



Bihar State Power Generation Company Limited

5th Floor, Vidyut Bhawan, Bailey Road, Patna – 800 021
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CIN: U40102BR2012SGC018888

Notice Inviting Tender

NIT No. **06**/PR/BSPGCL/2026

Description of work	EMD	Tender Document Cost (inc. GST)	Bid Processing Fee
For Selection of Agency for Design, Development, Deployment, Integration and 5-Year Operation & Maintenance of the BIHAR STATE SOLAR ENERGY DATA MANAGEMENT (SEDM) PORTAL for connectivity with Remote Monitoring Systems (RMS) of Feeder Level Solarisation and other Solar Plants under PM-KUSUM Scheme (Component A, B & C) and Integration with the MNRE National Level SEDM Portal	Rs. 22000/-	Rs. 5000/- + GST @ 18%(non-refundable)	As per Eproc2.
Start Date of Online Sale of Tender Documents	01.08.2026 15:00 Hrs. onwards		
Pre-Bid Meeting Date (Physical & Online)	At 11.00 Hrs on 12.08.2026, Venue: Conference Hall, 5th Floor, Vidyut Bhawan-I, Bailey Road, Patna – 800021, Bihar.		
Last Date of Submission of Original EMD	Upto 16:00 Hrs. of 22.08.2026		
Last Date of Online Submission of Tender	Upto 17:00 Hrs. of 22.08.2026		
Date of Opening of Techno-Commercial Part (Part-I)	17:00 Hrs. onwards on 22.08.2026		
Date of Opening of Financial Part (Part-II)	To be intimated to the eligible Bidders through e-mail.		
1. Bids against this tender are being invited through e-Tendering mode only. Tender document is available in downloadable format at https://eproc2.bihar.gov.in after paying tender document fee mandatory to be paid through online modes i.e. Internet Payment Gateway (Credit/Debit Card), Net Banking, etc. 2. Bid along with necessary online payments must be submitted through e-procurement portal https://eproc2.bihar.gov.in before the date & time specified in the NIT. The department doesn't take responsibility for the delay/ Non submission of Tender/ Non- payment caused due to Non-availability of internet connection, network traffic, holidays or any other reasons. 3. Bid must be accompanied with scan copy of Bank Guarantee towards Bid Security (EMD) in favour of "Bihar State Power Generation Company Limited". Acknowledgement of online payment of Tender Document Cost & Bid Processing Fee and Original Bank Guarantee (Hardcopy) towards Bid Security (EMD) must be submitted to Chief Engineer, BSPGCL Vidyut Bhawan-I Patna Upto 16:00 Hrs. of 22.08.2026 failing which the bidder will not be eligible. 4. Any other information including corrigendum/addendum, if any, shall be uploaded on e-procurement website and the bidders are advised to follow and keep track of BSPGCL/e-procurement website for updated information if any. BSPGCL is not obligated to send/ communicate separate information in this regard. However for any enquiry bidders may contact on following :- (i) Contact No.7763813871. (ii) E-mail Id- chiefengineerbspgcl@gmail.com			
 (Rajeev Kumar Singh) ESE, BSPGCL			
e-Procurement Help Desk Toll Free Number: 1800 572 6571, Email Id: eproc2support@bihar.gov.in Working Hours: 8AM to 7PM (All days in week except Sunday and few selected state holidays).			

BIHAR STATE POWER GENERATION COMPANY LIMITED.

(A Government of Bihar Undertaking)



Request for Proposal (RFP) Document

For

For Selection of Agency for Design, Development, Deployment, Integration and 5-Year Operation & Maintenance of the BIHAR STATE SOLAR ENERGY DATA MANAGEMENT (SEDM) PORTAL for connectivity with Remote Monitoring Systems (RMS) of Feeder Level Solarisation and other Solar Plants under PM-KUSUM Scheme (Component C) and Integration with the MNRE National Level SEDM Portal

NIT No.: 06/PR/BSPGCL/2026

Cost of RFP Document:- Rs. 5900/-(including GST@18%)

(Non-Refundable)

Registered Office: Fifth Floor, Vidyut Bhawan-I,

Bailey Road, Patna 800021.

Website: <https://bspgcl.co.in/>

E-mail: chiefengineerbspgcl@gmail.com

NIT NOTICE

NIT No: 06/PR/BSPGCL/2026

Bihar State Power Generation Co. Ltd. (BSPGCL)
5th floor, Vidyut Bhawan, Bailey Road, Patna-800021
Tel. No. 7763813864/7763813871 E-Mail: chiefengineerbspzgl@gmail.com

BSPGCL invites online bids (e-tenders) from interested bidders for Selection of Agency for Design, Development, Deployment, Integration and 5-Year Operation & Maintenance of the BIHAR STATE SOLAR ENERGY DATA MANAGEMENT (SEDM) PORTAL for connectivity with Remote Monitoring Systems (RMS) of Solar Plants for Feeder Level Solarization under PM-KUSUM Scheme (Component C) and Integration with the MNRE National Level SEDM Portal

The RFP document is available at Portal: <https://eproc2.bihar.gov.in>. Interested bidders may view, download the e-bid documents, seek clarifications, and submit their e-bid through eproc2 portal up to the date and time mentioned in the table below:

a.	NIT No.	06/PR/BSPGCL /2026.
b.	Fee of RFP document (Non-refundable)	Rs. 5000 + 18% GST = Rs. 5900/-
c.	Earnest Money Deposit(EMD)/ Security Deposit	Rs. 22000/-
d.	Processing Fee (Non-refundable)	As per eproc2 Portal.
e.	Availability of RFP document on website	01.08.2026
f.	Pre-bid meeting	12.08.2026 at 11:00 AM at Conference Hall, 5th Floor Vidyut Bhawan Bailey Road Patna- 800021
g.	e-tender submission due date and time	22.08.2026.2026 up to 16:00
h.	Online technical e-tender opening date & time	22.08.2026 at 17:00 onwards
i.	Online financial e-tender opening date & time (Only of technically qualified bidders)	Shall be intimated later through mail.
j.	Venue of opening of technical & financial e-tenders	5th floor, Vidyut Bhawan, Bailey Road, Patna-800021

For participation in e-tendering module, it is mandatory for Bidders to get registration on website <https://eproc2.bihar.gov.in/>. Therefore, it is advised to all Bidders to get register at the E-Procurement portal at the earliest. Tender documents can be downloaded from website <https://eproc2.bihar.gov.in>. Service and gateway charges shall be borne by the Bidders. Upon enrolment, the Bidders will be required to register their valid Digital Signature Certificate (DSC) of appropriate class as specified for the E-Procurement system (in the name of person who will sign the proposal) in the form of smart card/ e-token, from any of the licensed Certifying Authority recognized by CCA India (e.g. Sify/ nCode/ e-Mudhra, etc). For any type of clarification, Bidders can visit <https://eproc2.bihar.gov.in/> and can call at help desk contact no.

