

3(b)	Is the date of sale of non-judicial stamp paper shown on the BG and the stamp paper is issued not more than Six months prior to the date of execution of BG?		
4(a)	Are the factual details such as Bid specification No., LOA No. contract price, etc, correct?		
4(b)	Whether Overwriting /cutting, if any on the BG, authenticated under signature & seal of executants?		
5	Is the amount and validity of BG is in line with contract provisions?		
6	Whether the BG has been issued by a Nationalized bank / Non- Nationalized Bank acceptable to Buyer /Scheduled Bank in India (the applicability of the bank should be in line with the provisions of bidding documents)?		

Dated the *[Insert date of the month]* day of..... *[Insert month, year]*
at..... *[Insert place]*.

Signature {(of Bidder’s authorized Bid Signatory (ies))[#] {In full and initials}}:

Full name: {insert full name of authorized Bid Signatory }

Title: {insert title/position of authorized Bid Signatory }

Name of Bidder (Sole Bidder’s name or Consortium/ JV’s name, if applicable):

Capacity: {insert the person’s capacity to sign for the Bidder}

Address: {insert the authorized Bid Signatory’s address}

Phone/fax: {insert the authorized Bid Signatory’s phone and fax number, if applicable}

Email: {insert the authorized Bid Signatory’s email address}_____

(Common Seal).....

Appendix C - Supplier Response Format

C1 :General Guidelines to the bidders

The Purchaser will select a Supplier (also referred as the 'bidder') in accordance with the eligibility criteria indicated in Section IV.

The bidders are invited to submit a Technical Proposal and a Price Proposal for goods and related services required for the project as defined in Section VI, Scope of Work .This proposal will be the basis for contract negotiations and finalization of the contract with the successful bidder.

The bidders must familiarize themselves with local conditions and take these into account while preparing their proposals. To facilitate the bidders in making the Proposal, the Purchaser shall have a "Pre-Bid conference" at the address and date as given in ITB, Section II. Please note that:

- Costs involved in preparation of the proposal and of negotiating the contract, including a visit to the Purchaser, are not reimbursable.
- The final evaluation shall be as per the evaluation methodology mentioned eligibility criteria.
- Please check all attachments with the checklist provided at the end, prior to submission of bid.

C 1.1: Guidelines for Technical proposal

In preparing the Technical Proposal, bidders are expected to examine this Bid document in detail. The proposal should cover all the aspects of this bid document. Any bid not found responsive to this bid document shall be rejected. Material deficiencies in providing the information requested may also result in rejection of the proposal. The price proposal should follow standard formats/forms as given in Appendix C3

While preparing the technical proposal, bidders must give particular attention that the technical proposal does not include any financial information.

C.1.2 : Guidelines for Price proposal

In preparing the price proposal, bidders are expected to take into account the requirements and conditions of the bid document. The price proposal should follow standard formats/forms as given in Appendix C3.

C2 : Technical Proposal

C 2.1 General Requirements

Company Statistics

Please provide the general and financial details of each of the entities (bidder, consortium member (if any) and subcontractors) in the following formats:

Table: Bidder – Company Statistics

Details	Supplier Response
Bidder's Name	
Address	
Contact (s), Title (s), Telephone (s), E-mail id(s)	
Name of the Chairman/ MD/ CEO/ Partners	
Nature of Ownership	
Date of Incorporation of Company/Entity	

C 2.2: Project Experience

Bidder shall provide details of projects with application modules and other requirements (as mentioned in Eligibility Criteria, (Section IV).

Bidders need to submit the details as per the format in the table provided.

Table: The details of the same should be included in the following format and necessary supporting documents should be attached with RFP:

Details of Project Experience

S.No.	Eligibility Criteria Clause	Client Name	Name of the Project	Date and Year of Commissioning	Indicate the modules implemented in the project (SCADA /DMS / RT-DAS)
1					
2					
3					
4					
5					
6					
7					

Note : Kindly provide Client Performance Certificates for the completed projects provided for establishing/confirming the requisite details for project experience as mentioned above

Or Copy of LoA/ Work Order along with proof of release of final payment

C 2.3: Firm Detail

Bidder shall provide details of net-worth and turnover for the past three audited financial years in the following format:

Firm Detail			
Details	FY 2019-20	FY 2020-21	FY 2021-22
Net-worth			
Turn-Over			

Audited financial reports and copy of the certificates supporting the above need to be submitted as proof.

C 2.4: Facility Management Services Plan

The detail plan for FMS shall be given in accordance with the Section IV & chapter 17 of Section VI.

C 2.5: Project Management Practices

Please provide high-level details of the project management practices that will be followed to manage the project. The project management practices would include (but not be limited to) details of:-

- Bidder must provide details of how they envisage the contract being managed including principles such as (but not limited to) joint planning and control mechanisms; regular and active review meetings; Project management of individual work streams and overall program management of the entire service; Performance reporting
- Bidder should outline their proposed governance structure and designate a Service Manager to co-ordinate their activities and provide a focal point of contact to whom Utility can refer on any matter concerning the service.
- Reporting lines and decision-making powers within the bidder’s organization must be explained
- Reporting formats and templates that would be followed by the bidders
- Outline the proposed escalation procedures in the event that issues arise.

C 2.6: Quality Assurance

- Quality of service - Suppliers must provide details of their proposed approach to quality assurance to ensure the quality of services in accordance with Chapter 18 of Section VI, Section IV .This should include
 - Responsibility of quality of service;

- How the supplier will ensure quality service is provided;
- How quality will be measured

Does your company (and consortium partner) have any quality certification / Assessment? Ifso, please provide your responses for the following:

Details of Certification

Description	Bidder's Response
Certification / Assessment Name	
Who issued the certification/assessment?	
When was the certification/assessment obtained?	
Does this certification/assessment process involve periodic reviews and observations/ remarks after such review? If so, please provide details and specify when your company is due for its next quality review?	

Please specify your company's process for product development and enhancements

C 2.12: PREFERENCE TO MAKE IN INDIA AND GRANTING OF PURCHASE PREFERENCE TO LOCAL SUPPLIERS.

Refer Annexure-II to BDS

C2.13: Cyber Security Conformance Requirements:

No. 12/34/2020-T&R
Government of India / Bharat Sarkar
Ministry of Power / Vidyut Mantralaya
(T&R Division)

"F" Wing, 2nd Floor, Nirman Bhawan,
New Delhi, Dated the 24th December, 2021.

ORDER

Subject: Testing of power system equipment for use in the Supply System and Network in the country for Cyber Security – reg.

Reference is invited to this Ministry's Order No.12/34/2020-T&R dated 8th June, 2021 on the above mentioned subject. The above Order stands revised to the extent attached in Annexure 1 to Annexure 4.

2. The above Order dated 8th June, 2021, shall be applicable for imported products as listed in Annexure-1 for orders placed on or after 8th June 2021.
3. The subject order will be reviewed and updated as needed and the same will be notified as and when any changes / updates are implemented.
4. This issues with the approval of the competent authority.

Encl: Annexure 1 to 4.



