitated through appropriate interface/templates.

The application will provision for generation of Textual (Data) reports and Graphical (Pie- Chart, Bar-Chart, Line Graph, 3-D, worm plots, etc) reports. Internal users within SLDC & Back-office will also be able to prepare custom reports using the tool. Application will have provisions for porting relevant data through docx/xlsx, (latest MS Excel format), csv, pdf, and xml formats.

Supplier and SLDC will define the formats of predefined reports and data to be ported during post award discussion as envisaged through customization under Supplier scope. Typical report samples will be submitted during post award discussion. Supplier will prepare these predefined reports formats and these predefined reports will be a deliverable item.

a. All the report sheets should have block nos. as well as block in time. All reports to have the

name of OPTCL emblem.

b. Every report to have a space for remarks.

c. All reports will be in printable/downloadable form.

d. All the reports will be within the paper margin. In case of reports with tabulated data which may exceed the paper margin, the section of report consisting of the data exceeding the paper margin should be generated along with all the other features (column and row labels, header, footer, etc) that were present in the earlier section of the report.

e. A blank template will be provided so that required queries/reports can be generated from the database.

f. All report sheets to have an uploading/print preview feature before final uploading to public domain. Data from all the report sheets will be exportable in excel/ pdf/doc forms as and when required.

g. All reports will be archived on daily basis for maximum possible days/months (minimum 3 years). Reports will be retrievable/ printable with print preview option. Master list of reports and their formats along with samples (if required) will be decided/supplied by SLDC, OPTCL during SRS finalization stage.

3.9 Module -9 Mobile Application

Software will integrate the Modules with the existing web site of SLDC and will develop android base mobile app for SLDC. The mobile app should have following features.

a. Display of important parameters like Schedule, Frequency, current revision and demand met etc.
b. Information on power maps, generator details and important transmission system elements.
c. Load graphs for last three days including current day.
d. Links of various reports of SLDC (Statutory documents/Regulations/SLDC Reports/ Office orders etc.)
e. Day ahead margin of open access applicants

Above specified are the functional requirements only. provision has kept for optimization of these requirements in the software and hardware modules.

4.0 Chapter 4: API integration of third-party application /Data Integration

a) The software provider will design and develop integration modules as part of SAMAST software to share or exchange data with other internal and external systems as per SLDC requirements. The list of software applications proposed to have integration with SAMAST software along with tentative data sharing requirements is provided below.

b) Software Provider will develop and implement necessary application interfaces (APIs) as well as documentation, for integration (export of data/information) from SAMAST software (under this tender) with the existing application systems, like SCADA. SLDC to ensure necessary APIs are available to Software Provider from other suppliers for integration (import of data/information) to SAMAST software (under this tender). For integration of SAMAST software with other SLDC, OPTCL owned software, required API will be provided by SLDC, OPTCL.

c) These integration requirements would be required to be fulfilled by SAMAST provider in the event of any changes/ replacements of the existing application system like SCADA, SLDC website/ SLDC, OPTCL website etc. during the currency of current project as well as AMC period.

The block diagram in Figure 7 explains the proposed SAMAST software's application and its integration with existing software application.

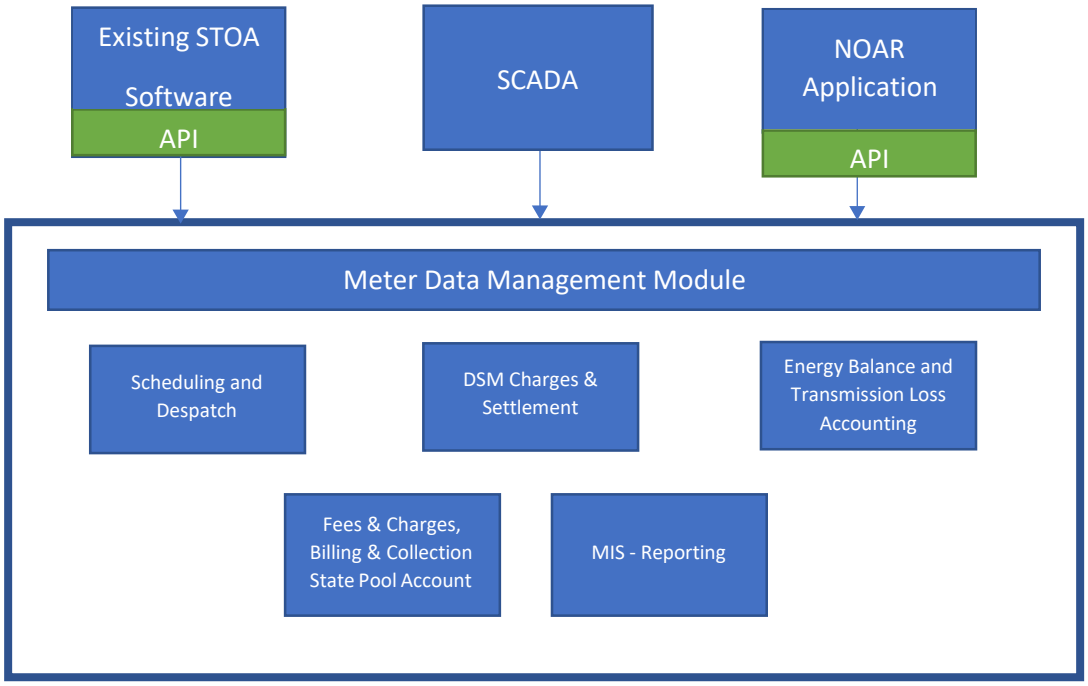


Figure 8 Modules under SAMAST software and its Integration with other software

Table 41 IT Application areas

Sl. No	IT Application	Functionality Required
1.	SLDC, OPTCL website	SLDC developed website integration with SLDC, OPTCL website
2.	SCADA	Data integration between SAMAST software and SCADA for displaying real-time information on website etc.
3	System (proposed)	Automatic Meter Reading (AMR) software and AMR system for getting meter data from AMR system for energy Accounting
4	DISCOMs	Data sharing to / from DISCOMs

5.0 Chapter 5: Detail architecture of development, testing & production phase of software modules:

Deployment Architecture:

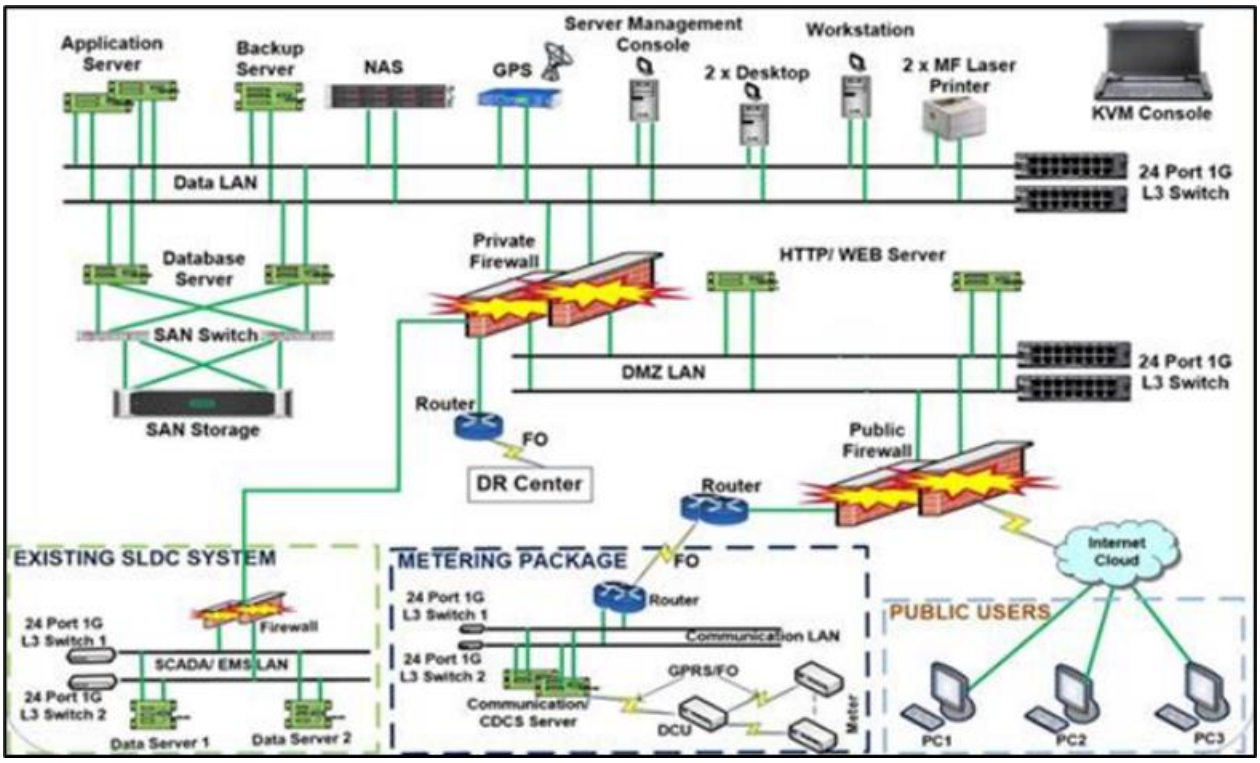


Figure 9 IT Infrastructure for Control Centre

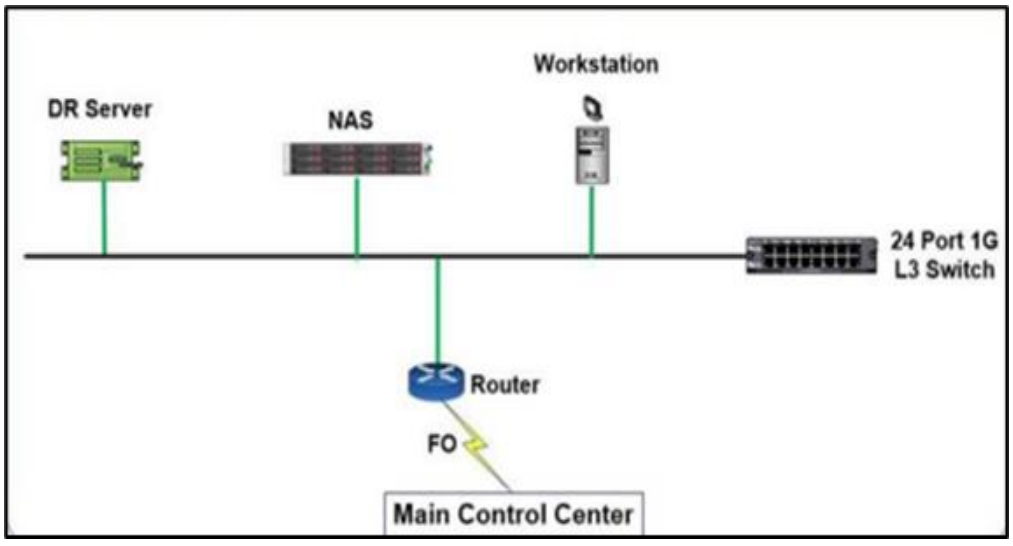
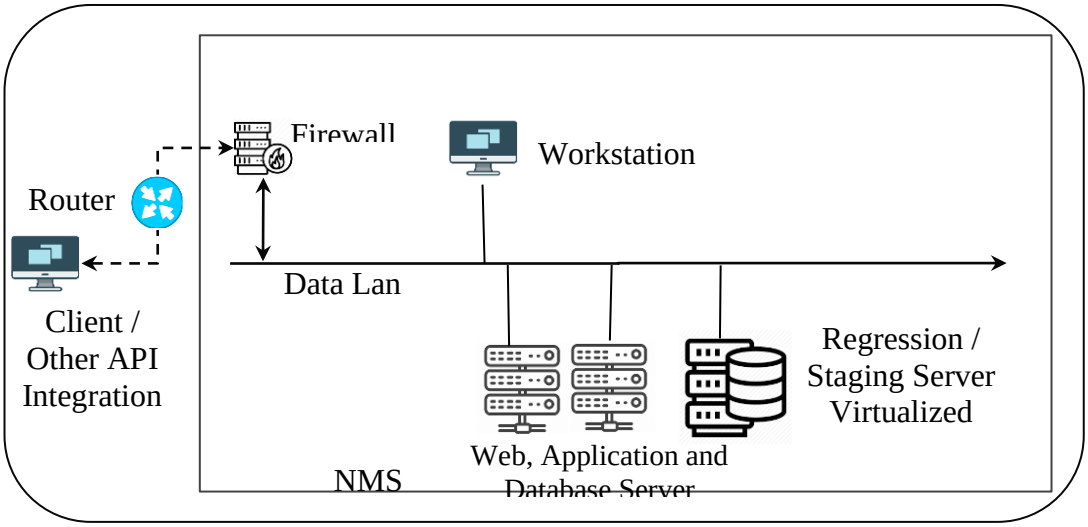