Helpline/Support: Toll Free Number: 1800 572 6571

Email Id: eproc2support@bihar.gov.in

Working Hours: 08:00 AM to 7:00 PM (All days in week except Sunday and state Government holidays)

**Address: RJ Complex, 2nd Floor, Canara Bank Campus, Khajpura, Ashiana Road, P.S.
- Shastri Nagar, Patna 800 014, Bihar**

All required documents for registering on are mentioned in the subsequent RFP documents. The bidders need to submit the proof of payment of e-tender document fees, processing fees and Earnest Money Deposit (format attached) as stated in the above table. Bid documents fees and Processing fees are to be submitted online on eproc2 Portal and bidder shall submit the acknowledgement. The scanned copy of the Demand Draft / BG and Covering Letter form must be uploaded along with the e-tenders. The original Demand Draft/Bank Guarantee and original signed Bank Security declaration form must reach the office of Chief Engineer, BSPGCL at 5th floor, Vidyut Bhawan, Bailey Road, Patna-800021 at scheduled time mentioned in the RFP, failing which, tender shall not be considered. Chief Engineer, Bihar State Power Generation Co. Ltd., (BSPGCL) reserves the right to reject any or all tenders without assigning any reason thereof. The decision of BSPGCL will be final and binding.

Note: Opening of the NIT is subject to BSPGCL approval

DISCLAIMER

1. This Request for Proposal (NIT) document is not an agreement or offer by the BSPGCL to the prospective Bidders or any other party. The purpose of this NIT is to provide interested parties with information to assist the formulation of their bid. This NIT is based on material and information available in public domain.
2. BSPGCL representative (Such as Consultant) nor its employees will have no liability to any bidder or any other person under the law of contract, tort, the principles of restitution or unjust enrichment or otherwise for any errors / issues / typological errors.
3. This NIT along with its formats is not transferrable.
4. While this NIT has been prepared in good faith, neither BSPGCL nor its employees make any representation or warranty- express or implied, as to the accuracy, reliability or completeness of the information contained in this NIT.
5. Neither BSPGCL representative, nor its employees will have any liability to any bidder or any other person under the law of contract, tort, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage which may arise from or be incurred or suffered in connection with anything contained in this NIT, any matter deemed to form part of this NIT, the award for supply of power, the information supplied by or on behalf of BSPGCL or its employees, any consultants or otherwise arising in any way from the selection process for the said supply of power.
6. This NIT is not an agreement and is neither an offer nor invitation by BSPGCL to the prospective Bidders or any other person. The purpose of this NIT is to provide interested parties with information that may be useful to them in the formulation of their offers pursuant to this NIT. This NIT may not be appropriate for all persons, and it is not possible for BSPGCL, its employees or advisers to consider the objectives, technical expertise and particular needs of each party who reads or uses this NIT. The assumptions, assessments, statements, and information contained in this NIT, may not be complete, accurate, adequate, or correct. Each bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments and information contained in this NIT and obtain independent advice from appropriate sources.
7. Although best efforts have been taken while estimating the project capacity yet the bidders are encouraged to visit the respective substations and verify the information before submission of bid.
8. BSPGCL also accepts no liability of any nature whether resulting from negligence or otherwise however caused, arising from reliance of any bidder upon the statements contained in this NIT. BSPGCL may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this NIT.
9. The Bidder shall bear all its costs associated with or relating to the preparation and submission of its offer including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations which may be required by BSPGCL, or any other costs incurred in connection with or relating to its offer. All such costs and expenses will remain with the Bidder, and BSPGCL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation for submission of the offer, regardless of the conduct or outcome of the selection process.

Notice Inviting Tender (NIT) — Brief

Bihar State Power Generation Company Limited (BSPGCL), a Government of Bihar undertaking, invites bids from eligible, experienced and financially sound IT/IIoT/SCADA solution providers for the design, development, deployment, integration, and 5 (five) years' Operation & Maintenance of a State-level Solar Energy Data Management (SEDM) Portal, in coordination with the State Implementing Agency (SIA) for the PM-KUSUM Scheme in the State of Bihar. This Bihar State Portal shall connect with Remote Monitoring Systems (RMS) installed at solar plants sites for feeder-level solarisation under PM-KUSUM Components C and shall further integrate with the National Level SEDM Portal maintained by the Ministry of New and Renewable Energy (MNRE).

This tender document has been prepared with reference to (a) the Model Guidelines for State Level SEDM Software Development issued by MNRE, (b) the Specifications for Remote Monitoring System — PM-KUSUM Component C prepared under the Supporting Structural Reforms in the Indian Power Sector (PSR) Programme and (c) the RMS Communication and Security Architecture — PM-KUSUM SEDM Platform document. Bidders are advised to read this tender document along with its Annexures in entirety before submission of bids.

Definitions and Abbreviations

Term	Description
BSPGCL	Bihar State Power Generation Company Limited — Tendering / Executing Agency for this Contract
SIA	State Implementing Agency
SNA	State Nodal Agency
MNRE	Ministry of New and Renewable Energy, Government of India
SEDM	Solar Energy Data Management
RMS	Remote Monitoring System
DCU	Data Concentrator Unit
DAQ	Data Acquisition System
SCADA	Supervisory Control and Data Acquisition
IIoT	Industrial Internet of Things
MQTT	Message Queuing Telemetry Transport protocol
JSON	JavaScript Object Notation

Term	Description
SWPS	Solar Water Pumping System
SJB / SCB	String Junction Box / String Combiner Box
MDAS/MDM	Meter Data Acquisition System / Meter Data Management
DISCOM	Distribution Company (e.g., NBPDCCL / SBPDCL in Bihar)
SLA	Service Level Agreement
O&M	Operation and Maintenance
EMD	Earnest Money Deposit
POC	Proof of Concept

1. Preface / Background

As per the guidelines of MNRE for the PM-KUSUM scheme, every State Implementing Agency (SIA) is required to develop a State Level Solar Energy Data Management (SEDM) platform covering all applicable components of the scheme, namely Component-C (Setting up of Decentralised Grid Connected Solar Power Plants, including solarisation of agricultural feeders at sub-station level), Component-C (Feeder-level solarisation), in line with the Model Guidelines for State Level SEDM Software Development issued by MNRE.

Bihar has undertaken feeder-level solarisation of agricultural feeders at the sub-station level under PM-KUSUM Component C, wherein solar plants are connected with grid to solarize 11 kV agricultural feeder to supply daytime solar power directly to Solar Plant connections on that feeder. This model requires monitoring at two distinct levels: (i) Solar Plant Performance and Feeder Availability Monitoring at the sub-station end, and (ii) Solarisation of Agricultural Feeder at Sub-Station Level.

The Bihar State SEDM Portal shall capture data from Inverters, Energy Meters, String Combiner Boxes, and Data Acquisition Systems installed at feeder-level solar plants and other PM-KUSUM installations, through their respective Remote Monitoring Systems (RMS), using the IIoT communication protocol (MQTT) and JSON message format prescribed in the MNRE guideline document 'Communication Architecture between RMS and State Level Server — All Components'.

Accordingly, BSPGCL requires a scalable, secure, interoperable IIoT-based SCADA/Device-Integration platform along with associated business application modules (collectively, the 'Bihar State SEDM Portal') to connect thousands of RMS devices of any make/manufacturer, and to further integrate this data with the MNRE National Level SEDM Portal. This tender seeks a qualified bidder to supply the requisite software licenses and to provide deployment, integration, configuration, go-live, cloud hosting and 5-year Operation & Maintenance services for the same, on a Software-as-a-Service (SaaS) basis with payment against unit rate per system.

