TPCODL

CORRIGENDUM-IV

Tender Enquiry No. TPCODL/P&S/222/20-21
(SCADA & ADMS SYSTEM FOR TPCODL NETWORK)

S. No.	Reference	Existing Clause	Amended Clause
1	Last date and time of receipt of Bids	18.06.2021; 15:00 Hours	25.06.2021; 15:00 Hours
2	Project Specification	Refer Revised Section-A	Refer Addendum for Tender Enquiry_15062021
3	Schedule of Items (Price Schedule)	Annexure-I	Refer Annexure I _Price Schedule_15062021

All other terms and conditions of the above tender shall remain unaltered.

By Order,

Chief (Procurement & Stores)

Modified RFP Sections of Tender Enquiry No- TPCODL/P&S/222/20-21

Section-A

Following sections are modified of SCADA/ADMS Tender Enquiry No- TPCODL/P&S/222/20-21

a) Scope of Work
b) Project Schedule
c) Payment Terms
d) Price-Bid Format

3.0 Scope of Work (Sheet 106 of RFP - TPCODL/P&S/222/20-21)

The specification provides for Design, Engineering, Supply, Insurance, Transportation, Delivery at site, Installation, Testing and Commissioning of SCADA, and other systems for the **Main Control Centre (MCC) & Backup Control Center (BCC)**, Warranty and Post Warranty support as per the detailed specifications. Any item though not specifically mentioned but is required to complete the project shall be considered and the same shall be supplied and installed by the bidder.

The indicative Bill of Material is as per the attached document ***(Refer Annexure-6 of Section-E, Indicative Bill of Material for Proposed SCADA, DMS and OMS System).*** Attached BOM is indicative, Bidder shall submit the detailed BOM along with the offer, as per the System/Architecture offered to meet the specified requirements.

Bidder to note that the proposed system architecture shall give more emphasis on the following aspects

a. Reliability

b. High Availability

c. Cyber Security Resilience

d. Seamless Integration with Enterprise and Third Party Systems, and the systems installed in phases.

Purchaser intent to commission the proposed system in 3 Phases i.e. Phase – A, Phase – B & Phase-C as described below:

Phase-A: Installation and commissioning of SCADA and other Systems at MCC and BCC

a. Installation & commissioning of MCC SCADA system, data migration from existing system and integration with Purchaser's and other systems procured under this RFP. Installation and commissioning of Client Operator Workstations for each Circle.

b. Installation & commissioning of BCC SCADA system, with Other Applications; data migration from existing systems and integration with Purchaser's and other systems procured under this RFP. Installation and commissioning of Client Operator Workstations for each Circle.

c. Installation and commissioning of Client Operator Workstations at each Circle for Area Power System Control Centre (i.e. BBSR1, BBSR2, Cuttack, Dhenkanal & Paradeep). These Operator Workstations will be communicating to both MCC and BCC.

d. Secured ICCP integration with SLDC/OPTCL and other applicable systems

Phase-B: Installation, commissioning and integration of DMS System at MCC and BCC with SCADA and other systems installed under Phase-A.

Purchaser is intending to commission the DMS System after the Go-live of SCADA System at MCC and BCC, accordingly the Purchaser will inform the bidder for implementation of DMS system.

a. Installation & commissioning of DMS System at MCC and BCC and integration with respective SCADA and other systems installed under this RFP and other Purchaser's Applications/Systems.

b. Integration of GIS system (5 Nos. Circle) with all functionalities as per RFP with incremental data handling.

- Database Development & Configuration of DMS interface with GIS system for 2 Circles with all DMS functionalities as per RFP and incremental data handling.
- Database Development & Configuration of DMS interface with GIS system for remaining 3 Circles with all DMS functionalities as per RFP and incremental data handling of entire Purchaser's network.

Phase-C: Installation, commissioning & integration of OMS System at MCC and BCC with SCADA, DMS and other systems installed under Phase-A & B.

Purchaser is intending to commission the OMS System after the Go-live of SCADA and DMS System at MCC and BCC, accordingly the Purchaser will inform the bidder for implementation of OMS system.

a. Installation & Commissioning of OMS System at MCC and BCC and integration with respective SCADA and other systems installed under this RFP and other Purchaser's Applications/Systems.

Bidder shall design the system as per the phases for seamless integration of equipment of each phase to meet Purchaser's functional requirement stated in the RFP. Bidder to ensure that the configuration of SCADA system shall take care the requirement of DMS and OMS applications. No major changes are envisaged in the installed SCADA system for integration of DMS and OMS applications.

However, Bidder shall ensure the followings for implementation of SCADA, DMS & OMS System

a. SCADA, DMS & OMS System Software and Hardware version should be same and tightly integrate with each other and Purchaser's all functional requirement stated in the RFP.

b. If the DMS, OMS versions are different, then it is bidder's responsibility to match the installed SCADA system with the latest.

c. The platform services shall be common to the whole family of products (MCC, BCC, DMS, OMS, DTS, PDS & QAS); thus, integrated control of power system network is possible from one base platform. Allows data to be distributed across a number of sites and systems.

d. All network modelling shall be modelled as per the available Purchaser's GIS platform.

The procurement of the equipment will be carried out in phased manner and should be available for FAT as per the phases and material delivery will be accordingly finalized during detailed engineering.

Major components to be included in the proposed solution of SCADA, DMS, OMS, Communication and other systems are given as under, however the final scope would be decided only after the bid opening.

a. Study of existing deployed SCADA and Distribution Management System Applications along with interfaces

b. Demonstration of the system at Purchaser's works before finalizing the order. For the demonstration all the expenses incurred shall be borne by the bidder.

c. Purchaser's personnel (4-5) site visits at Technically Shortlisted Bidder's customer sites, commissioned by the bidder with all applications mentioned in the specification. For the site visits (inclusive of travel, boarding, lodging and conveyance), cost incurred shall be borne by the bidder.

d. Program Development and Quality Assurance System

e. SCADA, DMS & OMS System for MCC and BCC

f. Cyber Security Management System

g. Integrated Communication Network Management System

h. Time Series Information Storage & Retrieval System

i. Automatic On-line Backup System

j. Free Format Reports, Dashboards and Analytics

k. Web Applications, Web Services, Clients (Corporate)

l. Dispatcher Training Simulator (Standalone) – Study Mode Simulator with SCADA, DMS & OMS Application, capable of replicating all the functions of Real-time System (MCC)

m. Real-time Data Acquisition from RTU/DCU over IEC60870-5-104 to MCC & BCC. Integration with other real-time system on protocol mentioned in the Interface section.

n. The proposed system shall use the existing IP scheme of the sub-stations to follow its connection profile, specifically the inclusion of a custom Originator Address (OA) in the ASDU header. Basically, each domain (PDS & QAS, MCC and BCC) shall use its own Originator address for the RTU/DCU to identify who is connecting. This parameter shall be configurable via a user interface within the system.

o. Bidder to note that, the communication backbone for the entire system is on MPLS/VPN cloud, currently there is no secondary communication link available. However, the proposed system shall be capable of redundant communication architecture. Bidder to specify the bandwidth requirement to meet the required functionality and submit the detail application landscape to optimize/enhance the available bandwidth requirement.

p. Designed and implemented system should be duly certified by appropriate certifying agency for the following parameter:

- Network design suitability and compliance for critical utility infrastructure.
- Penetration testing certification for implemented network for external and internal threat cases required and defined as per national and international cyber security accredited agencies.
- Purchaser will appoint the third-party auditor, Bidder shall extend all required support (Applicable for all the supplied equipment i.e. own and sub-vendor products) and will be responsible to carry out periodic cyber security audits of the network during the period of Standard and extended Post Warranty period. The minimum frequency of audits will be in-line with the regulatory requirement.
- Bidder to fix all identified gaps detected during the audit at no additional cost to Purchase during the Standard and extended Post Warranty period.

q. Communication components and accessories such as Converters, switches, routers, firewall and other accessories such as cables, connectors etc. required to connect the SCADA systems with Purchaser's Sub-Station Automation and other enterprise systems.

r. Installation of communication network equipment, communication establishment, cable supply, laying, termination is in the scope of the bidder for the systems supplied at MCC and BCC to meet all the functional requirement specified in this RFP.

s. Other components, Accessories, Hardware, Software and Firmware, to interconnect and integrate the proposed system into a fully functional system as per required functionality stated in this document.

t. Centralized Time Synchronization System at MCC and BCC shall ensure the time synchronization of all OT components of the proposed solution including Sub-Station Automation System of all primary sub-stations and field automation equipment of the Purchaser's.

u. Integration with various OT/IT systems mentioned below on existing interfaces and provisioning of ESB interface over SOA

i. Interface to Enterprise Historian System

ii. Interface with Geographical Information System (Current ESRI Version 10.2.1 / Upgraded ESRI Version 10.6), Seamless integration with GIS

iii. Secured ICCP interface with SLDC, other utilities and third-party systems (Main & Backup)

iv. Video Streaming Interface for real-time monitoring of the electrical equipment through SCADA GUI during selection / operation

v. SMS Gateway and Email Server

vi. AMR/AMI, IVR, WFM, FFM

vii. Other OPC, ODBC, SFTP, SAP interface, BI Interface

viii. Interface with Network Planning System (e.g. CYMEDIST)

ix. Antivirus System (Enterprise Antivirus Software)

x. Cyber Security Management System with Purchaser's Enterprise SOC/SIEM System

xi. Integration of IoT devices on protocol such as LORA, NB-IoT etc.

xii. Interface of OMS with proposed applications

xiii. Integration with Large Video Wall

xiv. Weather Monitoring through Web sites

v. **Advance Distribution Management and Other Applications**

i. Network Model

ii. Network Connectivity Analysis

iii. Dynamic Network Coloring

iv. Real-Time Network Analysis

- Real-Time Network Analysis Function Execution
- Real-Time Network Model Builder

- Parameter Adaptation
- State Estimator
- Power Flow Studies
- Contingency Analysis
- Security constrained Dispatch
- Voltage Var Control

v. Load Shedding Application

vi. Switch Order Management

vii. Fault Location, Isolation & Restoration

viii. Load Forecasting

ix. Optimal Feeder Reconfiguration

x. Distribution Power Flow (DPF)

xi. Outage Management, Trouble Call Management

xii. Crew Management, Field Scheduling and Dispatch

xiii. Outage Analysis & Prediction

xiv. Web Portal for Outage Management

xv. Mobile crew management Client

xvi. Quality of Service Indices

xvii. Interactive Voice Response

w. **Other Applications**

i. Advance Analytics – Online / Offline

ii. Power System Analysis Tools

iii. Power Quality Index

iv. Limit Violation Monitoring

v. Integrate DG and DERs

vi. Load Forecasting, Schedule Management

vii. Provide resiliency to natural disasters and other threats

viii. Multi-site Network Management

ix. Online analytics/ intelligence to diagnose and predict incipient faults / developing faults within the equipment & SCADA

x. Capability of building artificial intelligence in the system so as to guide operation Engineers during emergencies interactively.

xi. Vendor shall give the details of applications available on Mobility platform

xii. The bidder shall provide solution for identifying non-reporting of analog/digital data of feeder/line/bus/station on SCADA system with an auto trigger to Maintenance team through SMS/Email notification/SAP-PM for resolution. Records of such failure instances to be displayed in separate tab/mimic. This input should be utilized by SAP for autogenerating defect notification.

x. Participation of Purchaser's Engineers (5 Engineers) at Vendor's works during the system built till completion of FAT (approx. 2 months).

y. Preparation of Real-time Reports, Dashboard etc. as per Purchaser's customization and capturing operational requirement of Control Room Engineer.

z. Vendor shall submit the details of all databases proposed and its relationship with application. Data flow diagram with entity relationship shall be submitted for key applications. Vendor shall clearly mention the list of application which are required to build data models manually.

aa. Application development for Purchaser's Specific requirements at site

bb. Demonstration / Testing of the fully configured system at Bidder's works before dispatch of the system at site (FAT). The factory inspection shall be integrated system at a common work place. FAT will be conducted as per the FAT procedure document to be submitted by the Bidder during detailed engineering and approved by Purchaser after review.

cc. Installation, testing & commissioning of the above systems including integration with Purchaser's existing systems, sub-vendors' systems & systems of others and performance of Site Acceptance Test (SAT) in phased manner.

dd. Site Acceptance Test (SAT) to the Purchaser's satisfaction as per the SAT document submitted by the Bidder during detailed engineering and approved by the Purchaser after review) with the completion of the following, in minimum:

i. Bidder to note that the SAT will be carried out as per the migration strategy and commissioning plan. Same will be mutually finalized during detailed engineering.

ii. Demonstration of Performance Measure as specified in the RFP

iii. Integration of all supplied equipment under the contract.

ee. Providing necessary tools and software licenses for all the Software (OS, Application) and Hardware including of sub-vendor's offered solutions.

ff. Maintenance services for the supplied Hardware, Software package, Software up-gradation, Patch Management services including sub-vendor products and with Resident Engineer support during the Standard warranty period of 2 Years from the date of system handover

after SAT, resolution of all punch point of SAT and trouble-free operation of the entire system for a period of one month.

gg. Bidder shall provide maintenance services for the supplied Hardware, Software package, Software up-gradation, Patch Management services including sub-vendor products and with Resident Engineer at site for next 5 years over and above as mentioned in item ff.

hh. Bidder shall provide warranty support for next 3 years over and above as mentioned in clause ff and gg for Software Upgrades, Patch Management and any software subscription of all software supplied under this project including sub-vendor products.

ii. Warranty and Maintenance services will be applicable for each phase as per the above-mentioned Subclauses ff, gg and hh.

jj. All software supplied shall be licensed and shall be in the name of the Purchaser. Bidder should offer the latest software & Firmware of the proposed products which is tested and proven. Bidder shall provide all documentation in soft / hard form about licensing information for each software supplied (OS, application software, configuration, diagnostics, simulation & testing tools).

kk. The offered system shall store the copy of the system configuration, user configurable database, tools and relevant software as a backup at Purchaser's identified location for restoration under a disaster recovery plan.

ll. The Documents shall be submitted as proposed. Master Document List (MDL) shall be prepared by Bidder and submitted for Purchaser's approval.

mm. The bidder shall provide complete engineering data, drawings, reports, manuals and services offered etc. i.e. complete set of documentation / drawings / architectures/ Inter-Operability Tables (IOTs) submission of Test Reports, job progress reports etc.

nn. The drawings will be approved in four categories as follows:

i. Code I: Approved

ii. Code II: Approved subject to incorporation of comments as marked. Resubmit for formal approval

iii. Code III: Not Approved. Incorporate comments as marked. Resubmit for review / approval.

iv. Code IVa: Retain for Information.

v. Code IVb: Resubmit after incorporation of comments.

oo. It is the responsibility of the Bidder to handover all project related drawings in AutoCAD formats only. The pdf version of above drawings / documents shall also be submitted for formal approval process.

pp. Submission of technical documentation related to design, installation, testing, operation & maintenance of the equipment and submission of Test Reports, job progress reports etc. in hard copies (3 sets) and soft copies (3 sets, preferably in PDF).

qq. Training of Purchaser's Personnel at site and Bidder's works with all required training setup for each individual trainee.

rr. Supply of recommended and mandatory spares for all supplied items as mentioned in the separate section

ss. Providing complete source code, including customization

Bidder shall refer the entire project specifications of the RFP to understand the execution methodology, supply, services and interface requirement for complete Scope of work of this project.

It is not the intent of this specification to specify completely herein, all details of design & construction of SCADA System. However, the bidder is encouraged to provide latest hardware and software technology used worldwide to meet the specified requirement and at the same time system shall conform in all respects to high standards of engineering, design & workmanship.

