

**JHARKHAND RENEWABLE ENERGY DEVELOPMENT AGENCY**  
Address - 3rd Floor, SLDC Building, Kusai, Doranda, Ranchi-834002. Jharkhand  
Phone No. +91-0651-2491161 Fax No. +91-0651-2491165 Email: info@jreda.com



**EOI No. 23/JREDA/EOI/IT/20-21**

**For**

**IT supported IoT based Real-time Monitoring Dashboard along with Supply, Installation, Activation & Maintenance and Software services Support for Energy Monitoring, Control and Maintenance for Grid/Off-Grid for Solar projects across the State of Jharkhand**

**Govt. of Jharkhand**  
**Energy Department**  
**Jharkhand Renewable Energy Development Agency (JREDA)**  
 3rd Floor, S.L.D.C. Building, Kusai Colony, Doranda, Ranchi-834002.  
 Ph.: 0651-2491161, Fax: 0651-2491165,  
 E-mail: info@jreda.com; Website: [www.jreda.com](http://www.jreda.com)

**e-Procurement Notice**

**EoI No. : 23/JREDA/EOI/IT/20-21**

**Dated: 02.02.2021**

1	Name of the work	<b>Expression of Interest (EoI) for IT supported IoT based Real Time Monitoring Dashboard along with Supply, Installation, Activation, Maintenance and Software Service support for Energy Monitoring Control and Maintenance for Grid/Off-grid Solar Projects across the State of Jharkhand</b>
1	Date of publication of EoI on website: <a href="http://jharkhandtenders.gov.in">http://jharkhandtenders.gov.in</a>	<b>03.02.2021 (Wednesday)</b>
2	Last date & time for receipt of online EoI	<b>25.02.2021(Thursday) upto 05:00 P.M.</b>
3		
4	Submission of original copies of EoI fee (Offline)	<b>25.02.2021 and 26.02.2021 up to 5.00 P.M.</b>
5	EoI Opening Date	<b>01.03.2021 (Monday) at 03:00 PM</b>
6	Name & address of office inviting tender	Director, Jharkhand Renewable Energy Development Agency(JREDA) 3 <sup>rd</sup> Floor, SLDC Building, Kusai, Doranda, Ranchi- 834002 (Jharkhand)
7	Contact no. of procurement officer	9570086777
8	Helpline no. of e-procurement	0651-2491167/68/61

**Any corrigendum/addendum can be seen on website: <http://jharkhandtenders.gov.in> & [www.jreda.com](http://www.jreda.com). Further details can be seen on website: <http://jharkhandtenders.gov.in> & [www.jreda.com](http://www.jreda.com)**

**Sd/-**  
**Director,**  
**JREDA, Ranchi**

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Jharkhand Renewable Energy Development Agency (JREDA) is an autonomous body under the Societies Registration Act 21, 1860 registered on 19th February 2001 for the development and deployment of New and Renewable Energy resources for supplementing the energy requirements of the state and to generate public awareness in facilitating deployment of new and renewable energy systems. JREDA is a state nodal agency for the implementation of renewable energy projects by means of financial incentives made available by the Ministry of New and Renewable Energy (MNRE), Govt. of India and Government of Jharkhand and State Designated Agency (SDA) for implementation of Energy Efficiency projects by means of financial incentives made available by Bureau of Energy Efficiency (BEE).

**Assignment title:**

IT supported IoT based Real-time Monitoring Dashboard along with Supply, Installation, Activation & Maintenance and Software services Support for Energy Monitoring, Control and Maintenance for Grid/Off-Grid for Solar projects across the State of Jharkhand

**JHARKHAND RENEWABLE ENERGY DEVELOPMENT AGENCY** now invites eligible firms to express their interest in providing their services. Interested bidder should provide information demonstrating that they have the required qualifications and relevant experience to perform the work and share relevant details of similar work/assignments undertaken/executed. Short-listing criteria are available in Annexure – 1. The firm will be selected in accordance with meeting the short-listing criteria.