(Ujjwal Kumar Sinha)
Deputy Secretary to the Govt. of India
Tel: 23063497

To

1. All Ministries/Departments of Government of India (As per list)
2. Secretary (Coordination), Cabinet Secretariat
3. Vice Chairman, NITI Aayog
4. Comptroller and Auditor General of India
5. Chairperson, CEA
6. Secretary (Power/ Electricity), all State Governments & Union Territory Administration as per mailing list.
7. Chairman of all State Power Utilities as per mailing list.
8. CMDs of CPSEs/ Chairman. of DVC & BBMB/ MD, EESL/ DG, NPTI/ DG, CPRI/ DG, BEE
9. All ASs / JSs / EA, MoP

Copy to:

1. PS to Hon'ble PM, Prime Minister's Office
2. PS to Hon'ble MoP for Power and NRE
3. PS to Hon'ble MoS for Power and Heavy Industries
4. Sr. PPS to Secretary (Power)

List of designated laboratories for cyber security conformance testing**Table -A. Field Equipment /Operational Technology (OT)**

Sl. No.	Equipment	Communication Protocol Conformance Standards	Protocol Security Conformance Standards	Designated Laboratories
1	Remote Terminal Units (RTUs) / Feeder / Field RTUs (FRTUs)&PLCs with IEC communications protocols	IEC 60870-5 -101 / IEC 60870-5 -104 (Test Details-Annexure 2)	IEC 60870-5- 7 Security extension &IEC 62351 series (specifically IEC 62351-100 parts 1& 3) (Test Details Annexure-2)	Central Power Research Institute (CPRI), Prof Sir C V Raman Road, Sadashiva Nagar PO, Bengaluru - 560080, Karnataka
2	Intelligent Electronic Device (IED) / Equipment / Numerical Protection Relays / Bay Control Units / Bay Protection Units, Gateways, Transformer Tap controller/ changer with IEC 61850 communication protocol	IEC 61850-5 to IEC 61850-10 (Test Details-Annexure 2)		CPRI
3	Smart meters with IEC 62056communication protocols	IS 15959 series and IS 16444 series (Test details-Annexure 2)	IS 15959 series and IS 16444 series (Test Details Annexure 2)	1. CPRI 2. Electrical Research and Development Association (ERDA), ERDA Road, GIDC, Makarpura, Vadodara - 390 010 Gujarat 3. Yadav Measurements Pvt. Ltd. (YMPL) 373-375, RIICO Bhamashah Industrial Area Kaladwas 313003 Udaipur – Rajasthan

Information Technology (IT) Equipment (Main / Backup / Disaster recovery (DR) Control Centre / Substation control centre IT equipment)

All IT products procured /supplied shall have a valid Certificate of Common Criteria as per ISO/IEC 15408 issued by signatories of the Common Criteria Recognition Agreement (CCRA)

www.commoncriteriaportal.org

Import/procurement/supplied from vendors sourcing from prior reference countries, the Certificate for Common Criteria shall be from Government Laboratories in India according to the IC3S scheme operated by Ministry of Electronics and Information Technology, which is a signatory to CCRA.
<https://www.commoncriteria-india.gov.in/>

A handwritten signature in blue ink, consisting of a circle followed by stylized letters, possibly 'SMLU', with a small arrow pointing downwards to the right.

Details of tests for various identified products

**Remote Terminal Units (RTUs)/ Feeder / Field RTUs (FRTUs) & PLC's
(Sl. No. 1 of Table - A of Annexure - 1)**

Test protocol:

Utilities / manufacturers will submit the sample along with all the required technical documentation for taking up testing to the designated laboratory.

Reference standards

- 1) IEC 60870-5-101 & IEC 60870-5-104 as applicable
- 2) IEC 60870-5-7 Telecontrol equipment and systems - Part 5-7: Transmission protocols - Security extensions to IEC 60870-5-101 and IEC 60870-5-104 protocols (applying IEC 62351)
- 3) IEC 62351-100-1 & IEC 62351-100-3 and other cross referenced standards

Test cases

Extract from standard (IEC 62351-100-1)

The conformance test cases are divided into four clauses:

- Clause 5: Verification of configuration parameters. This clause contains the configuration parameters affecting the message contents and/or the protocol behaviour.
- Clause 6: Verification of communication. The goal of this clause is to verify that Device Under Test (DUT) is able to implement the security extension messages as described in IEC TS 60870-5- 7.
- Clause 7: Verification of procedures. The goal of this clause is to verify that DUT is able to execute the security extension procedures as described in IEC TS 62351-5.
- Clause 8: Test result chart. This clause contains the results of the test cases listed in Clauses 6 and 7 for each supported value of the configuration parameters listed in Clause 5.

The test cases are organized in tables. They are numbered; their numbering syntax is: Sub clause number (where the Table is located) + test case number.

In the column 'reference' each test case has a direct reference to IEC TS 62351-5 or IEC TS 60870-5-7 where the clause under test is defined.

Test cases are mandatory depending on the description in the column 'Required'. The following situations are possible:

M= Mandatory test case. The test is referencing a clause that is mandatory in IEC TS 62351-5 or IEC TS 60870-5-7.

Protocol Information Conformance Statement (PICS) x, x = Mandatory test case if the functionality is enabled in the PICS (by marking the applicable check box), with a reference to the section number of the PICS (x.x).

Conformance testing of security extension procedures

The security extension procedures can be summarized as follows:

- User management
- Update key maintenance
- Session key maintenance
- Challenge/Reply authentication
- Aggressive Mode authentication

Extract from standard (IEC 62351-100-3)

IEC 62351-3 defines the requirements related to the authentication/encryption protocol, procedures and methods to be implemented at TCP/IP (transport) level.

The conformance test cases are divided into three clauses:

- Clause 5: Verification of configuration parameters. This clause contains the parameters specified by the standards referencing IEC 62351-3 (see IEC 62351-3:2014/AMD1:2018, Clause 7) and affecting the protocol behaviour.
- Clause 6: Verification of IEC 62351-3 requirements. The goal of this clause is to verify that DUT is conformant to the requirements of the IEC 62351-3.
- Clause 7: Test result chart. This clause contains the results of the test cases listed in Clause 6 for each supported value of the configuration parameters listed in Clause 5.

The test cases are organized in tables. They are numbered, their numbering syntax is: Sub clause number (where the table is located) + test case number.

In the column 'Reference' each test case has a direct reference to IEC 62351-3 where the clause under test is defined. PICS or Protocol Implementation eXtra Information for Testing (PIXIT) could be found in the "Reference" column for some test cases whenever the execution of the test case shall take into account specific parameter values declared in the PICS or PIXIT of the DUT.

Test cases are mandatory depending on the description in the column 'Required'. The following situations are possible:

M = Mandatory test case. The test is referencing to a clause that is mandatory in IEC 62351-3.

PICS

or

PIXIT = Mandatory test case if the functionality is enabled in the PICS or PIXIT by marking the applicable check box or declaring the applicable value.

Testing Criteria

1) Supply from Trusted Sources

The sample size shall be as specified by CEA as per the approved criteria for Trusted Vendors

2) Supply from other than trusted vendors

For RTUs /FRTUs and IEDs, the sample size for testing shall be minimum one number from each make and having same firmware version for the supply lot size of 200 numbers or less. For every additional supply lot of upto 200 numbers, one sample having the same firmware version as that of the first lot shall be tested for randomly selected test cases. For smart meters, the sample size for testing shall be minimum one number from each make and having same firmware version for the supply lot size of 5000 numbers or less. For every additional supply lot of upto 5000 numbers, one sample having the same firmware version as that of the first lot shall be tested for randomly selected test cases. The manufacturer shall submit request to the Nodal agency along with vendor's / manufacturer's certifications for supply chain management system practices and secure product development process implementations based on any one or more of standards ISO / IEC 27036, ISO / IEC 20243, IEC 62443 for verification.

After scrutiny of vendor's / manufacturer's proof and certifications the supplier / utilities shall be asked to submit product to the designated laboratory for communication and cyber security conformance testing. All certifications shall be valid as on the date of submission of samples for testing and product certifications / type test reports shall not be older than 5 years.

The entire supply lot shall stand rejected on failure of any sample drawn from the lot to comply with the test requirements.

3) Supply from prior reference countries

The utility shall obtain prior permission from the Government of India for importing the product / system from prior reference countries.

The sample size shall be 5% of the supply lot / ordered quantity (minimum one) from each make and having same firmware version for each supply lot shall be tested. The manufacturer shall submit request to the Nodal agency along with vendor's / manufacturer's certifications for supply chain management system practices and secure product development process implementations based on any one or more of standards ISO / IEC 27036, ISO / IEC 20243, IEC 62443 for verification. All certifications shall be valid as on the date of submission of samples for testing and product certifications / type test reports shall not be older than 5 years.

After scrutiny of vendor's / manufacturer's proof and certifications the supplier / utilities shall be asked to submit product to the designated Government / Government controlled Autonomous laboratory for type tests (Annexure - 4) and for communication & cyber security conformance testing (Annexure 1 and Annexure 2).