9.0 Project Schedule / Calendar of Events / Milestones

a. The Bidder shall provide a detailed Implementation Schedule indicating major Bidder and Purchaser activities, major completion milestone events, and interdependencies between events. Required Purchaser activities and associated dates must be clearly shown and include interdependencies to the Bidder's scheduled activities. The schedule shall be in terms of months after Receipt of Order (ARO), not absolute dates.

b. The Bidder shall perform all scheduling activities with Microsoft Project, such that all schedules as periodically transmitted to Purchaser include both hard copy and electronic versions.

c. Following is the expected delivery schedule. Bidders may propose separate delivery schedule; however, the total time for project completion (Phase A & Phase B) shall not exceed 1278 days from the date of placement of firm purchase order by Purchaser.

d. Bidders may propose separate delivery schedule for Phase-C; however, the total time for Phase-C completion shall not exceed 540 days from the date of placement of firm purchase order by Purchaser.

9.1 **Delivery Schedule**

Phase-A (MCC & BCC – SCADA System)

Sr. No.	Milestone	Target
1	PO Placement	Zero Day
2	MDL & Project Detailed, Project Execution Schedule submission & approval	30 days from Sr. No. 1
3	Architecture and other Drawings, Bill of Material finalization, Functional and Design Specifications submission & approval	70 days from Sr. No. 1
4	Procurement of Hardware and Software	60 days from Sr. No. 3
5	Submittal of Acceptance Test Plans and Test Procedures	30 days from Sr. No. 3
6	System Staging and Database, Display Building / Migration	60 days from Sr. No. 4
7	Inspection of equipment (FAT)	30 days from Sr. No. 6
8	Delivery of equipment	28 days from Sr. No. 7
9	Completion of installation (MCC & BCC)	120 days from Sr. No. 8
10	Database Migration (Historical)	30 days from Sr. No. 9
11	Integration with Enterprise and Utility System	60 days from Sr. No. 10
12	PG test	30 days from Sr. No. 11
13	Cyber Security - Audit	30 days from Sr. No. 12
14	Handover to Purchaser	30 days from Sr. No. 13
15	Overall project schedule – Phase A	548 days

Phase-B (MCC & BCC – DMS System)

Sr. No.	Milestone	Target
1	Handover of SCADA System (After completion of 30 days trouble free Phase-A Operation)	Zero Day
2	Architecture and other Drawings, Bill of Material finalization, Functional and Design Specifications submission & approval	60 days from Sr. No. 1
3	Procurement of Hardware and Software	45 days from Sr. No. 2
4	Submittal of Acceptance Test Plans and Test Procedures	30 days from Sr. No. 2
5	System Staging and Database, Display Building / Migration	90 days from Sr. No. 3
6	Inspection of equipment (FAT)	30 days from Sr. No. 5

7	Delivery of equipment	30 days from Sr. No. 6
8	Completion of installation (MCC & BCC)	60 days from Sr. No. 7
9	Integration with GIS and SCADA System for 2 Circles	100 days from Sr. No. 8
10	Integration with GIS and SCADA System for 3 Circles	180 days from Sr. No. 9
11	Integration with Enterprise and Utility System	45 days from Sr. No. 10
12	PG test	30 days from Sr. No. 11
13	Cyber Security - Audit	30 days from Sr. No. 12
14	Handover to Purchaser	30 days from Sr. No. 13
15	Overall project schedule – Phase B	730 days

Phase-C (MCC & BCC – OMS System)

Sr. No.	Milestone	Target
1	PO Placement	Zero Day
2	MDL & Project Detailed, Project Execution Schedule submission & approval	15 days from Sr. No. 1
3	Architecture and other Drawings, Bill of Material finalization, Functional and Design Specifications submission & approval	30 days from Sr. No. 2
4	Procurement of Hardware and Software	45 days from Sr. No. 3
5	Submittal of Acceptance Test Plans and Test Procedures	30 days from Sr. No. 3
6	System Staging and Database, Display Building / Migration	120 days from Sr. No. 4
7	Inspection of equipment (FAT)	30 days from Sr. No. 6
8	Delivery of equipment	15 days from Sr. No. 7
9	Completion of installation (MCC & BCC)	30 days from Sr. No. 8
10	Integration with Existing SCADA & DMS System	100 days from Sr. No. 9
11	Integration with Enterprise and Utility System	95 days from Sr. No. 10
12	PG test	30 days from Sr. No. 11
13	Cyber Security - Audit	30 days from Sr. No. 12
14	Handover to Purchaser	30 days from Sr. No. 13
15	Overall project schedule – Phase C	540 days

Phase	Duration
Phase - A	548 Days
Phase - B	730 Days
Phase - C	540 Days
Total Project Completion Date	**1818 Days**

9.2 Calendar of Events

Sr. No.	Events	Target
1	Detailed bid documents / hosting of detailed bid documents in Purchaser's ARIBA website	Zero Date
2	Pre-Bid Meeting with Bidders	Within 15 days from Sr. No. 1
3	Receipt of pre-bid queries, if any	Within 30 days from Sr. No. 1
4	Posting of Consolidated replies for the pre-bid queries to all bidders	Within 15 days from Sr. No. 3
5	Receipt of Bids	Within 15 days from Sr. No. 4
6	Opening of technical bids	Next working day from Sr. No. 5
7	System Demonstration by Bidders at Purchaser's works	Within 30 days from Sr. No. 6
8	Date & Time of opening of Price of qualified bids	Will be notified to the successful bidders through our website / mail.

9.3 Mile Stones (Phase A & B)

Payment shall be made as per the finalized payment terms with Purchaser's procurement team as per the milestones mentioned below:

Sl. No.	Milestone Number	Milestone Description	Payment Plan (% of Contract Price)	Remarks
1	MS-01	Prebid meeting	-	
2	MS-02	Bid Submission	-	
3	MS-03	Bid Discussion	-	
4	MS-04	PO Placement	-	
Phase A: Delivery of SCADA System at MCC and BCC				
5	MS-05	Mobilization Advance against submission of the following: • PO Acceptance • Submission of Contract Performance Bank Guarantee (CPBG) for 10% of Contract Value • Submission of Advance Bank Guarantee (ABG) for 5% of Contract Value • Opening of Site Office in Project Area	5% of Total Contract Price	Phase-A
6	MS-06	Submission and Approval of following • List of Deliverables • Configuration Drawings • Detailed Project Schedule • Database Design Documentation	5% of Total Contract Price	Phase-A

Sl. No.	Milestone Number	Milestone Description	Payment Plan (% of Contract Price)	Remarks
		• Design Documentation for Hardware & Software System • Application Overview Document • Software requirements specifications for Custom Designs • Any Other Documentation related to Design Engineering		
7	MS-07	System hardware staging completed in the Factory, Complete installation of all the Bidder standard baseline system and application software • Software Test Review & Signoff • Software Test Execution • Software Test Planning to test SCADA and other Applications and required functions • Review and Signoff Requirements • Successful completion of FAT and resolution of all variances to Purchaser's satisfaction	10% of Total Contract Price	Phase-A
8	MS-08	• Shipment of the System, its complete installation at Purchaser's site, and successful completion of system startup activities. • Installation and commissioning of SCADA and other systems at MCC and BCC covering entire scope of work e.g. SCADA, PDS & QAS, DTS, Cyber Security and Communication Network Management System and applications as per specification etc. • Interface development with existing systems like SLDC, Enterprise Historian etc. • Pre-SAT test acceptance	10% of Total Contract Price	Phase-A
9	MS-9	Successful completion of SAT and resolution of all variances to Purchaser's satisfaction after completion of all test plans and procedures. This includes: • Site Preparation Plan • Witness demonstrations of all custom features • Field Update Period completed • Rectification of Bugs/ Issues if any reported after Pre-SAT • Training on O & M of System • Availability of Complete functionality as specified in the specification and scope of Work • Data Migration (Historical) • Demonstration of Performance Guarantee Parameters • Cyber Security Audit • System Handover for Operation	10% of Total Contract Price	Phase-A

Sl. No.	Milestone Number	Milestone Description	Payment Plan (% of Contract Price)	Remarks
10	MS-10	Operational Acceptance and submission As-built drawings, spares: • Successful completion of System Availability and Performance Guarantee tests • Submission of Operator's User's Manual, Modification if any to the Operator's User's manual and submission of approved manual • Submission of Backup of entire system on secondary media • Delivery of all As-built drawings, database and logic files, source code and final documents Delivery of spares, maintenance & testing equipment's etc.	5% of Total Contract Price	Phase-A
Phase B: Delivery of DMS System at MCC and BCC				
11	MS-11	• Shipment of the System, its complete installation at Purchaser's site, and successful completion of system startup activities. • Installation and commissioning of DMS and other systems at MCC and BCC • Pre-FAT Test Acceptance • Integration with Purchaser's GIS System for 2 Circles with all functionalities as per RFP with incremental data handling • Interface development with other Enterprise systems like CIS, MDM, SAP etc. • Pre-SAT Test Acceptance	10% of Total Contract Price	Phase-B
12	MS-12	Successful completion of SAT and resolution of all variances to Purchaser's satisfaction after completion of all test plans and procedures. This includes: • Site Preparation Plan • Witness demonstrations of all custom features • Field Update Period completed • Rectification of Bugs/ Issues if any reported after Pre-SAT • Training on O & M of System • Availability of Complete functionality as specified in the specification and scope of Work • Demonstration of Performance Guarantee Parameters • System Handover for Operation	10% of Total Contract Price	Phase-B
13	MS-13	• Integration with Purchaser's GIS System for 3 Circles with all functionalities as per RFP with incremental data handling • Interface development with other Enterprise systems like CIS, MDM, SAP etc.	15% of Total Contract Price	Phase-B

Sl. No.	Milestone Number	Milestone Description	Payment Plan (% of Contract Price)	Remarks
14	MS-14	Successful completion of SAT and resolution of all variances to Purchaser's satisfaction after completion of all test plans and procedures. This includes: • Field Update Period completed • Rectification of Bugs/ Issues if any reported during SAT • Availability of Complete functionality as specified in the specification and scope of Work • Demonstration of Performance Guarantee Parameters • Cyber Security Audit • System Handover for Operation	10% of Total Contract Price	Phase-B
15	MS-15	Operational Acceptance and submission As-built drawings, spares: • Successful completion of System Availability and Performance Guarantee tests • Submission of Operator's User's Manual, Modification if any to the Operator's User's manual and submission of approved manual • Submission of Backup of entire system on secondary media • Delivery of all As-built drawings, database and logic files, source code and final documents Delivery of spares, maintenance & testing equipment's etc.	10% of Total Contract Price	Phase-B

9.4 **Mile Stones (Phase C)**

Mile stone for Phase C will be discussed and finalized during the placement of PO for implementation of OMS System.

12.0 Project Management

12.1 Project Implementation

This section specifies project implementation requirements, including Purchaser and the Bidder responsibilities, project management procedures, project documents, the activities leading up to shipment of the SCADA/DMS/OMS and other systems, and the installation, commissioning, and site test activities.

12.2 Project Management

The Bidder and Purchaser shall assign a project manager with the authority to make commitments and decisions that are binding on the either side with the following responsibilities:

12.2.1 Purchaser's Project Manager

Purchaser’s project manager shall be responsible for representing Purchaser’s interests throughout the project. Purchaser’s project manager will, from time to time, authorize other staff to act in this regard for specific tasks. The project manager will also change such assignments from time to time. Such actions shall be submitted to the Bidder in writing.

All correspondence with Purchaser shall be addressed to Purchaser's project manager.

12.2.2 The Bidder's Project Manager and Project Personnel

The Bidder shall designate a project manager who shall be responsible for the co-ordination of all project work and for the communications between the Bidder and Purchaser. Except for conditions outside the control of the Bidder, the Bidder's project manager shall not be removed or replaced without the approval of Purchaser.

Bidder shall submit the manpower deployment plan along with the bids, describing the key roles of each person. The project shall be staffed with a core project team. Additional personnel shall be assigned to work under the direction of the core team as required to effectively implement the SCADA/DMS/OMS and Other Systems. Core project team members shall have experience as stated elsewhere in this document.

The Bidder shall inform Purchaser of any pending or possible changes in the use or status of all Bidder project personnel. Any changes to Bidder staff, including work assignments and participation level, shall be announced as soon as practical and shall be subject to Purchaser’s approval. Purchaser shall have the right to have any Bidder staff removed from the project for cause.

12.3 Project Management Practices

Bidder shall 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:

a. Bidder must provide details of how they envisage the contract being managed and control mechanisms; regular and active review meetings; Project management of individual work streams and overall program management of the entire service; Performance reporting

b. 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 which Purchaser can refer on any matter concerning the service.

c. Reporting lines and decision-making powers within the bidder's organization must be submitted

d. Reporting formats and templates that would be followed by the bidders

e. Outline the proposed escalation procedures if issues arise.

12.4 **Project Schedule**

The project implementation schedule for Phase A & B shall not be exceeding 43 months from the date of award. Based upon this schedule the bidder shall submit a preliminary implementation plan along with the bid. The detail project implementation schedule shall be submitted by the bidder after award for Purchaser's approval, which shall include at least the following activities:

a. Site Survey

b. Documents submission and approval schedule

c. Factory & Site Testing Schedule

d. Database development schedule

e. Hardware purchase & Manufacturing, Software development & integration schedule

f. Dispatch Schedule

g. Installation / commissioning schedule

h. Data Migration (Historical)

i. Training schedule

The project schedule shall include the estimated period for completion of and its linkage with other activities.

12.5 **Progress report**

A progress report shall be prepared by the Bidder each month against the activities listed in the project schedule. The report shall be made available to Purchaser on a monthly basis, e.g., the 10th of each month. The progress report shall include all the completed, ongoing and scheduled activities.

12.6 **Transmittals**

Every document, mail, letter, progress report, change order, and any other written transmissions exchanged between the Bidder and Purchaser shall be assigned a unique transmittal number. The Bidder shall maintain a correspondence index and assign transmittal numbers consecutively for all Bidder documents. Purchaser will maintain a similar correspondence numbering scheme identifying documents and correspondence that Purchaser initiates.

12.7 **Implementation Responsibilities**

The general responsibilities of Purchaser and the Bidder are presented below. Other sections in the Specification may also present responsibilities. If the requirements of any other sections conflict with the responsibilities of this section, the responsibilities of the other sections shall take precedence over this section.