Figure 10 IT Infrastructure for Disaster Recovery System



Network Diagram

Figure 11 IT Infrastructure for Regression and Deployment (Staging)

The major components that are considered in the system architecture proposal are Web server, Application server, Database Server and other network components.

The Development and Staging/ Testing environment will be established by creating virtual machines that can be used to host corresponding application/web/Database applications curved from any of the available servers in Data Lan. These VMs will be installed on the existing deployment servers which are running in the Active and Backup server configuration in one of the servers. The position of the development and testing environment can be decided at the time of detailed engineering based on the load and size constraints.

The application server shall host the Web Interface, Backend Business Logics, and APIs to interact with the other software modules. A filesystem shall be created in this server to store and manage all the images / files that shall be captured during the image collection process & scrutiny process. The database server shall be used to host the RDBMS MySQL database service which shall predominantly manage the datasets of the entire project during its lifecycle.

The system shall include redundant Application, Database, Web & Communication/API servers. They shall work on a 100% load sharing basis. In case of failure of one server, the other should take over the load of it.

Table 42 Server functions

S. No.	Server	Purpose

1	Application Servers	For Installation of all Applications of SAMAST IT Solutions
2	Database Servers	Management of complete database of System
3	Web Servers	For installing HTTP Server Software which acts as a web Server that is used for serving HTTP requests
4	Communication (API) Servers	For ABT Meters data availability & communication of meters Data to Applications/Database Server of SAMAST Data Center

6.0 Chapter 6: Documentation Management

Documentation of and Complete Software will meet following requirements. All documents will be supplied in hard copies as well as soft copies: -

6.1 Design Documents

Before starting the development of Software solution system components, a design document will be submitted for approval by SLDC OPTCL. The design document must essentially (but not limited to) included: -

- System Overview
- Hardware architecture
- Functional diagram
- Data Flow diagram
- Functions of each major component
- Physical details of each major component
- Functional Design Document
- Overall networking scheme
- System configurations
- Cyber Security Provisions

Similarly the design document for Complete Software System including MDM will also include (not limited to) the above sections.

6.2 Software Requirement Specifications Document

After approval of Design document, Detailed Software Requirements Specifications (DSRS) document for the application software for DC should be prepared and submitted for approval. This SRS should be prepared as per IEEE standard 830 of latest version for recommended practice for software requirements specifications. Software should be designed as per approved SRS.

6.3 Audit trail and Analysis

i. An audit trail is a series of records of computer events, about an operating system, an application, or user activities. A computer system may have several audit trails, each devoted to a particular type of activity. Auditing is a review and analysis of management, operational, and technical controls.

ii. The supplier shall develop a comprehensive and complete audit trail for all software modules so that, they can track back and find process breakdowns, if any and when they happen. Audit trail records shall also help identify outside data breach issues.

iii. The application shall log all the actions done by individual users with username, date and time and the administrator shall be able to generate detailed audit logs and historyof the process instance.

iv. It should enable availability of user wise online audit trails/ logs which should bearchived based on user, date, time etc. as part of audit records keeping.

v. All the edited and deleted (if any) records should be traceable and copy of all records should be kept in the system and which should be available with MIS reporting of thesame.

6.4 User Manuals

Following user manuals will be prepared and supplied for the system: -

a. User Manual for SLDC

   User manual for central site (SLDC) i.e., location where DC will be installed and where all data collection activities will be taken up, should contains all user instructions, block diagrams, user screens etc. in order to make itself self-contained complete document required for operation of complete software solution to be provided., all application software.

b. Training Documents

   Training document to be used during training of site personals will contain major functional details of the overall software and hardware system, its features and major instructions for understanding the overall working of the system.

c. Testing Documents

Testing documents will be prepared and submitted as per Testing Requirements section of this specification.

7.0 Chapter 7: Planning and Procedure for Testing (FAT/SAT/STLC Software Testing Life Cycle)

All equipment, materials, and software for SAMAST System will be subject to Factory Acceptance Testing (FAT) /Site Acceptance Testing (SAT) / STLC as applicable. The purpose of Acceptance Testing is to determine compliance to this specification in every respect in regard to the delivered and installed system. Bidder needs to follow Software testing life cycle for the testing of the application.

i. Performance Bench Marks for Site Acceptance Test (Guaranteed Technical Parameters)
   a. With 2500 meters data, UI/Deviation bill will be generated within 2 hours. This time shall remain valid for additional number of meters added during project execution period.
   b. In future (In approximately 5 years), with data of 4000 meters, UI/Deviation bill will be generated within 3 hours. [Bidder has to provide dummy data for testing].
   c. State level Energy Accounting (All reports) should be completed within 1day.
   d. All other modules including scheduling (all generator scheduling, drawl schedule of Discom, open access schedule etc.) should generate the report on mouse click**.**

ii. Acceptance Test Plans and Procedures

The Supplier will develop and document proposed Test Procedures and Test Plans for Factory Acceptance Testing (FAT), Site Acceptance Testing (SAT), Unit testing, System Integration testing, SAT/UAT of the delivered and commissioned system and its components. Supplier will finalize the proposed FAT and SAT acceptance test plans and procedures. The final Test Procedures and Test Plans will be subject to review and approval by SLDC, OPTCL prior to testing.

The Acceptance Test Plans (ATP) will enable SLDC, OPTCL to verify the ability of the delivered and commissioned system and its components to individually and simultaneously fulfill all functional and performance requirements of the system set forth in the contract through a series of mutually agreed to structured tests.

All system documentations will be completed, reviewed and approved by SLDC, OPTCL before any testing.

The ATP will include, but not be limited to, functional tests that demonstrate compliance of the functional, performance, software, hardware, communication, interface, and operational aspects of the delivered and installed system.

iii. Factory Acceptance Test (FAT) for hardware and equipment's.

The Supplier will perform a preliminary FAT (Pre-FAT) prior to the FAT. The pre-FAT will be a complete dry run of the FAT, following the test plans and procedures. The intent is for the Supplier to detect and correct most design, integration, and database, display, and performance problems prior to the FAT. The representatives of SLDC will have the right to witness all or parts of pre- FAT for which supplier will intimate SLDC in sufficient advance.

Test results (including documentations and certifications) for tests conducted by Supplier or third

parties that are not included in the FAT test plan and procedures to be furnished to SLDC, OPTCL prior to FAT for review and evaluation.

Supplier and/or third parties conducted tests deemed inadequate will be repeated until accepted by SLDC.

Supplier's project manager will sign off each test of Pre-FAT. The completed test results will be sent to SLDC for review before their representative's travel to the Supplier facilities for the FAT. All tests will be conducted using the contract-specified databases unless SLDC authorizes the Supplier to use a test database.

The FAT will be conducted according to the FAT Test Plan and Test Procedure documents approved by SLDC, OPTCL will cover, as a minimum:

iv. Visual Inspection

To verify that the system to be delivered has all required components and is properly configured. Visual inspection will verify acceptable workmanship and that all equipment, including cables and connectors, are appropriately labelled.

v. Hardware Diagnostic Test

Individual tests of all system hardware. These tests will consist of running standard hardware diagnostic programs, plus all special diagnostic programs used by the Supplier.

vi. Communications and Interfacing Test

Verify that all interconnected system components, such as data acquisition, control, monitoring, and data management functions are operating properly when correctly connected.

vii. Software Development Tools

Verify that all required software development tools, utilities, software diagnostics, and debugging tools for the system, including the UI and database, are included in the system and are functioning correctly.

viii. Functionality verification

Verify that all system functions are working normally as set forth in the contract.

ix. Performance Testing

Verify that the system throughput, timing and response time requirements are satisfied. Tests will include verification of:

a. Data exchange times
b. Local and remote request response times

c. Communication latency
d. User Interface function response time

x. Security Testing

Verify that the system meets the software at delivery security requirements and other aspects of secure operation and system access including:

a. Communication error detection capabilities
b. Correct operation of system configuration, control, maintenance, and management procedures Safe system recovery with no erroneous data or control operation generation after system restarts.
c. Protection against unauthorized access to the system and control functions

xi. Environmental Testing

Verify that:

a. All system functions will operate correctly over the specified temperature range.
b. The accuracy of the inputs and outputs remain valid over the specified temperature range.

