SECTION- 6 SUPPORT SERVICES
Chapter 2- FMS

This section describes general requirements describes the project's spares and maintenance requirements.

2.0 INTRODUCTION

The Contractor shall be required to provide the services through Facility Management Service provider so as to manage SCADA / DMS system including all equipments, installations including hardware, software & networks installed & commissioned by Contractor for the utility in order that they meet the availability requirement as specified in the document.

System Management Services shall be provided by FMS Contractor in order that maximum uptime & performance levels of SCADA systems installed are ensured. As such, FMS Contractor is expected to provide services as per ITIL (IT Infrastructure Library) standards with performance levels meeting or exceeding those mentioned in Service Level Agreement (SLA) agreed between utility & Contractor.

To achieve the desired Service Levels, the Contractor may need to interact, coordinate and collaborate with the other Service Providers as required. The Contractor will act as the Single Point of Contact for all issues relating to the Service Levels. The Contractor will have the responsibility to deal with the other vendors (during warranty period) /other vendors as selected by utility (after warranty period) as the case maybe, to provide the services at agreed service levels. However, the prime responsibility of providing desired services shall be that of lead Contractor during warranty period. The role of FMS Contractor shall start immediately after systems are installed, commissioned and handed over to the owner after Operational acceptance of the SCADA/DMS System.

2.1   SCOPE OF WORK

The Scope of Work shall include the software and hardware maintenance support to be provided by the Contractor in respect of the system supplied under this project during five year Facility Management Services (FMS) period alongwith Supervision & Operationalzing five year warranty of the SCADA/DMS System after the Operational Acceptance of the SCADA/DMS System.

The maintenance of the SCADA-DMS System under FMS period shall be comprehensive, as set forth herein, in nature and would broadly include but not be limited to diagnosis and rectification of the hardware and software failures. The Scope also includes:

- Co-ordination with equipment supplier for Repair/ replacement of defective equipments
- Configuration of the replaced hardware/software, periodic routine checking as part of a preventive maintenance program (as described in further detail in this document) which would include checking of functionality of hardware and software,

- Services to bring up any or all SCADA-DMS systems upon its failure and to restore the functioning of SCADA-DMS system including Control Centres etc. .
- Database sizing and CFE card addition for new RTUs/FRTUs
- The support for the RTU's /FRTUs
- All Software modules under the SCADA-DMS System and the associated Hardware supplied under this project .

Routine works like database building, addition of analog and status points and other such day-to-day operational activity would primarily be the responsibility of Utility and in case of any difficulty in this regard the same shall be referred to the Contractor for support.Contractor

2.1.1 Hours of Cover

The Contractor's on-site support standard hours of service the timings for Emergency Software Support would be 24 hours a day, 7 days a week throughout the year(i.e. 24x365). At least three Engineers including Site Manager alongwith One on-site support personnel for Hardware and one on-site personnel for Software shall be deployed at each control center. The support personnel so deployed shall be qualified personnel having experience in the delivered SCADA/DMS system. The Contractor shall submit the CV's of all such personnel to Utility for approval before deployment at site.

The Contractor shall be responsible for 24*7*365 management of all the systems as per scope of work with services rendered at least as per Service Level Agreement between utility & Contractor. The Scope does not include management of physical security for access to the said facilities, The following facilities will be provided at the start of contract to FMS Contractor by Utility for carrying out the FMS responsibilities:

- Appropriately secured lockable storage/setup area
- Sufficient Sitting/office space in neat & clean environment
- PC (other communication facilities like P&T telephone & internet facility are to be arranged by FMS Contractor)

2.1.2 Essence of the Agreement

The essence of the Agreement (to be entered) is to provide FMS for the designated hardware and software, with the goal of meeting the Availability as set forth herein and to provide system tuning and configuration to accommodate a growing system.