12.7.1 **Bidder's Responsibilities**

The Bidder's specific responsibilities shall include:

a. Providing all SCADA/DMS/OMS and other systems equipment and related support materials, including all interconnecting cables and wiring between all Bidder-provided equipment and between the SCADA/DMS/OMS and any equipment furnished by Purchaser

b. Defining the stock of spare parts needed to maintain for system availability

c. Providing all engineering, software design, development, and integration services necessary for SCADA/DMS/OMS and Other Systems implementation

d. Providing and integrating all application software except that to be developed by Purchaser. This responsibility extends to all software developed by Sub-vendors.

e. Providing all SCADA/DMS/OMS and Other Systems displays and reports

f. Import and export of GIS Data

g. Migration of historical data from Purchaser's Systems

h. Using the Development System to create displays and generate reports according to samples and templates provided by Purchaser

i. Implementing the database for Purchaser's network and installing the database into the Development System. In addition, the Bidder shall identify any data elements required in the Bidder's database and shall be responsible for integrating such data elements into the Bidder's database.

j. Interface development like Secured ICCP, SAP-PM, MM, Enterprise Historian, MDM, OMS, CIS, IVR etc.

k. Supplying a display style guide defining all discretionary display parameters used by the Bidder when developing standard displays and reports

l. Defining and coordinating a software and database management methodology that shall ensure synchronization of the system databases and applications software, between the Bidder's factory and Purchaser's site, until acceptance of the entire solution

m. Ensuring that all reasonable security measures have been incorporated in the SCADA/DMS/OMS and Other Systems and all software, upon delivery, is free of viruses, trapdoors, and other software contaminants, contains no software enabled with “electronic self-help”, is purged of all sample scripts and sample code, and has had all default accounts and passwords removed or disabled

n. Managing, coordinating, and scheduling the activities of all Sub-vendors employed by the Bidder for this project. This shall include the resolution of all problems that may arise in connection with the hardware, software, and services supplied by the Sub-vendors.

o. Implementing the SCADA/DMS/OMS and Other Systems according to the quality standards acceptable to Purchaser

p. Training Purchaser staff so that they will be self-sufficient and able to operate, maintain, and upgrade the complete SCADA/DMS/OMS and Other Systems

q. Supplying SCADA/DMS/OMS and Other Systems documentation such as instruction manuals, maintenance manuals, drawings, software design and user documentation, and other appropriate material that together fully defines the supplied system and allows Purchaser to operate, maintain, backup, restore, and upgrade the SCADA/DMS/OMS and Other Systems hardware and software

r. Supplying final (“as built”) documentation that is accurate and complete.

s. Providing adequate facilities and resources for, as well as performing, factory testing

t. Providing an environment that allows for reproducible execution of all SCADA/DMS/OMS and Other Systems functional performance tests conducted during factory acceptance testing

u. Transportation and delivery of all Bidder-provided equipment and materials to Purchaser's site or sites

v. Verification of existing infrastructure such as the power distribution, air conditioning, power grounding, seismic protection, dust protection, fire protection, equipment size, and other site requirements as necessary for the proper environmental control and operation of all SCADA/DMS/OMS and Other Systems equipment

w. Performing the installation of the SCADA/DMS/OMS and Other Systems at Purchaser’s site under Purchaser’s supervision

x. Performing, with Purchaser's assistance, system start-up after satisfactory system installation, i.e. powering up the system, loading correct versions of all software and databases, activating data links, verifying correct operation of the system, and turning over to Purchaser an operational system ready for site testing

y. Performing after delivery and start-up of the system, but prior to any site testing, setting up all functions for proper operation (system and function "tuning")

z. Performing the test at Purchaser's site, including correcting all reported variances

aa. Ensuring and periodically demonstrating that the work is progressing according to the approved schedule

bb. Performing historical data migration

cc. Providing office space and services for Purchaser personnel at the Bidder's site

dd. Maintaining the SCADA/DMS/OMS and Other Systems up to the start of the warranty

ee. Providing and implementing all required warranty services

12.7.2 **Purchaser's Responsibilities**

Purchaser will be responsible for the following:

a. Providing input power to equipment enclosures

b. Providing WAN and DCU/RTU communications media from the existing Automation WAN

c. Supplying display conventions and standards to be followed by the Bidder when preparing or customizing displays for this project

d. Reviewing and approving project deliverables such as, but not limited to, detailed implementation schedule, software and hardware functional design documents, user manuals, custom display and report formats, drawings, progress reports, training program, quality assurance plan, test plans and procedures, test results, support services (including maintenance), and as-built system documents

e. Providing documentation, interface details, engineering drawings, and schematic diagrams of Purchaser-furnished equipment to be directly interfaced with the SCADA/DMS/OMS and Other Systems

f. Coordinating and supervising the Bidder's work to be performed at Purchaser facilities

g. Attending pre-factory tests (at Purchaser's discretion)

h. Participating in factory tests and approving test results

i. Assist the Bidder with the installation

j. Monitoring the site tests and approving test results

k. Monitoring the availability test and approving test results

l. Providing test data for processes external to the SCADA/DMS/OMS and Other Systems

m. Preparing variance reports, resolving variance issues, and approving corrected variances

n. Determining if the Bidder's work is progressing in accordance with the schedule

o. Verification of all Bidder materials, installation practices, and workmanship conform to requirements

p. Providing facilities for on-site training and Bidder offices.

12.8 **Third-Party Software**

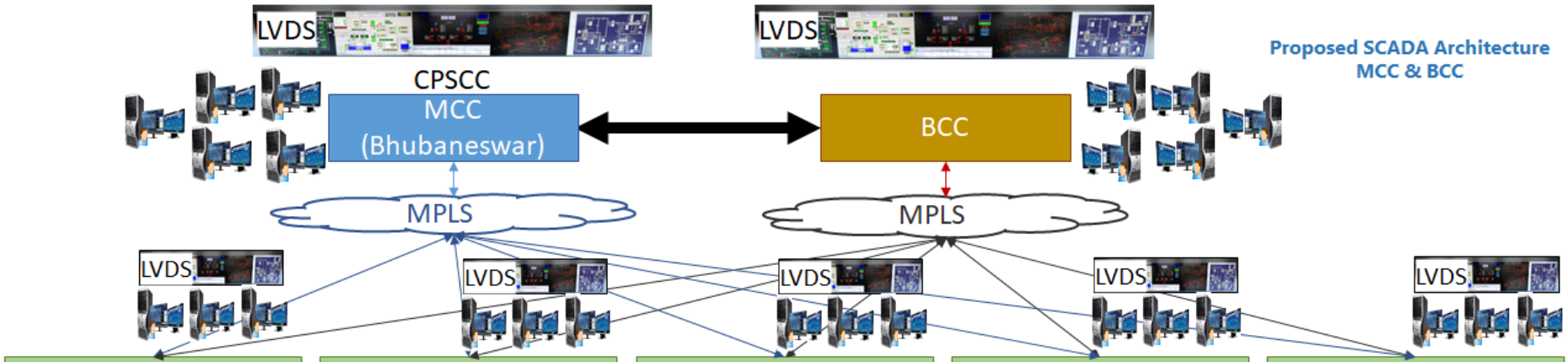
Where any Bidder-provided applications software or software modules developed by a third-party are integrated into the SCADA/DMS/OMS and Other Systems, the Bidder shall be responsible for integrating, testing, and meeting the functional, security, and performance requirements of this software in the SCADA/DMS/OMS and Other Systems environment. The bidder shall avail all software licenses, warranty and support provided by the OEM in the name of the Purchaser.

12.9 **On-Site Offices**

Both Purchaser and the Bidder shall make available office facilities for use by the other party. Purchaser will provide offices for Bidder staff at Purchaser’s offices throughout the project. The same will be reviewed time to time to accommodate additional resources of the bidders and until completion of the site testing.

The Bidder shall provide offices dedicated to Purchaser’s use suitable for up to five staff. These offices shall be contiguously located and shall be kept available for the exclusive use of Purchaser throughout the duration of the project such that confidential documents, personal effects, and other materials may be stored. Offices for an additional Purchaser staff shall be made available during factory testing.

Centralized SCADA/ADMS System Architecture at MCC & BCC



APSCC SCADA System Bhubaneswar (BBSR1)	
Bhubaneswar Circle-1 (BBSR1)	
RAPDRP	30
ODSSP	30
Nabakalebar	0
Conventional Sub-Station	13
Total Number of Sub-Stations	73

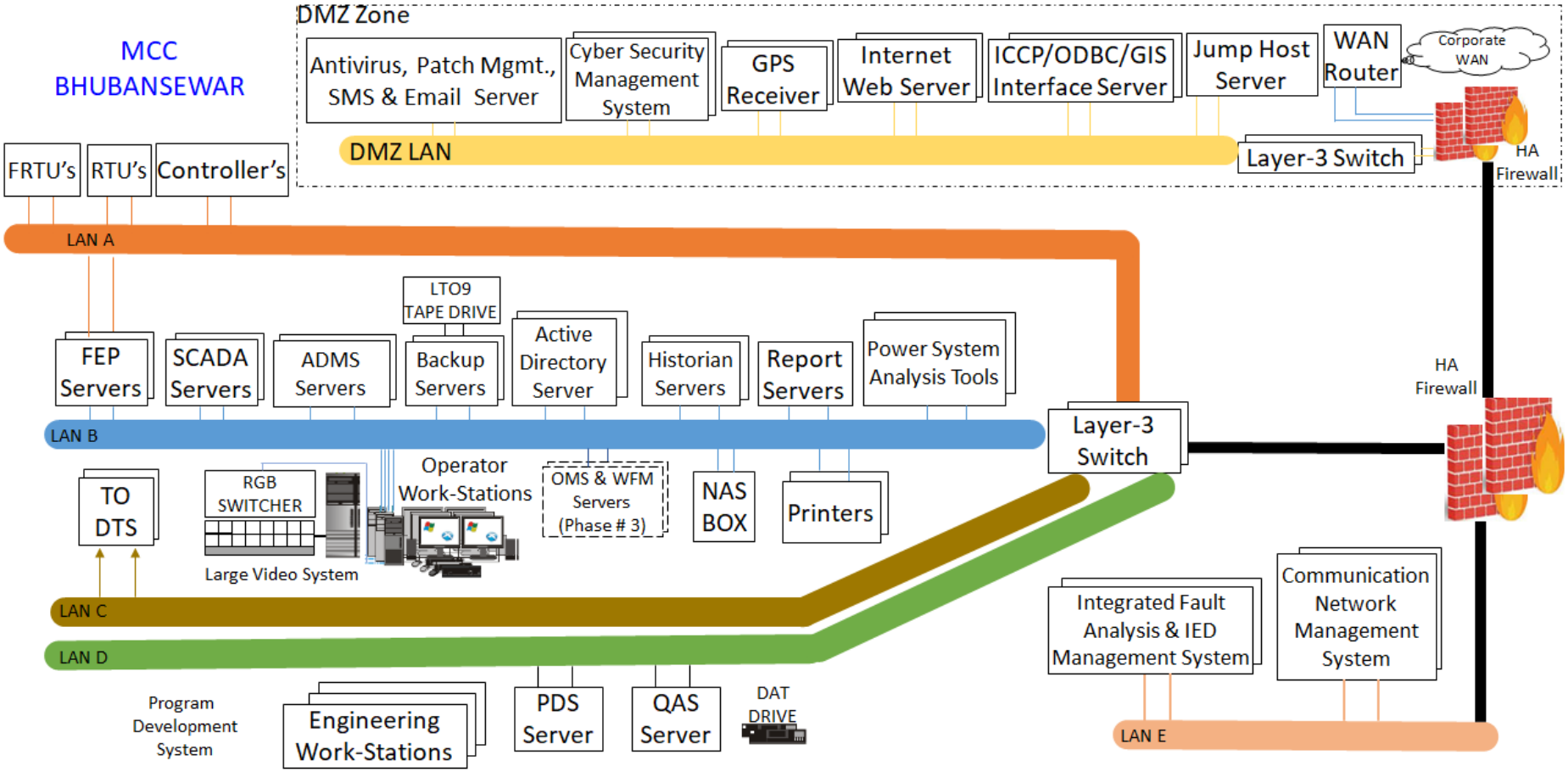
APSCC SCADA System Bhubaneswar (BBSR2)	
Bhubaneswar Circle-2 (BBSR2)	
RAPDRP	0
ODSSP	28
Nabakalebar	4
Conventional Sub-Station	52
Total Number of Sub-Stations	84

APSCC SCADA System Cuttack	
Cuttack (CTC)	
RAPDRP	22
ODSSP	21
Nabakalebar	0
Conventional Sub-Station	30
Total Number of Sub-Stations	73

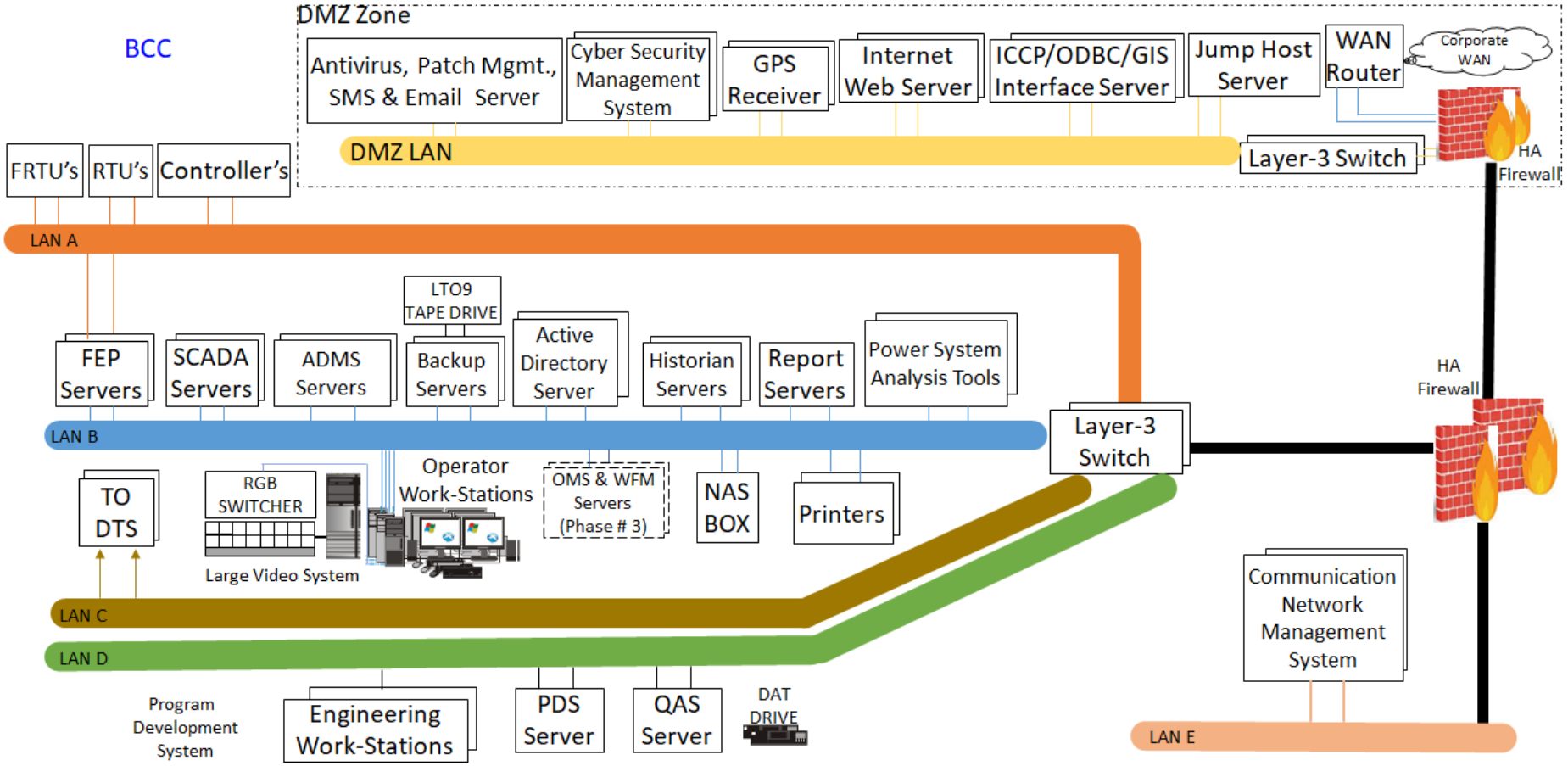
APSCC SCADA System Dhenkanal	
Dhenkanal (DKL)	
RAPDRP	0
ODSSP	28
Nabakalebar	0
Conventional Sub-Station	46
Total Number of Sub-Stations	74

APSCC SCADA System Paradeep	
Paradeep (PDP)	
RAPDRP	0
ODSSP	27
Nabakalebar	0
Conventional Sub-Station	40
Total Number of Sub-Stations	67