The entire supply lot shall stand rejected on failure of any sample drawn from the lot to comply with the test requirements.

A handwritten signature or set of initials in blue ink, located in the upper right quadrant of the page. The signature is somewhat stylized and appears to consist of several connected loops and lines.

Type Tests

Products imported from prior reference countries shall also undergo type testing (one sample) as per following standards in addition to communication protocol and security conformance testing at the designated Government / Government controlled Autonomous laboratory:

Type test standards for RTUs/ FRTUs

1. IEC 60870-1-2 1989 Telecontrol equipment and systems. Part 1: General considerations. Section Two: Guide for specifications.
2. IEC 60870-2-1:1995 Telecontrol equipment and systems - Part 2; Operating conditions - Section 1: Power supply and electromagnetic compatibility.
3. IEC 60870-2-2:1996 Telecontrol equipment and systems - Part 2: Operating conditions - Section 2: Environmental conditions (climatic, mechanical and other non-electrical influences).
4. IEC 60870-3: 1989 Telecontrol equipment and systems. Part 3: Interfaces (electrical characteristics)

Type test standard for IEDs / Numerical Protection Relays / Bay controls units

1. The applicable testing standards for Protection Relays, Sensors, Tap Changer Control, Bay Protection Units, Measurement Equipment is IEC60255-1 (Common Requirements), -21 (Vibration, Shock & Bump), -26 (Electromagnetic Compatibility) and - 27 (Safety) for Measurement Relays and Protection Equipment.
2. IEC 61850-3: 2013, Ed. 2 Communication networks and systems for power utility automation - Part 3: General requirements.

Type test standards for Smart meters

1. IS 16444: 2015 AC static direct connected watthour smart meter class 1 and 2 - Specification.
2. IS 16444 Part 2: 2017 AC static transformer operated watthour and var - Hour smart meters, class 0.2 S, 0.5 S and 1.0 S: Part 2 specification transformer operated smart meters.

Note:

1. All above referred standards shall be latest with amendments if any at the time of submission of sample(s) for testing.
2. Type tests generally covers functionality, environmental, mechanical, EMI/ EMC and electrical safety related tests.
3. All certifications shall be valid as on the date of submission of samples for testing and product certifications/type test reports shall not be older than 5 years.

C3: Price proposal

Utilities to prepare the detailed price schedules as per the Sample Price schedule is provided hereunder:

Price proposal

Bidders are requested to provide cost for each of the Project Area in the subsequent formats. The Bidders should take a note of following points while filling the Price proposal.

- 1) Bidder will be responsible for payment of Taxes (including local entry taxes), duties, cess, charges etc, including taxes, duties, cess, charges etc, to be paid by the Supplier pre- or post-delivery. Such taxes, duties, cess, charges etc, if not explicitly mentioned in the following tables, but applicable under law, should be included in the Quote under “Any other levies” column.
- 2) The Bidder will provide Tax rates assumed for the calculation at the time of proposal for each item in notes to respective table.
- 3) Please refer to GCC Clause 12.2 and the SCC for Price adjustments due to change in Tax rates (including local entry taxes), duties, cess, charges etc.
- 4) Purchaser reserves the right to deduct and pay to the government authorities the taxes at applicable rates from the price payable to the supplier.
- 5) The unit prices mentioned for various components should be the same for all Project Areas. In case of any discrepancy among unit prices of various Project Areas, the lowest unit price of equipment mentioned for any Project Area shall prevail.

C 3.1: Project Area with Data Recovery Centre

Bidder should refer Appendix F to fill in following information:

Name of Project Area (town):-	
Location Data Centre:-	
Number Subdivision Offices under the Project Area:-	
Number of Other Offices under the Project Area:-	

- Forms (Form 1 to Form 10) should filled, by the bidder

A/ U TOWN SCADA CONTROL CENTRE WISE

CONTROL CENTRE LOCATION

DISASTER RECOVERY LOCATION :

CONTROLLED TOWN/TOWNS

Form : 1 Project Management Cost

	Project Management Cost Including all Taxes & Duties	Unit	
	Installation, Testing and Commissioning Cost to Integrate Entire SCADA & IT (relevant to SCADA) Infrastructure	Rs.	
	Integration with legacy applications & Data Migration	Rs.	
	Training for the Employees	Rs.	Refer Form-9
	Sub-Total A1		
	Grand Total A	Rs.	

***Project management cost include applicable tax /GST etc.**

Specific Exclusions

- Land, Control Centre & various server rooms and other Civil & Structural Works including earthing.
- Infrastructures such as Air conditioning system,
- External & Internal electrification & Lighting,
- Fire fighting system
- DG Set for meeting the SCADA/DMS Control Centre critical load requirements
- Any mobile equipment such as Crane, truck, Jeep, filter M/c, etc.
- Any T&P, testing equipments. etc.
- Furniture for the computers required for SCADA/DMS & SCADA system
- Any contract for IT/ Outsourcing of services of revenue expenditure type where there is no capital addition.
- Communication equipments such as mobile phone, telephone etc other than those specified in MTS -SCADA/DMS
- DISCOM Manpower for managing SCADA/DMS system

Note :

- Bidder shall specify make & model of proposed items by adding two columns by utility in price proposal between column : equipment” and Column “ Unit” in all forms Form 2 -12
- Sum of cost of FMS/year shall match with FMS cost indicated /year in Form 10 . Bidder shall ensure the same.
- Cost of basic unit price of RTU in Form 11 and basic unit price FRTU in Form 12 comprising of panel , rack , DI,DO,AI , CPU ,PS , COMM card shall match with Form 4 (row 1) & Form 5 (row1)
- Bidder may club functions in common server as per their architecture . However , they shall mention the same in remark in Form about the same . However, bidder shall be solely responsible for meeting FUNCTIONAL, PERMFORMANCE , SECURITY AND SLA requirement as per SBD

SCADA/DMS Control Centre Cost (BoQ)

Form : 2

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs		
C1	Server/ workstation Hardware					
	SCADA Server	No.				
	DMS Server	No.				
	OMS Server	No.				
	FEP server with interface switches	No.				
	ISR server	No.				
	NMS server	No.				
	DTS server	No.				
	Other Active Devices	No.				
	Developmental server	No.				
	Communication Server	No.				
	Web/Directory server	No.				
	SMS gateway	No.				
	Workstation with dual TFT Monitors (S/S monitoring)	No.				
	Workstation with dual TFT Monitors (Network monitoring)	No.				
	Remote VDUs with one TFT Monitors	No.				
	Developmental console with one TFT	No.				
	DTS/Workstation Console with dual TFTs	No.				
	DLP based Video Projection system with 3x4 Module configuration with each module at least 70" diagonal with projector	No.				
	<u>Storage & Backup Devices</u>					

	External RAID Mass storage device (for 24 months online backup)	No.				
	Exteranl DAT drive	No.				
	Switches					
	Layer II switch (SCADA/DMS LAN)	No.				
	Layer II switch (Planning & Development system LAN)	No.				
	Routers					
	Router for interfacing IT system & SCADA/DMS DR centre	No.				
	Router at remote VDU	No.				
	Security system (DMZ)					
	Web server with load balancing	No.				
	Mail server	No.				
	Router	No.				
	Firewall & network IDS/IPS	No.				
	Layer II switch	No.				
	Other Active Devices					
	GPS Time synchronisation system	Set				
	Time, day & date digital displays	Set				
	Printers					
	Color inkjet printer	Set				
	B/W Laser printer	Set				
	Any other items required to meet functional /Performance requirement as per MTS	Lot				
	Sub-Total C1 (Hardware)					
C2	Software for Control Centre					
	SCADA software	Lot				
	ISR Software	Lot				
	DMS software	Lot				
	OMS Software	Lot				
	DTS software	Lot				
	Developmental software	Lot				
	Network Management Software	Lot				
	WEB /Network security software (INCL IN WEBSERVER)	Lot				
	RDBMS package(incl in ISR)	Lot				
	GIS Adaptor/Engine for importing data from GIS system under IT system	Lot				
	Any other software to meet functional /performance requirement of MTS	Lot				
	Sub-Total -B2 (Software)					