2.1.2.1 SERVICE DELIVERY MANAGEMENT

FMS Contractor shall provide detailed description for service delivery management for the complete project including transition plan and deliverables and project management methodology.

a. Project Management

FMS Contractor will assign a Project Manager for the entire State who will provide the management interface facility and has the responsibility for managing the complete service delivery during the contractual arrangement between utility and the FMS Contractor. Project Manager will be responsible for preparation and delivery of all monthly/weekly reports as well as all invoicing relating to the service being delivered. Project Manager's responsibilities should essentially cover the following:

- Overall responsibility for delivery of the Statement of Work/s (SOW) and Service Level Agreement (SLA).
- Act as a primary interface to Utility for all matters that can affect the baseline, schedule and cost of the services project.
- Maintain project communications through Utility's Project Leader.
- Provide strategic and tactical recommendations in relation to technology related issues
- Provide escalation to FMS Contractor's senior management if required
- Resolve deviations from the phased project plan.
- Conduct regularly scheduled project status meetings.
- Review and administer the Project Change Control Procedure with utility Project Leader.
- Identify and resolve problems and issues together with utility Project Leader.
- Responsible for preparation and delivery of all monthly reports as well as all invoicing relating to the services being delivered

b. Transition Management

During initial two weeks viz. initial period of taking over by FMS Contractor after completion of all installation & commissioning jobs by consortium members, FMS Contractor shall provide minimum agreeable services. Formal SLA shall be enforced only after initial transition period.

c. Install, Moves, Adds, Changes (IMAC) Services

This Service provides for the scheduling and performance of install, move, adds, and change activities for Hardware and Software. Definitions of these components are as follows:

i. **Install:** Installation of desktop machines/workstations, servers, peripheral equipment, and network-attached peripheral equipment, which form part of the existing SCADA/DMS System (new equipment needs to be procured by the Utility).

ii. **Move:** Movement of desktop machines/workstations, servers, peripheral equipment, and network-attached peripheral equipment.

iii. **Add:** Installation of additional hardware /software after initial delivery

iv. **Change:** Upgrade to or modification of existing hardware or software on desktop/workstations and servers etc.

Requests for IMAC shall be prepared by FMS Contractor depending on customer/ system requirements & shall be approved by utility. Utility shall formulate guidelines for IMAC & communicate it to FMS Contractor. All procurements shall be done by utility.

d. Contractor Management Services

As part of this activity , for efficient and effective warranty implementation, the FMS Contractor's team will:

1. Manage the vendors for escalations on support
2. Logging calls and co-ordination with Contractors
3. Contractor SLA tracking
4. Management of assets sent for repair
5. Maintain database of the various vendors with details like contact person, Tel. Nos., response time and resolution time commitments. Log calls with vendors, Coordinate and follow up with the vendors and get the necessary items exchanged.
6. Analyze the performance of the Contractors periodically (Quarterly basis)
7. Provide MIS to utility regarding tenure of completion of warranty/AMC with outside vendors for software, hardware & networks maintenance in order that utility may take necessary action for renewal of warranty/AMC. FMS Contractor shall also provide MIS regarding performance of said Contractors during existing warranty/AMC.
8. Since during initial five years, warranty is in scope of OEM vendors there will be no AMC for SCADA/DMS system. During such period, FMS Contractor has to interact with such vendors for maintenance services and spares. After warranty period, if required Utility can award the suitable AMC and FMS Contractor has to interact with Contractors as selected by utility for providing AMC for the said system on mutually agreed terms & conditions.

.

e) FMS Contractor's Responsibilities

1. Provide a single-point-of-contact for responding to Utility's queries or accepting its problem management requests. **FMS Contractor's** specialist will respond to utility's initial request within agreed service level objectives set forth.

2. Monitor availability & Escalate to service provider and Notify Utility for communication failures.

3. Review the service levels of the service provider (as per pre-defined schedules on SLA performance) along with utility.

4. Provide network availability incident reports severity wise to utility in a format mutually agreed.

5. Provide SLA performance management report of the Service Provider.

6. **Fault Detection and Notification :** The Contractor shall diagnose problems that could arise as part of the LAN/WAN network. These include connectivity problems due to failures in communication transport links, routing configuration points, or from software bugs etc.

7. **Fault Isolation and Resolution :** All faults that have been identified need to be isolated and rectified appropriately. The resolution measures undertaken by the Contractor and results produced accordingly shall be documented in the report.