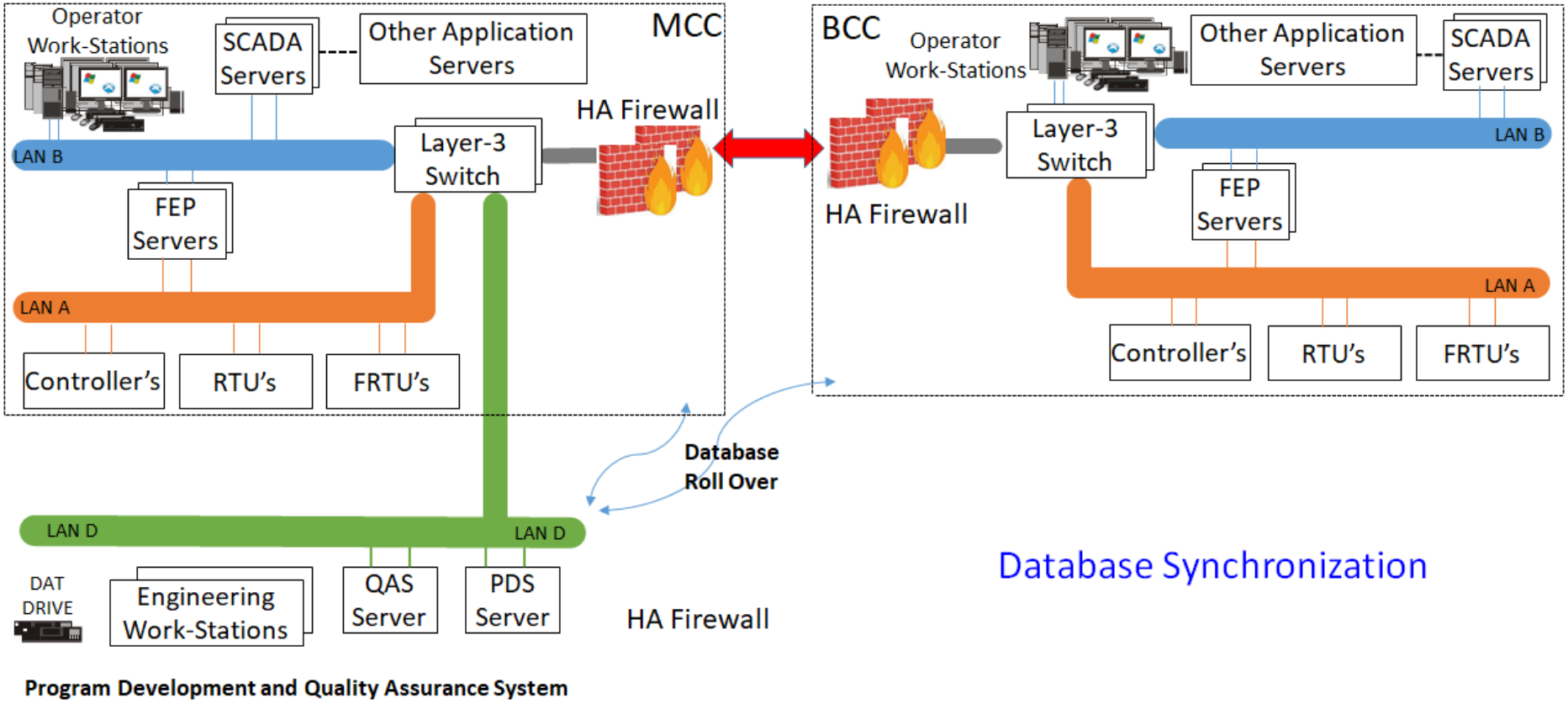
Proposed SCADA System Landscape - MCC



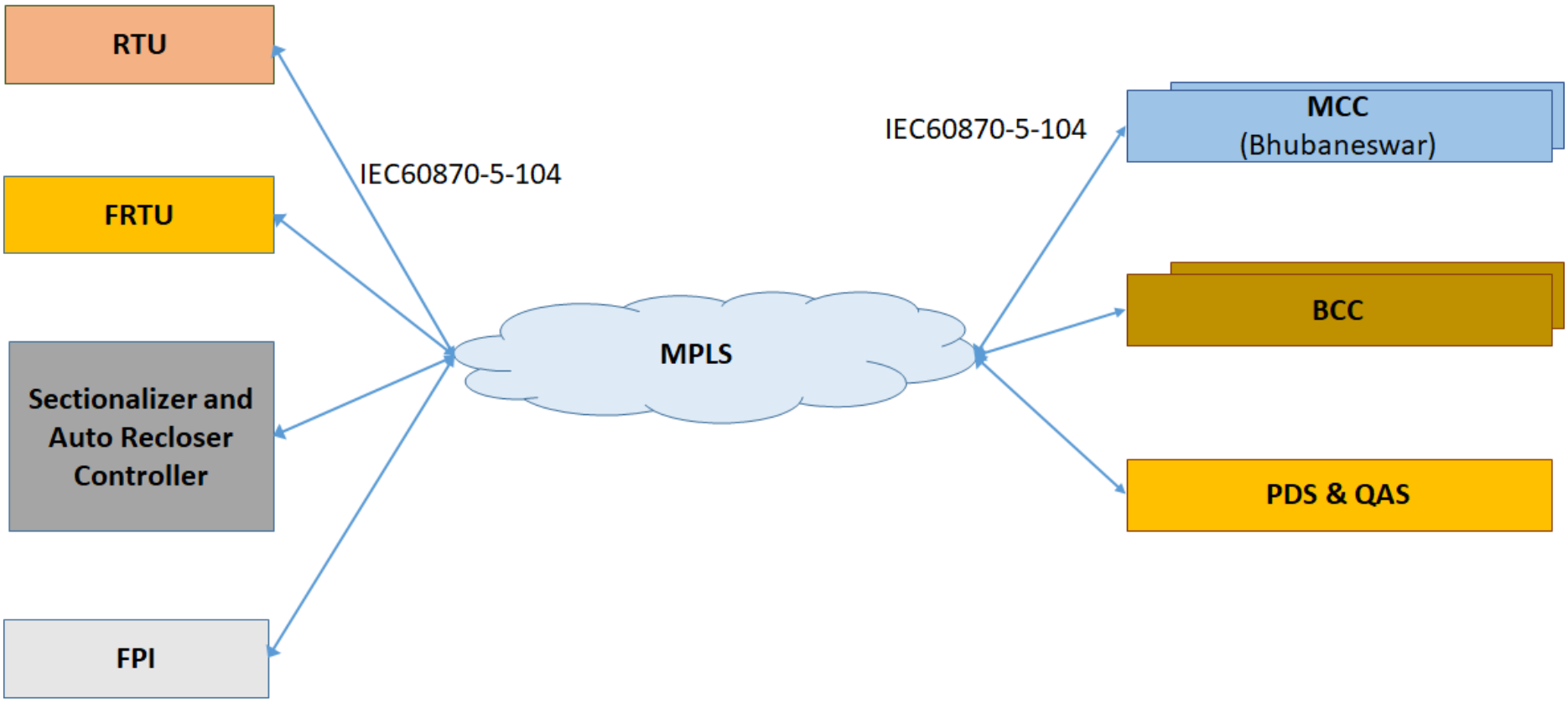
Proposed SCADA System Landscape - BCC



Data Synchronization and Database Roll Over from PDS & QAS to MCC & BCC



Communication with Field Devices



1	2
Sl. No.	**Information to Bidder**
1	Bill of Quantity mentioned in the tables are indicative, this may vary to meet the functional or site requirement. It is the responsibility of the Bidder to include all Hardware, Software and Services as per functional requirement specified in the RFP as per the phases mentioned.
2	Bidder to refer preferred make and model of the equipment to be considered for this project. All bidder's own and bought out items shall be subject to Purchaser's prior approval.
3	The bidder shall propose and design the solution considering all the functional requirement stated in the RFP and shall submit the overall System Architecture considering current and phase wised implementation.
4	System shall be modular in such a way that it shall allow flexible configuration of the system, adding modules as and when required. The system shall facilitate a gradual growth of the system through phased implementation as the Power System Network operating requirements expand or change.
5	Bidder shall include license for redundant server/applications as applicable. Bidder shall also consider the enterprise version of software as feasible to meet the required functionality and to reduce the overall cost.
6	All the servers / work stations are with Operating System and shall be of latest version at the time of order placement. Purchaser's preference of OS for Servers is REDHAT LINUX except servers required in DMZ zone.
7	All Systems and Operator Workstations shall be kept current with latest OS version and Application Software as and when the new applications will be implemented in a phased manner.
8	All Servers shall be Rack-Mounted (MCC, BCC, DTS, PDS & QAS). Generally other than hard disk capacity all server shall be same.
9	Bidders shall optimize the requirement of hardware for servers and processors where one or more applications can be combined or distributed in any combination with adequate redundancy without impacting the performance of the system. However, certain applications are to be hosted on independent hardware. Critical and Non-Critical applications are defined in the RFP for optimizing the overall architecture.
10	Configuration of all Operator workstations shall be identical.
11	The FEP should be modular such that adequate communication response speed is achieved with distributed parallel units.
12	The offered solution shall meet all the Cyber Security Requirement as per the IEC62351, IEC62443 standard and NERC_CIP, NISTR, ISO 27001 and NCIIPC guidelines. All the Cyber Security measures shall address Operational Technology requirement. Bidder shall ensure that the proposed architecture at MCC and BCC are certified by Cyber Security auditor for the compliance as per Industry standards. Bidder shall also ensure that the third party Cyber Security Audit is conducted and identified gaps are complied before handing over the system to Purchaser in a phased manner as and when the new applications will be implemented in a phased manner.
13	The proposed system will be integrated with other external systems and the required interfaces shall be considered accordingly. Since all external systems are different, special studies for interfaces have to be conducted for each individual case.
14	The platform services shall be common to the whole family of products (MCC, BCC, DMS, OMS, DTS, PDS & QAS); thus, integrated control of power system network is possible from one base platform. Allows data to be distributed across a number of sites and systems.

1	2
Sl. No.	**Information to Bidder**
15	Applications such as DMS, OMS & other analytical Applications, Intelligent Alarm Processing, Operator Guidance Messages, Dispatcher Training Simulator, Energy Audit, user's own utility programs and any other selected applications shall be assigned to the appropriate Server as per functional & processing requirements.
16	The Bidder to ensure that the data modelling shall be network based and common across various applications as required by the Purchaser. This also includes Sub-Vendors applications.
17	The bid shall include required hardware and software for managing the common database of MCC and BCC systems. The System shall provide common network CIM modelling. Unified data engineering environment for data take-on and data maintenance, facilitating a single point of entry for both graphical representations and the object data.
18	Bidder to indicate clearly the no. of Software licenses (proprietary & third party) included taking into account no. of Servers, Clients, Work-Stations, redundant equipment, I/O Tags etc. Bidder shall also indicate the (slab-wise) incremental price for each of these licenses as applicable. It will be deemed to be nil if not indicated separately. Bidder shall consider enterprise license for common applications for proposed system.
19	Each selected application shall include necessary prerequisites, if any.
20	All cabling (Communication, Power Supply, Interfaces) is in Bidder's scope. This includes supply, laying, termination and connection to equipment.
21	All Networking accessories and all types of Cables required for integration of other systems shall be considered by the bidder.
22	Necessary Communication equipment (Industrial grade) such as Layer3 switches, Firewall, Networking cables, patch cords etc. for integrating the Servers, Workstations through the L3 switches shall be in the scope of the Bidder. All structure cabling at MCC, BCC and at Sub-Stations (if any) is in Bidder scope. All the Communication equipment shall be DC Powered.
23	Post Warranty Services - Resident Engineer Support shall be Common for all the supplied equipment (Bidder's Own and bought out items)
24	It is the responsibility of the Bidder's Resident Testing Engineer to carry out all activities under the supervision of Purchaser including data base modelling, addition/deletion as per the site requirement during Warranty and Post Warranty period as defined in the RFP.
25	It is the responsibility of the bidder to provide Patch Management, Software upgradation, Firmware Upgradation for Bidder's Owned items, Sub-vendor items, Communication and Networking items
26	Patch Management, Software upgradation, Firmware Upgradation, Minor and Major modification, Display Generation etc. is the responsibility of the Bidder's Resident Testing Engineer as per the SLA and activities specified in the RFP
27	The bidder shall indicate the total FOR Site price (TPCODL) in Indian Rupees including of all taxes & duties
28	Purchaser may procure any item from elsewhere. Integration of those with supplied system is in Bidder's scope.
29	All annual maintenance charges of supplied Hardware, OS & Software are inclusive in the Warranty and Post Warranty of Bidder's Owned items, Sub-vendor items, Communication and Networking items, software licenses their renewal, upgrades etc.
30	The prices quoted for "Price Schedule-DMS, Price Schedule-OMS and BOM 1-6" shall be considered for evaluation. The prices for "Price Schedule-NCC, BOM-NCC and BOM-Comms and Accessories-NCC" are for reference only and shall not be part of evaluation.

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A		**SCADA & Other Systems**									
A1	MCC	SCADA & Other Application System Hardware inclusive of Servers, HMIs, Printers, networking accessories, Development Systems, Panels, GPS Clock etc.	A	From BOM 1	Lot	1					
A2		SCADA & Other System Applications and Interface Software Licenses with OS	C		Lot	1					
A3		SCADA & Other Application System Engineering, Installation, Commissioning & Testing Services	G.1		Lumpsum	1					
		Total of A									
B		**Distribution Management System**									
B1	MCC	DMS System Hardware inclusive of Servers, HMIs, Panels, all interfaces and networking accessories etc.	B.1	From BOM 1	Lot	1					
B2		DMS & Other System Applications and Interface Software Licenses with OS	D		Lot	1					
B3		DMS System Engineering, Installation, Commissioning & Testing Services	G.2		Lumpsum	1					
		Total of B									
C		**SCADA & Other Systems**									
C1	BCC	SCADA & Other Application System Hardware inclusive of Servers, HMIs, Printers, networking accessories, Development Systems, Panels, GPS Clock etc.	A	From BOM 2	Lot	1					
C2		SCADA & Other System Applications and Interface Software Licenses with OS	C		Lot	1					
C3		SCADA & Other Application System Engineering, Installation, Commissioning & Testing Services	G.1		Lumpsum	1					
		Total of C									
D		**Distribution Management System**									
D1	BCC	DMS System Hardware inclusive of Servers, HMIs, Panels, all interfaces and networking accessories etc.	B.1	From BOM 2	Lot	1					
D2		DMS & Other System Applications and Interface Software Licenses with OS	D		Lot	1					
D3		DMS System Engineering, Installation, Commissioning & Testing Services	G.2		Lumpsum	1					
		Total of D									
E		**Program Development & Quality Assurance System**									

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
E1	MCC / BCC	PDS & QAS System Hardware inclusive of Servers, HMIs, Panels, Development Systems, all interfaces and networking accessories etc.	A	From BOM 3	Lot	1					
E2		PDS & QAS System Applications and Interface Software Licenses with OS	B		Lot	1					
E3		PDS&QAS System Engineering, Installation, Commissioning & Testing Services	C		Lumpsum	1					
E4		Services for SCADA System Configuration (Bidder to include all services except item E.5 to E.7)			Lumpsum	1					
E5		Services for DMS Applications			Lumpsum	1					
E6		Services for Third Party and Other System Integration			Lumpsum	1					
E7		Services for Implementation of Purchaser's Specific Applications			Lumpsum	1					
		Total of E									
F	MCC (Standalone)	**Dispatcher Training Simulator of SCADA and DMS System**		From BOM 4							
F1		DTS System Hardware inclusive of Servers, HMIs, Panels, development Systems, all interfaces and networking accessories etc.	A		Lot	1					
F2		DTS System Applications, Simulation Tools and Interface Software Licenses with OS	B		Lot	1					
F3		DTS System Engineering, Installation, Commissioning & Testing Services	C		Lumpsum	1					
		Total of F									
G	MCC	**Cyber Security Management System**		From BOM 5							
G1		Cyber Security Management System Hardware inclusive of Servers, HMIs, Panels, development Systems, all interfaces and networking accessories etc.	A		Lot	1					
G2		Cyber Security Management System Applications, Simulation Tools and Interface Software Licenses with OS	B		Lot	1					
G3		Cyber Security Management System Engineering, Installation, Commissioning & Testing Services	C		Lumpsum	1					
		Total of G									
H		**Cyber Security Management System**									