C3	Mandatory spares Max 5% of C1					
	Mandatory spares	L/S				
	Sub -Total C3 spares					
	Grand Total C					

SCADA/ Disaster Recovery Control Cost (BoQ)

Form : 3

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total Cost	FMS Cost
				Rs.	Rs.	Rs.
D1	Server/ workstation Hardware					
	SCADA Server	No.				
	DMS Server	No.				
	OMS Server	No.				
	FEP server with interface switches	No.				
	ISR server	No.				
	NMS server	No.				
	DTS server	No.				
	Other Active Devices	no				
	Developmental server	No.				
	Commnuication Server	No.				
	Web/Directory server	No.				
	SMS gaterway	No.				
	Workstation with dual TFT Monitors (S/S monitoring)	No.				
	Workstation with dual TFT Monitors (Network monitoring)	No				
	Remote VDUs with one TFT Monitors	No.				
	Developmental console with one TFT	No.				
	DTS/Workstation Console with dual TFTs	No.				
	DLP based Video Projection system with 3x4 Module configuration with eachmodule at least 70" diagonal with projector	No.				
	Storage & Backup Devices					

	External RAID Mass storage device (for 24 months online backup)	No.				
	External DAT drive	No.				
	<u>Switches</u>					
	Layer II switch (SCADA/DMS LAN)	No.				
	Layer II switch (Planning & Development system LAN)	No.				
	<u>Routers</u>					
	Router for interfacing IT system & SCADA/DMS DR centre	No.				
	Router at remote VDU	No.				
	<u>Security system (DMZ)</u>					
	Web server with load balancing	No.				
	Mail server	No.				
	Router	No.				
	Firewall & network IPS/IDS	No.				
	Layer II switch	No.				
	<u>Other Active Devices</u>					
	GPS Time synchronisation system	Set				
	Time, day & date digital displays	Set				
	<u>Printers</u>					
	Color inkjet printer	Set				
	B/W Laser printer	Set				
	Any other item to meet specification requirements					
D2	Software					
	SCADA software	Lot				
	ISR Software	Lot				
	DMS software	Lot				
	DTS software	Lot				
	OMS Software	Lot				
	Developmental software	Lot				
	Network Management Software	Lot				
	RDBMS package	(incl in ISR)				
	WEB /Network security software	(Incl in web server)				
	GIS Adaptor/Engine for importing data from GIS system under IT system	Lot				
	Any other item to meet specification requirements	Lot				

S.No.	Equipment	Unit	Quantity	Unit Price (Per Unit Cost (incl taxes & duties))	Total Cost	FMS Cost
				Rs.	Rs.	Rs.
D3	Mandatory spares Max 5% of D1					
	Mandatory spares	L/S				
	Sub -Total d3 spares					
	Grand Total D					

Form 4

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs
E1	RTUs					
	RTU base equipment comprising panels, racks, sub-racks, Power Supply modules, CPU, interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned	Set				
	Multifunctional transducers	No.				
	Contact Multiplying Relays (CMRs)	No.				
	Heavy duty relays for Control	No.				
	Dummy Breaker Latching Relays	No.				
	Transformer Transducers	No.				
	Single TFT PC for LDMS with 2KVA UPS	No				
	Any other hardware to meet functional /performance requirement of MTS	Lot				
	Sub - Total (Hardware) -E1					
E2	Software for LDMS					
	LDMS software	No.				
	Any other software to meet functional /performance requirement of MTS	Lot				
	Sub - Total (test equipment) -E2					
E3	TEST EQUIPMENTS for RTU					
	RTU Database Configuration & Maintenance Software tool	No.				
	Master Station cum RTU Simulator & Protocol analyser software tool	No.				

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total Cost	FMS Cost
				Rs.	Rs.	Rs.
	Laptop PC for above software tools along with interfacing hardware including Hub	No.				
	Sub - Total (test equipment) -E3					
E4	MANDATORY SPARES FOR RTU					
	5% of E1					
	Sub - Total (mandatory spare) -D4					
	Grand total E					

Form 5

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs.
F1	FRTUs					
	Mini pole mounted FRTU base equipment along with enclosure suitable to work in open environment (Adequate protection from water & dust) , racks, sub-racks, Power Supply modules with power backup , I/o modules, CPU, interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned	No.				
	Contact Multiplying Relays (CMRs)	No.				
	Heavy duty relays for Control	No.				
	Multifunction transducer	No.				
	Any other hardware to meet functional /performance requirement of MTS	Lot				
	Sub-Total (Hardware) F1					
F2	Test Equipments for FRTU					
	FRTU Database Configuration & Maintenance Software tool	No.				
	Master Station cum FRTU Simulator & Protocol analyser software tool	No.				

	Laptop PC for above software tools along with interfacing hardware including Hub	No.				
	Sub-Total (Test equipment) F2					
F3	MANDATORY SPARES FOR FRTU					
	5% of E1					
	Sub-Total (Spares) F3					
	Grand Total F					

Form 6

S.No	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs.
G1	MPLS					
	Annual charges for 100MBps Links with RTUs	No.				
	MPLS Router	No.				
	Any other hardware to meet functional /performance requirement of MTS					
	Sub - Total g1					
G2	GPRS/MPLS-4G					
	Annual charges for 2MBps Links with FRTUs /FPI	No.				
	Modems	No.				
	Any other hardware to meet functional /performance requirement of MTS					
	Sub - Total g2					
	Mandatory spares 5% of g1,g2					
	Grand Total G					

Form 7

S.No.	Survey	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs.
H1	Main Equipments - Control centre					
	UPS with suitable rating running in parallel redundant mode*	Set				
	VRLA type Battery banks for above UPS for minimum 30 min. backup duration	Set				
	Sub- Total H1					
H2	Main Equipments - DR Centre					
	Main Equipments					
	UPS with suitable rating running in parallel redundant mode*					
	VRLA type Battery banks for above UPS for minimum 30 min. backup duration					
	Sub-Total H2					
H3	II For RTU / Data Concentrator / Communication Eqpts.					
	DC Power Supply (DCPS) system based on SMPS					
	Battery bank for above DCPS (VRLA Type) for minimum 4 hrs backup					
	Sub-Total H3					
H4	For FRTU					
	48V DC Power Supply (DCPS) system based on SMPS					
	Battery bank for above DCPS					

	(VRLA Type) for minimum 4 hrs backup					
	Sub-Total H4					
H5	Remote VDU, IDMS location					
	UPS (2 kVA)					
	Sub-Total H5					
H6	Mandatory Spares for UPS					
	5% of above H1 TO H5					
	Sub-Total H6					
	Grand Total (H)					

Form 8

S.No.	Survey	Type	Unit	Quantity	Per Unit Cost (incl taxes & duties))	Total	FMS Cost / year
					Rs.	Rs.	Rs.
J1	RMU (WAY requirement)	No of WAYS					
	RMU		No				
	Sub- Total J1						
J2	SECTIONLIZER /RECLOSER						
	Sectionlizer		No				
	Recloser		No				
	Sub-Total J2						
J3	FPI						
	Communicable		No				
	Sub-Total J3						
J4	RECONDUTORING (Specify type of each conductor existing & recondutoring)						
			Km				
			Km				
	Sub-Total J4						
J5	Control/power cable for RTUs from outdoor switchgear,if any at						

	S/S and numerical relays						
	control /power cable		Km				
	Numerical relay /BCPU		Nos				
	Sub-Total J5						
J6	Mandatory Spares						
	5% of above J1 TO J5						
	Sub-Total J6						
	Grand Total (J)						

Form 9 : Training

	Description	Duration in days	Total Cost (Rs.)
A.	Operator's Training		
1.	Operator for SCADA/DMS Control Centre	5	
2.	Instructor for DTS	10	
B.	Maintenance Training		
1	Computer Hardware & System Software	10	
2.	Application Software (SCADA/DMS)	10	
3.	RTU & FRTU	5	
4.	Database & display development	5	
6.	Auxiliary Power Supply	3	
7.	Communication System including NMS	5	2

