Configuration of devices with providing SCADA Software License, Deployment, integration and Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

**SCOPE of WORK & TECHNICAL SPECIFICATION**

1. Preface

As per guidelines of MNRE for PM-KUSUM project, State Implementing Agency (SIA) of each state needs to develop a State Level Solar Energy Data Management platform for all three components Component-A Distributed Solar Plants, Component-B Stand Alone Off Grid Solar Pumps and Component-C for Solarization of Grid Connected Pumps in line with the “Model Guidelines for State Level SEDM Software Development”. (SEDM stand for Solar Energy Data Management)

This state Level SEDM platform will cover various functionalities of business as well as operational requirements. As mentioned in guidelines, all Remote monitoring systems will capture data from Pump Controllers, Inverters, Energy Meters, String Combiner boxes etc. and connect to State Level SEDM platform using IIoT communication protocol and JSON message format as described in guidelines “Communication Architecture between RMS and State Level Server-All Components” published by MNRE.

In view of above, Device Integration (SCADA) platform is required to connect all Remote monitoring system using IIoT Technology. Bidder shall provide scalable IIoT based SCADA platform as well as configuration services to integrate thousands of devices such as Inverters, Energy Meters, controller, drives, string combiner box, etc. It should be an interoperable, scalable SCADA platform to connect any Remote Monitoring System other than PM-KUSUM as well using IIoT protocol and JSON message format with TLS/SSL Security

Bidder shall provide SCADA software license as well as services in a Software As A Service (SaaS) model with where payment shall be made against unit rate of individual system for 5 years.

1. Scope of Work:

1.1 Bids are invited for selection of a SCADA software solution provider for supply, deployment, integration, testing, configuration and go live of IIoT based SCADA platform on per system basis

1.2 Bidder shall consider following scope of work as a part of this tender:
Configuration of devices with providing SCADA Software License, Deployment, integration and Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

1.2.1 Supply of SCADA Software platform license for integration of IoT based Remote monitoring system as per MNRE Guidelines.

1.2.2 SCADA Device Provisioning Services for each IoT based Remote Monitoring System which includes TLS/SSL Certificate Generation, Credential generation, Device hierarchy management such as District/DISCOM/Division/Sub division, FTP Server credential and testing for each device.

1.2.3 SCADA Tag Configuration Services for each IoT based Remote Monitoring System which includes configuration of Hard Tags, Soft Tags, Alarms and Notifications of Each system.

1.2.4 Configuration Services of User and Role Management: Organization/User Creation, Role Management, Group Creation, Data Access Mapping, Mobile Application User Access Management.

1.2.5 Integration of data with State Level as well as National Level Platform.

1.2.6 Impart the required training to DISCOM Officers for operation and usage of system

1.2.7 Bidder shall exclude following points from scope of work of this tender :-

1.2.7.1 Supply, Installation, Testing and Commissioning of Remote Monitoring System Hardware
1.2.7.2 SIM Card procurement and recurring charges
1.2.7.3 SMS Gate way

2. Proof of Concept:

The proof of concept is to establish successful communication between IoT based Remote Monitoring Systems of PM-KUSUM Empanelled Agency of Component B & Component C or Virtual IoT Clients of Component B & Component C as per MNRE Guidelines.

2.1 Functionality, Features and Configuration of SCADA Platform:
Bidder shall deploy his SCADA platform and configure the same for 3 virtual clients of Component-B & 3 virtual clients of Component-C. Bidder shall also demonstrate following features:

a. Device provisioning and Connectivity of virtual clients with SCADA platform using TLS/SSL Certification, Device Authentication & Topic Level Authorization
b. Process JSON message formats described in MNRE guidelines and Display any 10 parameters of required equipment
c. Display of live parameters values on web client
d. Remote Operation using web client
e. Notifications on web client

2.2 Period of the POC:
- The bidder shall have required to establish the POC within 7 Days period on receiving Intimation for POC.
- For that the bidder has require to come along with authorized representative on the date of starting of the POC. The bidder who will not remain present to establish the POC during the period of the POC will be declared as disqualified.
Configuration of devices with providing SCADA Software License, Deployment, integration and Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

3. Software Deployment and Device integration Schedule:

Bidder shall supply, deploy and test SCADA software platform as per specifications within **15 days** from date of order.