Further information can be obtained at the address below during office hours [10:00 to 18:00 hours].

Director, JHARKHAND RENEWABLE ENERGY DEVELOPMENT AGENCY  
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## Annexure – I: Eligibility Criteria

S. No.	Basic Requirement	Specific Requirement	Documents Required
1	Entity	Bidder should be original equipment manufacturer or an IT company in the field of Internet of things devices.	Copy of supporting document for manufacturer/IT in field of IoT.
2	Essential work experience	<ul style="list-style-type: none"> <li>i. Bidder should have responded to EOI in this regard and subsequently made a technical presentation.</li> <li>ii. Bidder should have experience in the design and development and installation of IOT system in the area of power sector.</li> <li>iii. Bidder should show online data of kwh meters/energy parameters as well as environmental parameters such as temperature in ant Govt energy sector industry.</li> </ul>	<p>Details of experience supported by proper documents.</p> <p style="text-align: center;">&amp;</p> <p>Copy of performance certificate.</p>
3	<b>Bidder shall submit EoI Fee of Rs. 1000/- (Non-refundable), which is payable in the form of Bank Draft in favor of Director, JREDA, Ranchi. MSE, Jharkhand need not pay EoI fee in relation to this EoI.</b>		

Exact and complete corporate/registered/home office address, business address, telephone numbers, fax numbers, E-mail and cable address should be provided by the bidder. For the bidder of foreign registry, indicate if there is any branch office(s) established in India with details in aforesaid manner.

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## 1. History

Jharkhand Renewable Energy Development Agency (JREDA) is an autonomous body under the Societies Registration Act 21, 1860 registered on 19th February 2001 for the development and deployment of New and Renewable Energy resources for supplementing the energy requirements of the state and to generate public awareness in facilitating deployment of new and renewable energy systems. JREDA is a state nodal agency for the implementation of renewable energy projects by means of financial incentives made available by the Ministry of New and Renewable Energy (MNRE), Govt. of India and Government of Jharkhand and State Designated Agency (SDA) for implementation of Energy Efficiency projects by means of financial incentives made available by Bureau of Energy Efficiency (BEE).

For the creation of a conducive environment for the development of Solar Energy in the state, State Government had notified solar policy on 10th August 2015. The policy titled, “**Jharkhand State Solar Power Policy 2015**” would remain in operation till 5 years or till the issuance of any new policy. Solar Power Projects commissioned under this policy would be eligible for the incentives declared under this policy for 10 years. For the promotion of rooftop solar programs and to bring investment in rooftop solar market in the state, state government has notified “**Jharkhand Solar Rooftop Policy, 2018**”. Rooftop specific solar policy covers clauses of mandatory installation and virtual net metering which would help peaking up of the solar rooftop installations and making Jharkhand a self-sustained solar energy market.

State of Jharkhand has potential for the development of other renewable energy sources like Small Hydel Plant (SHPs), Bio-mass based plants etc. JREDA has launched several schemes for the development of renewable energy portfolio across the state and also exploring opportunities for the development of new renewable energy sources.

## 2. Existing Infrastructure

In grid connected rooftop or small SPV system, the DC power generated from SPV panel is converted to AC power using power conditioning unit and is fed to the grid either of 33 kV/11 kV three phase lines or of 415V/230V three/single phase line depending on the local technical and legal requirements.

These systems generate power during the day time which is utilized by powering captive loads and feed excess power to the grid. In case, when power generated is not sufficient, the captive loads are served by drawing power from the grid.