2. Scope of Work

2.1 Bids are invited for the selection of a SCADA/Device-Integration software solution provider for the supply, deployment, integration, testing, configuration and go-live of an IIoT-based SCADA platform (Bihar State SEDM Portal) on a per-system basis, for RMS installed under PM-KUSUM Components C in the State of Bihar, with specific emphasis on feeder-level solarisation installations and further integrate this data with MNRE National Level SEDM Portal.

2.2 The Bidder's scope of work under this tender shall include, but not be limited to:

1. Supply of SCADA/Device-Integration software platform license for integration of IIoT-based Remote Monitoring Systems as per MNRE Guidelines.
2. SCADA Device Provisioning Services for each IIoT-based RMS, including TLS/SSL certificate generation, credential generation, device-hierarchy management (District / DISCOM / Division / Sub-Division / Sub-Station-Feeder), FTP server credential generation, and testing for each device.
3. SCADA Tag Configuration Services for each IIoT-based RMS, including configuration of Hard Tags, Soft Tags, Alarms and Notifications for each system, in line with the parameter sets defined in the RMS Communication Architecture Annexures (Pump Controller, Energy Meter, Inverter, String Combiner Box, RMS Heartbeat, and DAQ).

4. Configuration of User and Role Management: organisation/user creation, role management, group creation, data-access mapping (District / Feeder / Sub-Station / Plant level), and mobile-application user-access management.
5. Design, development, deployment, integration, and 5 (five) years Operation & Maintenance of a State-level Solar Energy Data Management (SEDM) Portal, in coordination with the State Implementing Agency (SIA) for the PM-KUSUM Scheme in the State of Bihar
6. Integration of data with the Bihar State Level Portal as well as the MNRE National Level SEDM Portal.
7. Development and configuration of dashboards specific to feeder-level solarisation — including Solar Plant Performance & Feeder Availability Monitoring (sub-station end).
8. Imparting the required training to BSPGCL / DISCOM officers for operation and usage of the system.
9. Providing cloud hosting and 5 (five) years of Operation & Maintenance (O&M) services for the Bihar State SEDM Portal.

2.3 Exclusions from Scope of Work

- Supply, installation, testing and commissioning of Remote Monitoring System (RMS) hardware (to be supplied separately by the empanelled solar system integrators/agencies).
- SIM card procurement and recurring connectivity charges.
- SMS gateway subscription charges. There should be provision in Software.

3. Proof of Concept (POC)

The Proof of Concept is intended to establish successful communication between IIoT-based Remote Monitoring Systems of PM-KUSUM empanelled agencies (Component C), or virtual IoT clients simulating the same, and the bidder's proposed SCADA platform, strictly as per MNRE Guidelines.

3.1 Functionality, Features and Configuration of SCADA Platform to be demonstrated

The Bidder shall deploy its SCADA platform and configure it for at least 3 (three) virtual clients of Component-C (including a feeder-level solarisation simulation for Component C), and shall demonstrate the following:

- Device provisioning and connectivity of virtual clients with the SCADA platform using TLS/SSL certification, device authentication and topic-level authorisation.
- Processing of JSON message formats described in the MNRE guidelines and display of at least 15 parameters of the required equipment (Inverter, Energy Meter, String Combiner Box).
- Display of live parameter values on the web client.
- Remote operation capability using the web client.
- Notifications on the web client for configured events/alarms.

3.2 Period of the POC

The Bidder shall be required to establish the POC within 7 (seven) days from the date of intimation for the POC. The bidder shall depute an authorised representative on the date of commencement of

the POC. A bidder who fails to remain present to establish the POC within the stipulated period shall be declared disqualified.

4. Software Deployment and Device Integration Schedule

4.1 The Bidder shall supply, deploy and test the SCADA software platform, along with a third-party security audit certificate, as per the specifications herein, within 60 (Sixty) days from the date of order, subject to availability of the requisite IT infrastructure.

4.2 The Bidder shall successfully integrate the various RMS devices installed in the field across Bihar DISCOMs/BSPGCL, under Components C of the PM-KUSUM Scheme, with the SCADA software platform within the time period below, computed from the date of e-mail intimation from BSPGCL/DISCOM (subject to the CSV device list uploaded by the respective installer):

No. of Systems reported for integration in a day	Time period for integration
Up to 50 Systems	2 days
More than 50 and up to 100 Systems	3 days
More than 100 and up to 200 Systems	4 days

4.3 Penalty for Delayed Integration of Devices

In case of delay in integrating a device with the server beyond the timelines above, a penalty of Rs. 10/- per day per system, plus applicable GST and cess, shall be levied on the total order value corresponding to the number of systems delayed, subject to a maximum of 10% of the total order value corresponding to that number of systems, plus applicable GST and cess.

5. Go-Live Acceptance Criteria

The following is an indicative list of acceptance criteria to be adopted for the project. These will include, but not be limited to, the following:

- Successful device provisioning, authentication, and data flow from RMS to the Bihar State SEDM Portal for the sample devices tested.
- Reports generated accurately for different stakeholders, viz. Feeder Load Curve, Feeder Current Trend, Voltage Profile, Power Factor, Outage Report, Seasonal Demand Curve, etc.
- Dashboards successfully displaying real-time data for both sub-station-end (solar plant/feeder monitoring) and plant-end views under the feeder-level solarisation model.
- Successful integration and data exchange test with the MNRE National Level SEDM Portal.

6. Architecture of the Bihar State Level SEDM Platform

6.1 High Level Architecture

All Remote Monitoring Systems installed across Bihar under PM-KUSUM Components C shall connect to the Bihar State Level SEDM Platform. The Bihar State SEDM Platform shall summarise the data in the required format and provide it to the National Level SEDM Platform maintained by MNRE. Data access shall be provided to various stakeholders (BSPGCL, DISCOMs, empanelled agencies, Solar Plants/consumers) from the Bihar State SEDM Platform.

The Bihar State SEDM Platform shall mainly consist of two major parts:

- Device Integration (SCADA) — responsible for device connectivity, security, tag/message processing, archiving, and events/notifications.
- System Modules (Business Process Modules) — responsible for application workflows, consumer/asset management, billing data, reporting and MIS.

6.2 System Components and Architecture for Feeder-Level Solarisation (PM-KUSUM Component A/C)

Since Bihar's PM-KUSUM programme places particular emphasis on solarisation of agricultural feeders at the sub-station level, the Bidder's platform must specifically support the following two-tier monitoring architecture (as detailed in the attached 'Specifications for Remote Monitoring System — PM-KUSUM Component C):

6.2.1 Sub-Station End — Solar Plant Performance & Feeder Availability Monitoring

Monitors String Combiner Box(es) [DC V, I, kW, kWh per string], Inverter(s) [DC and AC V, I, kW, kWh, kVARh, kVAh], the Generation Meter, the 11kV/33kV interconnection transformer, feeder status (ON/OFF/TRIP) via digital inputs, the Bi-directional Meter at the 11kV/33kV bus, and local weather parameters (irradiation, temperature, wind speed) required for % Performance Ratio (%PR) calculation — all aggregated through an RMS & DAQ unit with RS485 field connectivity and remote (cellular) communication to the Bihar State SEDM Portal.