The test schedule will allow sufficient time for verification and/or additional unstructured testing by the SLDC, OPTCL's representative, who will be able to schedule unstructured testing at any time, including during structured tests.

xii. Application Testing

a. The supplier should ensure a systematic approach for testing the software application to meet the requirements and is free of defects before go live. The Software Testing Life Cycle (STLC) shall be used to ensure that the software is of high quality, reliable, and meets the needs of the end-users.
b. The supplier shall follow all the steps of STLC such as Requirement analysis, Test Planning, Test case development, Test Environment Setup, Test Execution, Test Closure etc. The core testing team of SLDC shall review the test case development before test execution.
c. Unit testing, integration and other setting shall be conducted by the supplier with proper documentation and ensure that the product is free from all kind defects (functional, User Interface)/bugs after which, end user (SLDC) will perform UAT at their end.

xiii. Site Acceptance Test (SAT)

The SAT will be conducted by the OWNER (End Users) with support, as required from the supplier, after the system has been installed and commissioned. The system will be subjected to a subset of the functional and performance tests. The SAT will also include any type of testing that could not be performed in the factory. SLDC's representative, as necessary, will employ unstructured tests to verify overall system operation under field conditions. Any defects or design errors discovered during the SAT will be corrected by the Supplier. The SAT includes the commissioning test, the

functional and performance test, and the cyber security audit after the installation of the delivered system.

xiv. Commissioning Test:

a. The commissioning tests will be conducted by the supplier and include:
b. The same visual inspection and verification as in FAT
c. Loading of the software and starting the system. At the option of the SLDC, OPTCL all software will be recompiled from the source or distribution media.
d. Interface of the AMR/HES and MDM System to communications facilities for all data sources and other systems that interface with the AMR/HES System.
e. Initialization and preliminary tuning of application software as needed.

xv. Site Functional and Performance Test:

The site functional and performance test ("site test") will be comprised of a subset of the functional and performance tests conducted in FAT. The tests to be performed will be proposed by the Supplier and approved by SLDC, OPTCL. These tests will be extended as necessary to test functions simulated during the FAT, such as communications with all field devices and all other systems that interface with the DC.

xvi. Cyber Security Audit:

The cyber security audit shall be conducted by certified empaneled CERT-IN third party auditor before go-live and once in each year during AMC period.

xvii. Testing Process Flow:

a. The SLDC will nominate a team to carry out Acceptance testing of the various solution developed by the supplier (For timely completion of the project, Testing Team nominated by SLDC will complete the testing of the software within stipulated time (not exceeding 30 days).
b. The supplier will setup testing environment at the DC and use dedicated test servers for the same.
c. The supplier will provide training to the Acceptance Testing team prior to the commencement of the acceptance testing of the system.
d. The supplier should provide detailed test scripts for carrying out the acceptance test of various systems supplied.
e. Supplier will resolve all the defects/issues identified by the SLDC's acceptance testing team during acceptance procedure.
f. The software would be re-tested to ensure closure of identified defects/issues.
g. Subsequently, the authorized representative nominated by the SLDC will issue an acceptance certificate which should be produced by the SP to go ahead with the final rollout of the software.

xviii. Test Approval:

The Supplier will maintain a complete computer record of all test results with variance reporting and processing procedures for approval by SLDC, OPTCL. In the event that the AMR/Complete Software System including MDM system does not successfully pass any portion of the Acceptance Testing, the Supplier will notify the SLDC, OPTCL of the specific deficiency. The Supplier will

promptly correct the specified deficiency, which will then be re-tested until successful.

8.0 Chapter 8: Training and Capacity Building Requirement

i. Comprehensive training programs will be provided to enable the efficient and effective use and operation of the deployed system by users of the system, and to develop a self - sufficient hardware and software support team within SLDC, OPTCL and the registered users of SLDC, OPTCL. The bidder will prepare and provide a description of the proposed training programs with course content, and technical level of the instruction for review and approval by the SLDC, OPTCL at the beginning of the deployment, and will work with the SLDC to schedule, organize and execute the approved training programs.

Training will include, where appropriate, a combination of formal training classes, workshops, as well as continuous (informal) knowledge transfer from the Supplier's technical specialists to the personnel of SLDC and its constituents during the deployment process and after the commissioning of the AMR and Complete Software system including MDM. In-person training sessions could be offered at Supplier's location or at the SLDC, OPTCL own facilities or any other locations of choice by both parties.

Two hard copies and one soft copy of operating manual of the DC & DR Hardware and Software containing all details will be made available to SLDC, OPTCL and SLDC each.

ii. Training programs for system users

Training program for system users will include but not restricted to the following:

a. System overview including system functionalities and features
b. System configuration and operations-oriented training System alarms handling
c. Local/Remote configuration procedures
d. Engineering oriented training for development/testing
e. Minimum classroom training for a group of system users will be 18 hours (6 hours x 3 days) in different batches. Minimum hands-on training for a team of system users will be in two parts of total 48 hours (6 hours x 8 days). The group will comprise of representatives from SLDC, OPTCL and Registered Users of SLDC etc.

iii. Training program for system hardware and software support team

The training course will be designed to give Purchaser personnel sufficient knowledge of the overall design and operation of the system so that they can correct the problems, configure the hardware, perform preventive maintenance, run diagnostic programs and communicate with contract maintenance personnel

The following subjects will be covered:

a) System Hardware Overview: Configuration of the system hardware. Preventive maintenance techniques and diagnostic procedures for each element of the Servers & Workstation console system, e.g., Servers, processors, auxiliary memories, LANs, routers, firewall, User account login, IPS, IDS and printers.

b) System Expansion: Techniques and procedures to expand and add equipment such as memory in server, printer, communication channels, router ports, work stations and control centers.

c) System Configuration: Procedures of configuring Router ports, VLANs, Firewall Policy definitions and Interfacing web services.

d) System Maintenance: Basics of operation and maintenance of the redundant hardware configuration fail over hardware, failure of control centers configuration control panels and fail over switches. Maintenance of protective devices and power supplies.

e) Storage System: Basics of Storage Technology, understanding the various hardware storage options, configuration of storage/archiving of the Meter data, retrieval of stored meter data from the storage system and use the Historical Data for analytical studies, and report preparation etc. and also operation & maintenance of storage architecture, Maintaining backup of data from Servers and archiving and as well as retrieving of data from the remote control center in case of failure at the local storage system.

f) Operational Training: Practical training on preventive and corrective maintenance of all equipment, including use of special tools and instruments. This training will be provided on Purchaser equipment, or on similarly configured systems.

g) System Administration: An introduction to software architecture, Effect of tuning/configuration parameters of OS software, System Software, Application Software, Network software, database software, firewall, antivirus etc. on the performance of the system, Administration of Database both and RDBMS, security.

h) Operating System: Including the user aspects of the operating system, such as program loading and integrating procedures; scheduling, management, service and utility functions; and system expansion techniques and procedures.

i) System Initialization and Failover: From cold warm setup Including design, theory of operation and Practice

j) Diagnostics: Including the execution of diagnostic procedures and the Interpretation of diagnostic outputs,

k) Software Documentation: Orientation in the organization and use of system software documentation.

l) Hands-on Training: One week, with allocated computer time for trainee Performance of unstructured exercises, including system shut down, restoration and with the course instructor available for assistance as necessary.

m) System hardening and Cyber security related features of application e.g. user authentication, encryption etc.

iv. Minimum training for hardware and software support team will be in three parts of total 90 hours (6 hours x 15 days). The software support team will comprise of representatives from SLDC, OPTCL.

v. All expenditure incurred for conducting the above training program shall be borne by the supplier.

9.0 Chapter 9: Backup & Restoration

a. The Backup & Restoration of all data of SAMAST application shall be done as per the decided by the SLDC, OPTCL

b. All the applications should be able to archive data, based on user specified parameters(i.e., data range) and restore archival data for online use whenever required.

c. Backup and recovery of all the system software, application software, database, etc. as per MeitY, GoI policy (Guidelines for Government Departments for Adoption/ Procurement of Cloud Services).

d. The systems should provide features to schedule backup/ restore operations. The Solution Provider should ensure that activity such as proper Data Backup, Data Restoration, and Data Synchronization at Disaster Recovery site are tested and implemented properly as per the standard norms.

e. In case required, the systems should have the ability to run multiple backup tasks in parallel.

f. All the applications should produce individual reports for each backup/ restore activity.

g. The systems should support direct backup of data from one machine to another/ from server to back tapes/ CDs/ Storage Area Network etc.

h. The systems should have provision to keep data on storage media with high tolerance of failure.

i. The system should allow recovery of data in case of hardware/ software failure and data corruption. It should be able to perform recovery to a point of time, to known backup database.

j. As Disaster Management strategy, Vendor shall configure the data back-up from SLDC, site to DR site on periodic basis defined by SLDC in the detailed order. The specifications for the backup server shall be same as defined for the SLDC and only storage capacity shall be designed in such a way as to keep the data backup for a period of at-least five (5) years.

PART-I

SECTION –VI

COMPREHENSIVE AMC

SCHEDULE OF COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT OF SAMAST SOFTWARE AND HARDWARE

FOR STATE LOAD DESPATCH CENTER, OPTCL, ODISHA.

TENDER SPECIFICATION
NO. SLDC-01/2023-24

SECTION –VI: COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT

SCHEDULE OF COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT OF SAMAST SOFTWARE SCHEME AND DATA CENTRE & DISASTER RECOVERY CENTRE HARDWARE INFRASTRUCTURE FOR STATE LOAD DESPATCH CENTER, OPTCL, ODISHA.

Service Level Agreement clauses for Warranty and Annual Maintenance Period

Supplier will provide onsite as well as remote support in order to keep system operational with system functionalities and performance in accordance with the specifications.

1. **Scope AMC**

   During warranty and AMC period, supplier would be responsible for repair/ replacement/ modification/ rectification of software, hardware either manufactured or bought out, update the software used in SAMAST Project all times without any extra cost to SLDC, OPTCL. Warranty and AMC covers all Switches, Servers, Software and all other equipment of SAMAST Project. It will be bidders' responsibility to provide data availability and MDM reports without any extra charges to SLDC, OPTCL. The Bidder should provide support for RDBMS & other application software during warranty and AMC period. The maintenance practices to be followed will be as per ISO latest Standard. The essence of the maintenance and support services to provide maintenance support for the designated hardware and software, with the goal of meeting the availability as set forth herein.

2. **On-Site Support and Maintenance**

   Supplier will maintain a team of skilled personals having sufficient knowledge of the system in order to diagnose and set right any problem in software and hardware system in minimum time. The supplier will locate its supporting personals so as any problem may be rectified within stipulated time frame as per AMC requirements.

   Supplier will maintain an online web-based help desk system on website for logging complaints and checking the resolution status round the clock on all days of the year. Web based help desk will be accessible to the user through browser via Internet. Separate username and password will be provided with separate privileges for users of central site as well as other distributed users/ entities.

However, SLDC, OPTCL will be able to view logged complaints and their status irrespective the initiator of compliant. Any complaint will remain open until and unless approved its closure by SLDC, OPTCL. All logs will be suitably time stamped. The severity level of the complaint will be assigned by SLDC, OPTCL.

Supplier will post minimum two Full Time Equivalent (FTE) resident engineers to central site SLDC HQ throughout the warranty and AMC period in order to diagnose and set right any problem in system in minimum time. These engineers will coordinate with the substation personnel, Maintenance Technician and the back-end team of the supplier for complaint resolution. Their duties will also include complete support for Reports configuration, Display building, Database Management, Web Management, Development activities etc. for all sub-systems in all aspects. Supplier will maintain their mobile phone live and will maintain same number throughout the contract period.

Necessary space and Facilities of reasonable nature of sitting will be provided by SLDC, OPTCL for deployed Engineer-of successful bidder at SLDC, OPTCL office. The bidder in its quote will also take into account any hardware/software up-gradation, if required during contract period. During maintenance period the Supplier will keep a recorday of all operation and maintenance procedure in the form of manual and will also maintain a record of all command logs (actual command given, who gave the command, time & date and from where) for a period of 12 months. For next period, the same information will be stored/retained in a non-online mode in archival mode . A list of all User ID linked with name and other details of the user duly certified by the Purchaser will also be maintained.

3. **Remote Support and Maintenance**

In case, it is required for timely restoration, all privilege would be extended under the supervision of system administrator and by considering all cyber security measures.

4. **Updation and Patchesp**

A record of all the software updation and changes will be given to the Purchaser and any major updation and changes will be done with the prior approval of the Purchaser. Supplier will keep updated all supplied software kernel/OS and application software with all latest patches and upgrade. There will be no separate liability for License renewable on the system user.

5. **Maintenance and Support of Brought Out Items**

Supplier will take back-to-back support from manufactures of all bought out items. However, supplier will be responsible for all coordination work from OEM for all types of support and maintenance.