Form10 : FMS

S.No.	Description	Duration	Peer YEAR cost	FOR 2YEARS	FOR 5YEARS (Addl 3yrs)
1	FMS charges for SCADA/DMS system (maintaining overall system availability as per TS)	Per year			
2	FMS charges for SCADA/DMS system (maintaining availability individual hardware & non –critical functions as per TS)	Per year			
3	Total FMS charges				

- The necessary spares required for maintenance of the system during FMS shall be provided by the contractor. However, the consumables shall be provided by the owner.
- FMS shall include all the supplied hardware & software under the project
- Cost of overall system availability/year shall not be less than 40 % and more than 60% of total FMS charges/year

B & C TOWN ZONAL SCADA CONTROL CENTRE WISE (ZSCC)

ZONAL CONTROL CENTRE LOCATION

DATA RECOVERY LOCATION :

CONTROLLED TOWN/TOWNS

Form : 1 Project Management Cost

Project Management Cost Including all Taxes & Duties	Unit	
Installation, Testing and Commissioning Cost to Integrate Entire SCADA & IT (relevant to SCADA) Infrastructure	Rs.	
Integration with legacy applications & Data Migration	Rs.	
Training for the Employees	Rs.	Refer Form-9
Sub-Total A1		
Grand Total A	Rs.	

***Project management cost include applicable tax /GST etc.**

Specific Exclusions

- Land, Control Centre & various server rooms and other Civil & Structural Works including earthing.
- Infrastructures such as Air conditioning system,
- External & Internal electrification & Lighting,
- Fire fighting system
- DG Set for meeting the SCADA/DMS Control Centre critical load requirements
- Any mobile equipment such as Crane, truck, Jeep, filter M/c, etc.
- Any T&P, testing equipments. etc.
- Furniture for the computers required for SCADA/DMS & SCADA system
- Any contract for IT/ Outsourcing of services of revenue expenditure type where there is no capital addition.
- Communication equipments such as mobile phone, telephone etc other than those specified in MTS -SCADA/DMS
- DISCOM Manpower for managing SCADA/DMS system

FORM 2
ZSCC wise

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties))	Total	FMS Cost / year
				Rs.	Rs.	Rs
C1	Server/ workstation Hardware					
	SCADA server	No.				
	FEP server with interface switches	No.				
	ISR server	No.				
	NMS server	No.				
	DTS server	No.				
	Developmental server	No.				
	Commuication Server	No.				
	Web/Directory server	No.				
	SMS gaterway	No.				
	Workstation with dual TFT Monitors (S/S monitoring)					
	Workstation with dual TFT Monitors (FPI monitoring)	No.				
	Workstation with dual TFT Monitors (S/S monitoring) - RTDAS					
	Workstation with dual TFT Monitors (FPI monitoring)- RTDAS	No.				
	Remote VDUs with one TFT Monitors	No.				
	Developmental console with one TFT	No.				

	DTS/Workstation Console with dual TFTs	No.				
	DLP based VideoProjection system with 3x4 Module configuration with each module at least 70" diagonal with projector	No.				
	<u>Storage & Backup Devices</u>					
	External RAID Mass storage device (for 24 months online backup)	No.				
	Exteranal DAT drive	No.				
	<u>Switches</u>					
	Layer II switch (SCADA/DMS LAN)	No.				
	Layer II switch (Planning & Development system LAN)	No.				
	<u>Routers</u>					
	Router for interfacing IT system & SCADA/DMS DR centre	No.				
	Router at remote VDU	No.				
	<u>Security system (DMZ)</u>					
	Web server with load balancing	No.				
	Mail server	No.				
	Router	No.				
	Firewall & network IDS/IPS	No.				
	Layer II switch	No.				
	<u>Other Active Devices</u>					

	GPS Time synchronisation system	Set				
	Time, day & date digital displays	Set				
	Printers					
	Color inkjet printer	Set				
	B/W Laser printer	Set				
	Any other items required to meet functional /Performance requirement as per UMTS	Lot				
	Sub-Total C1 (Hardware)					
C2	Software for Control Centre					
	SCADA software	Lot				
	ISR Software	Lot				
	DMS software	Lot				
	DTS software	Lot				
	Developmental software	Lot				
	Network Management Software	Lot				
	WEB /Network security software (Incl in webserver)	Lot				
	RDBMS package(In cl in ISR)	Lot				
	GIS Adaptor/Engine for importing data from GIS system under IT system	Lot				
	Any other software to meet functional /performance requirement of UMTS	Lot				
	Sub-Total -B2 (Software)					
C3	Mandatory spares Max 5% of C1					

	Mandatory spares	L/S				
	Sub -Total C3 spares					
	Grand Total C					

FORM 3

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs
D1	Server/ workstation Hardware					
	DR server	No.				
	Communication Server	No.				
	Workstation with one TFT Monitors	No.				
	<u>Storage & Backup Devices</u>					
	External storage device	No.				
	Exteranal DAT drive	No.				
	<u>Switches</u>					
	Layer II switch (DR LAN)	No.				
	<u>Routers</u>					
	Router for interfacing at SCADA DMS centre	No.				
	<u>Printers</u>					
	Color inkjet printer	Set				
	B/w Laser printer	Set				
	Any other items required to meet functional /Performance requirement as per UMTS	Lot				
	Sub-Total D1 Hardware					
D2	Software for Control Centre					
	RDBMS package (Incl in ISR)	Lot				

	Any other items required to meet functional /Performance requirement as per UMTS	Lot				
	Sub-Total D1 Software					
D3	Mandatory spares Max 5% of D1					
	Mandatory spares	L/S				
	Sub -Total d3 spares					
	Grand Total D					

FORM-4

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs
E1	RTUs B & C -TYPE					
	RTU base equipment comprising panels, racks, sub-racks, Power Supply modules, CPU, interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned					
	Multifunctional transducers					
	Contact Multiplying Relays (CMRs)					
	Heavy duty relays for Control					
	Dummy Breaker Latching Relays					
	Transformer Transducers					
	Single TFT PC for LDMS with 2KVA UPS					

	Any other hardware to meet functional					
	/performance requirement of MTS					
	Sub - Total (Hardware) -E1					
E2	Software for LDMS					
	LDMS software					
	Any other software to meet functional /performance requirement of MTS					
	Sub - Total (SOFTWARE) -E2					
E3	TEST EQUIPMENTS for RTU					
	RTU Database Configuration & Maintenance Software tool					
	Master Station cum RTU Simulator & Protocol analyser software tool					
	Laptop PC for above software tools along with interfacing hardware including Hub					
	Sub - Total (test equipment) -E3					
E4	MANDATORY SPARES FOR RTU					
	5% of E1					
	Sub - Total (mandatory spare) - D4					
	Grand total E					-

FORM 5 NOT APPLICABLE

FORM6

S.No	Equipment	Unit	Quantity	Total (per unit)	Total	FMS Cost / year
				Rs.	Rs.	Rs
G1	MPLS					
A)	Annual charges for 100MBps Links with RTUs	No.				
B)	MPLS Router	No.				
C)	Any other hardware to meet functional /performance requirement of MTS					
G2	Sub - Total g1					
	GPRS/MPLS-4G					
A)	Annual charges for 2MBps Links with SA-FPIs	No.				
B)	Modems	No.				
C)	Any other hardware to meet functional /performance requirement of MTS					
	Sub - Total g2					
G3	Mandatory spares 5% of g1,g2					
Grand Total G						

FORM 7

S.No.	Survey	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs
H1	Main Equipments - Control centre					
	UPS with suitable rating running in parallel redundant mode*					
	VRLA type Battery banks for above UPS for minimum 30 min. backup duration					
	Sub- Total H1					