6.2.2 Plant End — Pump Performance & Energy Monitoring

Monitors each plant connection on the solarised feeder. Solar Plant connections may either use a new smart energy meter (Solar Plant-1 type) with remote communication, or an existing energy meter integrated with an RMS & DAQ unit (Solar Plant-2 type, similar to stand-alone solar pump RMS) supporting RS232/RS485 connectivity to the meter, analog/digital inputs, relay outputs for remote pump control, and multiple operational modes — remote operation, schedule-based operation, and sensor (moisture) based operation — to optimise energy usage.

The Bidder's SCADA platform must be able to logically group and present data separately for the sub-station-end (plant/feeder) view and the Solar Plant-end (pump/energy) view, while maintaining the relationship between a feeder, its solar plant, and all Solar Plant connections mapped to that feeder.

6.3 Reference Architecture Diagrams (Options under PM-KUSUM Component C)

For completeness, the Bidder's platform shall also support configurations described in the attached RMS specification document, which may be used in Grid connected solar plant installations.

6.4 Detailed Module Level Architecture

The Device Integration part of the platform shall have various modules related to SCADA functionality as elaborated in Section 7 below (Device Management, SCADA Tag Processing, Events & Notification Processing, Archiving & Historian, MDAS/MDM, User & Role Management, Consumer Mobile Application and Report Manager), structured as a multi-layered software architecture so that each layer (service/integration) can be modified independently without impacting the entire architecture.

7. Software Modules Requirement Specifications

The following software modules are required for the Device Integration part of the Bihar State SEDM Platform, structured on a multi-layered software architecture:

- Device Management
- SCADA Tag Processing
- Events & Notification Processing
- Archiving & Historian
- Meter Data Acquisition (MDAS) & Meter Data Management (MDM)
- User & Role Management
- Consumer / Solar Plant Mobile Application
- Report Manager

7.1 Device Management with TLS/SSL VPN

The primary function of this module is to ensure configuration, security, connectivity, communication, and availability monitoring of Remote Monitoring Systems. It must support:

- Multi-device communication connectivity using an MQTT (IIoT) broker capable of handling bi-directional communication with up to 10,000 devices on a single instance.
- Device registration and configuration against a Universal Unique ID — IMEI number (cellular connectivity) or MAC ID (Ethernet/Wi-Fi connectivity).
- Manufacturer Unique ID capture: Serial Number, Batch, Manufacturing Date, Model Number, etc.
- VPN security: upload and configuration of TLS/SSL client certificates for AES-256 bit encrypted communication.
- Device SIM card details: mobile number, service-provider APN, username, password.
- Server connection configuration: IP, URL, port, and MQTT/FTP server details.
- Server authentication credentials: token/username and password for MQTT and FTP servers.
- OTP configuration: auto-generation and exchange of a 32-character random topic for OTP subscription.
- Communication topics: auto-generation and exchange, with topic authorisation against unique device identification.

- SMS gateway integration and gateway mobile-number configuration for SMS-based connectivity fallback.
- FTP server for updating device configuration files and certificate renewal.

7.1.1 Communication Modes to be Supported

- Push on Periodic Interval
- Push on Event/Notification
- On-Demand Read Parameter
- On-Demand Write Command
- Configuration Read/Write (Configuration-over-the-air)
- SMS-based Periodic Data, On-Demand Read/Write, and Configuration Update (as fallback)

7.1.2 Communication Analysis

- % Device Connectivity
- % Data Availability of different parameters
- Number of messages/data received

7.1.3 Security Requirements

The platform must implement the full security stack described in the 'RMS Communication and Security Architecture — PM-KUSUM SEDM Platform' document (see Section 10 below for details): Identification, Encryption (AES-256 over TLS/SSL), Authentication (TLS/SSL client certificate based), Authorization (topic-level access restriction), and OTP-based transaction security.

7.2 SCADA Tag Processing

- Message processing of MQTT messages — periodic push and event-based push — with JSON parsing at a speed of at least 100 messages/second using multiple threads.
- Virtual Device (VD) based message parsing — a single physical device/RMS may report multiple virtual devices such as Drive, Bi-directional Meter, Generation Meter, DAQ, etc.
- Ability to send remote commands to devices (e.g., remote operation).
- Ability to update single or multiple configuration parameters (alarm limits, schedules, etc.), including bulk updates across multiple devices on a single command.
- Auto-update of device configuration, such as RTC synchronisation with server timestamp.
- Auto-generated Machine-to-Machine (M2M) commands, such as automatic pump-off for Demand Side Management.
- Support for SMS-based read/write of individual parameters as a fallback communication channel.
- Processing of multiple tags/parameters (V, I, PF, F, kW, kWh, etc.) for trend and analysis.

- Processing of soft/derived parameters based on logic and conditions, e.g., voltage unbalance/unbalanced load.
- Server-side automatic handling of missing data based on missing indexes, periodic interval and time period, with configurable priority for retrieval of important missing data.
- Ability to create multiple parameter groups: Instantaneous, Notifications, Mobile Application Groups, with user/role mapping against each group for access control.

7.3 Events & Notifications Processing

- Configuration of limits for analog alarms (H, HH, L, LL) and digital alarms (V, I, kW, PF, F, etc.).
- Processing of Hard Tags and Soft Tags to generate alarms — plant status, inverter status, feeder trip, etc.
- Logic and calculation-based alarms derived from Hard Tags and Soft Tags.
- Alarms against archived parameters (daily/weekly/monthly %CUF, average plant running hours, etc.).
- Notification configuration and processing against alarms/events or on a scheduled basis, via SMS, e-mail and push notifications to configured users.
- Notifications on non-availability of data, at the following minimum intervals: Component C — 24 hours (Empanelled Agency), 24 hours (Solar Plant).
- Notification groups and role-based subscription security for users and devices.

7.4 Archiving & Historian

- Rule-based archiving with Min., Max., Initial, Last, Count and Sum values of configured parameters over configured time durations.
- 15-minute slot-wise archiving, daily archiving, and monthly archiving.
- Configuration of multiple parameters from multiple devices into a single virtual device group.
- Summary parameters — deriving district/feeder/state-level summaries on a daily and monthly basis.
- Archiving-based notification configuration against alarms/events of archived parameters.
- Soft Tag processing via API-based logic/calculation of integrated parameters.
- Storage and retrieval of historical data across multiple tables/formats, based on archiving rules.

7.5 Meter Data Acquisition (MDAS) & Meter Data Management (MDM)

- Meter information: Make, Model Number, Serial Number, Ratings, etc.
- Meter instantaneous data: RTC timestamp, line-to-neutral and line-to-line voltage, phase-wise and total current, active/reactive/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 a snapshot of relevant parameters.
- Rule-based meter data verification and validation, and meter-replacement/serial-number-mismatch reporting.
- Integration capability with the existing DISCOM billing system.

7.6 User & Role Management

- Creation of multiple organisation types: National Implementing Agency (MNRE), State Implementing Agency (BSPGCL), State PSUs (DISCOMs, transmission companies, etc.), Solar Empanelled Agencies, and RMS/Software Agencies.
- Addition of multiple users under each organisation.
- Assignment of District, Feeder, Sub-Station or Plant-level access to organisations — with Component C (including feeder-level solarisation) at Feeder level.
- Creation of multiple user roles: Admin; Users with Add/Edit/Delete rights; View-only users.
- User-level access control: assignment of systems and parameter groups per user, view-only access, and write/command/configuration access as applicable.
- Consumer/Solar Plant/Owner mapping: ability to add thousands of consumers, each restricted to access only their own system's data.