Bidder shall successfully integrate the different RMS-Devices installed in field anywhere in Gujarat DISCOMs under the Component-A, Component-B and Component-C of PM-KUSUM Scheme with SCADA software platform as per specifications within the **time mentioned as below** from date of e-mail from DISCOM intimating him for integrating device/s subject to CSV file uploaded by the respective installer.

<table>
<thead>
<tr>
<th>No. of Systems reported to be integrated in a day</th>
<th>Time period for integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 50 Systems</td>
<td>2 days</td>
</tr>
<tr>
<td>More than 50 and Up to 100 Systems</td>
<td>3 days</td>
</tr>
<tr>
<td>More than 100 and Up to 200 Systems</td>
<td>4 days</td>
</tr>
</tbody>
</table>

**Penalty for delay integration of devises :-**
In case of delay in integrating devise with server, penalty @ Rs.10/- per day per system plus applicable GST and cess on the total order value of the no. of integration of systems subject to a maximum of 50% of total order value of the no. of integration of systems plus applicable GST and cess would be levied

**Go-Live Acceptance Criteria**
Following is the indicative list of acceptance criteria to be adopted for the project. The activities below will include but not be limited to the following:

a) Integration of Devices with Central server with at least 90% of devices transferring data to server continuously for at least 15 days

b) Reports generated accurately for different stakeholders viz. Feeder Load curve, Feeder Current trend, Voltage Profile, Power Factor, Outage Report, Seasonal Demand Curve etc.

c) Dashboard successfully displaying real time data

4. Specifications of Device Integration (SCADA) platform requirement

4.1 Architecture of State Level Solar Energy Data Management Platform

4.1.1 High Level Architecture
As shown in high level architecture diagram, all Remote Monitoring systems will connect to State Level Solar Energy Data Management (SEDM) platform. State Level Solar Energy Data Management platform will summarize the data in require format and provide it to National Level Solar Energy Data Management Platform. Data access will be provided to various stake holders from state level SEDM Platform.

State Level SEDM platform is mainly consists of two major parts:
Configuration of devices with providing SCADA Software License, Deployment, integration and Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

1. Device Integration (SCADA)
2. System Modules (Business Process Modules)

High Level System Architecture (with reference to EESL Tender Annexure 8)
- Scalability to Manage Thousands of Systems
- Security using TLS/SSL VPN
- Data Integrity by Hosting on Govt. Infrastructure

STATE LEVEL SEDM PLATFORM HOSTED ON GOVT. INFRASTRUCTURE (NIC / DISCOM Data Center / Private Cloud)
- Device Integration
- System Modules
- Web server
- TLS/SSL Encrypted channel
- Web/Mobile clients

NATIONAL LEVEL SEDM PLATFORM HOSTED ON GOVT. INFRASTRUCTURE (NIC)
- Device Integration
- System Modules
- Web server
- TLS/SSL Encrypted channel
- Web/Mobile clients

Farmer | Empanelled Agency | SIA | DISCOM | MNRE | SECI/ NISE | DBT

4.1.2 Detail Module Level Architecture

As shown in Module Level Architecture Diagram, Device integration part is having various modules related to SCADA system

Authorised Signature with Round Seal of bidder

Date and place

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4.2 Software Modules Requirement Specifications of Device Integration Part of State Level SEDM Platform

4.2.1 List of Software Modules required for Device Integration Part of State Level SEDM Platform with Multi layered Software Architecture (A multi layered architecture consists of various layers, each of which corresponds to a different service or integration. Because each layer is separate, making changes to each layer is easier than having to tackle the entire architecture)
   1. Device Management
   2. SCADA Tag Processing
   3. Events & Notification Processing
   4. Archiving & Historian
   5. Meter Data Acquisition (MDAS) & Meter Data Management (MDM)
   6. User & Role Management
   7. Consumer Mobile Application
   8. Report Manager

4.2.2 Device Management with TLS/SSL VPN

Main Functionalities of this module is to ensure Configuration, Security, Connectivity, Communication, and Availability of Remote Monitoring Systems.