8. **Carrier Coordination :** Carrier Coordination implies providing a single point of contact to resolve network related problems involving carrier circuits, whether equipment or circuit related. When a problem is diagnosed because of a WAN circuit, the Contractor must coordinate with the corresponding carrier to test and restore the circuit. The Contractor must take the responsibility and ensure that the problem is resolved.

9. **Hardware/Software Maintenance and Monitoring:** This would include problem determination, configuration issues, and hardware and software fault reporting and resolution. All such issues would need to be recorded and rectified.

10. **24x7 Network Monitoring and reporting:** The Contractor shall monitor the network on a continuous basis using the NMS and submit reports on a monthly basis with instances from the NMS system. System performance is to be monitored independently by the Contractor and a monthly report mentioning Service up time etc. is to be submitted to Utility. The report shall include:

    - Network configuration changes
    - Network Performance Management including bandwidth availability and Bandwidth utilization
    - Network uptime
    - Link uptime
    - Network equipment health check report
    - Resource utilization and Faults in network
    - Link wise Latency report (both one way and round trip) times.

o Historical reporting for generation of on-demand and scheduled reports of Business Service related metrics with capabilities for customization of the report presentation.

- o Generate SLA violation alarms to notify whenever an agreement is violated or is in danger of being violated.
- o Any other reports/format other than the above mentioned reports required by utility

f) Backup/Restore management

FMS Contractor will perform backup and restore management in accordance with mutually FMS Contractor shall ensure:

1. Backup and restore of data in accordance to defined process / procedure.
2. 24 x 7 support for database restoration requests
3. Maintenance and Upgrade of infrastructure and/or software as and when needed.
4. Performance analysis of infrastructure and rework of backup schedule for optimum utilization.
5. Generation and publishing of backup reports periodically.
6. Maintaining inventory of onsite tapes.
7. Forecasting tape requirements for backup.
8. Ensuring failed backups are restarted and completed successfully within the backup cycle.
9. Monitor and enhance the performance of scheduled backups
10. Real-time monitoring, log maintenance and reporting of backup status on a regular basis.
11. Management of storage environment to maintain performance at optimum levels.
12. Periodic Restoration Testing of the Backup
13. Periodic Browsing of the Backup Media
14. Management of the storage solution including, but not limited to, management of space, volume, RAID configuration, configuration and management of disk array etc.,
15. Interacting with Process Owners in developing / maintaining Backup & Restoration Policies / Procedures
16. To provide MIS reports as per agreement

g) Restoration of Control Centre in case of Failure

The FMS Contractor shall ensure that all the relevant data is transferred from control centre at regular frequency to Data Recovery Centre (DR) which is required for restoration of Control Centre in case of complete failure of Control centre. The FMS Contractor shall carry out system build in order to build the SCADA/DMS system at Control centre from scratch utilizing DR Centre.

h) Performance Monitoring & Reporting

- Regularly monitor and maintain a log of the performance monitoring of servers including but not limited to monitoring CPU, disk space, memory utilization, I/O utilization, Central Storage etc.
- Regular analysis of events and logs generated in all the sub systems including but not limited to servers, operating systems, databases, applications etc. The system administrators shall also ensure that the logs are backed up and truncated at regular intervals.
- The administrators shall undertake actions in accordance with the results of the log analysis to ensure that the bottlenecks in the infrastructure are identified and fine-tuning is done for optimal performance
- Reporting to utility for all system performance monitoring

The Contractor must adhere to well-defined processes and procedures to deliver consistent quality services throughout its contractual period. Any hardware/software to meet the requirements under this section must be provided by the Contractor. The Contractor is expected to have the following system management controls in place:

i) **AVAILABILITY MANAGEMENT**

a. The Contractor must define the processes/procedures which ensure the service delivery as per the required SLAs or exceed it. It should cover various equipments such as all the servers, networks, switches, routers, Modems & other site specific services, and the critical services and their supporting hardware, and software components, as defined in scope of work. Industry standard SLA management tools should be deployed and shall have following essential features:
b. Ability to create an escalation for an SLA.
c. Ability to workflow the SLAs.
d. Ability to create new action types, if needed.
e. Ability to define sets of actions that are grouped together in a specific sequence.
f. Ability to associate an escalation point with one or more actions through the action group.