6. Charges for support services

All recurring expenditure including spare parts for maintenance and support services during AMC period will be borne by the supplier.

7. Problem/Defect Escalation Order

The successful bidder will submit their organization's escalation order for this project in the following format:

Table 43 Escalation Matrix

Details of Supplier Executive	Description	Escalation Order
Name, Designation, Email ID, Mobile number	Overall accountability	4th level
Name, Designation, Email ID, Mobile number	SLDC Department head to interact if there is any change in business requirement or some change request need to be implemented within the existing contract or any other issue that need to have a mutual consent to move forward and if the problem/defect in the existing software is not resolved within the specified resolution time.	3rd level
Name, Designation, Email ID, Mobile number	SLDC Team Lead to report if any concerns and some items within the scope need to be fixed in priority	2nd level
Name, Designation, Email ID, Mobile number	Interactions with SLDC Team, to provide support, resolve the defects and work together for seamless operation.	1st level

8. System Availability

The nature of maintenance support required for systems and components are described below:

Table 44 System Availability Requirement

SYSTEM AVAILABILITY REQUIREMENT			
Sl. No.	System	Scope	System Availability
1	All Systems software and Hardware supplied with this project including Cyber Security system.	Hardware & Software	99%

Bidder will be responsible for coordination with the OEM for all matter related to that equipment (Hardware & Software). The bidder will also be responsible for meeting the overall response times and availability requirements as specified in the specification. The maintenance of the System will be comprehensive and will comprise of the following category of works which is further elaborated for each of the different subsystems:

i. Preventive Maintenance Activity (performance monitoring, system backup, patch management, updates, emergency response and troubleshooting)
ii. Maintaining adequate no. of spares
iii. Integration of new module/equipment etc.

9. Preventive Maintenance Activity

The preventive maintenance activity to be performed by the Supplier to keep the system running at optimum level by diagnosis and rectification of all hardware and software failures would broadly include:

a. Repair / replacement of defective equipment -The bidder will be responsible for repair/replacement of all the hardware including consumables required for the various systems. Only replacement of printer cartridge and paper rim will be excluded from the scope of the supplier.
b. Configuration of the replaced hardware and software, periodic routine checking as part of a preventive maintenance program (as described in further detail in this document) which would include checking of functionality of hardware and software.
c. Monitoring of the performance of the system and doing necessary tuning for optimum performance to accommodate any changes such as addition of new components.
d. Providing all necessary assistance to Owner for addition and modification of database, Database sizing activities including Backup and restoring of the system.

e. Restoration of the systems upon its failure and to restore the functioning of the various systems.

9.1 Hours of Cover

The supplier will provide engineers who have an experience and skill to maintain the system to the desired level of availability. The service of above manpower resource will be standard hours of service i.e. 10:00 am to 5:30 pm local time (IST), including Public and Owner Company Holidays, throughout the year. The timings for Emergency Support will be 24 hours a day, 7 days a week throughout the year.

The support personnel so deployed will be qualified personnel having at least 5 years of experience in the delivered system. The supplier will submit the CV's to owner/Employee for approval before deployment at site. The owner can ask the supplier to replace the personnel deployed for maintenance support if his performance is not found to be satisfactory.

The bidder will submit authentication against disbursement of the monthly salary of the deployed manpower by 5th day of subsequent Month during AMC period.

9.2 Service Response requirements

The severity levels are defined in coming sections and the requirement of response time for various severity levels is defined below:

Emergency support for severity 1 issues is to be provided 24 hours a day, seven days a week. The on-call support team will include all key technical competencies so that any aspect of a system failure can be attended. The team will comprise of experienced Engineers who are skilled in troubleshooting of the various systems covered under warranty/AMC. Severity 1 problems will be reported by telephone for rapid response; target response times are defined in point-20 (Response and Resolution Time). The bidder will submit the process details to meet the above requirements along with the offer. For severity 1 problems, the key objective is to restore the system to an operational state as quickly as possible, including by a temporary workaround. Resolution of problems will also be provided by an individual fix that will be installed by the supplier at no extra cost to Owner. Severity 2, 3 and 4 problems will be reported by Owner through a call tracking system to be provided by the supplier.

9.3 Monitoring

The operation and performance of the various systems under warranty/AMC period will be monitored on a fortnightly basis, the bidder will review the following, analyse the results, and submit report to SLDC. The bidder will conduct at least the following monitoring:

a) Log Monitoring

i. System logs for a selected day
ii. System history log
iii. Aggregate data collection
iv. Events Collection

During monitoring if any defect/ abnormality is found, the bidder will undertake corrective maintenance for the same.

All Servers, devices, on-line functions, and maintenance functions in system will be monitored for fatal and recoverable errors. All errors will be recorded by the system for review by maintenance personnel. Each type of error (e.g., Server failure, memory access violation, device reply time-out, or message checksum error) will be recorded separately with a date and time tag.

Failure monitoring logic will be distributed within the computing network and will detect all failures that affect the availability of network resources or services. Failure monitoring functions will be independent of application function and user modes. The failure monitoring and error detection function will preferably provide event notification for 3rd party products e.g. SNMP messages. Resources Monitoring

b) Resource Monitoring services comprises checking the system's major node resources, gather log data, analyse results, and advise Owner/Purchaser on the appropriate actions to be taken and undertake any agreed upon actions. The NMS system will be able to continuously collect the following information:

i. CPU loading
ii. Memory utilization
iii. Disk utilization
iv. LAN utilization
v. Operating system resource utilization reports
vi. System error log
vii. Status Position of DCU/Gateway Switch/IEM at Sites through HES/AMR (HES/AMR is not included in scope)

c) Cyber security System monitoring

The Bidder will also be responsible for monitoring of the cyber security system. The logs of the system will be analysed for exceptions and the possible incident of intrusion/trespass will be informed to the Purchaser. The Centralized Monitoring Console (CMC) will monitor and continuously collect the above logs. The supplier will carry out the Bi-Annual Security Audit from CERT-In Certified auditors for the complete system under this project and implement the recommendation given by auditor in consultation with the owner.

9.4 Patch Management

The bidder will also be responsible for providing updates/patches for the software products supplied under the project. All other patches of third-party product like Operating System and Antivirus will be tested by the Bidder prior to installing in the Purchasers network. Other products like Firewalls will also be provided with secure patch management. A secure patch management and deployment system is to be established which will be provided with single point of Internet connectivity. Internet connectivity will be provided by the Purchaser. All the patches will be downloaded through this single point of

connection.

The Bidder will provide a mechanism for patch management so that it is known that what patches have been applied, what all patches are pending but available with us and what is the recent release of patches for the various products. Any patch will be applied only with consent of the Purchaser's representative.

9.5 Physical maintenance

The bidder will undertake physical maintenance of all Equipment and modules under the scope of this contract, in accordance with this section. The physical maintenance will include cleaning, dusting, inspection of equipment for loose connections, damage to insulation, pest infections etc. as follows: -

(a) Online diagnostics for servers and workstations-once every 3 months.

(b) Connection test of LAN cables for identifying potential loose contacts in machine, hubs and routers-once every 3 months.

(c) Physical hardware checks to ensure proper working of cooling fans etc. – once every 3 months.

(d) Physical inspection to check the machine and the panels for rat droppings, lizards or other vermin- once every 3 months.

(e) Cleaning and blowing for removal of dust from servers and workstations and Racks- once every 3 months.

Note: - Equipment shutdown during preventive maintenance will be deemed as available.

10. SPARES INVENTORY:

The Bidder will be responsible for providing all the spares (cards/modules/accessories etc.) for supplied & installed equipment and Non availability of spares will not have any impact on Outage time. The spares will be provided / arranged by the supplier at no extra cost to Purchaser In addition to the Mandatory Spares the bidder will provide a list of "Recommended Spare Parts", which may be required over and above the spares listed in Mandatory Spare parts list, to support system availabilities specified in specifications. These will be periodically verified by the owner and unavailability of spares will be treated as non-availability as per severity-2. If spares has been used in the system then the replenishment of the spare should be done within 45 calendar day, otherwise it will be considered as non-availability as per Severity -2.

11. Integration of New Equipment:

Addition/Deletion/Integration of new IEMs including substation equipment in the MDAS database and application software will also be the responsibility of the Bidder without any extra cost to SLDC, OPTCL.

12. Reliability Indices:

The following reliability indices will also be automatically generated on weekly basis from DC and archived for download on demand.

13. Problem/Defect Reporting:

The bidder will submit an appropriate problem/defect reporting procedure to meet the requirement of all severity level cases to get the approval of the same from SLDC, OPTCL.

The problems will be categorized as follows**:**

14. Severity levels:

The detail of the systems under different severity levels is as below:

Table 45 Severity Levels

Category	Definition
Severity-1 (Urgent)	Complete system failure, severe system instability, loss or failure of any major subsystem or system component such as to cause a significant adverse impact to system availability, performance, or Severity-1 Urgent
Severity 2 – Serious	Degradation of services or critical functions such as to negatively impact system operation. Failure of any redundant system component such that the normal redundancy is lost. For e.g. meter data of a whole station is not available/both main & standby meter data not available/Main server not working, system shifted on standby server.
Severity 3 – Minor	Any other system defect, failure, or unexpected operation. For e.g. Main meter data is not available, however standby/check meter data is available.
Severity 4 – General/ Technical Help	Request for information, technical configuration assistance, “how to” guidance, and enhancement requests.

a) Severity-I (Urgent)

This support is required when there is a complete system failure, severe system instability, the loss/ failure of any major sub-system / system or its components, which may significantly impact the system availability, performance, or operational capability at Control centre. Following outages/disruptions will be considered under Serverity-1:

i. Loss of Critical functionality as envisaged in specification due to any problem software/Hardware-related in DC & associated system.

ii. Outages of MDM and Communication Server.

iii. Cyber Security issues and Outage of complete Web system.

iv. Outage of both Routers or LAN Switches.

v. Loss of data exchange with other computer systems or other control centres or Disaster Recovery Center.

vi. Failure of complete UPS system resulting into loss of UPS output SUPPLY both Output ACDBs is covered under this category. Power supply and UPS maintenance will be under the scope of SLDC, OPTCL. Monitoring and reporting to be done under the warranty / AMC scope of supplier

Initially, the Owner's Engineers will attempt to restore the system. In case the system does not come up and/or the problem is not resolved then the Owner's Engineer will intimate the problem to the supplier. Upon receiving intimation, the representative of the supplier would immediately attend to the problem. The problem will be attended by the supplier at the earliest, and it will arrange all resources and take all steps to restore the data availability and functionality at the earliest.

b) Severity-2 (Serious)

The support services not defined under Severity-1 are included under this category. Coverage under this severity would be outages that do not immediately cause on line data loss but subsequently could result into Severity-1 category outage, loss of an important subsystem that may affect the day-to-day works and loss of archived data.