7.7 Consumer / Solar Plant Mobile Application

- Multiple language selection at login (including Hindi).
- User profile and details; OTP-based password reset.
- System details: plant ratings, connection details.
- Live status: RMS connectivity, generation status, grid status (single/three phase availability), power import/export status.
- Today's running hours and performance analysis — summary of yesterday and current month, generation/consumption/%CUF.
- Trend views — current/last week, current/last month, day-wise solar generation, net energy, water discharge and running hours.
- Complaint registration and service-centre contact details.
- Help documents, safety guidelines and system-performance-improvement guidance.

7.8 Report Manager

- Report generation with multiple duration filters: last week, last month, current week, current month, current billing cycle, and user-configurable date ranges.
- Running hours reports; %CUF, pump consumption, and solar-energy-generation reports.
- Billing reports: net, import and export of energy.
- Loss-calculation reports.

- Abnormal electrical system reports: over-voltage, voltage unbalance, overload, unbalanced load, high temperature.
- Instantaneous parameter reports: min., max., average values of voltage, PF, power, etc.
- % Device connectivity and % data availability reports.
- Comparison and correlation reports between two durations/seasons or two products.
- SLA calculation reports — periodic, system-generated calculations for penalties and SLA compliance, as required by BSPGCL from time to time.
- Reports related to billing and electrical-system performance analysis as required by BSPGCL/DISCOMs during the 5-year contract period.
- Automatic monthly and annual energy-accounting and commercial-settlement reports as required by BSPGCL.

7.9 Integration with MNRE National Level Portal

The Bidder shall integrate the entire Bihar State SEDM Platform data with the existing State-level as well as National-level Solar Energy Data Management Platform, as described in the relevant Annexure of the MNRE 'Model Guidelines for State Level SEDM Software Development'.

8. Communication Architecture & Security between RMS and Bihar State Server

The Bidder's platform must implement the communication and security architecture exactly as specified in the attached 'RMS Communication and Security Architecture — PM-KUSUM SEDM Platform' document, summarised below.

8.1 Security Architecture

The communication between RMS/DCU and the Bihar State SEDM (IoT) Platform must implement a Private TLS/SSL VPN to prevent interception, packet-sniffing and man-in-the-middle (MitM) attacks, with the following five security pillars:

Security Pillar	Implementation
Identification	By TLS/SSL certificate as well as IMEI identification during message exchange
Encryption	AES-256 encrypted communication over TLS/SSL
Authentication	TLS/SSL client-certificate-based authentication
Authorization	Access restricted only to topics authorised to the specific device
OTP	Only messages with a valid OTP are processed further; others are disarded

8.2 RMS Registration Process

- Every supplier/vendor must register all unique IMEI numbers of RMS/DCU devices with the Bihar State SEDM Platform.
- The State platform shall generate an individual client certificate for each RMS/DCU against its registered unique IMEI, and share it with the supplier/vendor through a secured web API interface.
- Each supplier/vendor shall access the web API using unique credentials issued to them.
- The web API shall return the individual client certificate, Device Broker URL, and the 'info' topic.
- After installation of the client certificate relevant to its IMEI, the RMS/DCU shall connect to the Device Broker, authenticate using the client certificate, and — after subscribing to the default topic — receive additional configuration details such as FTP credentials and message topic structure.
- On client-certificate expiry, the RMS shall connect to the FTP server using its available credentials and download the renewed certificate.

8.3 MQTT Topic Structure

RMS/DCU devices shall publish and subscribe only to their respective authorised topics, in the format:

[Application Version] / [Solution] / {IMEI} / [Message Type]

Sub-topic	Purpose	Direction
Info	Default topic to exchange RMS/DCU configuration details	Subscribe
OTP	Exchange OTP at every configurable interval (15/30/60 minutes)	Subscribe
Heartbeat	Update RMS/DCU health indicators at frequent configurable intervals	Publish
Data	Exchange RMS/DCU monitoring parameters in push mode (periodic / on event / historic-missing-data)	Publish
Ondemand	Exchange Read/Write commands between server and RMS/DCU, tracked against a common MSGID	Publish/Subscribe
Config	Configuration-over-the-air for configurable device parameters	Subscribe

8.4 Communication Modes

- Push on Periodic Interval — e.g., Inverter/Pump Controller data every 5 minutes, Energy Meter data every 15 minutes, String Combiner Box data every 10 minutes (all intervals configurable).

- Push on Event — immediate transmission on detection of configurable alarm/event conditions (inverter ON/OFF, fault/trip status, feeder trip, etc.).
- On-Demand Read — server sends a command to RMS to retrieve data as and when required.
- On-Demand Write — remote-operation commands sent to RMS, with acknowledgement returned after execution.
- Configuration Read/Write — remote reading/updating of configurable parameters such as periodic interval, alarm limits, and server parameters ('configuration over the air').

8.5 Communication Protocols

- Field Device Communication: RMS to field devices (Inverter, Drive, String Combiner Box, MFT/MFM, DAQ) shall use MODBUS RTU protocol, ensuring interoperability across makes/manufacturers.
- Energy Meter Communication: RMS to Energy Meter (Bi-directional Revenue Meter, Solar Generation Audit Meter) shall use DLMS or Modbus protocol.
- RMS to Server Communication: Industrial IoT MQTT protocol, a widely accepted IoT protocol for Smart Grid, Smart RE and Smart City applications.

8.6 MQTT Message Structure

Every message exchanged between the RMS/DCU and the Bihar State SEDM Platform through the Device Broker shall include (at minimum) the following handshaking parameters, in addition to equipment-specific parameters, exactly as defined in the JSON annexures of the attached Communication Architecture document:

Keyword	Description
IMEI	Unique identification of RMS/DCU — required to ensure registered source of data
VD	Virtual Device/group — for grouping parameters based on update interval/subsystem
MSGID	Message transaction ID for Ondemand/Config request-response-acknowledgement-feedback
COMMAND	Read/Write — applicable only for Ondemand/Config message types
TIMESTAMP	RTC timestamp of RMS/DCU against all parameters of the VD/group (YYYY-MM-DD HH:mm:ss)
STINTERVAL	Periodic interval (minutes) at which RMS stores and transmits data

Keyword	Description
DATE / INDEX / MAXINDEX / LOAD	Local storage reference date, index, maximum index and retrieval command/status
POTP COTP	Previous / Current One-Time Password

The Bidder shall implement all equipment-wise JSON message formats exactly as specified in Annexures 1–7 of the attached 'RMS Communication and Security Architecture — PM-KUSUM SEDM Platform' document, covering: Plant Controller, Energy Meter, Inverter, String Combiner Box, RMS Heartbeat, DAQ System, and On-Demand Read/Write Parameter/Configuration messages. These Annexures are enclosed with this tender as Annexure-1 and form an integral part of the technical specifications.

9. Specifications for the Remote Monitoring System (RMS)

While supply, installation, testing and commissioning of RMS hardware is outside the scope of this tender (refer Section 2.3), the Bidder's SCADA platform must be fully compatible with, and capable of integrating, RMS devices meeting the following minimum specifications (as detailed in the attached 'Specifications for Remote Monitoring System — PM-KUSUM Component C document). This is provided to enable the Bidder to design a platform compatible with the field devices to be integrated.