ii) **PERFORMANCE MANAGEMENT**

The recording, monitoring, measuring, analyzing, reporting, and forecasting of current levels, potential bottlenecks, and enhancements of performance characteristics for the services, networks, applications, system software, and equipment within the scope shall be required. System tuning and optimization is an inherent part of this contract. Where warranted, the Contractor will utilize capacity management data in combination with performance management data to identify ways to improve performance levels of the resources, extend their useful life, and request utility to approve revisions/upgrades to the computing and communications hardware, software and other equipments such that higher levels of performance of the resources are obtained.

iii) SECURITY MANAGEMENT

The protection from unauthorized usage, detection of intrusions, reporting as required and proactive prevention actions are to be provided by the Contractor.

2.2 Support Services
2.2.1 Emergency Support

The severity levels are defined under clause 2.3 of this chapter . Emergency Support for Severity 1 issues are to be provided 24 hours a day, seven days a week. The on-call support team shall include all key technical competencies so that any aspect of a system failure can be attended. The team comprise of experienced technical staff that are skilled in troubleshooting SCADA / DMS systems. Severity 1 problems shall be reported by telephone for rapid response; target response times are defined in clause 2.5. The Contractor shall **submit the process details** to meet the above requirements along with the offer. For severity 1 problems, the key objective is to restore the system to an operational state as quickly as possible, including by a temporary workaround. Resolution of the defect may be completed during standard hours.

Severity 2, 3, and 4 problems shall be reported by Utility through a call tracking system to be provided by the Contractor. The Emergency Support service goal is to meet the availability targets greater than specified in this document (minimum 99% for Overall SCADA/DMS System). Resolution of problems may also be provided by an individual fix that will be installed by the Contractor at no extra cost to Utility.

2.2.2 Monitoring

The Contractor shall conduct the following monitoring, for the supplied SCADA/DMS System .

2.2.2.1 Error Log Monitoring

To monitor the performance of SCADA/DMS system on a bi-weekly basis, the Contractor shall review the following, analyse the results, and communicate to Utility:

- System logs for a selected day
- System history log
- Aggregate data collection
- Events Collection

During monitoring if any defect is found, the Contractor shall undertake corrective action for the same. The Contractor shall **submit the process details** to meet the above along with the offer

2.2.2.2   Resource Monitoring

Resource Monitoring services comprises checking the system's major node resources, gather log data, analyse results, and advise Utility on the appropriate actions to be taken and undertake any agreed upon actions. A tool will be created to continuously collect the following information:

- CPU loading (Peak and Average)
- System error log
- Disk utilization (Peak and Average)
- Operating system error reports
- LAN utilization (Peak and Average)
- Bandwidth utilisation
- Memory utilisation (Peak and Average)

The Contractor shall submit the procedures details to meet the above along with the offer.

2.2.3 Support for System expansion

New RTUs,RMUs & FPIs etc per year are likely to be added to match the growing Power system. The services to be provided by the Contractor will include the Communication Front End (CFE) port/card addition/expansion, database resizing, interface addition in CFE and support for integration confirming to the IEC standards / existing application. This would not include the cost of equipments/card required for expansion**.**

2.3   Problem Severity Levels

The problems will be categorized as follows:

Category	Definition
Severity 1 – Urgent	Complete system failure, severe system instability, loss or failure of any major subsystem or system component such as to cause a significant adverse impact to system availability, performance, or operational capability (as described at 2.3.1).

Category	Definition
Severity 2 – Serious	Degradation of services or critical functions such as to negatively impact system operation. Failure of any redundant system component such that the normal redundancy is lost (as described at 2.3.1. Non-availability of Man-power at control centre during working hours
Severity 3 – Minor	Any other system defect, failure, or unexpected operation (as described at 2.3.1.
Severity 4 – General/Technical Help	Request for information, technical configuration assistance, "how to" guidance, and enhancement requests. (as described at 2.3.1.