4.2.2.1 Device Configuration Details:

- **Multiple Device Communication Connectivity using** MQTT (IIoT) Server to handle bi-directional communication of up to **10000** devices with single instance
- **Device Registration and Configuration against** Universal Unique ID - IMEI number (Cellular Connectivity) or MAC ID (Ethernet or Wi-Fi Connectivity)
- **Manufacturer Unique ID:** Serial Number, Batch, Manufacturing Date, Model Number etc.
- **VPN Security:** Upload and configure TLS / SSL certificate for AES 256 Bit Encryption
- **Device SIM Card Details:** Mobile Number of Device, Service Provider APN, User Name, Password
- **Server Connection Configuration:** IP, URL, Port, MQTT and FTP server details
- **Server Authentication Credentials:** Token/Username and Password for MQTT and FTP Server
- **OTP Configuration:** Auto Generation and exchange of 32 character random topic for OTP subscription
- **Communication Topics:** Auto Generation and Exchange with Topic authorization against Unique Identification
- **SMS Gateway** Integration and Gateway Mobile Number Configuration for SMS connectivity
- **FTP Server** for updating Device Configuration Files

4.2.2.2 Communication Architecture & Security Implementation Details:
Configuration of devices with providing SCADA Software License, Deployment, integration and Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

-IIoT Communication Modes:
1. Push on Periodic Interval
2. Push on Event
3. On Demand Read Parameter
4. On Demand Command
5. Configuration Read / Write

-IIoT Communication Analysis:
1. % Device Connectivity
2. % Data Availability of Different Parameters
3. Number of Messages / Data

-SMS Communication Modes:
1. SMS of Periodic Data
2. SMS to Read and Write a parameter on Demand
3. SMS for Configuration Update

-SMS Communication Security:
1. Verification of Device Mobile Number, IMEI Number, OTP in each SMS message transaction

-IIoT Communication Security:
1. Identification
2. Encryption
3. Authentication
4. Authorization
5. OTP

For further details related to communication and security architecture please Refer to Annexure-1 of “Model Guidelines for State Level SEDM Software Development” and refer to “Communication Architecture between RMS and Server” for JSON Message Formats

4.2.3 SCADA Tag Processing

Device integration (SCADA) Platform should have following Tag Processing functionalities:

Message Processing:
MQTT Messages
Device Push Messages:
- Push on Periodic Interval & Push on Event
- JSON parsing of messages at a speed of 100 messages per second using multiple threads
- Virtual Device configuration based message parsing: single device may have 10 virtual devices such as Pump Controller / Drive, Bi Directional Meter, Generation Meter, Pump Meter, Health Parameters etc.

Device On Demand Messages:
- Send Remote Commands to Device such as Remote Pump Operation
- Update single or multiple configuration parameters such as alarm limits or schedule of operation
Configuration of devices with providing SCADA Software License, Deployment, integration and & Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

- **Bulk Update multiple devices on a single command** such as updating pump operation running hours
- **Auto Update Device Configuration** such as RTC sync with Server Time Stamp
- **Auto Generated M2M (Device-Device) Commands** such as Pump Off for Demand Side Management

**SMS Messages:**
- Read and Write an individual parameter using SMS messages

**Data Processing:**
- Processing multiple tags or parameters such as V, I, PF, F, kW, kWh for trend and analysis purpose
- Processing Soft Parameters based on logics and conditions i.e. Voltage Un Balance / Un Balance Load etc.

**History Back Fill Processing:**
- Server side Automatic Processing of mixing data based on missing indexes, periodic interval and time period
- Priority configuration for virtual device, duration, samples to retrieve important missing data on higher priority

**Mapping and Group Processing:**
- Create multiple group of parameters: Instantaneous, Notifications, Mobile Application Groups
- Map Device against consumer to automatically allow consumers to view groups
- User and Role Management against group processing to restrict user access

### 4.2.4 Event & Notifications Processing

Device integration (SCADA) Platform should have following Events & Notifications functionalities:

**Alarm Configuration & Processing:**
- Configuration of Limits for Analog Alarms –H, HH, L, LL Limits and Digital Alarms –V, I, kW, PF, F etc.
- Processing Hard Tags and Soft Tags and generating alarms against it –Pump Status, Inverter Status etc.

**Soft Alarm Configuration & Processing:**
- Generating logic and calculation based alarms against Hard Tags and soft tags

**Alarm against archived parameters:**
- Configuration and processing of alarms / events / notifications against archived parameters – Daily / Weekly / Monthly %CUF, Average Pump Running Hours etc.