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
H1	BCC	Cyber Security Management System Hardware inclusive of Servers, HMIs, Panels, development Systems, all interfaces and networking accessories etc.	A	From BOM 5	Lot	1					
H2		Cyber Security Management System Applications, Simulation Tools and Interface Software Licenses with OS	B		Lot	1					
H3		Cyber Security Management System Engineering, Installation, Commissioning & Testing Services	C		Lumpsum	1					
		Total of H									
I	Comm Networking Accessories	**Communication & Other Networking Accessories**		From BOM 6							
I1		Communication and Networking Equipment - with complete Hardware & Software License	A		Lot	1					
I2		Engineering, Installation, Commissioning & Testing	B		Lumpsum	1					
I3		Integration with Other Systems			Lumpsum	1					
		Total of I									
J	Spares	**Spares**		Refer Specification for Details in Section-A							
J1		Spares for SCADA System			Lot	1					
J2		Spares for DMS System			Lot	1					
		Total of J									
		GRAND TOTAL (A+B+C+D+E+F+G+H+I+J)									
K	Warranty	**System Hardware, Software Maintenance, upgradation & Patch Management Services - during the Standard Warranty period i.e. 2 years from the date of system handover after SAT & resolution of all punch point of SAT**									
K1		Resident Engineer Support - For all the system including Sub-Vendor Equipment			Lumpsum	1					
K2		Software Maintenance, Upgradation and Patch Management Services			Lumpsum	1					
K3		Hardware Maintenance & Upgradation			Lumpsum	1					
K4		Database Addition / Deletion New Station / Bay / Feeder / Equipment			Lumpsum	1					
		Total of K									

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
L		**Hardware, Software Maintenance, upgradation and Patch Management Services - Additional 5 years support after completion of standard warranty period of 2 years**									
L1	Warranty	Hardware, Software Maintenance, upgradation and Patch Management Services, includes the following:			Lumpsum	1					
L2		Resident Engineer Support - For all the system including sub-vendor equipment			Lumpsum	1					
L3		Software Maintenance, Upgradation and Patch Management Services			Lumpsum	1					
L4		Hardware Maintenance & Upgradation			Lumpsum	1					
L5		Database Addition / Deletion New Station/Bay/Feeder/Equipment			Lumpsum	1					
		Total of L									
M	Warranty	**Software Annual Maintenance Services - Additional 3 years support after completion of 7 Years (2 years standard warranty and additional 5 years support)**									
M1		Software Maintenance, Upgradation and Patch Management and any Software subscription of all software supplied under this project, including sub-vendor products Services			Lumpsum	1					
		Total of M									
		GRAND TOTAL (K+L+M)									
N		Deputation of Purchaser's representative (5 Engineers) for the period of 2/3 months at Bidder's works for database modeling, generation, engineering, Display building etc. including, boarding, lodging and local transportation			Lumpsum	1					
		Total of N									
O	Training	**Training**									
O1		**SCADA System**		As per BOM 1, 2							
O1.1		On-site Training			man-days	100					
O1.2		Bidder's Work Place			man-days	100					
		Sub-Total of O1									
O2		**DMS System**		As per BOM 1							

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
O2.1	Training	On-site Training		As per BOM 1, 2	man-days	100					
O2.2		Bidder's Work Place			man-days	200					
		Sub-Total of O2									
O3		**PDS & QAS System**		As per BOM 3							
O3.1	Training	On-site Training			man-days	100					
O3.2		Bidder's Work Place			man-days	100					
		Sub-Total of O3									
O4		**DTS System**		As per BOM 4							
O4.1	Training	On-site Training			man-days	100					
O4.2		Bidder's Work Place			man-days	100					
		Sub-Total of O4									
O5		**Cyber Security System**		As per BOM 5							
O5.1	Training	On-site Training			man-days	100					
O5.2		Bidder's Work Place			man-days	100					
		Sub-Total of O5									
O6		**Communication and Networking System**		As per BOM 6							
O6.1	Training	On-site Training			man-days	50					
O6.2		Bidder's Work Place			man-days	50					
		Sub-Total of O6									
		Sub-Total of (O1.1+O2.1+O3.1+O4.1+O5.1+O6.1)									
		Sub-Total of (O1.2+O2.2+O3.2+O4.2+O5.2+O6.2)									
		Total of O (O1+O2+O3+O4+O5+O6)									
		Total SCADA & DMS Project Cost									
		Total SCADA & DMS Project Cost excluding Item L & M									
P		**Optional System : Cyber Security Management System**									
P1	Optional Item	Optional Items - Hardware	A	From BOM 5	Lot	1					
P2		Optional Items - Software	B		Lot	1					
P3		Optional Items - Services	C		Lot	1					
		Total of P									
		SCADA/ADMS Tag license - 1,00,000 Physical I/Os			Lumpsum	1					

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
Q	Additional Tag License	Applicable License enhancement in other systems due to enhancement of additional 1,00,000 Tags			Lumpsum	1					
		All Services Required for enhancement of Additional 1,00,000 Tags			Lumpsum	1					
		Total of Q									

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	MCC	**Outage Management System**		From BOM 1							
A1		OMS System Hardware inclusive of Servers, HMIs, Panels, all interfaces and networking accessories etc.	B.2		Lot	1					
A2		OMS & Other System Applications and Interface Software Licenses with OS	E		Lot	1					
A3		OMS System Engineering, Installation, Commissioning & Testing Services	G.3		Lumpsum	1					
		Total of A									
B	BCC	**Outage Management System**		From BOM 2							
B1		OMS System Hardware inclusive of Servers, HMIs, Panels, all interfaces and networking accessories etc.	B.2		Lot	1					
B2		OMS & Other System Applications and Interface Software Licenses with OS	E		Lot	1					
B3		OMS System Engineering, Installation, Commissioning & Testing Services	G.3		Lumpsum	1					
		Total of B									
C	MCC / BCC	**Program Development & Quality Assurance System**		From BOM 3							
C1		Developmental Utility for OMS Applications - License	B.3		Lumpsum	1					
C2		Services for OMS Applications	C1.4		Lumpsum	1					
C3		Services for Third Party and Other System Integration	C1.6		Lumpsum	1					
		Total of C									
D	Comm Networking Accessories	**Communication & Other Networking Accessories**		From BOM 6							
D1		Communication and Networking Equipment - with complete Hardware & Software License	A		Lot	1					
D2		Engineering, Installation, Commissioning & Testing	B		Lumpsum	1					
D3		Integration with Other Systems			Lumpsum	1					
		Total of D									
		GRAND TOTAL (A+B+C+D)									
E		**System Hardware, Software Maintenance, upgradation & Patch Management Services - during the Standard Warranty period i.e. 2 years from the date of system handover after SAT & resolution of all punch point of SAT**									

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
E1	Warranty	Resident Engineer Support - Support provided for SCADA and DMS will also take care of OMS			NA						
E2		Software Maintenance, Upgradation and Patch Management Services			Lumpsum	1					
E3		Hardware Maintenance & Upgradation			Lumpsum	1					
E4		Database Addition / Deletion			Lumpsum	1					
		Total of E									
F		**Hardware, Software Maintenance, upgradation and Patch Management Services - Additional 5 years support after completion of standard warranty period of 2 years**									
F1		Hardware, Software Maintenance, upgradation and Patch Management Services, includes the following:			Lumpsum	1					
F2	Warranty	Resident Engineer Support - Support provided for SCADA and DMS will also take care of OMS			NA						
F3		Software Maintenance, Upgradation and Patch Management Services			Lumpsum	1					
F4		Hardware Maintenance & Upgradation			Lumpsum	1					
F5		Database Addition / Deletion New Station/Bay/Feeder/Equipment			Lumpsum	1					
		Total of F									
G		**Software Annual Maintenance Services - Additional 3 years support after completion of 7 Years (2 years standard warranty and additional 5 years support)**									
G1	Warranty	Software Maintenance, Upgradation and Patch Management and any Software subscription of all software supplied under this project, including sub-vendor products Services			Lumpsum	1					
		Total of G									
		GRAND TOTAL (E+F+G)									
H		**Training**									
H1		**OMS System**									
H1.1	Training	On-site Training		As per BOM 1, 2	man-days	100					
H1.2		Bidder's Work Place			man-days	200					

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
		Total of H									
		Total OMS Project Cost									
		Total OMS Project Cost excluding Item F & G									

1	2	3	4	5	6	7	8	9	10
Sl. No.	MCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	MCC	SCADA System Hardware							
A.1	MCC	SCADA Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
A.2	MCC	FEP (Front End Processor) - (Main & Standby) with REDHAT LINUX / WINDOW OS	Sets	2					
A.3	MCC	Purchaser's Specific Application Servers (Power System Analysis Tools) (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
A.4	MCC	Time Series Historian Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
A.5	MCC	Report Server with REDHAT LINUX / WINDOW OS	Set	1					
A.6	MCC	On-Line Backup Server (Main & Standby) with pool of storage media with REDHAT LINUX / WINDOW OS	Set	1					
A.7	MCC	Operator Work-Station w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVS and Rack Mountable) with WINDOW OS	Sets	38					
A.8	MCC	Web Server (Main & Standby) with WINDOW OS	Set	1					
A.9	MCC	Interface Server (Main & Standby) for Third Party and Other System Integration on Secured ICCP/OPC/ODBC/Web Services etc. with WINDOW OS	Set	1					
A.10	MCC	Centralized Time Synchronization System (Main & Standby) including GPS Receiver with Time, Date & Frequency Display Unit	Set	1					
A.11	MCC	Printer, Scanner, Copy - Colour for A3 & A4 Size	Set	1					
A.12	MCC	Printer, Scanner, Copy - B/W for A3 & A4 Size	Set	1					
A.13	MCC	Industrial Grade Server Panels (42U)	Lot	1					
A.14	MCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1					
A.15	MCC	External Tape Drive for each Server rack as per database size	Lot	1					
A.16	MCC	Tapes for Server (Pack of 10)	Nos.	4					
A.17	MCC	LTO-9 OR better Tape Drive with Auto Loader	Sets	2					
A.18	MCC	Storage NAS BOX (10 TB or higher)	Sets	2					

1	2	3	4	5	6	7	8	9	10
Sl. No.	MCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A.19	MCC	SMS and E-mail Gateway - GSM/GPRS Modem with all Accessories	No.	1					
A.20	MCC	All other accessories to meet all the functional requirement (e.g. Cables, Connectors etc.)	Lot	1					
A.21	MCC	Alarm Hooter with Controller for all Operator workstations	Nos.	38					
A.22	MCC	Interface for Video streaming and integration with SCADA Application	Set	1					
A.23	MCC	Integrated Fault Analysis & IED Management System (Main & Standby)	Set	1					
A.24	MCC	Centralized Bio-Metric System for User Authentication	Set	1					
A.25	MCC	Finger Print Identification System	Sets	38					
A.26	MCC	Large Video Wall System (12X2 Matrix) with redundant Controller and other accessories	Set	1					
A.27	MCC	UPS System with Battery in Parallel Redundant Mode (40 KVA) with all accessories with Minimum 4 Hours Backup	Set	1					
A.28	MCC	48 V DC System, Battery, Battery Charger in Redundant Mode with all accessories	Set	1					
A.29	MCC	ACDB & DCDB	Lot	1					
		Total of A							
B	MCC	**DMS & OMS System Hardware (at MCC)**							
B.1	MCC	Distribution Management System (DMS) Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
		Sub-Total of B.1							
B.2	MCC	Outage Management System (Main & Standby) (TCM, WFM, FFM) Server	Set	1					
		Sub-Total of B.2							
		Total of B (B.1+B.2)							
C	MCC	**SCADA System Software with Licenses**							
C.1	MCC	SCADA Servers (Main & Standby) for 10,00,000 Physical I/Os	Lumpsum	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	MCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
C.2	MCC	FEP Servers (Main & Standby) for 5,00,000 Physical I/Os	Lumpsum	1					
C.3	MCC	FEP Servers (Main & Standby) for 5,00,000 Physical I/Os	Lumpsum	1					
C.4	MCC	Purchaser's Specific Application (Power System Analysis Tools)	Lumpsum	1					
C.5	MCC	Time Series HIS with Enterprise Edition with 50 Named Concurrent User	Lumpsum	1					
C.6	MCC	Report Generation and Analytics utility	Lumpsum	1					
C.7	MCC	On-Line Backup Software	Lumpsum	1					
C.8	MCC	Operator Work-Stations Software	Lumpsum	1					
C.9	MCC	Web Server with unlimited client license	Lumpsum	1					
C.10	MCC	**Protocols :** IEC 60870-5-101, IEC 60870-5-104, IEC 61850, MODBUS (TCP/IP) IEC 61970, IEC61968 IEEE C37.118.1a-2014 (IEEE 60255-118-1-2018) Secured ICCP, OPC-UA & DA, ODBC, SQL, DDE & XML Open ADR, MQTT, NB-IoT, LORA SFTP/FTPS, HTTPS, XMPP, SOAP, REST	Lumpsum	1					
C.11	MCC	Interface tools, software, sockets for third Party and other system as per Specification (e.g. Protocols - Secured ICCP, OPC, ODBC, CIM licenses & System - SAP, GIS, Enterprise Historian (Server & Client as applicable)	Lumpsum	1					
C.12	MCC	Centralized Time Synchronization Utility (Main & Standby) including GPS Software - SNTP, Pulse, IRIG-B	Lumpsum	1					
C.13	MCC	Interface tools, software, sockets for Video Management System (Server & Client as applicable)	Lumpsum	1					
C.14	MCC	SMS and Email Utility Software	Lumpsum	1					
C.15	MCC	Integrated Fault Analysis & IED Management System Software	Lumpsum	1					
C.16	MCC	Large Video Wall System Software	Lumpsum	1					
C.17	MCC	Microsoft Office License (Enterprise)	Lumpsum	1					
C.18	MCC	Multi-site operations License (Enterprise)	Lumpsum	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	MCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
C.19	MCC	C++ and FORTRAN Compiler and Development Tools	Lumpsum	1					
C.20	MCC	Windows Server Enterprise License	Lumpsum	1					
C.21	MCC	Red Hat Enterprise LINUX License	Lumpsum	1					
C.22	MCC	Microsoft Windows 64 Bit License (Enterprise)	Lumpsum	1					
C.23	MCC	Data Explorer (Server and Client) (Enterprise)	Lumpsum	1					
C.24	MCC	Software Utility for Printer, Scanner, Copier etc.	Lumpsum	1					
		Total of C							
D	MCC	DMS System Software with Licenses							
D.1	MCC	Distribution Management System (DMS)							
D.1.1	MCC	Network Model	Lumpsum	1					
D.1.2	MCC	Network Connectivity Analysis	Lumpsum	1					
D.1.3	MCC	Dynamic Network Coloring	Lumpsum	1					
D.1.4	MCC	Real-Time Network Analysis	Lumpsum	1					
a	MCC	Real-Time Network Analysis Function Execution	Lumpsum	1					
b	MCC	Real-Time Network Model Builder	Lumpsum	1					
c	MCC	Parameter Adaptation	Lumpsum	1					
d	MCC	State Estimator	Lumpsum	1					
e	MCC	Power Flow Studies	Lumpsum	1					
f	MCC	Contingency Analysis	Lumpsum	1					
g	MCC	Security Constrained Dispatch	Lumpsum	1					
h	MCC	Voltage Var Control	Lumpsum	1					
D.1.5	MCC	Load Shedding	Lumpsum	1					
D.1.6	MCC	Switch Order Management	Lumpsum	1					
D.1.7	MCC	Fault Location, Isolation & Restoration	Lumpsum	1					
D.1.8	MCC	Optimal Feeder Reconfiguration	Lumpsum	1					
D.1.9	MCC	Distribution Power Flow (DPF)	Lumpsum	1					
D.1.10	MCC	Quality of Service Indices	Lumpsum	1					
		Total of D							