The concept of rooftop solar is based on the scale of the PV plant rather than the fact whether it is situated on a roof/terrace or not. Hence, the definition of RTS also includes small solar plant on the ground

## 3. Current position

- I. About 1000+ Rooftop solar units are installed
- II. This EoI for IT supported IoT based Real-time Monitoring Dashboard along with Supply, Installation, Activation & Maintenance and Software services Support for Energy

- Monitoring, Control and Maintenance for Grid/Off-Grid for Solar projects across the State of Jharkhand.
- III. Out of this 1,000 units, energy data is sent individually from about 600 units and no data transfer takes place from the remaining about 400
  - IV. The data from individual units are not aggregated and no consolidated reports
  - V. No consolidated report on energy output, downtime etc available as on date as no system software platform is installed in this regard
  - VI. There are multiple suppliers of solar power units.
  - VII. The suppliers are mandated to operate and maintain O&M for a period of 5 years from the date of their installation.
  - VIII. The solar units are installed in multiple rooftops.

#### 4. Objective of EoI:

- i. **Utilize Internet of Things solution**, which enables continuous remote monitoring and asset management leading to improvements in productivity and profitability of the plant. The following lists the categorical benefits of adopting IoT for O&M: Asset Management:
- ii. **Improve Efficiency:** Improve efficiency of the solar cells hampered due to environmental factors such as module soiling, module shading etc by monitoring luminosity, current, voltage, temperature, humidity etc as well as overall energy output and installing efficient O&M system and maintain the system for a period of five years after installation of the system.
- iii. **Track and analyze sensor data** to help monitor physical health of the plant and Devices in real-time.
- iv. **Install a centralized system** to provide information on individual devices such as PV modules, strings, combiner boxes, inverters, transformers, etc.
- v. **Analyze historical device data** to provide insights into plant and device performance bottlenecks. For eg: simple algorithms can be used to estimate losses such shading loss, soiling loss, transmission loss, etc at an aggregated level (plant) as well as at a disaggregated level (device). Addressing these performance issues in a timely manner will result in an overall increase in equipment reliability and efficiency.
- vi. **Install Predictive analytics system** that will enable proactive detection of malfunctions, degradations and failures in devices such as PV modules, Inverters and Transformers in order to lower plant downtime and generation loss due to device failures.
- vii. **Obtain operational intelligence through Data analytics** that will lead to preventive maintenance activities which will lower equipment failures and repair/replacement costs

#### 5. Expected Benefits

- i. Real Time Status Updates
- ii. Dashboard that enables Monitoring & reporting
- iii. Real Time Maintenance support
- iv. Improved Asset Performance and uncovering of low-performing units and potential
- v. Enhanced technician Productivity.
- vi. Theft and Vandalism Prevention.

#### 6. Scope of work:

The scope of work shall be for the work Supply, Installation, Activation & Maintenance and Software services Support for Solar Energy Monitoring, Control and Maintenance System (SEMS) is to be implemented in the following three phases:

**I. Phase 1:**

- Energy Data Collection from the existing energy meters and data transfer to central server at JREDA in order to break down the data silos, enhance visibility & connectivity, and ultimately optimize productivity, processes and efficiency of JREDA.
- Study & identify whether data is available from all the locations of solar power plant (list to be provided to the successful bidder) in Jharkhand.
- Identify locations from where data is not available.
- Coordinate with solar equipment suppliers with respect to KWH meter data transfer.
- Study types of data currently captured and suggest various other types of data currently not captured but deemed necessary to exploit the full potential of solar power units.
- Study heterogeneity of data in the legacy systems & databases and streamline them in identical form
- Collection, compilation and integration of data from existing systems and devices to a separate data structure for purposes of cleansing, organizing, and analysing the combined data

**II. Phase 2:**

- In coordination with solar equipment supplier check for integrity of optic fibre cable connections and ensure dataflow from meter
- Capture of data not presently available but need to improve overall efficiency while reducing the O&M cost is to be installed during this phase. A single modem should collect and transfer data of both energy and environment.
- Assess data made available/not made available, availability of Modbus to transfer data to cloud, condition of fibre optic lines of communication, nature and frequency of data availability. Diagnose the reason as to why data is not available at several locations
- Recommend data needs and discuss with JREDA regarding the data needs, reports needed, alert system needed etc and ensure data availability online at the JREDA office at Ranchi.