Following outages/disruptions will be considered under Serverity-2:

i. Failure of one Data Server/Application server, stoppage of data collections for archiving and outage of other applications not covered under severity-1 are included in this category. However, the critical functionality loss due to loss of only one component as defined here will be treated as Severity-1.

ii. Failure of one output ACDB, one input ACDB, failure of one UPS system, Failure of Battery System and failure of any other system of Auxiliary Power supply not covered under Severity-1 are included in this category. Power supply and UPS maintenance will be under the scope of SLDC, OPTCL. Monitoring and reporting to be done under the warranty / AMC scope of supplier

iii. Failure of any redundant system component affecting the critical redundancy like loss of any one Application Processor, Router, Server would also be included in this category.

iv. Non-availability of designated supplier's Man-power at control centre as well as required inventory of spares specified here.

v. Non-compliance of Monitoring functions as specified in point 13 above.

c) Severity-3 (Standard / Minor)

The support services included under this category are when the outage or loss of functionality is neither of an emergency nor priority functionalities as indicated in severity level 1 or 2 above. Problems like database reworking, failure of any one workstation, printers and integration of new equipment / services as defined in point 16 above would be covered under this Severity.

d) Severity-4 (General Technical Help)

Request for information, technical configuration assistance, "how to" guidance, and enhancement requests are included under this category.

15. Response and Resolution Time

This section describes the target times within which the bidder will respond to support requests for each category of severity. The Initial Response Time is defined as the period from the initial receipt of the support request (email/telephone/fax or any other communication channels) and the acknowledgment of the supplier subject to the Maximum time defined Table-46.

The Action Resolution Time will be computed after the expiry of the ideal initial response time subject to the Maximum time defined in below Table-46.

This period includes investigation time and consideration of alternative courses of action to remedy the situation. The Action is defined as a direct solution or a workaround.

Except for Severity Level 1 all response and resolution times (hours and days) specified below are working hours only:

Table 46 Emergency Support Response/Resolution Time

Severity	Ideal Initial Response Time	Action Resolution Time (to be commenced after end of ideal initial response time)	Action
1	30 Minutes	1 Hour	An urgent or emergency situation requiring continuous attention from necessary support staff until system operation is workaround.
2	2 Hours	12 Hours	Attempt to find a solution acceptable to Owner (dependent on reproducibility) as quickly as practical.
3	1 day	2 days	Evaluation and action plan. Resolution time is dependent on reproducibility, ability to gather data, and Owner's prioritization. Resolution may be by workaround.
4	2 days	4 days	Report on the problem/query is to be furnished

The bidder will submit the detailed format and procedure for all the activities such as Reporting time, Resolution time, Downtime etc. along with the bid proposal.

16. Availability and Payment Charges Calculation

It is the endeavor of both the bidder and owner to maximize system availability to the extent possible. The bidder will provide guaranteed availability for various types of Systems as specified in point 9 above. The non-availability hours for availability calculation will be counted from the end of the allowed Action Resolution time. The web-based help desk software application will have features for complaint reporting, severity level assignment, initial response time stamping, remarks of the resident engineer regarding actions taken, complaint resolution time stamp and statistics for computing duration of system outage under different severity level categories. There will be separate login for SLDC and SLDC, OPTCL for certification of the complaint resolution time and will be finalized during DSRS phase. The complaint resolution time stamp will be generated only after endorsement/acknowledgement by SLDC engineer in-charge.

Duration of outages over and above the Action Resolution time, as defined in point 20 in each of the Severity levels will be counted for the non- availability computation and will be clearly brought out in the web based help desk. The resolution may be accomplished by a work around, and such solution will mark the end of non-availability.

In the event of frequent failures at a site, due to a common cause, the first FPR (Field Problem Report) logged will be used for the purpose of availability calculation. However, simultaneous multiple outages due to unrelated cause would be counted separately.

17. Availability computation for System

Availability will be computed on per quarter. The formula to be used for availability computation would be as under:

Availability per quarter yearly = $\{\underline{THQ- (S1x1 + S2x0.8 + S3x0.5)}\}/THQ \times 100\%$

Where THQ is Total hours in the quarter

S1 is the total non-availability hours in severity level-1 in the quarter

S2 is the total non-availability hours in severity level-2 in the quarter S3 is the total non-availability hours in severity level-3 in the quarter

S4 is the total non-availability hours in severity level-4 in the quarter

The target availability would be 99% or better for Software & Hardware. The monthly availability will be calculated as average of weekly availability of the month. Availability will be calculated quarterly as AMC and communications will be paid quarterly. For availability calculations, non-availability of data due to equipment (Hardware and software) failure will be considered. Non-availability of data to SLDC due to non-availability due to communication only will not be considered for availability calculations. However, to ensure the data availability at DC with the help of communication Service Provider as per Communication Service levels is in Supplier's Scope.

18. Payment of maintenance charges and Price Reduction (based on the total System availability)

i. AMC charges will be payable quarterly during the AMC period (on successful completion of 3 months against invoice after due verification by the owner's nodal officer)

ii. In the event of availability below a certain level, the maintenance charges would be proportionately reduced as follows:

Table 47 Deduction against less availability

Availability of the system per quarter	**Deduction as % of the apportioned price of total AMC**
More than or equal to 99%	NIL
Less than 99%	Deduction of 2% of the apportioned prices of the apportioned quarterly AMC for every 0.5 % or part there of decrease in availability under 99%. This deduction will be subject to maximum 50% of the total payable amount of the quarter.

19. Deduction against non-compliance of Preventive Maintenance:

Routine preventive maintenance shall be carried out on quarterly basis in addition to the normal maintenance and submit the relevant records to the Engineering in charge. In the event of missing of the preventive maintenance in any quarter by the bidder, 30% of amount payable for that quarter shall be deducted for non-compliance.

20. AMC B.G. towards security deposit, 100% payment and performance guarantee:

A Composite Bank Guarantee as per the Proforma enclosed at Annexure-VII of the specification for 10% [ten percent] of the (Taxable Value plus GST thereon) of the AMC Cost for 5 years, will be furnished from any nationalized/scheduled bank having a place of business at Bhubaneswar, to the office of **Chief Load Despatcher, SLDC**, Bhubaneswar within 30 days from the date of issue of the purchase order, The BG will be executed on non-judicial stamp paper worth of Rs.29.00 [Rupees twenty-nine] only or as per the prevalent rules, valid for a period of 62 months(60months AMC period+ 2 months) from the date of go-live, for scrutiny and acceptance, failing which the purchase order will be liable for cancellation without any further written notices. The BG should be accompanied by a confirmation letter from the concerned bank and should have provision for encashment at Bhubaneswar, before the Bank Guarantee is accepted and all concerned intimated. The B.G should be revalidated as and when intimated to you to cover the entire guarantee period.

Note:

i. BG for comprehensive AMC shall be submitted by the bidder for a period of 62 months started,12 months from the date of go-live.

ii. BG for AMC shall be submitted by the bidder prior to commencing of AMC.

iii. In case the bidder fails to submit the BG for AMC prior to the specified date mentioned at clause-20 above or decline to provide comprehensive AMC support, the BG submitted for Hardware and Software component shall be encased by SLDC, OPTCL.

iv. No interest is payable on any kind of Bank Guarantee.

21. Computation of Availability /Non-availability

The computation of Availability /Non-availability would be rounded up to 2 decimal places at each Control Centre on quarterly basis and any deduction in maintenance charges thereof would be calculated as stated above in point 22 on pro-rata basis.

a) Supplier's Obligations

The supplier will guarantee continuous availability of the system as indicated Section II :- clause 15 of the section for the defect liability period of one year from the date of operational acceptance in the warranty period and subsequent AMC period. The system availability will be calculated as indicated above on monthly basis. During this period, the supplier will take continuous actions to ensure the guaranteed availability. In case the actual availability falls short of the guaranteed availability, it would be considered as suppliers default and under the provision of Section II :-clause 15, defect liability period will be extended by a period equal to the period / months during which the availability is less than the guaranteed availability.

In order to optimize and improve the response of the system, the supplier may re-install the program modules after making the Owner engineer aware of the consequence (like data loss, database rebuild etc.).

Any modification of software/Operating System required to restore functionality due to hardware upgrades, patches, or arising out of a necessity to fix FPRs (Field problem reports), would be done by the supplier at no extra cost to owner.

The supplier will submit FSR (Field Service Report} and the steps taken to solve the problem, along with details of code changes.

b) Responsibilities of Owner

The responsibilities of the owner during the maintenance period are as follows:

i. Owner will ensure that proper Environmental conditions are maintained for the system.

ii. Owner will ensure that the System is kept and operated in a proper and prudent manner as described in the system documentation provided by the Supplier and only trained Owner representatives (or persons under their supervision) are allowed to operate the system.

iii. Owner will provide access to the sites of installation for purposes of providing Support Services.

iv. Owner will provide the supplier with Space for Office and storage space for their maintenance staff and spares.

c) Responsibility Matrix

The table in this section provides a summary definition of the roles and responsibilities of the supplier and Owner.

Legend:	□	This indicates who has primary responsibility to perform this function.
	A	This indicates who will provide assistance.

Table 48 Responsibility Matrix

Item	Task	Owner	Supplier
1.0	PROBLEM IDENTIFICATION		
1.1	Root cause analysis to determine whether the fault is attributable to Hardware or Software.	----	□
1.2	Resolution of problems involving third party maintainer where there is uncertainty whether the root cause is hardware or software.	----	□
2.0	SOFTWARE PROBLEM RESOLUTION		
2.1	Report problem and assist with problem identification	----	□
2.2	Provide or recommend corrections, temporary patches, workarounds or other fixes to system problems	----	□
2.3	Install and test corrections, temporary patches, workarounds or other fixes to system problems	----	□
3.0	ROUTINE SOFTWARE SUPPORT		
3.1	Build and maintain database and reports	□	A
3.2	Perform system back-ups	----	□
3.3	Restore or reinstall software from back-ups	----	□
3.4	Monitor system logs (part of remote monitoring service	----	□
3.5	Maintain system logs	----	□
3.6	Maintain user accounts	□	A
4.0	HARDWARE PROBLEM RESOLUTION		
4.1	Report problem and assist with defining problem	□	A
4.2	Troubleshoot problem to diagnose if it is software-related or hardware-related	----	□

4.3	Identify failed component, Replace failed components in online system using parts from spares inventory	----	□
4.4	Restore operation of repaired/ replaced equipment.	----	□
5.0	HARDWARE SPARE PARTS		
5.1	Manage local spares inventory	----	□
5.2	Replenish local spares inventory	----	□
5.3	Maintenance of Spares	----	□
6.0	INTEGRATION AND DATABASE WORK AT CONTROL CENTRE END		
7.0	CYBER SECURITY MONITORING		
7.1	Patch Updates	----	□
7.2	Cyber Security Monitoring	-----	□
7.3	Bi-Annual Audits	----	□
7.4	Implementation of Recommendations during Audit	----	□

d) Transfer Of Software

The bidder must ensure that after Warranty/AMC Period following are duly transferred to SLDC, OPTCL:

i. Fully Configurable Software and Configuration settings
ii. Data base
iii. All Licenses and Passwords
iv. Relevant any essential requirement for smooth functioning of the solution.
v. Ensure knowledge transfer to the owner's user team.

REFERENCE STANDARDS TO BE COMPILED WITH

i. CERC Regulations on IEGC, DSM, Congestion Alleviation, Ancillary Services, Sharing of Transmission Charges as available at http://www.cercind.gov.in/updated_consolidated_reg1.html

ii. Report on Scheduling, Accounting, Metering and Settlement of Transactions in Electricity SAMAST", http://www.forumofregulators.gov.in/Data/WhatsNew/SAMAST.pdf

PART – II

SECTION-VII

BID PRICE SCHEDULE (BPS)

PART – II
SECTION-VII: BID PRICE SCHEDULE (BPS)

BID PROPOSAL SHEET

Bidder's Proposal Reference No. and Date:
Bidder's Name & Address :
Contact Person :
Designation :
Telephone No. : Mobile No. :
Fax No. E-mail :

To

The Chief Load Despather, SLDC
ODISHA Power Transmission Corporation Ltd.
Janpath, Bhubaneshwar.