1	2	3	4	5	6	7	8	9	10
Sl. No.	MCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
E	MCC	**OMS System Software with Licenses**							
E.1	MCC	Outage Management System (Main & Standby) (TCM, WFM, FFM)	Lumpsum	1					
E.1.1	MCC	Outage Management, Trouble Call Management	Lumpsum	1					
E.1.2	MCC	Crew Management, Field Scheduling and Dispatch	Lumpsum	1					
E.1.3	MCC	Outage Analysis & Prediction	Lumpsum	1					
E.1.4	MCC	Web Portal for Outage Management	Lumpsum	1					
E.1.5	MCC	Mobile Crew Management Client	Lumpsum	1					
E.1.6	MCC	Interactive Voice Response	Lumpsum	1					
		Total of E							
		Total of F (D+E)							
G	MCC	**Services**							
G.1	MCC	Engineering, Installation, Commissioning & Testing -SCADA & other Systems	Lumpsum	1					
		Sub-Total of G.1							
G.2	MCC	Engineering, Installation, Commissioning & Testing - DMS	Lumpsum	1					
		Sub-Total of G.2							
G.3	MCC	Engineering, Installation, Commissioning & Testing - OMS	Lumpsum	1					
		Sub-Total of G.3							
		Total of G (G.1+G.2+G.3)							
		Grand Total (A+B+C+F+G)							

		Grand Total of SCADA System (A + C + G.1)							
		Grand Total of SCADA + DMS System (A + B+ C + D + G.1 + G.2)							
		Grand Total of SCADA + DMS + OMS System (A + B + C + D + E + G.1 + G.2 + G.3)							

1	2	3	4	5	6	7	8	9	10
Sl. No.	BCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	BCC	**SCADA System Hardware**							
A.1	BCC	SCADA Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
A.2	BCC	FEP (Front End Processor) - (Main & Standby) with REDHAT LINUX / WINDOW OS	Sets	2					
A.3	BCC	Purchaser's Specific Application Servers (Power System Analysis Tools) (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
A.4	BCC	Time Series Historian Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
A.5	BCC	Report Server with REDHAT LINUX / WINDOW OS	Set	1					
A.6	BCC	On-Line Backup Server (Main & Standby) with pool of storage media with REDHAT LINUX / WINDOW OS	Set	1					
A.7	BCC	Operator Work-Station w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVS and Rack Mountable) with WINDOW OS	Sets	38					
A.8	BCC	Web Server (Main & Standby) with WINDOW OS	Set	1					
A.9	BCC	Interface Server (Main & Standby) for Third Party and Other System Integration on Secured ICCP/OPC/ODBC/Web Services etc. with WINDOW OS	Set	1					
A.10	BCC	Centralized Time Synchronization System (Main & Standby) including GPS Receiver with Time, Date & Frequency Display Unit	Set	1					
A.11	BCC	Printer, Scanner, Copy - Colour for A3 & A4 Size	Set	1					
A.12	BCC	Printer, Scanner, Copy - B/W for A3 & A4 Size	Set	1					
A.13	BCC	Industrial Grade Server Panels (42U)	Lot	1					
A.14	BCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1					
A.15	BCC	External Tape Drive for each Server rack as per database size	Lot	1					
A.16	BCC	Tapes for Server (Pack of 10)	Nos.	4					
A.17	BCC	LTO-9 OR better Tape Drive with Auto Loader	Sets	2					
A.18	BCC	Storage NAS BOX (10 TB or higher)	Sets	2					

1	2	3	4	5	6	7	8	9	10
Sl. No.	BCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A.19	BCC	SMS and E-mail Gateway - GSM/GPRS Modem with all Accessories	No.	1					
A.20	BCC	All other accessories to meet all the functional requirement (e.g. Cables, Connectors etc.)	Lot	1					
A.21	BCC	Alarm Hooter with Controller for all Operator workstations	Nos.	38					
A.22	BCC	Interface for Video streaming and integration with SCADA Application	Set	1					
A.23	BCC	Integrated Fault Analysis & IED Management System (Main & Standby)	Set	1					
A.24	BCC	Centralized Bio-Metric System for User Authentication	Set	1					
A.25	BCC	Finger Print Identification System	Sets	38					
A.26	BCC	Large Video Wall System (12X2 Matrix) with redundant Controller and other accessories	Set	1					
A.27	BCC	UPS System with Battery in Parallel Redundant Mode (40 KVA) with all accessories with Minimum 4 Hours Backup	Set	1					
A.28	BCC	48 V DC System, Battery, Battery Charger in Redundant Mode with all accessories	Set	1					
A.29	BCC	ACDB & DCDB	Lot	1					
		Total of A							
B	BCC	**DMS & OMS System Hardware (at BCC)**							
B.1	BCC	Distribution Management System (DMS) Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
		Sub-Total of B.1							
B.2	BCC	Outage Management System (Main & Standby) (TCM, WFM, FFM) Server	Set	1					
		Sub-Total of B.2							
		Total of B (B.1+B.2)							
C	BCC	**SCADA System Software with Licenses**							
C.1	BCC	SCADA Servers (Main & Standby) for 10,00,000 Physical I/Os	Lumpsum	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	BCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
C.2	BCC	FEP Servers (Main & Standby) for 5,00,000 Physical I/Os	Lumpsum	1					
C.3	BCC	FEP Servers (Main & Standby) for 5,00,000 Physical I/Os	Lumpsum	1					
C.4	BCC	Purchaser's Specific Application (Power System Analysis Tools)	Lumpsum	1					
C.5	BCC	Time Series HIS with Enterprise Edition with 50 Named Concurrent User	Lumpsum	1					
C.6	BCC	Report Generation and Analytics utility	Lumpsum	1					
C.7	BCC	On-Line Backup Software	Lumpsum	1					
C.8	BCC	Operator Work-Stations Software	Lumpsum	1					
C.9	BCC	Web Server with unlimited client license	Lumpsum	1					
C.10	BCC	**Protocols :** IEC 60870-5-101, IEC 60870-5-104, IEC 61850, MODBUS (TCP/IP) IEC 61970, IEC61968 IEEE C37.118.1a-2014 (IEEE 60255-118-1-2018) Secured ICCP, OPC-UA & DA, ODBC, SQL, DDE & XML Open ADR, MQTT, NB-IoT, LORA SFTP/FTPS, HTTPS, XMPP, SOAP, REST	Lumpsum	1					
C.11	BCC	Interface tools, software, sockets for third Party and other system as per Specification (e.g. Protocols - Secured ICCP, OPC, ODBC, CIM licenses & System - SAP, GIS, Enterprise Historian (Server & Client as applicable)	Lumpsum	1					
C.12	BCC	Centralized Time Synchronization Utility (Main & Standby) including GPS Software - SNTP, Pulse, IRIG-B	Lumpsum	1					
C.13	BCC	Interface tools, software, sockets for Video Management System (Server & Client as applicable)	Lumpsum	1					
C.14	BCC	SMS and Email Utility Software	Lumpsum	1					
C.15	BCC	Integrated Fault Analysis & IED Management System Software	Lumpsum	1					
C.16	BCC	Large Video Wall System Software	Lumpsum	1					
C.17	BCC	Microsoft Office License (Enterprise)	Lumpsum	1					
C.18	BCC	Multi-site operations License (Enterprise)	Lumpsum	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	BCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
C.19	BCC	C++ and FORTRAN Compiler and Development Tools	Lumpsum	1					
C.20	BCC	Windows Server Enterprise License	Lumpsum	1					
C.21	BCC	Red Hat Enterprise LINUX License	Lumpsum	1					
C.22	BCC	Microsoft Windows 64 Bit License (Enterprise)	Lumpsum	1					
C.23	BCC	Data Explorer (Server and Client) (Enterprise)	Lumpsum	1					
C.24	BCC	Software Utility for Printer, Scanner, Copier etc.	Lumpsum	1					
		Total of C							
D	BCC	**DMS System Software with Licenses**							
D.1	BCC	Distribution Management System (DMS)							
D.1.1	BCC	Network Model	Lumpsum	1					
D.1.2	BCC	Network Connectivity Analysis	Lumpsum	1					
D.1.3	BCC	Dynamic Network Coloring	Lumpsum	1					
D.1.4	BCC	Real-Time Network Analysis	Lumpsum	1					
a	BCC	Real-Time Network Analysis Function Execution	Lumpsum	1					
b	BCC	Real-Time Network Model Builder	Lumpsum	1					
c	BCC	Parameter Adaptation	Lumpsum	1					
d	BCC	State Estimator	Lumpsum	1					
e	BCC	Power Flow Studies	Lumpsum	1					
f	BCC	Contingency Analysis	Lumpsum	1					
g	BCC	Security Constrained Dispatch	Lumpsum	1					
h	BCC	Voltage Var Control	Lumpsum	1					
D.1.5	BCC	Load Shedding	Lumpsum	1					
D.1.6	BCC	Switch Order Management	Lumpsum	1					
D.1.7	BCC	Fault Location, Isolation & Restoration	Lumpsum	1					
D.1.8	BCC	Optimal Feeder Reconfiguration	Lumpsum	1					
D.1.9	BCC	Distribution Power Flow (DPF)	Lumpsum	1					
D.1.10	BCC	Quality of Service Indices	Lumpsum	1					
		Total of D							

1	2	3	4	5	6	7	8	9	10
Sl. No.	BCC	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
E	BCC	**OMS System Software with Licenses**							
E.1	BCC	Outage Management System (Main & Standby) (TCM, WFM, FFM)	Lumpsum	1					
E.1.1	BCC	Outage Management, Trouble Call Management	Lumpsum	1					
E.1.2	BCC	Crew Management, Field Scheduling and Dispatch	Lumpsum	1					
E.1.3	BCC	Outage Analysis & Prediction	Lumpsum	1					
E.1.4	BCC	Web Portal for Outage Management	Lumpsum	1					
E.1.5	BCC	Mobile Crew Management Client	Lumpsum	1					
E.1.6	BCC	Interactive Voice Response	Lumpsum	1					
Total of E									
Total of F (D+E)									
G	BCC	**Services**							
G.1	BCC	Engineering, Installation, Commissioning & Testing -SCADA & other Systems	Lumpsum	1					
Sub-Total of G.1									
G.2	BCC	Engineering, Installation, Commissioning & Testing - DMS	Lumpsum	1					
Sub-Total of G.2									
G.3	BCC	Engineering, Installation, Commissioning & Testing - OMS	Lumpsum	1					
Sub-Total of G.3									
Total of G (G.1+G.2+G.3)									
Grand Total (A+B+C+F+G)									

Grand Total of SCADA System (A + C + G.1)									
Grand Total of SCADA + DMS System (A + B+ C + D + G.1 + G.2)									
Grand Total of SCADA + DMS + OMS System (A + B + C + D + E + G.1 + G.2 + G.3)									

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC /BCC / Substation	Description	UOM	MCC	BCC	Total Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	MCC/BCC	**System Hardware (PDS & QAS)**									
A.1	MCC/BCC	Programming & Development Server (PDS) with REDHAT LINUX / WINDOW OS	Set	2	2	4					
A.2	MCC/BCC	Quality Assurance Server (QAS) with REDHAT LINUX / WINDOW OS	Set	2	2	4					
A.3	MCC/BCC	Engineering Work-Station w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVW and Rack Mountable) with WINDOW OS	Set	4	4	8					
A.4	MCC/BCC	Printer, Scanner, Copy - Colour for A3 & A4 Size	Nos.	1	1	2					
A.5	MCC/BCC	Printer, Scanner, Copy - B/W for A3 & A4 Size		1	1	2					
A.6	MCC/BCC	SMS and E-mail Gateway - GSM/GPRS Modem with all Accessories	Nos.	1	1	2					
A.7	MCC/BCC	Industrial Grade Server Panels (42U)	Lot	1	1	2					
A.8	MCC/BCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1	1	2					
A.9	MCC/BCC	External Tape Drive for each Server rack as per database size	Lot	1	1	2					
A.10	MCC/BCC	Tapes for Servers (Pack of 10)	Nos.	4	4	8					
A.11	MCC/BCC	All other accessories to meet all the functional requirement (e.g. Cables, Connectors etc.)	Lot	1	1	2					
A.12	MCC/BCC	Alarm Hooter with Controller for all Operator workstations	Lot	0	0	0					
A.13	MCC/BCC	Finger Print Identification System - Bio Metric User Authentication	Lot	4	4	8					
		Total of A									
B	MCC/BCC	**System Software with Licenses**									
B.1	MCC/BCC	Programming & Development tools for database engineering, configuration & performance monitoring - All required functional Applications	Lumpsum	1	1	2					
B.2	MCC/BCC	Developmental Utility for Application Server, DMS, Power System Analysis Tools, Report Generation and Analytics, Web Application, VMS and Interface Tools	Lumpsum	1	1	2					
B.3	MCC/BCC	Developmental Utility for OMS Applications	Lumpsum	1	1	2					
B.4	MCC/BCC	Programming & Development tools for database engineering, display development, configuration & testing - DTS	Lumpsum	1	1	2					
B.5	MCC/BCC	Engineering Work-Stations Software License	Lumpsum	1	1	2					
B.6	MCC/BCC	Windows Server Standard/Enterprise License	Lumpsum	1	1	2					
B.7	MCC/BCC	Red Hat Enterprise LINUX License	Lumpsum	1	1	2					
B.8	MCC/BCC	Microsoft Windows 64 Bit License	Lumpsum	1	1	2					
B.9	MCC/BCC	Software Utility for Printer, Scanner, Copier etc.	Lumpsum	1	1	2					
B.10	MCC/BCC	Microsoft Office License	Lot	1	1	2					

Sl. No.	MCC /BCC / Substation	Description	UOM	MCC	BCC	Total Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
		Total of B									
C	MCC/BCC	**Services**									
C1	MCC/BCC	**Services - PDS & QAS, SCADA, DMS, Other Application and third Party interfaces**									
C1.1	MCC/BCC	Engineering, Installation, Commissioning & Testing	Lumpsum	1	1	2					
C1.2	MCC/BCC	Services for SCADA System Configuration	Lumpsum	1	1	2					
C1.3	MCC/BCC	Services for DMS Applications	Lumpsum	1	1	2					
C1.4	MCC/BCC	Services for OMS Applications	Lumpsum	1	1	2					
C1.5	MCC/BCC	Services for Implementation of Purchaser's Specific Applications	Lumpsum	1	1	2					
C1.6	MCC/BCC	Services for Third Party and Other System Integration	Lumpsum	1	1	2					
		Sub - Total of C1									
C2	Substations	**Services - For modification in existing systems (e.g. Gateway, RTUs, FRTUs etc.)**									
C2.1	Substations	Services of ABB for modification in the Gateway/RTU/FRTUs	Lumpsum	1	1	2					
C2.2	Substations	Services of Siemens for modification in the Gateway/RTU/FRTUs	Lumpsum	1	1	2					
C2.3	Substations	Services of GE (T&D) for modification in the Gateway/RTU/FRTUs	Lumpsum	1	1	2					
C2.4	Substations	Services of Schneider for modification in the Gateway/RTU/FRTUs	Lumpsum	1	1	2					
		Sub-Total of C2									
		Total of C (C1+C2)									
		Grand Total (A+B+C)									