- Environment Data Collection and data transfer to central server at JREDA/ Environment Data Collection Supply through sensors to obtain real time data on operating condition of the solar units that can improve efficiency such as Temp sensors to measure cell temp, Humidity sensor to monitor solar unit premises humidity, luminosity sensors to measure luminosity and correspondingly reflecting ability of cells (impeded by dust settling on cells), Current sensors, Voltage sensors, Energy meters where needed and port data through Modem to the central server installed at JREDA office during the first phase.
- Install IoT technology based smart devices across **100** locations for capturing requisite data and information and sending them real time to control room at JREDA, Ranchi.
- Supply of needed back end server and client PC, analytical reports, Graphs, Charts etc. and installation of an integrated dashboard for easy access of data anywhere, at any time.
- Ensure hardware and software system support generation of higher utilisation and generation of energy from the rooftop solar system
- Support with needed hardware components for a period of 5 years after the warranty period and ensure 95 % uptime

### III. **Phase 3:**

- Conduct training and handholding sessions (5 nos. of training sessions within 2 weeks of completion of phase 2 comprising of 10 people in each session)
- Maintain smart devices & the monitoring and control system for a period of 5 years. (devices other than the solar power plant of the solar system)
- Data Analysis and reporting as per the needs of JREDA
- Keeping dataflow uninterrupted, ensuring GSM SIM remains active and paid for to the provider, system integration, changes in software needed etc are part of this phase.
- Any other hardware requirement like fibre cables, components, other accessories needed for optimal data transfer.
- Maintain for a period after installation and data integration for 5 years, the software support system and report generation
- Provide the support services of an experienced engineer with not less than 3 years of experience who should be stationed at JREDA premises for coordination with JREDA engineer.



**Other Scope:**

- JREDA shall facilitate in obtaining permission from the consignee of the concerned power plants.
- Cleaning of Solar cells has been done by the agency performing CMC so that required generation could be made from the solar plant.

**7. Annual Maintenance & Software System Support service**

Annual maintenance and & Software System Support service for a period of five years from the date of commissioning should be provided.

**8. Training**

- I. The supplier shall provide comprehensive training in installation, integration, calibration, operation, maintenance, troubleshooting and replacement of defective modules of proposed DAS (Data Acquisition System), communication system, sensors, DAS programming and system related topics to JREDA engineers.
- II. Training syllabus, material and documentation in English language shall be provided along With time- table well before commencement of training for evaluation by JREDA
- III. The vendor shall be required to organize following training for the owner's personnel. The bidder shall provide training to various user groups nominated by JREDA. The bidder shall provide the Training Approach in the response. The training modules shall include but not limited to –
  - Remote Monitoring System (RMS) Administration & Configuration
  - RMS Installation and Troubleshooting
  - RMS data Analytics, Reports & Interpretation
  - Application Management
- IV. Soft copy of finalized training material should be provided to all the trainees of JREDA
- V. Training arrangements – All trainings must be of minimum 1 day or bidder can propose more no. of days training along with batch size as per requirement. A training calendar with contents and sessions will be also agreed upon between bidder and JREDA.

**9. Presentation from Parties responding to EOI**

Parties responding to this EOI should submit their responses. Parties should give a presentation to the management of JREDA as and when invited to do so. The presentation from the players should cover the following aspects –

- Experience in implementation of the online energy monitoring of electrical energy equipment including energy parameters monitoring
- Proposed methodology for implementation of IT supported IoT based Real-time Monitoring Dashboard along with Supply, Installation, Activation & Maintenance and Software services

Support for Energy Monitoring, Control and Maintenance for Grid/Off-Grid for Solar projects across the State of Jharkhand.

- Best practices in implementation of Communication technologies suited for rooftop solar power plant's condition monitoring.
- The parties may submit Expression of Interest (EoI) in one hard copy signed originals and an email copy to:

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