Sub: Proposal for **Development**/Engineering, Supply, Erection, Testing & Commissioning of SAMAST Project (Software and Hardware) on EPC/Turnkey Contract.

Ref. : 1. NOTICE INVITING TENDER(NIT) NO ……..
2. TENDER DOCUMENT REFERENCE NO……....
3. PACKAGE/Works: No……...

Dear Sir,

1. We, the undersigned Bidder having visited the Official e-Tender Portal of OPTCL of OPTCL and having read and examined in detail the Tender Documents [e-NIT, Free View Documents (.pdf) and Bid Forms(in XLS formats)] including specifications of the package referred above, do here by propose to engineer and supply including all types of test at manufacturer's works, ocean shipment, marine insurance, custom clearance, port clearance and handling, inland transportation, inland transit insurance, delivery to site, loading & unloading, storage, insurance during storage and inside site transportation and erect and commission of the materials/Equipment supplied under this contract including installation, performance testing and handing over to OPTCL of the complete Construction of works on EPC/Turnkey contract basis.

We, agree to the following major terms and conditions of the tender;

2.0 PRICES AND VALIDITY:

2.1 We declare that the prices quoted in our proposal are in accordance with your "Instructions to Tenderers" and as per the bid form (in .XLS formats) available in the Official tender Portal of OPTCL.

The Input Tax Credit (ITC) available on inward supply of goods or services, or both, as

the case may be for the contract has been fairly estimated and the benefit of the same has been fully adjusted while quoting the bid price.

All the basic prices (taxable value) of the price schedule are FIRM during the period of the contract (except for statutory variations in GST rates) in line with your bid documents.

2.3 All the prices and other terms and conditions of this proposal are valid for a period of 240 Days from the date of opening of the Technical (Part-I) bids.

2.4 The prices and the price components in line with the requirements of the bid documents Section-VII of the Part-II (Price Schedules) are keyed-In and uploaded in the Official e-Tender Portal of OPTCL.

2.5 We hereby declare that our bid prices cover entire scope of the work to complete the work in accordance with Bid Documents.

2.6 We hereby declare that prices left blank or indicating "nil/zero/0/dash/-/Not Applicable/NA/any other notation other than price" in the Schedules will be deemed to have been included in the prices of other items/total quoted Bid Price.

2.7 If there is a discrepancy between unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and total price shall be corrected. If there is a discrepancy in the quantity mentioned by the bidder from the quantity mentioned in the tender the tendered quantity (BOQ) will prevail.

2.8 We do not anticipate any change in Ownership of company/firm. If at all and there would be a change in Ownership, we undertake that our obligation under the contract in case we become successful bidder, shall stand.

3.0 TAXES & DUTIES:

3.1 We declare that towards the supply of goods & services by us, we will quote basic prices(taxable value) inclusive of Packing, Forwarding and Freight & Insurance excluding GST for each of the items quoted. Alongside the basic price(taxable value) quoted by us for each item, CGST plus OGST, or IGST, as the case may be, will also be quoted, which will be added to quoted basic price(taxable value) to indicate quoted final value. Tax Invoice shall constitute basic price, CGST plus OGST, or IGST, as the case may be, and such other details which are stipulated in CGST and OGST Rules, 2017. No transaction between OPTCL and our vendors shall be recognized and the input credit on the supply of goods & services by our vendors shall be considered in the basic price(taxable value) quoted to OPTCL.

3.2 However, any statutory variation in GST on package supply (and not on individual goods and services components) supplied by us during the contract period is to OPTCL's account.

3.3 As regards the Income Tax, surcharge on Income Tax, statutory payments and other corporate taxes, we will be responsible for such payments to the concerned authorities.

3.4 The statutory deduction of taxes and duties at source as applicable, related to these works, shall be made by OPTCL from our bills for which we cannot claim any reimbursement. TDS so deducted by OPTCL shall be deposited by them with the relevant tax Authorities & TDS certificates shall be issued by OPTCL wherever so required under the respective law.

4.0 DEVIATIONS

4.1 We hereby declare that work shall be performed strictly in accordance with the Technical Specifications & Commercial Terms and conditions specified in the Bidding Documents except for the deviation detailed out exhaustively in the following sheet.

(a) Commercial Deviations Attach 7.pdf
(b) Technical Deviations Attach 8.pdf

Further, we confirm that any deviations found elsewhere in our proposal, other than those stated in above deviation sheet, shall not be given effect to. Deviation on account of better specification may be acceptable to OPTCL, without any cost implication to OPTCL.

However, we understand that any deviations with respect to the Technical Specifications & Commercial Terms and conditions specified in the Bidding Documents not acceptable to OPTCL may render my bid non-responsive.

4.2 We have read the following major provisions of the ITB & GTCC and confirm that the specified stipulations of these provisions are acceptable to us irrespective of whatever has been stated to the contrary anywhere-else in our proposal.

a. Terms of Payment
b. Bid Security Declaration in lieu of Bid Security (EMD)
c. Contract Performance Bank Guarantee (CPBG)
d. Price Reduction
e. Price Basis & Payments
f. Guarantee Period
g. Contract Completion Period
h. We further confirm that any deviations to the above clauses at Sl.No. (a) through found anywhere in our bid proposal implicit or explicit shall stand unconditionally withdrawn, without any cost implications whatsoever to OPTCL.

5.0 TENDER COST, TENDER PROCESSING FEES AND BID SECURITY:

5.1 We have scanned and uploaded the Demand Draft(s)/Bank Guarantee as applicable towards Tender Cost, Proof of Deposit of Tender Processing Fees. We have also submitted the above in original in a separate sealed envelope superscribing the Package/works No…., Bid ref. No. and Name.

5.2 The details of the above Demand Draft(s)/Bank Guarantee/ Proof of Deposit of Tender Processing Fees are as follows;

Particulars	DD/BG No. & Date	Amount (In Rs.)	Issuing Bank
Tender Cost			
Tender Processing fees			

6.0 QUALIFICATION DATA:

6.1 We confirm having uploaded(attachment.pdf)/keyed-in (Schedules) against the Technical and Financial qualification requirement on your official tender portal as per qualifying criteria specified in the Instruction to Bidders, Part-I.

6.2 In case, you require any further information in this regard, before evaluation of our bid, we agree to furnish the original in time to your satisfaction.

6.3 We declare that the documentary evidence in support of the above qualifying requirement and the information filled by us in this regard are correct to the best of our knowledge and belief. We undertake that if any of these documentary evidence/information are found incorrect, our bid shall be liable for rejection, and in the event we emerge successful in the bidding process and are awarded the package/works, we will be liable for all consequential damages apart from termination of the contract.

7.0 OTHER STATUTORY DOCUMENTS:

7.1 We have also uploaded (as an attachment .pdf) all the statutory documents mentioned in the ITB in support of the qualifying criteria.

8.0 BID CAPACITY:

8.1 We confirm that we have uploaded (documents attachemnt.pdf)/Keyed-in the schedules to meet our bid capacity criteria. We undertake to abide by the bid capacity and award criteria assessed by OPTCL as per the following bid capacity qualification, if found successful in the bidding process;

8.2 In case we participate through Joint Venture/Consortium, we and our partner together shall also agree to the above bid capacity criteria.

9.0 INSTALLATION OF CONTRACT:

9.1 We understand that in case of award, the contract to be entered into shall be treated as single contract. Supply portion of the contract consisting of development, Design, engineering, manufacturing, testing & inspection at manufacturer's works, packing, forwarding and transportation of equipment and materials, special tools & tackles and spares etc. from manufacturing works to project site including transit insurance as per Bidding documents. The Installation portion of the contract will relate to unloading, handing at site, storage, storage-cum-insurance and preservation at site, development of software module, erection, Installation, testing, commissioning including all associated Mechanical, Electrical, and Construction of all associated Structural & architectural works etc. as specified in bidding documents**.**

9.2 We further agree that if the contract is awarded to us it will be on single source responsibility basis and breach in any portion or part of one contract shall be construed

as a breach of the other contract as well, which will confer on you the right to terminate the other contract, at our risk and cost.

10.0 WORK COMPLETION SCHEDULE:

10.1 If this proposal is accepted by you, we agree to submit engineering data, provide services and complete the entire works from time to time in accordance with schedules uploaded in the tender portal of OPTCL in line with the ITB and acceptable to SLDC, OPTCL.

10.2 We fully understand that the time schedule stipulated in the proposal is the essence of the contract, if awarded. To this effect work completion schedule indicating key mile stones have been uploaded in the tender portal.

10.3 We undertake to complete the works in a phased manner as per the work schedule agreed to SLDC, OPTCL.

10.4 SLDC, OPTCL however reserves the right to re-schedule the completion period, if required.

11.0 CONTRACT PERFORMANCE BANK GUARANTEE:

(a) We agree that if our proposal is accepted, we shall provide an irrevocable Contract Performance Bank Guarantee (from list of Banks mentioned in the annexure to this documents) in non-judicial stamp paper of appropriate value (as per the prescribed format) within 30 (thirty) days from the date LOA issued, in favour of the Power System, OPTC Ltd. Bhubaneswar.The Bank Guarantee amount shall be specified in the tender. The bank guarantee shall be valid for 02 months over and above work completion period plus Guarantee Period. If the work completion period gets extended the Contract Performance Bank guarantee shall be extended accordingly.

(b) In case we have participated through Joint Venture/Consortium, the Contract Performance Bank Guarantee shall be Submitted by the lead partner on behalf of the Joint Venture/Consortium.

12.0 PERFORMANCE GUARANTEE:

12.1 We Certify that all the material supplied under this contract are new and guaranteed to cover the guarantee period and shall conform to high standards of software developments, engineering and shall be capable of performing in continuous commercial operation in a manner acceptable to SLDC, OPTCL.

12.2 We declare that the ratings and the performance figures/parameters of the software/equipment/ plant furnished & installed by us are guaranteed in line with the GTP and Technical Specifications of Part-I to cover the entire guarantee period.

12.3 We also undertake to take up the rectification/repair/replacement of software/materials or works, if any, during the defect liability period.

13.0 SELF DECLARATION FORM:

13.1 I/We, the undersigned do hereby declare that, I/We have never been blacklisted and / or there were no debarring actions against us for any default in executing the Turnkey Contract or in the performance of the contract entrusted to us in any of the Electricity Transmission Utilities of India.

13.2 In the event of any such information pertaining to the aforesaid matter found at any given point of time either during the course of the contract or at the bidding stage, my bid / contract shall be liable for rejection/ cancellation / termination without any notice at the sole discretion of OPTCL.

14.0 CHECK LIST:

14.1 We confirm having enclosed a check list duly keyed-in Schedule of this proposal and confirm **that** all necessary data/information have been provided in our proposal as required in the bidding documents.