1	2	3	4	5	6	7	8	9	10
Sl. No.	MCC (Standalone)	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	MCC	**System Hardware (for DTS)**							
A.1	MCC	DTS Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Set	1					
A.2	MCC	Operator Work-Station (at Training Room) w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVW and Rack Mountable) for Trainee with Windows OS	Sets	3					
A.3	MCC	Operator Work-Station (at Training Room) w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVW and Rack Mountable) for Instructor with Windows OS	Sets	2					
A.4	MCC	Printer, Scanner, Copy - B/W for A3 & A4 Size	No.	1					
A.5	MCC	Industrial Grade Server Panels (42U)	Lot	1					
A.6	MCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1					
A.7	MCC	External Tape Drive for each Server rack as per database size	Lot	1					
A.8	MCC	Tapes for Servers (Pack of 10)	Sets	2					
A.9	MCC	All other accessories to meet all the functional requirement (e.g. Cables, Connectors etc.)	Lumpsum	1					
A.10	MCC	Alarm Hooter with Controller for all Operator workstations	Sets	5					
A.11	MCC	Finger Print Identification System - Bio Metric User Authentication	Sets	5					
		Total of A							
B	MCC	**System Software with Licenses**							
B.1	MCC	Operator Training Simulation Software License	Lumpsum	1					
B.2	MCC	SCADA, DMS Applications Software License	Lumpsum	1					
B.3	MCC	Power System Analysis Tools, Report Generation and Analytics	Lumpsum	1					
B.4	MCC	Programming & Development tools for database engineering, display development, configuration & testing	Lumpsum	1					
B.5	MCC	Other Software Licenses to meet the functional requirement	Lumpsum	1					
B.6	MCC	RTU/Gateway Simulation Software	Lumpsum	1					
B.7	MCC	Relational Database Software in line with Main System	Lumpsum	1					
B.8	MCC	Operator Work-Stations (Trainee, Instructor workstation)	Lumpsum	1					
B.9	MCC	Microsoft Office License	Lumpsum	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	MCC (Standalone)	Description	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
B.10	MCC	Windows Server Standard License	Lumpsum	1					
B.11	MCC	Red Hat Enterprise LINUX License	Lumpsum	1					
B.12	MCC	Microsoft Windows 64 Bit License	Lumpsum	1					
		Total of B							
C	MCC	**Services**							
C.1	MCC	Engineering, Installation, Commissioning & Testing	Lumpsum	1					
		Total of C							
		Grand Total (A+B+C)							
D	MCC	**System Software with Licenses**							
D.1	MCC	OMS Applications Software License	Lumpsum	1					
		Total of D							
E	MCC	**Services**							
E.1	MCC	Engineering, Installation, Commissioning & Testing - OMS	Lumpsum	1					
		Total of E							
		Grand Total (D+E)							

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	UOM	MCC	BCC	Total Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	MCC/BCC	**System Hardware (at MCC & BCC)**									
A.1	MCC/BCC	Active Directory Server with REDHAT LINUX / WINDOW OS	Set	2	2	4					
A.2	MCC/BCC	Communication Network Management Server with REDHAT LINUX/WINDOW OS	Set	2	2	4					
A.3	MCC/BCC	Antivirus, Patch Management and Security Server with REDHAT LINUX/WINDOW OS	Set	1	1	2					
A.4	MCC/BCC	Jump Host Server (Main & Standby) with REDHAT LINUX / UNIX / WINDOW OS	Sets	2	2	4					
A.5	MCC/BCC	RSA Security Appliance (AAA)	Set	1	1	2					
A.6	MCC/BCC	IPS and IDS Server at Control Centre	Set	1	1	2					
A.7	MCC/BCC	High Availability Firewalls required for Network Segmentation (Each proposed network shall be isolated through Firewall)	Set	2	2	4					
A.8	MCC/BCC	Work-Station w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVW) with WINDOW OS	Set	2	1	3					
A.9	MCC/BCC	WAN Router and Accessories	Set	1	1	2					
A.10	MCC/BCC	SMS and E-mail Gateway - GSM/GPRS Modem with all Accessories	Nos.	2	0	2					
A.11	MCC/BCC	Industrial Grade Communication and Networking Equipment cabinet/RACK (42U)	Nos.	1	1	2					
A.12	MCC/BCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Set	1	1	2					
A.13	MCC/BCC	Finger Print Identification System	Lot	2	1	3					
		Total of A									
B	MCC/BCC	**System Software with Licenses (at MCC & BCC)**									
B.1	MCC/BCC	Communication Network Management Tool (Enterprise License) - For L2, L3 and MPLS network	Lumpsum	1	1	2					
B.2	MCC/BCC	Network Security Management Software	Lumpsum	1	1	2					
B.3	MCC/BCC	Event and Log Management Software	Lumpsum	1	1	2					
B.4	MCC/BCC	File Integrity / Change Auditing Licensing and support	Lumpsum	1	1	2					
B.5	MCC/BCC	Automated Asset Management tool	Lumpsum	1	1	2					
B.6	MCC/BCC	IPS and IDS Software	Lumpsum	1	1	2					
B.7	MCC/BCC	High Availability Firewalls Software	Lumpsum	1	1	2					

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	MCC / BCC	Description	UOM	MCC	BCC	Total Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
B.8	MCC/BCC	High Availability Firewalls required for Network Segmentation Software	Lumpsum	1	1	2					
B.9	MCC/BCC	Operator Work-Stations Software License	Lumpsum	1	1	2					
B.10	MCC/BCC	Windows Server Standard License	Lumpsum	1	1	2					
B.11	MCC/BCC	Red Hat Enterprise LINUX License	Lumpsum	1	1	2					
B.12	MCC/BCC	Microsoft Windows 64 Bit License	Lumpsum	1	1	2					
B.13	MCC/BCC	Active directory - Identity Management Software	Lumpsum	1	1	2					
B.14	MCC/BCC	RSA Security appliance - SecurID	Lumpsum	1	1	2					
B.15	MCC/BCC	RSA Token authenticator	Lumpsum	1	1	2					
B.16	MCC/BCC	Security Profiler	Lumpsum	1	1	2					
		Total of B									
C	MCC/BCC	**Services (at MCC & BCC)**									
C.1	MCC/BCC	Engineering, Installation, Commissioning & Testing	Lumpsum	1	1	2					
C.2	MCC/BCC	Cyber Security Assessment (As defined in Specification Section - B, chapter 12)	Lumpsum	1	1	2					
		Total of C									
		Grand Total (A+B+C)									
D	MCC/BCC	**Optional - Service (at MCC & BCC)**									
D.1	MCC/BCC	Incident Response Service	Lumpsum	1	0	1					
		Sub-Total of D									
		Grand Total (A+B+C+D)									

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Sl. No.	MCC / BCC	Description	UOM	Qty						Total Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
				MCC	BCC	PDS & QAS	DTS	IFA & IMS, Communication Network Management System	Cyber Security Management System			Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	MCC/BCC	Communication and Networking Equipment - with complete Hardware & Software License													
A.1	MCC/BCC	Layer 3 Stacked Gigabit Ethernet Switch (48 Ports) for SERVER LAN-B (DUAL LAN FOR EACH)	Sets	1	1	0	0	0	0	2					
A.2	MCC/BCC	Layer 3 Gigabit Ethernet Switch (48 Ports) for DMZ LAN (DUAL LAN FOR EACH)	Sets	1	1	0	0	0	0	2					
A.3	MCC/BCC	Layer 3 Gigabit Ethernet Switch (24 Ports) for FEP, DTS, PDS & QAS - LAN A, C, D & E (DUAL LAN FOR EACH)	Sets	1	1	1	1	1	0	5					
A.4	MCC/BCC	Industrial Grade Fibre Optic Transceiver, Power Supply converters, Fibre Optic and UTP Cable (Armored & Unarmored, LIUs, I/O boxes, patch panel, Patch cords (FO & UTP), Connectors, HDPE Conduits and other accessories	Lot	1	1	1	1	1	1	6					
A.5	MCC/BCC	GSM/GPRS Modem and Accessories	Nos.	2	2	2	0	0	2	8					
A.6	MCC/BCC	Industrial Grade Communication and Networking Equipment cabinet/RACK (42U)	Lot	2	2	0	0	0	0	4					
A.7	MCC/BCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1	1	0	0	0	0	2					
A.8	MCC/BCC	Armoured CAT6 cable	Lot	1	1	1	1	1	1	6					
A.9	MCC/BCC	Unarmoured CAT6 UTP Cable	Lot	1	1	1	1	1	1	6					
A.10	MCC/BCC	4C X 6 mm2 armoured cable for power supply	Lot	1	1	1	1	1	1	6					
A.11	MCC/BCC	Structure Cabling with Accessories for all LAN Network	Lot	1	1	1	1	1	1	6					
		Total of A													
B	MCC/BCC	**Services**													
B.1	MCC/BCC	Engineering, Installation, Commissioning & Testing	Lumpsum	1	1	1	1	1	1	6					
B.2	MCC/BCC	Integration with Other Systems	Lumpsum	1	1	1	1	1	1	6					
		Total of B													
		Grand Total (A+B)													

Note: 1 Set of Switch = minimum 2 Nos. of Switches for Dual LAN

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	NCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A		**SCADA & Other Systems**									
A1	NCC	SCADA & Other Application System Hardware inclusive of Servers, HMIs, Printers, networking accessories, Development Systems, Panels, GPS Clock etc.	A	BOM NCC	Lot	1					
A2		SCADA & Other System Applications and Interface Software Licenses with OS	C		Lot	1					
A3		SCADA & Other Application System Engineering, Installation, Commissioning & Testing Services	F.1		Lumpsum	1					
		Total of A									
B		**Distribution Management System**									
B1	NCC	DMS System Hardware inclusive of Servers, HMIs, Panels, all interfaces and networking accessories etc.	B.1	BOM NCC	Lot	1					
B2		DMS & Other System Applications and Interface Software Licenses with OS	D		Lot	1					
B3		DMS System Engineering, Installation, Commissioning & Testing Services	F.2		Lumpsum	1					
		Total of B									
C		**Outage Management System**									
C1	NCC	OMS System Hardware inclusive of Servers, HMIs, Panels, all interfaces and networking accessories etc.	B.2	BOM NCC	Lot	1					
C2		OMS & Other System Applications and Interface Software Licenses with OS	E		Lot	1					
C3		OMS System Engineering, Installation, Commissioning & Testing Services	F.3		Lumpsum	1					
		Total of C									
D		**Program Development & Quality Assurance System**									
D1	NCC	PDS & QAS System Hardware inclusive of Servers, HMIs, Panels, Development Systems, all interfaces and networking accessories etc.	G	BOM NCC	Lot	1					
D2		PDS & QAS System Applications and Interface Software Licenses with OS	H		Lot	1					
D3		PDS & QAS System Engineering, Installation, Commissioning & Testing Services	I.1		Lumpsum	1					

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	NCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
D4		Services for SCADA System Configuration (Bidder to include all services except item E.5 to E.7)	I.2		Lumpsum	1					
D5		Services for DMS Applications	I.3		Lumpsum	1					
D6		Services for OMS Applications	I.6		Lumpsum	1					
D7		Services for Third Party and Other System Integration	I.5		Lumpsum	1					
D8		Services for Implementation of Purchaser's Specific Applications	I.4		Lumpsum	1					
		Total of D									
E	NCC	**Cyber Security Management System**		BOM NCC							
E1		Cyber Security Management System Hardware inclusive of Servers, HMIs, Panels, development Systems, all interfaces and networking accessories etc.	J		Lot	1					
E2		Cyber Security Management System Applications, Simulation Tools and Interface Software Licenses with OS	K		Lot	1					
E3		Cyber Security Management System Engineering, Installation, Commissioning & Testing Services	L		Lumpsum	1					
		Total of E									
F	Comm Networking Accessories	**Communication & Other Networking Accessories**		BOM_COMMAND ACCESSORIES_NCC							
F1		Communication and Networking Equipment - with complete Hardware & Software License	A		Lot	1					
F2		Engineering, Installation, Commissioning & Testing	B		Lumpsum	1					
F3		Integration with Other Systems			Lumpsum	1					
		Total of F									
		GRAND TOTAL (A+B+C+D+E+F)									
G	Warranty	**System Hardware, Software Maintenance, upgradation & Patch Management Services - during the Standard Warranty period i.e. 2 years from the date of system handover after SAT & resolution of all punch point of SAT**									
G1		Resident Engineer Support - For all the system including Sub-Vendor Equipment			Lumpsum	1					
G2		Software Maintenance, Upgradation and Patch Management Services			Lumpsum	1					
G3		Hardware Maintenance & Upgradation			Lumpsum	1					

1	2	3	4	5	6	7	8	9	10	11	12
Sl. No.	NCC	Description	Item	Reference	UOM	Qty	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
								Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
G4		Database Addition / Deletion New Station / Bay / Feeder / Equipment			Lumpsum	1					
		Total of G									
H	Warranty	**Hardware, Software Maintenance, upgradation and Patch Management Services - Additional 5 years support after completion of standard warranty period of 2 years**									
H1		Hardware, Software Maintenance, upgradation and Patch Management Services, includes the following:			Lumpsum	1					
H2		Resident Engineer Support - For all the system including sub-vendor equipment			Lumpsum	1					
H3		Software Maintenance, Upgradation and Patch Management Services			Lumpsum	1					
H4		Hardware Maintenance & Upgradation			Lumpsum	1					
H5		Database Addition / Deletion New Station/Bay/Feeder/Equipment			Lumpsum	1					
		Total of H									
I	Warranty	**Software Annual Maintenance Services - Additional 3 years support after completion of 7 Years (2 years standard warranty and additional 5 years support)**									
I1		Software Maintenance, Upgradation and Patch Management and any Software subscription of all software supplied under this project, including sub-vendor products Services			Lumpsum	1					
		Total of I									
		GRAND TOTAL (G+H+I)									
		Total SCADA & DMS (A+B+F+G) Project Cost - NCC									
		Total SCADA, DMS & OMS (A+B+C+F+G) Project Cost - NCC									
		Total PDS & QAS - NCC									
		Total Cyber Security Management System - NCC									
		Total Project Cost (SCADA, DMS, OMS, PDS&QAS, CSMS) - NCC									
		Total Project Cost (SCADA, DMS, OMS, PDS&QAS, CSMS) including Item H & I - NCC									