H2	Main Equipments - DR Centre					
	Main Equipments					
	UPS with suitable rating running in parallel redundant mode*					
	VRLA type Battery banks for above UPS for minimum 30 min. backup duration					
	Sub-Total H2					
H3	II For RTU / Data Concentrator / Communication Eqpts.					
	DC Power Supply (DCPS) system based on SMPS					
	Battery bank for above DCPS (VRLA Type) for minimum 4 hrs backup					
	Sub-Total H3					
H4	For FRTU					
	48V DC Power Supply (DCPS) system based on SMPS					
	Battery bank for above DCPS (VRLA Type) for minimum 4 hrs backup					
	Sub-Total H4					
H5	Remote VDU location					
	UPS (2 kVA)					
	Sub-Total H5					
H6	Mandatory Spares for UPS					
	5% of above H1TO H5					
	Sub-Total H6					
	Grand Total (H)					

Form 8

S.No.	Survey	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
				Rs.	Rs.	Rs
J1	RMU					
	RMU	No	-		-	
	Sub- Total J1				-	
J2	SECTIONLIZER /RECLOSER					
	Sectionlizer recloser	No	-		-	
	Sub-Total J2				-	

J3	FPI				
	Communicable	No	-		-
	Sub-Total J3				-
J4	RECONDUTORING (Specify type of each conductor existing & reconductoring)				
		Km	-		-
		Km	-		-
	Sub-Total J4				-
J5	Control/power cable for RTUs from outdoor switchgear, numerical relays if any at S/S				
	Control /Power cables	Km	-		-
	Numerical relay	Nos	-	1	-
	Sub-Total J5				-
J6	Mandatory Spares				
	5% of above J1 TO J5		-		-
	Sub-Total J6				-
	Grand Total (J)				-

Form 9 : Training

	Description	Duration in days	Total Cost (Rs.)
A.	Operator's Training		
1.	Operator for SCADA/DMS Control Centre	5	
2.	Instructor for DTS	10	
B.	Maintenance Training		
1	Computer Hardware & System Software	10	
2.	Application Software (SCADA/DMS)	10	
3.	RTU & FRTU	5	
4.	Database & display development	5	
6.	Auxiliary Power Supply	3	
7.	Communication System including NMS	5	2

Form10 : FMS

S.No.	Description	Duration	Peer YEAR cost	FOR 2YEARS	FOR 5YEARS (Addl 3yrs)
1	FMS charges for SCADA system (maintaining overall system availability as per TS)	Per year			
2	FMS charges for SCADA system (maintaining availability individual hardware & non –critical functions as per TS)	Per year			
3	Total FMS charges	Five Year			

- The necessary spares required for maintenance of the system during FMS shall be provided by the contractor. However, the consumables shall be provided by the owner.
- FMS shall include all the supplied hardware & software under the project
- Cost of overall system availability/year shall not be less than 40 % and more than 60% of total FMS charges/year

PACKAGE COST : SUM OF RESPECTIVE FORMS

A/ U TOWN SCADA CONTROL CENTRE WISE

OR B/C ZSCC

CONTROL CENTRE LOCATION

DISASTER RECOVERY LOCATION :

CONTROLLED TOWN/TOWNS

Form : 1 Project Management Cost

	Project Management Cost Including all Taxes & Duties	Unit	
	Installation, Testing and Commissioning Cost to Integrate Entire SCADA & IT (relevant to SCADA) Infrastructure	Rs.	
	Integration with legacy applications & Data Migration	Rs.	
	Training for the Employees	Rs.	Refer Form-9
Sub-Total A1			
Grand Total A		Rs.	

*Project management cost include applicable tax /GST etc.

Specific Exclusions

- Land, Control Centre & various server rooms and other Civil & Structural Works including earthing.
- Infrastructures such as Air conditioning system,
- External & Internal electrification & Lighting,
- Fire fighting system
- DG Set for meeting the SCADA/DMS Control Centre critical load requirements
- Any mobile equipment such as Crane, truck, Jeep, filter M/c, etc.
- Any T&P, testing equipments. etc.
- Furniture for the computers required for SCADA/DMS & SCADA system
- Any contract for IT/ Outsourcing of services of revenue expenditure type where there is no capital addition.
- Communication equipments such as mobile phone, telephone etc other than those specified in MTS -SCADA/DMS
- DISCOM Manpower for managing SCADA/DMS system

Form : 2

S.No.	Equipment	Unit	Quantity	Per Unit Cost (incl taxes & duties)	Total	FMS Cost / year
C1	Server/ workstation Hardware					
	SCADA Server	No.				
	DMS Server	No.				
	OMS Server	No.				
	FEP server with interface switches	No.				
	ISR server	No.				
	NMS server	No.				
	DTS server	No.				
	Other Active Devices	no				
	Developmental server	No.				
	Commnuication Server	No.				
	Web/Directory server	No.				
	SMS gaterway	No.				
	Workstation with dual TFT Monitors (S/S monitoring)	No.				
	Workstation with dual TFT Monitors (Network monitoring)	No.				
	Remote VDUs with one TFT Monitors	No.				
	Developmental console with one TFT	No.				
	DTS/Workstation Console with dual TFTs	No.				
	DLP based Video Projection system with 3x4 Module configuration with each module at least 70" diagonal with projector	No.				
	Storage & Backup Devices					
	External RAID Mass storage device (for 24 months online backup)	No.				
	Exteranl DAT drive	No.				
	Switches					
	Layer II switch (SCADA/DMS LAN)	No.				
	Layer II switch (Planning & Development system LAN)	No.				
	Routers					
	Router for interfacing IT system & SCADA/DMS DR centre	No.				
	Router at remote VDU	No.				

	<u>Security system (DMZ)</u>					
	Web server with load balancing	No.				
	Mail server	No.				
	Router	No.				
	Firewall & network IDS/IPS	No.				
	Layer II switch	No.				
	<u>Other Active Devices</u>					
	GPS Time synchronisation system	Set				
	Time, day & date digital displays	Set				
	Printers					
	Color inkjet printer	Set				
	B/W Laser printer	Set				
	Any other items required to meet functional /Performance requirement as per MTS	Lot				
	Sub-Total C1 (Hardware)					
C2	Software for Control Centre					
	SCADA software	Lot				
	ISR Software	Lot				
	DMS software	Lot				
	OMS Software	Lot				
	DTS software	Lot				
	Developmental software	Lot				
	Network Management Software	Lot				
	WEB /Network security software (INCL IN WEBSERVER)	Lot				
	RDBMS package	Lot				
	GIS Adaptor/Engine for importing data from GIS system under IT system	Lot				
	Any other software to meet functional /performance requirement of MTS	Lot				
	Sub-Total -B2 (Software)					
C3	Mandatory spares Max 5% of C1					
	Mandatory spares	L/S				
	Sub -Total C3 spares					
	Grand Total C					

SCADA/ Disaster Recovery Control Cost (BoQ) FOR SCADA DMS CONTROL CENTRES

Form : 3

S.No.	Equipment	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight &Insurance)	Total Cost	FMS Cost/ye ar
				Rs.	Rs.	Rs.
D1	Server/ workstation Hardware					
	SCADA Server	No.				
	DMS Server	No.				
	OMS Server	No.				
	FEP server with interface switches	No.				
	ISR server	No.				
	NMS server	No.				
	DTS server	No.				
	Other Active Devices	no				
	Developmental server	No.				
	Commnuication Server	No.				
	Web/Directory server	No.				
	SMS gaterway	No.				
	Workstation with dual TFT Monitors (S/S monitoring)	No.				
	Workstation with dual TFT Monitors (Network monitoring)	No				
	Remote VDUs with one TFT Monitors	No.				
	Developmental console with one TFT	No.				
	DTS/Workstation Console with dual TFTs	No.				