**Notification:**
- Configuration and processing of Notifications against Alarm/Event or schedule basis
- SMS, Mail and Push Notifications to configured users
- Notifications at different intervals on unavailability of Data to Farmer as well as Empanelled Agency
  - Component A : 24 Hours (Farmer & Developer /RPG),
  - Component B : 24 Hours (Empanelled Agency), 24 Hours (Farmer)
  - Component C : 24 Hours (Empanelled Agency), 24 Hours (Farmer)

**Notification Groups & Security:**
Configuration of devices with providing SCADA Software License, Deployment, integration and Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

- User and Role Management based subscription of Notifications for User as well as Device

### 4.2.5 Archiving & Historian

Device integration (SCADA) Platform should have following Archiving & Historian functionalities:

**Rule based Archiving:** Archiving with Min., Max., Initial, Last, Count, Sum values of configured parameters and time duration
- 15 min. slot wise Archiving
- Daily Archiving
- Monthly Archiving

**Archiving configuration:**
- Configuration of multiple parameters from multiple devices in a single virtual device

**Summary Parameters:**
- Deriving Summary of entire district or Feeder or State on Daily and Monthly basis

**Archiving Notification:**
- Configuration and processing of Notifications against Alarm/Event of Archived parameters

**Soft Tag:**
- API based logic and calculation processing of integrated parameters

**Historian:**
- Storage and retrieval of history data in multiple tables, formats derived based on archiving

### 4.2.6 Meter Data Acquisition (MDAS) & Meter Data Management (MDM)

Device integration (SCADA) Platform should have following MDAS & MDM functionalities:

**Meter Information:**
- Meter Make, Model Number, Serial Number, Ratings etc.

**Meter Instantaneous Data:**
- RTC Time Stamp
- Voltage: Line to neutral voltage and Line to Line voltage
- Current: Phase wise current, Total Current
- Power: Active Power, Reactive Power, Apparent Power
- Power off Duration

**Meter Billing History Data:**
- Active Energy
- Reactive Energy
- MD (kW)
- MD (kVA)

**Load Survey Data:** 15 minute load survey data

**Tamper Data:** Tamper events with snap shot of multiple parameters

**Rule based Meter Data Verifications and Validation**

**Meter Replacement Process and Meter Serial Number mismatch report**

**Integration with existing Billing System**

### 4.2.7 User & Role Management

Device Integration (SCADA) Platform should have following User Management functionalities:

**Create Multiple Types of Organizations:**
Configuration of devices with providing SCADA Software License, Deployment, integration and Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

National Implementing Agency
State Implementing Agency
State PSUs: DISCOMs, Transmission Companies etc.
Solar Empanelled Agency
RMS and Software Agency

Add Multiple Users under each organization

Assign District Level or Feeder Level or Plant Level Access to Organization

Component A : Plant Level
Component B : District Level
Component C : Feeder Level

Create Multiple User Roles for Configuration

Admin
Users with Add / Edit / Delete Rights
View Only Users

User Level Access Control:
Assign systems and group of parameters against user
View Only Access of Data
Write Command and Configuration to System

Consumer / Farmer / Owner Mapping:
Add Thousands of consumers in a system
Access control to his particular system only

4.2.8 Consumer Mobile Application

Device integration (SCADA) Platform should have following functionalities in Consumer Mobile Application:

Multiple Language Selection at Log In
User Profile & Details
OTP based Password Reset Mechanism
System Details: Pump Ratings, Plant Ratings, Connection Details
Live Status: RMS Connectivity Status Parameter
Pump Status: ON / OFF
Generation Status: Inverter ON /OFF
Grid Status: Not Available Single Phase / Three Phase
Power Status: Import / Export (in kW)
Today’s Running Hours: Pump Running Hours
Performance Analysis – Summary of Yesterday and Current Month
Summary of Generation, Consumption, %CUF
Performance Analysis – Trend: Current Week / Last Week / Current Month / Last Month
Day wise Trend of Solar Generation / Pump Consumption / Net Energy
Day wise Trend of Water Discharge and Pump Running Hours
Complaint Registration
Service Center Contact Details
Address
Contact Person
Mobile Number
Help Documents
Safety Guidelines

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<th>Authorised Signature with Round Seal of bidder</th>
<th>Date and place</th>
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</table>
Guidelines for System Performance Improvement

4.2.9 Report Manager

Device integration (SCADA) Platform should have following report generation functionalities:

- **Reports generation with multiple duration filters:** Last Week, Last Month, Current Week, Current Month, Current Billing Cycle, Between User Configurable Dates
- **Report Generation for multiple performance indicators:**
  - Running Hours Report,
  - %CUF, Pump Consumption, Solar Energy Generation Reports
- **Billing Reports:** Net, Import, Export of Energy
- **Loss Calculations Reports,**
- **Abnormal Electrical System Reports:** Over Voltage, Voltage Un balance, Over Load, Un Balance Load, High Temp.,
- **Instantaneous Parameters:** Min., Max., Average values of Voltage, PF, Power etc.,
- **% Device Connectivity, % Data Availability**
- **Comparison & Correlation Reports:** Comparison of two duration/season, comparison of two products etc.
- **SLA Calculations Reports:** Periodic system generated calculation reports for penalty and SLA
  The bidder shall develop required reports to calculate penalty based on various service level Agreements of multiple type of systems used in PM-KUSUM Scheme for the component-A, component-B and component-C time to time as per the requirement of DISCOMs/GUVNL.

- The bidder shall develop various reports related to billing and electrical system performance analysis as per the requirement of DISCOMs/GUVNL as and when raised during the period of 5 years.
- Automatic reports for monthly and annual energy accounting and commercial settlement as per the requirement of DISCOMs/GUVNL should be prepared.

4.2.10 Integration with National Level Portal

Bidder needs to integrate entire data with Existing state as well as National Level Solar Energy Data Management Platform as described in Annexure - 4 of “Model Guidelines for State Level SEDM Platform”

5. Requirements of Device Integration (SCADA) Configuration Services for each RMS Device:

5.1 RMS Device Provisioning Services:
- RMS Device Registration against Unique IMEI Number
- X.509 Certificate generation
- Generation of unique Client ID, User Name and Password against each device for MQTT Authentication
- Generation of unique topics against each device for MQTT Authorization
- Generation of unique FTP Server user credentials
Configuration of devices with providing SCADA Software License, Deployment, integration and & Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

- RMS Device testing and hand holding of Empanelled agency
- Support for RMS Device installation and go live to empanelled agency

5.2 SCADA Configuration required for Each Device:

- SCADA Device configuration under respective DISCOM, Division, Sub Division, Sub Station / Feeder with IMEI Number mapping in SCADA
- Up to 100 Hard Tag Configuration of each device as per Annexures mentioned in “Communication Architecture between RMS and State Level Server”
- Up to 10 Formula based Soft Tag Configuration such as unbalance load, single phase detection, three phase detection
- Up to 20 Archiving Tag Configuration for integrated parameters required for performance analysis as mentioned below but not limited to
  - Active Energy: Solar Generation, Import, Export, Net Energy etc.
  - Running Hours: Pump Operations, Grid Availability, Three Phase Grid Availability etc.
  - Water Discharge Parameters
  - Performance Parameters: %CUF, Per Day Per kW Generation, Per Day Per HP Consumption etc.
  - Up to 20 Event and Notification Configuration

- Instantaneous Parameters
  - Pump Status: Change in pump status to ON, OFF, Protection Operated
  - Over Voltage of Grid as well as Pump: Vrn, Vyn, Vbn,
  - Unbalance Load
  - Over Load: Total kW
  - Low PF: average PF

- Archived Parameters
  - Average Low Generation: Current Week, Current Month
  - Average Low Availability of Grid: Current Week, Current Month
  - Average Low Operation Hours of Inverter or Pump Controller: Current Week, Current Month
  - Average High Running Hours of Pump: Current Week, Current Month
  - Notification Configuration against Event
  - Mobile Push Notification configuration against required events

5.3 User & Role Management Configuration

- Creating Group of Parameters against which user access management can be mapped
- Group of Parameters for individual Consumer
  - Instantaneous Parameter Group: to visualize parameters in consumer mobile application such as pump status, grid status, RMS health, solar power, pump power, net power etc.
  - Summary Parameter Group: to visualize daily / weekly / monthly summary indicators such as %CUF, Energy Transaction units
Configuration of devices with providing SCADA Software License, Deployment, integration and & Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

- Archived Parameter Group: to visualize day wise weekly & Monthly chart in consumer mobile application such as energy generated, consumed, imported and exported from grid, running hours of inverter or pump controller / inverter etc.
- Notification Groups : to publish push notifications required to be visualized in mobile application