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	NCC	**SCADA System Hardware (at NCC)**							
A.1	NCC	SCADA Server (Main & Standby) with REDHAT LINUX/WINDOW OS	Sets	1					
A.2	NCC	FEP (Front End Processor) - (Main & Standby) with REDHAT LINUX / WINDOW OS	Sets	2					
A.3	NCC	Purchaser's Specific Application Servers (Power System Analysis Tools) (Main & Standby) with REDHAT LINUX / WINDOW OS	Sets	0					
A.4	NCC	Time Series Historian Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Sets	1					
A.5	NCC	Report Server with REDHAT LINUX / WINDOW OS	Sets	1					
A.6	NCC	On-Line Backup Server (Main & Standby) with pool of storage media with REDHAT LINUX / WINDOW OS	Sets	1					
A.7	NCC	Operator Work-Station w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVW and Rack Mountable) with WINDOW OS	Sets	10					
A.8	NCC	Web Server (Main & Standby) with WINDOW OS	Sets	1					
A.9	NCC	Interface Server (Main & Standby) for Third Party and Other System Integration on Secured ICCP/OPC/ODBC/Web Services etc. with WINDOW OS	Sets	0					
A.10	NCC	Centralized Time Synchronization System (Main & Standby) including GPS Receiver with Time, Date & Frequency Display Unit	Sets	1					
A.11	NCC	Printer, Scanner, Copy - Colour for A3 & A4 Size	Sets	1					
A.12	NCC	Printer, Scanner, Copy - B/W for A3 & A4 Size	Sets	1					
A.13	NCC	Industrial Grade Server Panels (42U)	Lot	1					
A.14	NCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1					
A.15	NCC	External Tape Drive for each Server rack as per database size	Lot	1					
A.16	NCC	Tapes for Server (Pack of 10)	Nos.	2					
A.17	NCC	LTO-9 OR better Tape Drive with Auto Loader	Sets	1					
A.18	NCC	Storage NAS BOX (10 TB or higher)	Sets	2					
A.19	NCC	SMS and E-mail Gateway - GSM/GPRS Modem with all Accessories	Nos.	1					
A.20	NCC	All other accessories to meet all the functional requirement (e.g. Cables, Connectors etc.)	Lot	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A.21	NCC	Alarm Hooter with Controller for all Operator workstations	Nos.	10					
A.22	NCC	Interface for Video streaming and integration with SCADA Application	Set	1					
A.23	NCC	Integrated Fault Analysis & IED Management System (Main & Standby)	Sets	1					
A.24	NCC	Centralized Bio-Metric System for User Authentication	Set	1					
A.25	NCC	Finger Print Identification System	Sets	10					
A.26	NCC	Large Video Wall System (3X2 Matrix) with redundant Controller and other accessories	Set	1					
A.27	NCC	UPS System with Battery in Parallel Redundant Mode (25 KVA) with all accessories with Minimum 4 Hours Backup	Set	1					
A.28	NCC	48 V DC System, Battery, Battery Charger in Redundant Mode with all accessories	Set	1					
A.29	NCC	ACDB & DCDB	Lot	1					
		Sub-Total of A							
B	NCC	**DMS System Hardware (at NCC)**							
B.1	NCC	Distribution Management System (DMS) Server (Main & Standby) with REDHAT LINUX / WINDOW OS	Sets	1					
		Sub-Total of B.1							
B.2	NCC	Outage Management System (Main & Standby) (TCM, WFM, FFM) Server	Sets	1					
		Sub-Total of B.2							
		Total of B (B.1+B.2)							
C	NCC	**SCADA System Software with Licenses**							
C.1	NCC	SCADA Servers (Main & Standby) for 3,00,000 Physical I/Os	Lumpsum	1					
C.2	NCC	FEP Servers (Main & Standby) for 1,50,000 Physical I/Os	Lumpsum	1					
C.3	NCC	FEP Servers (Main & Standby) for 1,50,000 Physical I/Os	Lumpsum	1					
C.4	NCC	Purchaser's Specific Application (Power System Analysis Tools)	Lumpsum	0					
C.5	NCC	Time Series HIS with Enterprise Edition with 25 Named Concurrent User	Lumpsum	1					
C.6	NCC	Report Generation and Analytics utility	Lumpsum	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
C.7	NCC	On-Line Backup Software	Lumpsum	1					
C.8	NCC	Operator Work-Stations Software	Lumpsum	1					
C.9	NCC	Web Server with unlimited client license	Lumpsum	1					
C.10	NCC	**Protocols :** IEC 60870-5-101, IEC 60870-5-104, IEC 61850, MODBUS (TCP/IP) IEC 61970, IEC61968 IEEE C37.118.1a-2014 (IEEE 60255-118-1-2018) Secured ICCP, OPC-UA & DA, ODBC, SQL, DDE & XML Open ADR, MQTT, NB-IoT, LORA SFTP/FTPS, HTTPS, XMPP, SOAP, REST	Lumpsum	1					
C.11	NCC	Interface tools, software, sockets for third Party and other system as per Specification (e.g. Protocols - Secured ICCP, OPC, ODBC, CIM licenses & System - SAP, GIS, Enterprise Historian (Server & Client as applicable)	Lumpsum	0					
C.12	NCC	Centralized Time Synchronization Utility (Main & Standby) including GPS Software - SNTP, Pulse, IRIG-B	Lumpsum	1					
C.13	NCC	Interface tools, software, sockets for Video Management System (Server & Client as applicable)	Lumpsum	1					
C.14	NCC	SMS and Email Utility Software	Lumpsum	1					
C.15	NCC	Integrated Fault Analysis & IED Management System Software	Lumpsum	1					
C.16	NCC	Large Video Wall System Software	Lumpsum	1					
C.17	NCC	Microsoft Office License (Enterprise)	Lumpsum	1					
C.18	NCC	Multi-site operations License (Enterprise)	Lumpsum	1					
C.19	NCC	C++ and FORTRAN Compiler and Development Tools	Lumpsum	1					
C.20	NCC	Windows Server Enterprise License	Lumpsum	1					
C.21	NCC	Red Hat Enterprise LINUX License	Lumpsum	1					
C.22	NCC	Microsoft Windows 64 Bit License (Enterprise)	Lumpsum	1					
C.23	NCC	Data Explorer (Server and Client) (Enterprise)	Lumpsum	1					
C.24	NCC	Software Utility for Printer, Scanner, Copier etc.	Lumpsum	1					
		Total of C							
D	NCC	**DMS System Software with Licenses**							

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
D.1	NCC	Distribution Management System (DMS)							
D.1.1	NCC	Network Model	Lumpsum	1					
D.1.2	NCC	Network Connectivity Analysis	Lumpsum	1					
D.1.3	NCC	Dynamic Network Coloring	Lumpsum	1					
D.1.4	NCC	Real-Time Network Analysis	Lumpsum	1					
a	NCC	Real-Time Network Analysis Function Execution	Lumpsum	1					
b	NCC	Real-Time Network Model Builder	Lumpsum	1					
c	NCC	Parameter Adaptation	Lumpsum	1					
d	NCC	State Estimator	Lumpsum	1					
e	NCC	Power Flow Studies	Lumpsum	1					
f	NCC	Contingency Analysis	Lumpsum	1					
g	NCC	Security Constrained Dispatch	Lumpsum	1					
h	NCC	Voltage Var Control	Lumpsum	1					
D.1.5	NCC	Load Shedding	Lumpsum	1					
D.1.6	NCC	Switch Order Management	Lumpsum	1					
D.1.7	NCC	Fault Location, Isolation & Restoration	Lumpsum	1					
D.1.8	NCC	Optimal Feeder Reconfiguration	Lumpsum	1					
D.1.9	NCC	Distribution Power Flow (DPF)	Lumpsum	1					
D.1.10	NCC	Quality of Service Indices	Lumpsum	1					
		Total of D							
E	NCC	**OMS System Software with Licenses**							
E.1	NCC	Outage Management System (Main & Standby) (TCM, WFM, FFM) Server							
E.1.1	NCC	Outage Management, Trouble Call Management	Lumpsum	1					
E.1.2	NCC	Crew Management, Field Scheduling and Dispatch	Lumpsum	1					
E.1.3	NCC	Outage Analysis & Prediction	Lumpsum	1					
E.1.4	NCC	Web Portal for Outage Management	Lumpsum	1					
E.1.5	NCC	Mobile Crew Management Client	Lumpsum	1					
E.1.6	NCC	Interactive Voice Response	Lumpsum	1					
		Total of E							

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
		Total of (D+E)							
F	NCC	Services							
F.1	NCC	Engineering, Installation, Commissioning & Testing -SCADA & other Systems	Lumpsum	1					
		Sub-Total of F.1							
F.2	NCC	Engineering, Installation, Commissioning & Testing - DMS	Lumpsum	1					
		Sub-Total of F.2							
F.3	NCC	Engineering, Installation, Commissioning & Testing - OMS	Lumpsum	1					
		Sub-Total of F.3							
		Total of F (F.1+F.2+F.3)							
		Grand Total (A+B+C+D+E+F)							

		Grand Total of SCADA System (A + C + F.1)							
		Grand Total of SCADA + DMS System (A + B + C + D + F.1 + F.2)							
		Grand Total of SCADA + DMS + OMS System (A + B + C + D + E + F.1 + F.2 + F.3)							

Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
G	NCC	System Hardware (PDS & QAS)							
G.1	NCC	Programming & Development Server (PDS) with REDHAT LINUX / WINDOW OS	Set	2					
G.2	NCC	Quality Assurance Server (QAS) with REDHAT LINUX / WINDOW OS	Set	2					
G.3	NCC	Engineering Work-Station w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVW and Rack Mountable) with WINDOW OS	Set	4					
G.4	NCC	Printer, Scanner, Copy - Colour for A3 & A4 Size	Nos.	1					
G.5	NCC	Printer, Scanner, Copy - B/W for A3 & A4 Size		1					
G.6	NCC	SMS and E-mail Gateway - GSM/GPRS Modem with all Accessories	Nos.	1					
G.7	NCC	Industrial Grade Server Panels (42U)	Lot	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
G.8	NCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1					
G.9	NCC	External Tape Drive for each Server rack as per database size	Lot	1					
G.10	NCC	Tapes for Servers (Pack of 10)	Nos.	4					
G.11	NCC	All other accessories to meet all the functional requirement (e.g. Cables, Connectors etc.)	Lot	1					
G.12	NCC	Alarm Hooter with Controller for all Operator workstations	Lot	0					
G.13	NCC	Finger Print Identification System - Bio Metric User Authentication	Lot	4					
		Total of A							
H	NCC	**System Software with Licenses**							
H.1	NCC	Programming & Development tools for database engineering, configuration & performance monitoring - All required functional Applications	Lumpsum	1					
H.2	NCC	Developmental Utility for Application Server, DMS, Power System Analysis Tools, Report Generation and Analytics, Web Application, VMS and Interface Tools	Lumpsum	1					
H.3	NCC	Developmental Utility for OMS Applications	Lumpsum	1					
H.4	NCC	Programming & Development tools for database engineering, display development, configuration & testing - DTS	Lumpsum	1					
H.5	NCC	Engineering Work-Stations Software License	Lumpsum	1					
H.6	NCC	Windows Server Standard/Enterprise License	Lumpsum	1					
H.7	NCC	Red Hat Enterprise LINUX License	Lumpsum	1					
H.8	NCC	Microsoft Windows 64 Bit License	Lumpsum	1					
H.9	NCC	Software Utility for Printer, Scanner, Copier etc.	Lumpsum	1					
H.10	NCC	Microsoft Office License	Lot	1					
		Total of B							
I	NCC	**Services - PDS & QAS, SCADA, DMS, Other Application and third Party interfaces**							
I.1	NCC	Engineering, Installation, Commissioning & Testing	Lumpsum	1					
I.2	NCC	Services for SCADA System Configuration	Lumpsum	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
I.3	NCC	Services for DMS Applications	Lumpsum	1					
I.4	NCC	Services for Implementation of Purchaser's Specific Applications	Lumpsum	1					
I.5	NCC	Services for Third Party and Other System Integration	Lumpsum	1					
I.6	NCC	Services for OMS Applications	Lumpsum	1					
		Sub - Total of (I.1+I.2+I.3+I.4+I.5)							
		Sub - Total of (I.1+I.2+I.3+I.4+I.5+I.6)							
		Grand Total (G+H+I)							

Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
J	NCC	**System Hardware - CYBER SECURITY MANAGEMENT SYSTEM**							
J.1	NCC	Active Directory Server with REDHAT LINUX / WINDOW OS	Set	2					
J.2	NCC	Communication Network Management Server with REDHAT LINUX/WINDOW OS	Set	2					
J.3	NCC	Antivirus, Patch Management and Security Server with REDHAT LINUX/WINDOW OS	Set	1					
J.4	NCC	Jump Host Server (Main & Standby) with REDHAT LINUX / UNIX / WINDOW OS	Sets	2					
J.5	NCC	RSA Security Appliance (AAA)	Set	1					
J.6	NCC	IPS and IDS Server at Control Centre	Set	1					
J.7	NCC	High Availability Firewalls required for Network Segmentation (Each proposed network shall be isolated through Firewall)	Set	2					
J.8	NCC	Work-Station w 2 x 24" LED Monitors (with RGB/HDMI Provision for LVW) with WINDOW OS	Set	2					
J.9	NCC	WAN Router and Accessories	Set	1					
J.10	NCC	SMS and E-mail Gateway - GSM/GPRS Modem with all Accessories	Nos.	2					
J.11	NCC	Industrial Grade Communication and Networking Equipment cabinet/RACK (42U)	Nos.	1					

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
J.12	NCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Set	1					
J.13	NCC	Finger Print Identification System	Lot	2					
		Total of J							
K	NCC	**System Software with Licenses**							
K.1	NCC	Communication Network Management Tool (Enterprise License) - For L2, L3 and MPLS network	Lumpsum	1					
K.2	NCC	Network Security Management Software	Lumpsum	1					
K.3	NCC	Event and Log Management Software	Lumpsum	1					
K.4	NCC	File Integrity / Change Auditing Licensing and support	Lumpsum	1					
K.5	NCC	Automated Asset Management tool	Lumpsum	1					
K.6	NCC	IPS and IDS Software	Lumpsum	1					
K.7	NCC	High Availability Firewalls Software	Lumpsum	1					
K.8	NCC	High Availability Firewalls required for Network Segmentation Software	Lumpsum	1					
K.9	NCC	Operator Work-Stations Software License	Lumpsum	1					
K.10	NCC	Windows Server Standard License	Lumpsum	1					
K.11	NCC	Red Hat Enterprise LINUX License	Lumpsum	1					
K.12	NCC	Microsoft Windows 64 Bit License	Lumpsum	1					
K.13	NCC	Active directory - Identity Management Software	Lumpsum	1					
K.14	NCC	RSA Security appliance - SecurID	Lumpsum	1					
K.15	NCC	RSA Token authenticator	Lumpsum	1					
K.16	NCC	Security Profiler	Lumpsum	1					
		Total of K							
L	NCC	**Services**							
L.1	NCC	Engineering, Installation, Commissioning & Testing	Lumpsum	1					
L.2	NCC	Cyber Security Assessment (As defined in Specification Section - B, chapter 12)	Lumpsum	1					
		Total of L							
		Grand Total (J+K+L)							
M	NCC	**Optional - Service**							

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
M.1	NCC	Incident Response Service	Lumpsum	1					
		Sub-Total of M							
		Grand Total (J+K+L+M)							

1	2	3	4	5	6	7	8	9	10
Sl. No.	NCC	Description	UOM	NCC	HSN / SAC Code	Unit Price (INR)			Total Qty. (INR)
						Ex-Works Price (INR)	GST (%)	All-Inclusive Unit Price (INR)	Total All-Inclusive Value (INR)
A	NCC	Communication and Networking Equipment - with complete Hardware & Software License							
A.1	NCC	Layer 3 Stacked Gigabit Ethernet Switch (48 Ports) for SERVER LAN-B (DUAL LAN FOR EACH)	Sets	1					
A.2	NCC	Layer 3 Gigabit Ethernet Switch (48 Ports) for DMZ LAN (DUAL LAN FOR EACH)	Sets	1					
A.3	NCC	Layer 3 Gigabit Ethernet Switch (24 Ports) for FEP, DTS, PDS & QAS - LAN A, C, D & E (DUAL LAN FOR EACH)	Sets	3					
A.4	NCC	Industrial Grade Fibre Optic Transceiver, Power Supply converters, Fibre Optic and UTP Cable (Armored & Unarmored, LIUs, I/O boxes, patch panel, Patch cords (FO & UTP), Connectors, HDPE Conduits and other accessories	Lot	1					
A.5	NCC	GSM/GPRS Modem and Accessories	Nos.	2					
A.6	NCC	Industrial Grade Communication and Networking Equipment cabinet/RACK (42U)	Lot	2					
A.7	NCC	Rack-Mount Sliding Monitor with inbuilt Keyboard and Mouse along with Rack mounted KVM Switch	Lot	1					
A.8	NCC	Armoured CAT6 cable	Lot	1					
A.9	NCC	Unarmoured CAT6 UTP Cable	Lot	1					
A.10	NCC	4C X 6 mm2 armoured cable for power supply	Lot	1					
A.11	NCC	Structure Cabling with Accessories for all LAN Network	Lot	1					
		Total of A							
B	NCC	**Services**							
B.1	NCC	Engineering, Installation, Commissioning & Testing	Lumpsum	1					
B.2	NCC	Integration with Other Systems	Lumpsum	1					
		Total of B							
		Grand Total (A+B)							

Note: 1 Set of Switch = minimum 2 Nos. of Switches for Dual LAN