	DLP based Video Projection system with 3x4 Module configuration with each module at least 70" diagonal with projector	No.				
	<u>Storage & Backup Devices</u>					
	External RAID Mass storage device (for 24 months online backup)	No.				
	External DAT drive	No.				
	<u>Switches</u>					
	Layer II switch (SCADA/DMS LAN)	No.				
	Layer II switch (Planning & Development system LAN)	No.				
	<u>Routers</u>					
	Router for interfacing IT system & SCADA/DMS DR centre	No.				
	Router at remote VDU	No.				
	<u>Security system (DMZ)</u>					
	Web server with load balancing	No.				
	Mail server	No.				
	Router	No.				
	Firewall & network IPS/IDS	No.				
	Layer II switch	No.				
	<u>Other Active Devices</u>					
	GPS Time synchronisation system	Set				
	Time, day & date digital displays	Set				
	<u>Printers</u>					

	Color inkjet printer	Set				
	B/W Laser printer	Set				
	Any other item to meet specification requirements					
A2	Mandatory Spares					
1.	5% of a1	No.				
D2	Software					
2.	SCADA software	Lot				
3.	ISR Software	Lot				
4.	DMS software	Lot				
5.	DTS software	Lot				
6.	Developmental software	Lot				
7.	Network Management Software	Lot				
8.	RDBMS package	(incl in ISR)				
9.	WEB /Network security software	(Incl in web server)				
10.	GIS Adaptor/Engine for importing data from GIS system under IT system	Lot				
11.	Any other item to meet specification requirements	Lot				
D3	Mandatory Spares					
	5% of D1	No.				
	Sub -Total d3 spares					
	Grand Total D					

SCADA/ Disaster Recovery Control Cost (BoQ) FOR ZSCC

Form : 3

S.No.	Equipment	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight &Insurance)	Total Cost	FMS Cost/ye ar
				Rs.	Rs.	Rs.
D1	Server/ workstation Hardware					
	SCADA Server	No.				
	DMS Server	No.				
	OMS Server	No.				
	FEP server with interface switches	No.				
	ISR server	No.				
	NMS server	No.				
	DTS server	No.				
	Other Active Devices	no				
	Developmental server	No.				
	Commnuication Server	No.				
	Web/Directory server	No.				
	SMS gaterway	No.				
	Workstation with dual TFT Monitors (S/S monitoring)	No.				
	Workstation with dual TFT Monitors (Network monitoring)	No				
	Remote VDUs with one TFT Monitors	No.				
	Developmental console with one TFT	No.				
	DTS/Workstation Console with dual TFTs	No.				

	DLP/ based Video Projection system with 3x4 Module configuration	No.				
	with each module at least 70" diagonal with common projector					
	<u>Storage & Backup Devices</u>					
	External RAID Mass storage device (for 24 months online backup)	No.				
	External DAT drive	No.				
	<u>Switches</u>					
	Layer II switch (SCADA/DMS LAN)	No.				
	Layer II switch (Planning & Development system LAN)	No.				
	<u>Routers</u>					
	Router for interfacing IT system & SCADA/DMS DR centre	No.				
	Router at remote VDU	No.				
	<u>Security system (DMZ)</u>					
	Web server with load balancing	No.				
	Mail server	No.				
	Router	No.				
	Firewall & network IPS/IDS	No.				
	Layer II switch	No.				
	<u>Other Active Devices</u>					
	GPS Time synchronisation system	Set				

S.No.	Equipment	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight & Insurance)	Total Cost	FMS Cost/ye ar
				Rs.	Rs.	Rs.
	Time, day & date digital displays	Set				
	Printers					
	Color inkjet printer	Set				
	B/W Laser printer	Set				
	Any other item to meet specification requirements					
D2	Software					
	SCADA software	Lot				
	ISR Software	Lot				
	DMS software	Lot				
	DTS software	Lot				
	Developmental software	Lot				
	Network Management Software	Lot				
	RDBMS package	(incl in ISR)				
	WEB /Network security software	(Incl in web server)				
	GIS Adaptor/Engine for importing data from GIS system under IT system	Lot				
	Any other item to meet specification requirements	Lot				
D3	Mandatory Spares					
	5% of D1	No.				
	Sub -Total d3 spares					
	Grand Total D					

S.No.	Equipment	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight & Insurance)	Total Cost	FMS Cost / year
				Rs.	Rs.	Rs
E1	RTUs					
	RTU base equipment comprising panels, racks, sub-racks, Power Supply modules, CPU, interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned	Set				
	Multifunctional transducers	No.				
	Contact Multiplying Relays (CMRs)	No.				
	Heavy duty relays for Control	No.				
	Dummy Breaker Latching Relays	No.				
	Transformer Transducers	No.				
	Single TFT PC for LDMS INCL 2KVA UPS	No.				
	Any other hardware to meet functional /performance requirement of MTS	Lot				
	Sub - Total (Hardware) -E1					
E2	Software for LDMS					
	LDMS software	No.				
	Any other software to meet functional /performance requirement of MTS	Lot				
	Sub - Total (test equipment) -E2					
E3	TEST EQUIPMENTS for RTU					

	RTU Database Configuration & Maintenance Software tool	No.				
	Master Station cum RTU Simulator & Protocol analyser software tool	No.				
	Laptop PC for above software tools along with interfacing hardware including Hub	No.				
	Sub - Total (test equipment) -E3					
E4	MANDATORY SPARES FOR RTU					
	5% of E1					
	Sub - Total (mandatory spare) - D4					
	Grand total E					

Form 5

S.No.	Equipment	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight & Insuran ce)	Total	FMS Cost / year
				Rs.	Rs.	
F1	FRTUs					
	Mini pole mounted FRTU base equipment along with enclosure suitable to work in open environment (Adequate protection from water & dust) , racks, sub-racks, Power Supply modules with power backup , I/o modules, CPU, interfacing equipment, required converters & all other required items/accessories including complete wiring for all modules for locations mentioned	No.				
	Contact Multiplying Relays (CMRs)	No.				
	Heavy duty relays for Control	No.				
	Multifunction trnasducer	No.				
	Any other hardware to meet functional /performance requirement of MTS	Lot				
	Sub-Total (Hardware) F1					

F2	Test Equipments for FRTU					
	FRTU Database Configuration & Maintenance Software tool	No.				
	Master Station cum FRTU Simulator & Protocol analyser software tool	No.				
	Laptop PC for above software tools along with interfacing hardware including Hub	No.				
	Sub-Total (Test equipment) F2					
F3	MANDATORY SPARES FOR FRTU					
	5% of E1					
	Sub-Total (Spares) F3					
	Grand Total F					

Form 6

S.No	Equipment	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight & Insurance)	Total	FMS Cost / year
				Rs.	Rs.	Rs.
	MPLS					
	Annual charges for 100MBps Links with RTUs	No.				
	MPLS Router	No.				
	Any other hardware to meet functional /performance requirement of MTS					
	Sub - Total g1					
	GPRS/MPLS-4G					
	Annual charges for 2MBps Links with FRTUs /FPI	No.				
	Modems	No.				
	Any other hardware to meet functional /performance requirement of MTS					
	Sub - Total g2					

	Mandatory spares 5% of g1,g2					
Grand Total G						

Form 7

S.No.	Survey	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight & Insurance)	Total	FMS Cost / year
				Rs.	Rs.	Rs.
H1	Main Equipments - Control centre					
	UPS with suitable rating running in parallel redundant mode*	Set				
	VRLA type Battery banks for above UPS for minimum 30 min. backup duration	Set				
	Sub- Total H1					
H2	Main Equipments - DR Centre					
	Main Equipments					
	UPS with suitable rating running in parallel redundant mode*					
	VRLA type Battery banks for above UPS for minimum 30 min. backup duration					
	Sub-Total H2					
H3	II For RTU / Data Concentrator / Communication Eqpts.					
	DC Power Supply (DCPS) system based on SMPS					
	Battery bank for above DCPS (VRLA Type) for minimum 4 hrs backup					
	Sub-Total H3					
H4	For FRTU					

	48V DC Power Supply (DCPS) system based on SMPS					
	Battery bank for above DCPS (VRLA Type) for minimum 4 hrs backup					
	Sub-Total H4					
H5	Remote VDU location					
	UPS (2 kVA)					
	Sub-Total H5					
H6	Mandatory Spares for UPS					
	5% of above H1 TO H5					
	Sub-Total H6					
	Grand Total (H)					