15.0 ACKNOWLEDGEMENT OF DISCLAIMER:

15.1 We **undertake** that we have conducted our own estimation and analysis and checked the accuracy, reliability and completeness of the information contained in the bid Document (Tender Notification, Free view Documents and Bid Forms) uploaded in the e-tendering portal and obtained independent advice from appropriate sources in our own interest for the purpose of bidding.

15.2 We understand that SLDC, OPTCL is not responsible for the e-Tender Portal of OPTCL being temporarily unavailable due to any technical issue at any point of time. In that event SLDC, OPTCL will not be liable or responsible for any damages or expenses arising from any difficulty, error, imperfection or inaccuracy with this e-Tender Portal of OPTCL.

15.3 We agree to follow the time table of e-tendering process and get the activities of e-tendering processes done well in advance so as to avoid any inconvenience.

15.4 We undertake that in case of technical error/ failure of e-Tender Portal of OPTCL, we shall not challenge it by way of appeal, arbitration and in the Court of Law.

16.0 DECLARATION:

16.1 We, hereby declare that only the persons or firms interested in this proposal as principals are named herein and that no other person or firm other than those mentioned herein have any interest in this proposal or in the contract to be entered into if we are awarded the contract, and that this proposal is made without any connection with any other person, firm or party submitted a proposal and that this proposal is in all respect for and in good faith, without collusion or fraud.

16.2 Further, We hereby declare that we have gone through and understood the bid documents (including schedules in XLS available in the e-tender portal) in detail and tender portal instructions for the purpose of participating in the bidding process and enclose herewith attachments (in .pdf) uploaded and Schedules (in XLS) Keyed-in both in line with the original document.

Dated this ……..……day of ……**20…..** at…….

Thanking you, we remain,

Yours faithfully,

Date : (**Signature**)

Place : (Printed Name)……
(Designation)……...
(Common Seal)……
Business Address:
Country of Incorporation :(States or Provinces to be indicated) (Name & Address of the Principal Office)

Enclosure:

A. Soft Form of Documents (Scanned Copy):

Sl No	Description	.Pdf file reference
1	DD towards Tender Cost, and Documentary proof of payment of Tender Processing Fees through e-payment mode.	Attach 1.pdf
2	( ) Power of Attorney /notarized copy for signing the bid document. (a) Joint Venture/Consortium Agreement & Power of Attorney of Joint Venture/Consortium (In case of Bid from Joint Venture/ Consortium).	Attach 2.pdf
3	Following documents/Credential in support of meeting Technical Qualifying requirement: i. Work Orders/LOA (including detailed bill of quantity for supply & erection works) ii. Commissioning Certificate/ Handing Over and Taking Over Certificate/Client Certified copies of completion certificate in respect of the work orders furnished as above. ( ) Performance Certificate in respect of the work orders furnished as above.	Attach 3.pdf
4	Scanned copy of Documents/credential in support of meeting the Financial QR: i. Audited Annual Accounts for last 03(Three) years. FY:2019-20,2020-21,2021,22 MAAT Schedule (Fin-1) ii. Liquid Assets and Un-Utilised Credit Facility Schedule (Fin-2) iii. Net Worth Schedule (Fin-3) iv. Bidder's Bid Capacity Schedule (Highest Project related Annual Turn Over (Fin-4) v. Total Order Value of SLDC, OPTCL, GRIDCO work in Hand (if any) (Fin-5)	Attach 4.Pdf
5	Scanned copies of Statutory Documents; i. Certificate of Incorporation. ii. IT PAN. iii. IT Return of last three years. iv. GST Registration Certificate. v. EPF Registration Certificate etc.	Attach 5.pdf

6	Covering Letter of Bid Proposal Sheet (BPS) duly signed by the authorized signatory of the Bidder(s). Note: The enclosed Schedules specified in the BPS are in the .XLS format and Attachment (in.pdf), the same shall be keyed-in/ uploaded by the Bidder in the tender portal separately.	Attach 6.pdf
7	Commercial Deviation Schedule to be submitted as per the prescribed format duly signed. (Annexure-XII-A)	Attach 7.pdf
8	Technical Deviation Schedule to be submitted as per the prescribed format duly signed and uploaded (Annexure-XII-B)	Attach 8.pdf
9	Self-Declaration Form as per the format (Annexure-I)	Attach 9.pdf
10	Any Other relevant documents (As per requirement of the tender)	Attach 10.pdf

B. Schedules (XLS format) in the e-Tender Portal of OPTCL :

Sl. No.	**Particulars**	**Schedules in XLS format**
1	Bidders' information	Schedule-I
2	Acceptance of Important Condition of the Contract	Schedule-II
3	Check List	Schedule-III
4	Documents to Qualifying requirement	Schedule-IV
5	Financial qualification	Schedule-V
6	Outright Rejection Criteria	Schedule-VI
7	Documents to Accompany Bids	Schedule- VII

Table 49 Bidder's Information Sheet

SCHEDULE-I in XLS Format		
BIDDER's INFORMATION SHEET		
SLDC, ODISHA POWER TRANSMISSION CORPORATION LIMITED		
NOTICE INVITING TENDER-NIT NO		. …….
TENDER SPECIFICATION NO.		……..
NAME OF THE WORKS		Design/Development, Supply, Installation, Testing, Commissioning & Maintenance of SAMAST Software Scheme with Data center & Disaster Recovery Center set up and comprehensive AMC
NAME OF THE BIDDER		
THE BIDDERS ARE REQUIRED TO FURNISH THE FOLLOWING DETAILS AS PER THE FORMAT GIVEN BELOW WHICH IS A MANDATORY REQUIREMENT FOR EVALUATION OF BIDS.		
Sl.No.	DETAILS	TO BE FILLED IN BY THE BIDDER
1	BIDDER'S NAME	
2	BIDDER'S SITE NAME (Name of the BUSINESS PLACE)	
3	ADDRESS	
4	CITY	
5	STATE	
6	COUNTRY	
7	PIN CODE	
8	PHONE NO.	
9	FAX NO.	
10	GST REGISTRATION NO.	
11	PAN NO.	
12	TAN NO.	
13	CONTACT PERSON'S NAME	
14	POSITION / DEPARTMENT OF CONTACT PERSON	
15	CONTACT PERSON'S E MAIL ID	
16	CONTACT PERSON'S PHONE NO. AND MOBILE NO.	
17	CONTACT PERSON'S FAX NO.	
18	DETAIL ADDRESS OF JOINT VENTURE/CONSORTIUM PARTNERS (IF ANY), WITH ALL THE ABOVE INFORMATION.	
19	BANK A/C PARTICULARS OF THE BIDDER FOR EFT PAYMENT	

SCHEDULE-II in XLS Format

ACCEPTANCE OF IMPORTANT CONDITIONS OF THE CONTRACT

	With reference to bid proposal being submitted to SLDC, OPTCL against NOTICE INVITING TENDER-NIT NO. ……. TENDER SPECIFICATION NO-……Works –……..., we hereby confirm that we have read the provisions of the following clauses and that notwithstanding anything stated elsewhere to the contrary, we agree that the stipulations of these clauses are acceptable to us except those declared as "not agreed".	
	NAME OF THE BIDDER	
	Bid Proposal Ref. No. …. Dated…	
	Bidder's Address:	
Sl. No	Terms & Conditions	**Declaration (Indicate Agreed / Not Agreed)**
1	Whether the bidder agrees to all the Terms & Conditions of the contract for this tender?	
2	Documentary proof of Registration with Tender Wizard (hardcopy)	
3	Whether submitted the tender processing fee on or before the date and time of opening of technical bid?	
4	Whether the tenderer has submitted the bid in electronic mode only?	
5	Whether **validity of** the **bid** mentioned for a minimum period of **180** days from the date of opening of tender?	
6	Whether the tender has been submitted in two parts as specified?	
7	Whether the schedule of prices have been filled up fully. Incomplete submission of this schedule will make the tender liable for rejection	
8	Whether the tenderer has quoted '**FIRM**' price only	
9	Whether agreed to Implementation Schedule of the tender?	
10	Please confirm you agree to all clauses specified in the RFP and subsequent corrigendums & addendums	
11	Please confirm submission of tender using all Forms and Documents as per tender	
12	Technical proposal along with all Forms & Supporting documents	
13	Please confirm submission of Price proposal	
14	Please confirm you would submit all the required bank guarantee as per the clause provided if you are selected as the successful bidder	
15	Please confirm that all services have been included in the price proposal and is complete in all respects without any deviation/ missing items	
16	Please confirm that you have not submitted any alternate proposal	
17	Please confirm that you have noted the SLA guidelines and price reduction clauses applicable as specified in the RfP	
18	Please confirm you have responded to all the Scope of Work	
19	Please confirm you have agreed to Terms of Payment	

Note :	Any deviation to the above clauses at Sl. No. (a) through (s) found anywhere in our bid proposal, implicit or explicit, shall stand unconditionally withdrawn, without any cost implication whatsoever to SLDC, OPTCL.

SCHEDULE-III in XLS Format

CHECK LIST

(ATTACHMENT TO BID PROPOSAL SHEET AND KEYED-IN SCHEDULES)

SLDC, ODISHA POWER TRANSMISSION CORPORATION LIMITED (OPTCL)	
NAME OF THE BIDDER	
Bid Proposal No. / Date	

The following attachments (files in PDF format) and schedules in .XLS are attached to bid proposal sheet and Keyed –In (Mandatory)

Sl. No.	**Description**	**File name**	(Indicate YES / NO)
1	Declaration form (ANNEXURE-I)	Attach 1.pdf	
2	Abstract of terms and conditions to accompany Section-II of Part-I (ANNEXURE-II)	Attach 2.pdf	
3	Schedule of Quantity and Delivery (ANNEXURE-III)	Attach 3.pdf	
4	Abstract of price component [to accompany Part-II of this specification] (ANNEXURE-IV)	Attach 4. Pdf	
5	Schedule of prices to accompany Part-II (ANNEXURE-V)	Attach 5.pdf	
6	Bank Guarantee form for earnest money deposit (ANNEXURE-VI)	Attach 6.pdf	
7	Composite Bank Guarantee form for security deposit, payment, and performance (ANNEXURE-VII)	Attach 7.pdf	
8	Chart showing particulars of E.M.D. (ANNEXURE-VIII)	Attach 8.pdf	
9	Data on Experience.(ANNEXURE-IX)	Attach 9.pdf	
10	Schedule of spare parts.(ANNEXURE-X)	Attach 10.pdf	
11	Schedule of Installations (ANNEXURE-XI)	Attach 11.pdf	
12	Schedule of deviations (Technical) (ANNEXURE-XII A)	Attach 12.pdf	

13	Schedule of deviations (Commercial) (ANNEXURE-XII B)	Attach 13.pdf	
14	Litigation /Arbitration (ANNEXURE-XIII)	Attach 14.pdf	
15	Delivery Schedule (ANNEXURE-XIV)	Attach 15.pdf	
16	Change Request Format (ANNEXURE-XV)	Attach 16.pdf	
18	Bidders information	Schedule-I	
19	Acceptance of Important Condition of the Contract	Schedule-II	
20	Check List	Schedule-III	
21	Documents to Qualifying requirements	Schedule-IV	
22	Financial Qualification	Schedule-V	
23	Outright Rejection Criteria	Schedule-VI	
24	Documents to Accompany Bids	Schedule-VII	