The details of the system under different severity level are as below:-

2.3.1 Severity of the system under different Severity level.

a) Severity-1 (Urgent support)

This support is required when there is a complete system failure, severe system instability, the loss/ failure of any major sub-system / system or its components, which may significantly impact the system availability, performance, or operational capability at Control centre. For example, loss of data to the operator due to any problem in SCADA-DMS system, loss of ICCP system (software/Hardware related),Loss/failure of DR Centre, outages of both the CFEs attributable to any software/hardware related problem, outage of any important software functionality (on both the servers) which is required to disperse Distribution management functions, , Failure of both GPS clock and time synchronization and outage of both routers, failure of both LAN system, outage of both main and backup servers of any system, firewall would be included under this category. Initially Utility's Engineers shall attempt to restore the system. In case the system does not come up and/or the problem is not resolved then Utility's Engineer shall intimate the problem to the Contractor. Upon receiving intimation, the representative of the Contractor would immediately attend to the problem and if required, any other authorized representative the Contractor may log on to the system. The problem shall be attended by the Contractor at the earliest, within the response/Resolution time as specified in the Agreement. The Contractor shall take all steps to restore the SCADA functionality at the earliest to avoid data loss.

b) Severity-2

The support services not defined under Severity-1 are included under this category. Failure of one SCADA/DMS/FEP Server/ICCP server, failure of VPS , Stoppage of data collections for archiving, real time calculations, failure in Acquisition of SOE at the respective Control-Centre, outage of Real Time Network and distribution applications, and other applications are included in this category. Coverage under this severity would be outages that do not immediately cause on feeder data loss but subsequently could result into Severity-1

category outage, loss of an important subsystem that may affect the day-to-day works and loss of archived data. Failure of any redundant system component affecting the critical redundancy like loss of any one Application Processor, Router, CFE would also be included in this category. Non-availability of Man-power at control centre during working hours will also be covered under this category.

c) Severity-3 (Standard support)

The support services included under this category are when the outage or loss of functionality is neither an emergency nor a priority functionality as indicated in severity level 1 or 2 above. Problems like database reworking, failure of any one workstation, etc. would be covered under this Severity.

d) Severity-4 (General Technical Help)

Request for information, technical configuration assistance, "how to" guidance, and enhancement requests are included under this category.

2.4 Problem/Defect Reporting Procedure

The Contractor shall propose an appropriate problem/defect reporting procedure to meet the requirement of all severity level cases along with the offer.

2.5 Response and Resolution Time

This clause describes the target times within which the Contractor should respond to support requests for each category of severity. The *Initial Response Time* is defined as the period between the initial receipt of the support request (through approved communications channels) and the acknowledgment of the Contractor. The *Action Resolution Time* is the period between the initial response and the Contractor delivering a solution. This period includes investigation time and consideration of alternative courses of action to remedy the situation. The *Action* is defined as a direct solution or a workaround.

Except for Severity Level 1, all hours and days specified are working hours only.

2.5.1 Emergency Support Response/Resolution Time

Severity	Initial Response Time	Action Resolution Time	Action

1	30 minutes	2 hours	An urgent or emergency situation requiring continuous attention from necessary support staff until system operation is restored – may be by workaround.
2	1 day	2 days	Attempt to find a solution acceptable to Utility/ Employer as quickly as practical. Resolution time is dependent on reproducibility, ability to gather data, and Utility prioritisation. Resolution may be by workaround.
3	2 days	5 days	Evaluation and action plan. Resolution time is dependent on reproducibility, ability to gather data, and Utility prioritisation. Resolution may be by workaround.
4	2 days	10 days	Report on the problem/query is to be furnished.

The Contractor shall submit the detailed format/procedure for all the activities such as Reporting time, Resolution time, Downtime etc. along with the offer.

2.6 Preventive Maintenance
The Contractor shall undertake preventive maintenance of all equipment/modules (i.e. Hardware & Software supplied under the SCADA/DMS System), under the scope of this contract, in accordance with this section. The Contractor will prepare the report as per periodicity defined below and submit the same to the Engineer-in-charge.

i)   Activities shall include but not limited to:
(a) Patch Management for OS and Application Software

(b) Automatic update of Antivirus and firewall signatures on daily basis.