Form 8

S.No.	Survey	Type	Unit	Quantity	Unit Price (Inclusive of all taxes, duties, Freight & Insurance)	Total	FMS Cost / year
					Rs.	Rs.	Rs.
J1	RMU (WAY requirement)	No of WAYS					
	RMU		No				
	Sub- Total J1						
J2	SECTIONLIZER /RECLOSER						
	Sectionlizer		No				
	Recloser		No				
	Sub-Total J2						
J3	FPI						
	Communicable		No				
	Sub-Total J3						
J4	RECONDUTORING (Specify type of each conductor existing & recondutoring)						
			Km				

			Km			
	Sub-Total J4					
J5	Control/power cable for RTUs from outdoor switchgear,if any at S/S and numerical relays					
	control /power cable		Km			
	Numerical relay /BCPU		Nos			
	Sub-Total J5					
J6	Mandatory Spares					
	5% of above J1 TO J5					
	Sub-Total J6					
	Grand Total (J)					

Form 9 : Training

	Description	Duration in days	Total Cost (Rs.)
A.	Operator's Training		
1.	Operator for SCADA/DMS Control Centre	5	
2.	Instructor for DTS	10	
B.	Maintenance Training		
1	Computer Hardware & System Software	10	
2.	Application Software (SCADA/DMS)	10	
3.	RTU & FRTU	5	
4.	Database & display development	5	
6.	Auxiliary Power Supply	3	
7.	Communication System including NMS	5	2

Form10 : FMS

S.No.	Description	PER YEAR	2YEARS initial after operationl acceptance	3 more years years
1	FMS charges for SCADA/DMS system (maintaining overall system availability as per TS)			
2	FMS charges for SCADA/DMS system (maintaining availability individual hardware & non –critical functions as per TS)			
3	Total FMS charges			

- Cost of FMS for 5 years shall not be less than 25% of total project cost and per year unit rate shall be same. In case bidder quotes FMS less than 25%, bid shall be disqualified
- Cost of FMS for overall cost system availability shall not be less than 40% or not more than 60% of total FMS cost
- FMS Cost of all items shall be specified. FMS cost of non critical items such as printer , DAT, DTS consoles , DTS server shall not be more 10% of unit rate of item and no FMS for Bandwidth charges . The same needs to be specified in the cost and shall be paid on SLA on actual usage basis
- The necessary spares required for maintenance of the system during FMS shall be provided by the contractor. However, the consumables shall be provided by the owner.

Bidder can define quantity of servers , router, switches as per system configuration in the bid subject to adherence to functional , performance , redundancy , cyber security and all technical requirements . The quantity shall be as per indicative quantity in Chapter 19 , Table 9 . However , utility to define quantity as per approved project and bidder can define quantity of servers , router, switches as per system configuration of the proposal in the bid subject to adherence to functional , performance , redundancy , cyber security and all technical , test requirements .

Unit price is inclusive of taxes, freight and insurance, However , GST % to be indicated by bidder for items

For milestone payment – Payment schedule calculation

- *Hardware components = C1+ D1+E1+F1+G1B+G1C+G2B+G2C +H1+H2+H3+H4+H5+J1+J2+J3+J4+J5*
- Software components = C2+D2+E2+F2
- SPARES component = C3 + D3+E4+F4 G3+H6+J6
- TEST CONFIG TOOL component = E3+F3
- Training = Form 9
- FMS - Form 10
- Project Mgmt , Installation, Testing and Commissioning Cost = Form 1

Form11 : RTU BREAKUP

Break up of RTU unit price in form 4 row 1 (Only basic RTU ie, panel rack , Power supply card , Communication card , CPU , DI,DO, AI card without MFT,CMR,HDRetc)

Total cost of basic RTU in form 4 row 1 shall comparable with the breakup given below in Form 11. This is to derive unit rate of the modules

S.No.	Equipment	Unit	Quantity	Total (per unit)	Total
				Rs.	Rs.
A	RTUs				
1	Power supply module	No.			
2	CPU Module	No.			
3	Communication module (Specify no of Ethernet and serial ports	No.			
4	Digital Input (DI) Module (Specify no of channels	No.			
5	Digital Output (DO) Module (Specify no of channels	No.			
6	Analog input if any (AI) Module (Specify no of channels	No			
7	Any other hardware to meet functional /performance requirement of MTS	Lot			
Sub - Total (1 TO 7 = (ROW 1 OF FORM F4)					

Form12 : FRTU BREAKUP

Break up of FRTU unit price in form 5 row 1 (Only basic FRTU ie, panel rack , Power supply card , Communication card , CPU , DI,DO, AI card without MFT,CMR,HDRetc)

Total cost of basic FRTU in form 4 row 1 shall be comparable with the breakup given below in Form 11. This is to derive unit rate of the modules

S.No.	Equipment	Unit	Quantity	Total (per unit)	Total
				Rs.	Rs.
A	FRTUs				
1	Power supply module	No.			
2	CPU Module	No.			
3	Communication module (Specify no of Ethernet and serial ports	No.			
4	Digital Input (DI) Module (Specify no of channels	No.			
5	Digital Output (DO) Module (Specify no of channels	No.			
6	Analog input if any (AI) Module (Specify no of channels	No			
7	Any other hardware to meet functional /performance requirement of MTS	Lot			
Sub - Total (1 TO 7 = (ROW 1 OF FORM F5)					

C4: Checklists

Please submit a copy of this section with cover letter while submitting the proposal.

C 4.1: Mandatory forms that needs to be submitted

Check List for Mandatory Forms

S.No.	Item	Furnished
1	Documents against eligibility criteria	Yes/ No
2	Bid Security Declaration / Bid Security	Yes/ No
3	Technical Proposal	Yes/ No
4	Financial Proposal	Yes/ No
5	Proof of turnover and net worth for the last three audited financial years of Bidder, consortium member (if any) and sub-contractors	Yes/ No
6	Proposed SLA template	Yes/ No
7	Filled-in copy of Bidding forms (Section V)	Yes/ No

C 4.2: Compliance checklist

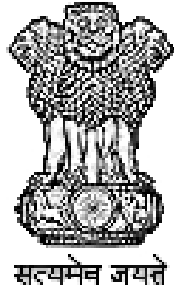
Check List for proper Documentation & Compliance

S.No.	Item	Furnished
1	Please confirm you agree to all clauses specified in the Section II, ITB	Yes/ No
2	Please confirm you have submitted all the mandatory forms specified in Appendix C (Technical & Financial Proposal)	Yes/ No
3	Please confirm you have noted the bid submission deadline specified in Section III, BDS (ITB 23.1)	Yes/ No
4	Please confirm you have noted that the performance security will be furnished within time period as specified in Section II, ITB clause 42.1	Yes/ No
5	Please confirm you have provided all document proof to substantiate you qualifying the eligibility criteria as mentioned in Section IV	Yes/ No
6	Please confirm you have complied with the proposed solution architecture specified in MTS Document	Yes/ No
7	Please confirm you have complied with all services specified in the scope of services mentioned in Section VI	Yes/ No

8	Please confirm that you comply with all clauses specified in the General Conditions of Contract specified in Section VII	Yes/ No
9	Please confirm that you comply with all clauses specified in the Special Conditions of Contract specified in Section VIII	Yes/ No
10	Please confirm that all goods (software and hardware) and services have been included in the price proposal and is complete in all respects without any deviation/ missing items	Yes/ No
11	Please confirm that you have not submitted any alternate proposal	Yes/ No
12	Please confirm that you have noted the SLA guidelines and penalty clauses applicable as specified in Section-VI.	Yes/ No
13	Please confirm you have provided sufficient Bid security in proper form as specified in clause 20, Section II ITB	Yes/ No
14	Please confirm you have responded to all mandatory technical specification given in Appendix A	Yes/ No



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GOVERNMENT OF INDIA
MINISTRY OF POWER



**STANDARD BIDDING DOCUMENT
SECTION-VI
MODEL TECHNICAL SPECIFICATION
SCADA/DMS/OMS**



POWER FINANCE CORPORATION

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