SCHEDULE-IV in XLS Format

SLDC, ODISHA POWER TRANSMISSION CORPORATION LIMITED		
(Qualifying Requirement Data Applicable for Bidders Seeking Qualification under Clause 41, Section-II Part-1 of e-Bid Documents.)		
To The Chief Load Despatcher SLDC, OPTCL Dear Sir, Tender Notice No…… -" Design/Development, Supply, Installation, Testing, Commissioning & Maintenance of SAMAST Software Scheme with Data centre & Disaster Recovery Center set up and comprehensive AMC . The details of which are given below:		
NAME OF THE BIDDER		
Bid Proposal No. / Dated		
Sl No	Description	Indicate the .pdf file(s)
Technical Qualification:		
1	Clause-41.1:The Bidder" means any eligible FARM or COMPANY registered under Company act 1956 (Amended in 2013) or Limited Liability Partnership (LLP) registered under the LLP Act, 2008 and should have been in operation in India, whose primary business is software development and implementation and must have relevant experience in Data Centre Hardware and software installation as on the date of bid opening and will have their registered offices in India.	
2	Clause-41.1:The Bidder (Lead bidder in case of JV) will have successfully implemented minimum **two (2) Software development & implementation project** in RLDC / NLDC / Grid India / RPC / STU / SLDC with minimum cumulative project cost INR 50 lakhs (with GST) in India in the last five (5) years ending the date of submission of bid.	
3	Clause-41.1:The Bidder (or any member in case of JV) will have completed minimum **two (2) IT infrastructure** in RLDC / NLDC / Grid India / RPC / STU / SLDC with minimum cumulative project cost INR 100 lakhs (with GST) in India in the last five (5) years as on date of submission of bid.	
4	Clause-41.1:The Bidders (Lead bidder in case of JV/consortium) should have CMMI – Level III maturity at the time of participation in the tender and the appraisal document and certificate will be enclosed with the bid.	
5	Clause-41.1:Bidders (Lead bidder in case of JV/consortium) shall have a valid ISO 9001:2000 or above and ISO 27001.Other JV partner shall have a valid ISO 9001:2000 or above.	

6	Clause-41.1: Bidders (Lead Bidder in case of JV/consortium) must provide third party Safety Certification ("S" mark) Scheme of electronic sector promoted by STQC certification services, Standardization Testing and Quality Certification directorate, Ministry of Electronics and Information Technology, Govt. of India.	
7	Clasue-41.2:The bidder (Lead bidder in case of JV) should have experience of completing at least One Project **(or)** two ongoing project in hand **(or)** having AMC for two projects since last two years, similar in nature with **all** the following software module in any RLDC / NLDC / Grid India / RPC / STU / SLDC. 1. Web based Energy Scheduling 2. Energy Accounting 3. Deviation Settlement Mechanism/UI	
8	Clause-41.2:The bidder (Lead bidder in case of JV) should have experience of completing at least One Project (or) One ongoing project (or) one projects under AMC contract since last two years, similar in nature for any one of the following software modules in any RLDC / NLDC / Grid India / RPC / STU / SLDC. 1. Open Access 2. Outage Management	
9	The Bidder must have on its roll at least 100 professionals in general and at least 50 professional in the area of Software development and implementation.	

SCHEDULE- V

SLDC, ODISHA POWER TRANSMISSION CORPORATION LIMITED			
(Qualifying Requirement Data Applicable for Bidders Seeking Qualification under Clause 31, Section-II part-1 of e-Bid Documents			
To The Chief Load Despatcher SLDC, OPTCL Dear Sir, Tender Notice No……. -" Design/Development, Supply, Installation, Testing, Commissioning & Maintenance of SAMAST Software Scheme with Data center & Disaster Recovery Center set up and comprehensive AMC . The details of which are given below:			
NAME OF THE BIDDER			
Bid Proposal No. / Dated			
Sl No	Description		(Indicate the .pdf file(s) and Schedules to be referred)
Financial Qualification:			
1	Clause-31.1 : The minimum average annual turnover (MAAT) of the last three years (FY2019-20, FY 2020-21, FY2021-22) for the Bidder will be INR 20.5 Crores.		
	Clause-31.1 : The minimum average annual turnover of IT Infrastructure / software development Projects, in last three years (FY2019-20, FY 2020-21, FY2021-22) will be minimum INR 4 crores for the single bidder or sum of both the partners in case of JV.		
	Clause-31.1 : In case of JV, the average annual turnover of lead bidder will be minimum INR 12 crores, the total of the average annual turnover of JV Member (other than Lead bidder) for the last three years (FY2019-20, FY 2020-21, FY2021-22) will be minimum INR 8.5 crores. Note:The bidder has to furnish the Certificate from the Chartered Accountants certifying Annual turnover of the Company (excluding its sister companies) based on audited accounts of the last three financial years.		
2	Clause-31.2 : LIQUID ASSETS AND ACCESS TO CREDIT FACILITY: Bidder shall be financially sound and stable. The liquid assets as per the Audited Accounts at the end of the last Financial Year and unutilized credit facility available from bank duly certified by the Bank at the end of the month preceding to the date of submission of the tender together as indicated in the following format should not be less than 15% of estimated cost of the tender (Rs 2 Crore)		
	Clause-31.2: LIQUID ASSETS AND UNUTILISED CREDIT FACILITY: (FIN-2)		

	1. LIQUID ASSETS: AS ON 31.03. 2023 a. Cash in Hand b. Cash at Bank c. Fixed Deposits Total Liquid Assets Note:Liquid Asset: The liquid Assets as per the last Audited Accounts prior to the year of Tender shall be considered.	
	2. Un-Utilized credit Facility at the end of the month preceding to the date of bid submission a. Cash Credits b. Letter of Credits c. Bank Guarantee d. Others **Total un-utilized Credit Facilities:** **Total of Liquid Assets and unutilized Credit Facilities(1+2)** Note:Un-Utilized Credit Facility: The latest unutilized credit facility as per the Banker's Certificate at the end of Month preceding to the Month of Tender shall be considered	
3	**Clause-31.3:NET WORTH:** Net worth of bidder as per the audited financial results shall be positive on the last day of the preceding financial year. Net Worth means the sum total of the paid-up share capital and free reserves (excluding reserves created out of the revaluation of assets, write back of depreciation provisions and amalgamation) net of P&L A/C (Dr. balance) and miscellaneous expenses to the extent not adjusted or written off. NET WORTH: **FIN-3** (AS ON 31.03.2023) a. Paid-up share capital b. Free Reserves excluding the reserves created out of the following: i. Revaluation of assets. ii. Write Back of depreciation Provisions. iii. Amalgamation c. Less P & L A/C (Dr.Balance) d. Less, Miscellaneous expenses to the extent not written off. **Total:** Note: Clause-31.3 The bidder has to furnish the certificate from the charted Accountants certifying the FIN-3 Schedule.	

4	Clause-31.4 : Bidders Bid Capacity: The Bidder's bid capacity will be limited to 200% of the Annual turnover of the Company (excluding its sister companies) of one year out of preceding three Financial Years. Bidder's Bid Capacity Schedule: **FIN-4** (a) For Financial Year- 2019-20 (b) For Financial Year- 2020-21 (c) For Financial Year -2021-22 Highest works Contract related Annual Turn Over Note: 1. Clause-31.4 The bidder has to furnish the year wise turnover of the Company (excluding its sister companies) certificated by the Chartered Accountants based on Audited Account.	

SCHEDULE- VI

STATE LOAD DISPATCH CENTER, ODISHA POWER TRANSMISSION CORPORATION LIMITED			
Outright Rejection Criteria - Schedule VI			
Tender Notice No.		SLDC-01/2023-24	
Tender Specification No.		SLDC-01/2023-24	
NAME OF THE WORK		Design / Development, Supply, Installation, Testing & Commissioning & Maintenance of SAMAST Software Scheme with Data Centre & Disaster Recovery centre set up and comprehensive AMC	
NAME OF THE BIDDER			
Sl.No.	**Criteria for Outright Rejection**	**Details to be filled by the bidder**	**Name of the attachment (eg. Tendercost.pdf, etc.)**
1	Documentary proof of submission Tender Cost, payment of Tender Processing Fees through e-payment mode.		
2	Power of Attorney (Authorized Signatory) notarized copy for signing the bid document in hard copy.		

SCHEDULE- VII

STATE LOAD DISPATCH CENTER, ODISHA POWER TRANSMISSION CORPORATION LIMITED		
Documents to Accompany Bids - Schedule VII		
Tender Notice No.		SLDC-01/2023-24
Tender Specification No.		SLDC-01/2023-24
Name Of The Work		Design / Development, Supply, Installation, Testing & Commissioning & Maintenance of SAMAST Software Scheme with Data Centre & Disaster Recovery centre set up and comprehensive AMC
Name Of The Bidder		
Sl.No.	**Description**	**Name of the attachment (Eg. Bid_Form.pdf, EMD.pdf, etc)**
1	Documentary proof of submission Tender Cost, payment of Tender Processing Fees through e-payment mode.	
2	Documents against the eligibility Criteria: Firm's Financial and Manpower Strength	
3	Documents against the eligibility Criteria: Past Performance & Relevant Project Experience	
4	Documents against the eligibility Criteria: Criteria on Domain Expertise	
5	Techno commercial Proposal as per Bid document - Supplier Response Format along with all the required duly filled forms as prescribed	
6	Techno-Commercial Deviation Schedule as per the Format-Annexure- XII.	
7	Undertaking on Acceptance of Importance Terms & Condition	
8	Duly filled, signed Bidding Forms in the format specified in Bid document.	
9	Price Proposal	
10	Any Other Documents	

PRICE BID

1. PRICE:

(i) Bidders are required to quote their price(s) for goods offered indicating they are 'FIRM'

(ii) The prices quoted will be FOR Destination only at the consignee's site/store inclusive of packing, forwarding, Freight , Insurance and GST. In addition, the break-up of FOR Destination price will be given as per schedule of Prices in Annexure-XVI of Section – II. The Bidders has to certify in the price bid that any implication of lower Tax and Input Tax Credit benefit as per anti-profiteering and other provisions under GST Laws, have been fully passed on to the Purchaser, while quoting the tender prices

2. INSURANCE:

Insurance of materials/equipments, covered by the Specification will be done by the Suppliers with their own Insurance Company unless otherwise stated. The responsibility of delivery of the materials/equipments at destination stores/site in good condition rests with the Supplier. Any claim with the Insurance Company or Transport agency arising due to loss or damage in transit has to be settled by the Supplier. The Supplier will undertake free replacement of equipments/ materials damaged or lost which will be reported by the Consignee within 30 days of receipt of the equipments/materials at Destination without awaiting for the settlement of their claims with the carriers and underwriters.

3. CERTIFICATE FOR EXEMPTION FROM GOODS AND SERVICES TAX:

Offers with exemption from Goods and Services Tax will be accompanied with authenticated proof of such exemption. Authenticated proof for this clause will mean Photostat copy of exemption certificates, attested by Gazetted Officers of State or Central Government.

4. PROPER FILLING UP OF THE PRICE SCHEDULE:

The tenderer should fill up the price schedule properly and in full. The tender may be rejected if the schedule of price is submitted in incomplete form.

5. NATURE OF PRICE INDICATED IN SPECIFICATION WILL BE FINAL.

The nature of price indicated in the Clause-13, Section – I of PART –I of the Specification will be final and binding