(c) Average and peak usage of CPU, LAN, Memory and Disk –once every month .

(d) Monitoring of machine with reference to error reports and logs - once every week

(e) Online diagnostics for servers and workstations - once every 3 months.

(f) Connection test of LAN cables for identifying potential loose contacts in machines, hubs and routers - once every 3 months.

(g) Physical hardware checks to ensure proper working of cooling fans etc.- once every 3 months.

(h) Physical inspection to check the machines and the panels for rat droppings, lizards or other vermin - once every 3 months,

(i) Cleaning and blowing for removal of dust from Servers , Workstations, CFE panels and RTUs/FRTUs etc.- once every 3 months.

ii)   Exclusions:

a) Maintaining dust free environment and protection from rodents and vermin is the   responsibility of Utility.

b) Regular cleaning of computer furniture and surroundings is the responsibility of Utility.

Equipment shutdown during preventive maintenance shall be deemed as available.

2.7   Availability and Payment charges Calculation

It is the endeavour of both the Contractor and Utility to maximize system availability to the extent possible. The Contractor shall provide guaranteed availability for various types of Severity levels as specified in clause 2.3 above. The non-availability hours for availability calculation may be reckoned from the end of the allowed Action Resolution time. A standardized register shall be maintained at each site containing full details of each outages, actions taken by Utility to correct the problem, applicable Severity level, time of reporting to the Contractor support engineer/support centers pursuant to the appropriate methods in the Agreement, allowed Response time as per the Response times defined in clause 2.5, actual Resolution time, and signature of Engineer-in-charge as well as the Contractor's support engineer of the site. Duration of outages over and above the Action Resolution time in each of the Severity levels shall be counted for the non- availability computation and shall be clearly brought out in the register. The resolution may be accomplished by a work around, and such solution shall mark the end of non-availability. In the event of multiple failures at a site, due to a common cause, the first FPR (Field Problem, Report) logged shall be used for the purpose of availability calculation. However, simultaneous multiple outages due to unrelated cause would be counted separately

2.7.1 Availability computation for SCADA-DMS System

Availability would be on per quarter basis. The formula to be used for availability computation would be as under:

Availability per quarter (per site) $= \dfrac{THQ- (S1 \times 1+S2 \times 0.4+S3 \times 0.1)}{THQ} \times 100\%$

Where THQ is total hours in the quarter

S1 is the total non-available hours in Severity Level-1

S2 is the total non-available hours in Severity Level-2

S3 is the total non-available hours in Severity Level -3

2.7.2 Payment of maintenance charges (based on SCADA-DMS System availability)

In the event of availability below a certain level, the maintenance charges would be proportionately reduced as follows:

For overall system avaialbility

Availability per quarter	Deduction as % of the apportioned price of total FMS for SCADA-DMS portion of the contract applicable for that site
> 99%	NIL
Less than 99%	Deduction of 2% of the apportioned price of the apportioned quarterly AMC for every 1% or part there of decrease in availability under 99%.

For individual hardware & non critical functions

Availability per quarter	Deduction as % of the apportioned price of total FMS for SCADA-DMS portion of the contract applicable for that site
> 98%	NIL
Less than 98%	Deduction of 2% of the apportioned price of the apportioned quarterly AMC for every 1% or part there of decrease in availability under 98%.

While calculating Availability following shall be considered :

The Overall SCADA/DMS System shall be considered as available if

a) All SCADA applications are available

b) All DMS applications are available

c) All SCADA/DMS functions described in the specification are executed at periodicities specified in the specification. without degradation in the response times

d) Requests from available Operator Consoles & VPS are processed

e) Information Storage and Retrieval applications are available

f) Data exchange with other system is available

g) One of the redundant hardware is available so that all the SCADA/DMS applications are functional to ensure the design & performance requirement as envisaged in the MTS

Further, Non-Availability of RTU/Data Concentrators/FRTUs/FPI/R-APDRP-IT System shall not be considered for calculating Overall SCADA/DMS System Availability.