9.1 RMS for Grid-Connected Solar Pumps (Component C)

- Solar system performance: DC voltage/current, AC output current, power, energy, inverter status, drive frequency, etc.
- Net metering: integration of Bi-directional Grid Interface Meter and Solar Generation Audit Meter over DLMS on RS232 ports, capturing imported/exported/net/solar-generation energy, voltage, power, current, PF.
- Billing data management: billing parameters from the Bi-directional Grid Interface Meter, as required by DISCOMs.
- RMS performance: % device connectivity, % data availability.
- Events and notifications: solar-generation faults, inverter faults, controller/drive faults (overload, dry run, short circuit, etc.).
- Consumer management: name, agriculture details, service number, contact details.
- Asset management: ratings, serial number, make/model of panel and controller, IMEI of communication module, ICCID of SIM.
- Complaint and ticket management; consumer mobile application for generation, running hours, complaint logging.

9.2 RMS for Solarisation of Agricultural Feeder at Sub-Station Level (Component C — Feeder Level Solarisation)

This is the primary configuration for Bihar's feeder-level solarisation programme, and the Bidder's platform must give it particular attention. As detailed in Section 6.2 above, the RMS at the sub-station end must monitor String Combiner Box(es), Inverter(s), the Generation Meter, feeder ON/OFF/TRIP status (digital input), the Bi-directional Meter at the 11kV bus, and weather parameters for %PR calculation. The RMS at each Solar Plant connection (either a new smart meter or an existing meter with RMS & DAQ) must support remote, schedule-based, and sensor-based pump operation modes.

9.3 Common Communication Architecture Requirements (applicable across 9.1–9.3)

- Field Device Connectivity: RMS to Plant/Inverter/String Combiner Box on RS485 MODBUS RTU protocol, for interoperability irrespective of make/manufacture.
- Remote Connectivity: GSM/GPRS/2G/3G/4G cellular connectivity.
- Local Connectivity: Ethernet/Bluetooth/Wi-Fi for local configuration and retrieval of locally stored data.

- Relay/contactor provision of suitable rating for remote plant operation, supporting mobile-app-based, schedule-based, and sensor-based operation modes.
- Communication protocol: MQTT to establish communication with thousands of systems; JSON message format as required by the SNA/SIA.
- Security: TLS/SSL/X.509-certificate-based encryption; token/password-based authentication and authorisation.
- Local data storage for at least one year in case of unavailability of cellular network, with automatic push to the central server on restoration of connectivity.
- Configuration update over-the-air for parameters such as IP, APN, data-logging interval, set points, etc.

9.5 EMI/EMC Certification Requirements for RMS

Sr.	Test	Passing Criteria
1	Surge Immunity Test (IEC 61000-4-5)	A
2	Electrical Fast Transient (IEC 61000-4-4)	A
3	Electrostatic Discharge (IEC 61000-4-2)	A
4	Radiated Electromagnetic Field Test (IEC 61000-4-3)	A
5	Power Frequency Magnetic Field (IEC 61000-4-8)	A
6	Conducted Disturbances induced by radio frequency (IEC 61000-4-6)	A
7	Voltage Dips, short interruptions (IEC 61000-4-11)	A
8	Dry Heat Test (IEC 60068-2-2), continuous operation @ 55°C	O
9	Damped Heat Test (IEC 60068-2-78), @ 95% RH and 40°C	O
<i>Passing Criteria — A: Temporary degradation or loss of function/performance which is self-recoverable. O: Normal performance within specified limits.</i>		

10. Device Integration (SCADA) Configuration Services — Scope per RMS Device

10.1 RMS Device Provisioning Services

- RMS device registration against unique IMEI number.
- X.509 certificate generation.
- Generation of unique Client ID, username and password for each device for MQTT authentication.
- Generation of unique topics for each device for MQTT authorisation.
- Generation of unique FTP server user credentials.
- RMS device testing and hand-holding of the empanelled agency.
- Support for RMS device installation and go-live to the empanelled agency.

10.2 SCADA Configuration Required for Each Device

- SCADA device configuration under the respective DISCOM, Division, Sub-Division, Sub-Station/Feeder, with IMEI-number mapping in SCADA.
- Up to 100 Hard Tag configurations per device, as per the annexures in the Communication Architecture document.
- Up to 10 formula-based Soft Tag configurations, e.g., unbalanced load, single-phase detection, three-phase detection.
- Up to 20 Archiving Tag configurations for integrated parameters required for performance analysis, e.g., active energy (solar generation, import, export, net), running hours (pump, grid, three-phase availability), water discharge parameters, and performance parameters (%CUF, per-day-per-kW generation, per-day-per-HP consumption).
- Up to 20 Event and Notification configurations — instantaneous parameters (plant status change, over-voltage, unbalanced load, overload, low PF) and archived parameters (average low generation/availability/operation hours over current week/month, average high running hours of pump), with mobile push-notification configuration against required events.

10.3 User & Role Management Configuration

- Creation of parameter groups against which user-access management can be mapped, at both individual-consumer and entire-feeder/district level for BSPGCL/DISCOM analysis (including Map View Group with geo-location, and Daily Analytics Group with day-wise bar graphs of important archived parameters).
- Mapping of users against relevant groups so that: individual consumers can access only their own system's data; BSPGCL/DISCOM users can access data limited to their relevant Feeder/District; and empanelled-agency users can access data limited to their relevant Feeder/District.

11. Requirements of Software Operation & Maintenance Services for 5 Years

O&M activities are defined across four parts:

- Remote Operational Support Services — required for successful application processing through all workflow stages.
- Remote Software Maintenance Services — required for maintaining availability and performance of the entire software platform.
- Consultancy Services — required to analyse received information and highlight abnormalities/irregularities to concerned officers and empanelled agencies.
- Regular Training and Handholding Services for BSPGCL/DISCOM officers and empanelled agencies.

11.1 Remote Operational Support Services

- Tracking applications through various stages, from registration to payment disbursement.
- Identifying misleading information and its reflection in reports/dashboards.
- Troubleshooting related to data verification and validation of each application.
- Mass or individual application-level rectification of data entries as per BSPGCL requirements (subject to permission from the competent authority).
- Support to empanelled agencies for troubleshooting and rectification (subject to permission from the competent authority).
- Support for auto-generation of forms and documents for each application.
- Regular archiving and back-up of each application during its processing till closure.
- Ensuring complete integration and closure of each application at the National Level Portal.

Information security is of utmost importance. It is the prime responsibility of the Bidder to ensure that data remains secure from unauthorised user access, with all due care taken in implementation.

11.2 Remote Software Maintenance Services

- Ensuring availability, proper functioning and performance of each software module.
- Bug resolution.
- Updating SCADA configuration in case of device/meter replacement.
- Support for billing-integration APIs as per BSPGCL/DISCOM requirements.
- Periodic database backup and restoration of the database and software platform in case of infrastructure or other failures.
- Maintaining compatibility with the latest versions of operating system and database used by servers, PCs and mobiles, releasing upgrades as required and submitting the latest source code to BSPGCL.

- Ensuring the software is not vulnerable to security threats, and updating the third-party security audit certificate as per guidelines.