6. Requirements of Software Maintenance Services for 5 Years:

Bidder shall provide Remote maintenance and support services to ensure the proper functioning and optimal performance of the software (SCADA) platform for 5 years which shall include following scope:
1. Ensuring availability of all Multi Layered Software (SCADA) Applications deployed on SIA Servers / NIC Servers / Cloud Servers
2. Ensuring proper functionality of all Multi Layered Software (SCADA) Applications
3. Configuration and integration of devices in case of replacement of the old devices by new devices including IIoT device, Energy meters, Inverters,Controller, Drive, String combiner box, etc. is included in maintenance period and no charge will be applicable for that.
4. Program updates, fixes, security alerts, and critical patch updates created during Support without any additional financial implication to utility

7. Penalty Terms for Software Maintenance:

<table>
<thead>
<tr>
<th>Availability per month for each device</th>
<th>Deduction as % of the apportioned price for each device</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 98%</td>
<td>NIL</td>
</tr>
<tr>
<td>Less than 98%</td>
<td>Deduction of 5% of the apportioned yearly value of maintenance contract for every 1% or part thereof of decrease in availability under 98%.</td>
</tr>
<tr>
<td>Less than 90%</td>
<td>Deduction of 10% of the apportioned yearly value of maintenance contract for every 1% or part thereof of decrease in availability under 90%.</td>
</tr>
</tbody>
</table>
Configuration of devices with providing SCADA Software License, Deployment, integration and & Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

<table>
<thead>
<tr>
<th>Less than 80%</th>
<th>Deduction of 15% of the apportioned price of the apportioned yearly value of maintenance contract for every 1% or part there of decrease in availability under 90%.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 75%</td>
<td>No payment for that devise for the year</td>
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</table>

Any Scheduled or planned maintenance activity which is informed in advance shall not be considered as a part of non-availability of system. However, bidder will be required to schedule planned maintenance time with prior approval of SIA.

Non availability of the system shall not include the following:
1. Down time due to hardware / software and application which is owned by SIA at their premises
2. Negligence or other conduct of SIA or its agents including a failure or malfunction resulting from applications or services provided by SIA or its vendors
3. Failure of malfunction of any hardware or software not provided by the bidder

8. Payment terms:
   - The cost of any operation & maintenance works rendered necessary during the Contract period due to defect in software, SIMs etc. shall be borne by the contractor and the Owner shall not be liable to pay any amount towards such O&M works.
   - Payment against devise configuration will be made within 30 days on receipt of valid invoices along with certificate of successful completion of work for each systems under claim-invoice certified by the DISCOM’s Engineer-in-charge from Corporate Office of concerned DISCOM, Subject to showing consistency of data for at least for 15 days.
   - Payment shall be made on monthly basis as per actual number of systems made Go-live per month and receipt of invoice thereof.
   - 20% of the total Payment against Remote maintenance charge of five years against each system will be made at the end of each year from the date of integration of device, for the maintenance period of five years

<table>
<thead>
<tr>
<th>Completion of 1st year from date of integration</th>
<th>20% amount of total cost of maintenance of each system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of 2nd year from date of integration</td>
<td>20% amount of total cost of maintenance of each system</td>
</tr>
<tr>
<td>Completion of 3rd year from date of integration</td>
<td>20% amount of total cost of maintenance of each system</td>
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</tbody>
</table>

<table>
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<th>Authorised Signature with Round Seal of bidder</th>
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Configuration of devices with providing SCADA Software License, Deployment, integration and & Go live services for each remote monitoring system as well as integration with existing State Level Portal & National Level Portal of PM-KUSUM scheme Component- A, B & C as described in Tender specifications along with 5 years’ comprehensive maintenance contract.

| Completion of 4th year from date of integration | 20% amount of total cost of maintenance of each system |
| Completion of 5th year from date of integration | 20% amount of total cost of maintenance of each system |

- Bill will be submitted quarterly to Regd. & corporate office Solar Cell.
- Commencement will be considered for FMS after successful completion of 15 days of successful installation period.

Other conditions:

- Bidder has to develop mobile application for Android / IOS platform.
- Web Application must work with all leading browser (like Chrome/Edge/Firefox/IE etc).
- Successful bidder shall design the backup strategy in consent with GUVNL to maintain and restore application and Database tier of the system.
- Solution should support high availability mode (active-active or active-passive).