However each device, including RTU, FRTU & Servers etc. shall individually exhibit a minimum availability of 98%. Further, the non-availability of following Non-Critical functions shall not be considered for calculations of SCADA/DMS System availability , however these functions should be available for 98% of the time.

(a) Database modification and generation

(b) Display modification and generation

(c) Report modification and creation

(d) DTS

2.7.3 The computation of Availability / Non-availability would be rounded up to 2 decimal places at each Contract Co-ordination Site on quarterly basis and any deduction in the maintenance charges thereof would be calculated as stated above in Clause 2.7.2 on pro-rata basis.

2.8 The Contractor's Obligations

2.8.1 In order to optimise and improve the response of the system, the Contractor may re-install the program modules after making the Utility engineer aware of the consequence (like data loss, database rebuild etc).

2.8.2 Any modification of software/Operating System required to restore functionality due to hardware upgrades, patches, or arising out of a necessity to fix FPRs, would be done by the Contractor at no extra cost to Utility . Also, any software updates/upgrades released till the completion of warranty period /AMC shall be provided and installed & commissioned free of cost as per instructions from Utility.

2.8.3 The Contractor shall ensure that all components (Hardware & Software) covered under five years comprehensive on-site warranty are maintained in good working condition and in case of any defect , timely replacement/repair shall be carried out so as to meet the availability requirements specified herein.

2.8.4 The Contractor will submit FSR (Field Service Report) and the steps taken to solve the problem, along with details of code changes.

2.9 Responsibilities of Utility

i) utility will ensure the availability of competent staff appropriately trained in the administration and use of existing SCADA/DMS systems for proper operation of the system.

ii) Utility shall ensure that proper Environmental conditions are maintained for the system.

iii) Utility shall ensure that the System is kept and operated in a proper and prudent manner and only trained Utility employees (or persons under their supervision) are allowed to operate the system.

iv) Utility shall provide access to the sites of installation for purposes of providing Support Services.

v) Utility shall provide the Contractor with Office and storage space for their maintenance staff and spares.

2.10 Responsibility Matrix

The table in this clause provides a summary definition of the roles and responsibilities of the Contractor and Utility.

Legend: ● This indicates who has <u>primary</u> responsibility to perform this function.
A This indicates who will provide assistance.

Item	Task	Utility / Employer	Contractor
0.0	PROBLEM IDENTIFICATION		
0.1	Root cause analysis to determine whether the fault is attributable to Hardware or Software.	A	●
0.2	Resolution of problems involving third party maintainer where there is uncertainty whether the root cause is hardware or software.	A	●
1.0	SOFTWARE PROBLEM RESOLUTION		
1.1	Report problem and assist with problem identification	A	●
1.2	Provide or recommend corrections, temporary patches, workarounds or other fixes to system problems		●
1.3	Install and test corrections, temporary patches, workarounds or other fixes to system problems	A	●

2.0	ROUTINE SOFTWARE SUPPORT		
2.1	Build and maintain database, displays and reports	●	A
2.2	Perform system back-ups	A	●
2.3	Restore or reinstall software from back-ups	A	●
2.4	Monitor system logs (part of remote monitoring service)	A	●
2.5	Maintain system logs	A	●
2.6	Maintain user accounts	●	A
3.0	HARDWARE PROBLEM RESOLUTION		
3.1	Report problem and assist with defining problem	●	A
3.2	Troubleshoot problem to diagnose if it is software-related or hardware-related	A	●
3.3	Identify failed component, Replace failed components in online system using parts from spares inventory	A	●
3.4	Restore operation of repaired/replaced equipment	A	●
4.0	HARDWARE SPARE PARTS		
4.1	Manage local spares inventory	A	●
4.2	Provide appropriate facility for local storage of spares	●	
4.3	Replenish local spares inventory	A	●
5.0	Integration and database work		
5.1	CFE Card addition/Expansion	A	●
5.2	Database resizing	A	●

The contractor shall be responsible for all the maintenance of the system till the operational acceptance. The consumables and spares wherever required for maintaining the system shall be provided by the contractor till operational acceptance of the system. The consumable items shall include but not be limited to (a) VPS lamps (b) printer paper (c) Printer toner, ink, ribbons and cartridges (d) Special cleaning material