11.3 Consultancy Services

- Verification, validation and identification of data/image discrepancies in JCR/PCR reports, with weekly/monthly highlighting to the concerned officer.
- Analytics of consumer and asset information.
- Development of reports related to billing and electrical-system performance analysis, as required by BSPGCL/DISCOMs, during the 5-year period.
- Automatic monthly/annual energy-accounting and commercial-settlement reports.
- Identification and generation of weekly/monthly exceptional reports (low generation, low CUF, abnormal electrical parameters, abnormal consumption/running hours, low component availability, low device connectivity, low data availability) shared with concerned officers at district/sub-division/state/DISCOM level.
- Identification and generation of exceptional reports related to complaint and ticket management — response/resolution time vs. SLA, root-cause analysis of complaints, and performance grading of agencies and components.

11.4 Regular Training and Handholding Services

Software and system training shall be conducted in person on a regular monthly basis, or as and when required, covering (but not limited to):

10. Business processes, data-entry impact, issues and resolutions.
11. Solar, grid and electrical-system performance analysis and issues.
12. Awareness for the Solar Plant mobile application, complaint and ticket management.
13. System and communication architecture, RMS, IT, and web/mobile applications.

12. Requirements of Cloud Hosting for Each Remote Monitoring System

The Bidder shall provide MEITY-approved, ISO 27001-compliant cloud infrastructure for each RMS for a period of 5 years, considering a multi-layered software and server/client architecture comprising, at minimum, the following layers:

- Device Integration and Management Server, with multiple message-queuing structure.
- SCADA Server with Tag, Alarm and Event processing.
- Application Server for third-party integration and configuration.
- Database (Trend) Server to store real-time data for trends and analysis.
- Archiving & Report Server to process archiving logic and store report data.
- Notification Processing Server for e-mail, SMS and push notifications.
- Web Server for mobile clients.
- Web Server for enterprise clients.

12.1 Minimum Performance Requirements

Server / Layer	Requirement
Device Management Server	Handle burst load of 600 messages/second from 5,000 devices on a single instance; routine load based on 3 messages every 15 minutes per device
SCADA Server	Process 1 million parameters every minute (200 parameters × 5,000 devices, single instance); process 100,000 events/alarms every minute (20 events × 5,000 devices, single instance)
Application Server	Host all required APIs and BOT-processing applications for integration with the MNRE National Level Portal
Database — Trend Server	Store 90 days of data for all samples (Type-1: 100 / Type-2: 200 / Type-3: 300 JSON parameters); retrieve 16 parameters per API call in <10 seconds for 50 concurrent enterprise users (4 Mbps)
Archiving & Historian Server	Store 180 days of data (Type-1: 50 / Type-2: 100 / Type-3: 150 JSON parameters); retrieve 16 parameters per API call in <10 seconds for 50 concurrent enterprise users (4 Mbps)
Archiving & Report Server	Store 1,825 days (5 years) of data (Type-1: 50 / Type-2: 100 / Type-3: 150 JSON parameters); retrieve 4 parameters per day-wise/weekly/monthly chart in <10 seconds for 5,000 concurrent mobile users (2 Mbps)
Web Server — Enterprise Users	Live-asset monitoring for up to 500 consumers of a single Feeder/District/Sub-Station on a single page (20 parameters each), map view with lat/long, KPI dashboard (10 parameters × 30-day values), individual-consumer monitoring (up to 200 online parameters), remote operation/configuration provision; response time <10 seconds for 50 concurrent users
Web Server — Mobile Users	Online monitoring (up to 50 parameters), summary parameters (up to 5, for last/current week/month), day-wise trend (up to 4 parameters × 30 days); response time <10 seconds for 5,000 concurrent mobile users

The Bidder shall additionally ensure back-up, redundancy and queue/buffer mechanisms, wherever required, to maintain more than 99% availability of the system. Storage redundancy shall be maintained for uninterrupted data availability of trend, archived and summary parameters for 90 days; provision shall be made to restore a 5-year data back-up within 24 hours in case of hardware failure.

13. Service Level Agreement & Penalty Terms for Software & Cloud Services

Any scheduled or planned maintenance activity, informed in advance and approved by BSPGCL, shall not be considered as non-availability of the system. Non-availability of the system shall not include: (a) downtime due to hardware/software/application owned by BSPGCL/DISCOM at their premises; (b) negligence or other conduct of BSPGCL/DISCOM or its agents, including failure/malfunction of applications or services provided by BSPGCL/DISCOM or its vendors; or (c) failure/malfunction of any hardware or software not provided by the Bidder.

Availability per month (Software)	Deduction as % of the apportioned price for each device
> 98%	NIL
Less than 98%	Deduction of 5% of the apportioned yearly value of the maintenance contract for every 1% (or part thereof) decrease in availability below 98%
Less than 90%	Deduction of 10% of the apportioned yearly value of the maintenance contract for every 1% (or part thereof) decrease in availability below 90%
Less than 80%	Deduction of 15% of the apportioned yearly value of the maintenance contract for every 1% (or part thereof) decrease in availability below 80%
Less than 75%	No payment for that device for the year

14. Payment Terms

The cost of any operation & maintenance work rendered necessary during the contract period due to a defect in the software shall be borne by the Bidder; BSPGCL shall not be liable to pay any amount towards such O&M work.

14.1 Payment against Supply, Integration, Testing & Commissioning (SITC)

Payment against device configuration shall be made within 30 days of receipt of valid invoices, along with a certificate of successful completion of work for each system, certified by the concerned DISCOM's/BSPGCL's Engineer-in-Charge, subject to demonstrated data consistency for at least 15 days. Payment shall be made monthly, based on the actual number of systems made go-live in that month and receipt of the corresponding invoice.

14.2 Payment of O&M Services

The Bidder shall provide unit rates for each application in two parts, with payment as follows:

- Part-1: Business processes where services are required till installation, commissioning and PCR/JCR report submission of the solar system. Payment shall be made monthly, based on the actual number of successfully accepted JCR/PCR reports in that month.
- Part-2: Device Integration (SCADA), where services are required during the 5-year O&M period of the solar system. Payment shall be made monthly, based on the actual number of systems made go-live in that month. 20% of the total payment towards the remote-maintenance charge for five years, against each system, shall be released at the end of each year from the date of integration of the device, for the 5-year maintenance period, as tabulated below.

Milestone	% of Total Maintenance Cost of Each System
Completion of 1st year from date of integration	20%
Completion of 2nd year from date of integration	20%
Completion of 3rd year from date of integration	20%
Completion of 4th year from date of integration	20%
Completion of 5th year from date of integration	20%

Bills shall be submitted quarterly to the Registered & Corporate Office of the concerned Solar Cell / BSPGCL.

14.3 Payment of Cloud Services

20% of the total payment against the remote-maintenance charge for five years, against each system, shall be released at the end of each year from the date of integration of the device, for the 5-year maintenance period, on the same schedule as Section 14.2 above.

14.4 Other Conditions

- The Bidder shall develop a mobile application for Android and iOS platforms.
- The web application must work with all leading browsers (Chrome, Edge, Firefox, etc.).
- The successful Bidder shall design the back-up strategy in consultation with BSPGCL/DISCOM to maintain and restore the application and database tiers of the system.

15. Bid Eligibility Conditions & Evaluation Criteria

Offers of only those bidders who qualify based on the following evaluation criteria will be taken into further consideration; prices of only those bidders qualifying on the subsequent criteria will be opened.

15.1 Preliminary Offer

Documents towards payment of the Tender Document Fee and Earnest Money Deposit (EMD) — or a notarised copy of the SSI/MSME/Udyog Aadhaar Memorandum certificate registered in Bihar and registration with CPSU/NSIC/DGS&D in the prescribed form — are required to be submitted with the tender document. All documents required in the 'EMD & Tender Document Fee Cover' must be placed as specified in this tender document. Technical offers of only those bidders found qualified based on the preliminary offer will be opened.

15.2 Techno-Commercial Offer

Offers of only those bidders fulfilling the minimum eligibility conditions below, and who have submitted the required documents under the 'Technical Offer' cover (physical and online, as applicable), will be considered for technical evaluation.

15.2.1 Minimum Eligibility Conditions

- The Bidder shall be a body incorporated in India under the Companies Act, 1956/2013 (including amendments), engaged in manufacturing and/or as a system integrator in the business of Solar Power/Renewable Energy; or a body registered under the Limited Liability Partnership Act, 2008, engaged in the same business. A certified copy of the relevant registration certificate, and requisite GSTIN, shall be enclosed with the bid.
- In case of a bidder that is an incorporated Indian Joint Venture company, the technical and financial experience criteria shall be met either by the JV company itself, or by an individual JV partner (Indian or foreign) holding at least 26% stake in the JV company.
- A Power of Attorney (POA) authorising a person to sign documents, submit technical/commercial information, and attend meetings on behalf of the bidder must be submitted.
- The bidder must not be currently stopped/blacklisted by any Government agency in any State.
- Technical Experience: The bidder should have experience of successfully implementing a SCADA system or a Meter Data Acquisition System (MDAS) with remote device operation, for Energy Management of a Power Utility, for at least 1000 Energy Monitoring Devices (Meters/Inverters/Controllers/Drives/String Combiner Boxes) during the last 2 years as on the date of publication of this tender. Experience certificates/acceptance reports/work orders/LoAs, clearly establishing start/end dates, scope and project value, shall be submitted.
- Turnover and Net Worth: Average annual turnover of the bidder during the last 2 financial years shall be at least Rs. 01 (one) Crore per year, with positive net worth in both years. The applicable financial years shall be FY 2023-24 & FY 2024-25, or FY 2024-25 & FY 2025-26 (considering provisional turnover for FY 2025-26). A bidder showing average turnover/net worth of only one qualifying year shall not be considered; the company must have been in existence for at least the last two years.

- Parent Company: Eligibility of a parent company holding a minimum 26% share in the bidding company may also be considered, with documentary evidence submitted along with the bid.
- Audited/certified copies of annual accounts (or a CA-certified turnover summary for proprietorship/partnership firms) shall be enclosed.
- The bidder must have a valid GSTIN registration certificate in the State and a valid PAN, copies of which shall be enclosed with the Technical Bid.
- Proof of Concept (POC): The bidder shall be required to establish the POC within 7 days of intimation, as per Section 3 above.

15.2.2 Conflict of Interest

A bidder shall not have a conflict of interest with other bidders for a particular quoted item. A bidder may be considered to have a conflict of interest if, among other things: it shares common proprietors/partners/directors with another bidder; it receives direct or indirect financial subsidy/stake from another bidder; it shares a common legal representative/agent with another bidder; it has a relationship (direct or through common third parties) enabling access to or influence over another bidder's bid; it participates in more than one bid in this process (which shall disqualify all such bids); or it participated as a consultant in the preparation of the design/technical specifications of this tender. Every bidder shall, at the time of bid submission, provide a declaration of no conflict of interest.

15.2.3 General Conditions

- The bidder should have at least 5 personnel on its rolls with a minimum of 2 years' SCADA-implementation experience (in their own or another organisation), whose responsibilities include development and/or customisation of SCADA systems. Details in the CV format, duly signed, shall be provided with the technical bid.
- The bidder shall declare if any relative is working with, or is an employee of, BSPGCL/any Bihar DISCOM.
- The tender document, duly signed and sealed on every page, shall be submitted along with the technical bid, as acceptance of the terms and conditions.
- The bidder should be an ISO 9001:2015 (or equivalent) certified company, with a valid certificate as on the date of bid submission.
- Offers not satisfying any of the above criteria will be liable for rejection.
- BSPGCL reserves the right to accept or reject any or all tender documents/bids. The decision of BSPGCL shall be final and binding on all bidders.

16. Price Bid Format (Schedule-B)

The price offers of only those bidders who qualify in the techno-commercial offer evaluation, fulfilling the required criteria mentioned above, shall be opened.

Sr. No.	Item Description	Qty.	Unit Rate (Rs.)	GST (%)	GST (Rs.)	Total Amount (Rs.)
1	Supply of SCADA Software License, Deployment, Integration and Go-Live services for each RMS, and integration with the Bihar State Level Portal & MNRE National Level Portal of PM-KUSUM scheme Component C, as described in Tender Sections 6 & 7 — System-1 (Up to 100 Parameters)	1		18%		
	— do — System-2 (Up to 200 Parameters)	1		18%		
	— do — System-3 (Up to 300 Parameters)	1		18%		
2	O&M Services Part-1 — Remote Operational Support Services (Section 11.1) — System-1 (Up to 100 Parameters)	1		18%		
	— do — System-2 (Up to 200 Parameters)	1		18%		
	— do — System-3 (Up to 300 Parameters)	1		18%		
3	O&M Services Part-2 — Software Maintenance, Consultancy & Training for 5 years (Sections 11.2–11.4) — System-1 (Up to 100 Parameters)	1		18%		
	— do — System-2 (Up to 200 Parameters)	1		18%		
	— do — System-3 (Up to 300 Parameters)	1		18%		
4	Cloud Hosting on MEITY-approved, Tier-3 or higher, ISO 27001-compliant Data Centre/Cloud Platform, with SLA of >99.9% availability and the computational/storage performance in Section 12, for each RMS type, for 5 years — System-1 (Up to 100 Parameters)	1		18%		
	— do — System-2 (Up to 200 Parameters)	1		18%		

Sr. No.	Item Description	Qty.	Unit Rate (Rs.)	GST (%)	GST (Rs.)	Total Amount (Rs.)
	— do — System-3 (Up to 300 Parameters)	1		18%		
	Total (Item 1 + Item 2 + Item 3 + Item 4)					-----

Bidders shall quote unit rates per system for each of the three system types (based on number of parameters), inclusive of all applicable taxes, duties, and levies except GST, which shall be shown separately.

17. List of Annexures

- Annexure-1: RMS Communication and Security Architecture — PM-KUSUM SEDM Platform (including MQTT Topic Structure, Message Structure, and JSON Format Annexures for Plant Controller, Energy Meter, Inverter, String Combiner Box, RMS Heartbeat, DAQ System, and On-Demand Read/Write Configuration).
- Annexure-2: Specifications for Remote Monitoring System — PM-KUSUM Component C (including System Architecture for Net Metering, Solarisation of Agricultural Feeder at Sub-Station Level).
- Annexure-3: MNRE Model Guidelines for State Level SEDM Software Development (to be enclosed by BSPGCL).
- Annexure-4: Bidder Eligibility Documents Checklist and Formats (Power of Attorney, Turnover/Net-worth Certificate, Experience Certificate format, Manpower CV format, No-Conflict-of-Interest Declaration format).
- Annexure-5: Draft Contract Agreement / Service Level Agreement (SLA) format.