

CALL FOR EMPANELLMENT OF VENDORS

FOR

**Supply, Installation and Commissioning of Grid Interactive
Rooftop Solar PV Power Plants And Extending
Maintenance Services Directly to Customers**

Under

**Off-grid and Decentralized Solar Application under JNNSM,
MNRE, GOI**



ISSUED BY

ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY

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Index

Important Dates.....	5
Check list of Document.....	6
1. Eligibility Criteria.....	7
2. Scope of Work.....	8
3. Instructions to the Applicant.....	9
4. Programme Execution Schedule.....	10
5. Quality Check & inspection.....	11
6. Warranty.....	11
7. Payment.....	12
8. Execution.....	12
9. Dispute.....	12
10. Arbitration between Customer & Vendor.....	12
Annexure A Specification of Product and services.....	13
Application form-.....	25

Disclaimer

Kindly Note:

1. This document is not transferable
2. Though adequate care has been taken for preparation of this document, the applicant shall satisfy himself that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any applicant within ten days from the date of issue of this notice, it shall be considered that document is complete in all respects and has been received by the applicant.
3. The Odisha Renewable Energy Development Agency (OREDA) reserves the right to modify, amend or supplement this application process.
4. While the document has been prepared in good faith, neither OREDA nor their employees or advisors make any representation, warranty, express or implied or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability and completeness of this document, even if any loss or damage is caused by any act or omission on their part.

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Background:

This call for empanelment is invited as compliance of the following missions, policies and guidelines issued or to be issued by Govt of India, Govt of Odisha and Regulatory Commissions for promotion, propagation and development of renewable energy.

1. Off Grid and Decentralized Solar Application under JNNSM,MNRE, Govt of India
2. Renewable Energy Policy, Govt of Odisha
3. Net Metering Regulations and its subsequent amendments issued by OERC from time to time
4. Climate Change Action Plan, Govt of Odisha

The state Odisha with an average solar radiation of about 5 kWh per sqm, highest domestic tariff of Rs. 5.60 per unit and over 7 million urban populations has tremendous potential for harnessing solar power on rooftops in the grid-tied mode. The Odisha Electricity Regulatory Commission has already pronounced the Net Metering Regulation to facilitate installation of such plants.

In the wake of the above and also in view of the targets set by the Ministry of New and Renewable Energy for harnessing 2.377 GW solar power in the state, OREDA intends to promote installation of rooftop solar power plants in a big way.

Since rooftop solar power plants will be installed mostly for individual households and institutions it has tremendous potential to influence public opinion about the performance and usefulness of such projects. Hence qualities of materials, proper workmanship, timely execution, delivery of post installation services etc. are considered to be of paramount importance.

In order to take this challenging task forward OREDA intends to form a technically & financially strong and dedicated team of project executors by empanelling reputed system integrators of solar PV power plants within the country.

In this endeavor OREDA also intends to provide a wide range of choice to the customers by offering various combinations of solar PV panels, Inverters, net meters, structures, SPDs and other protection devices etc. as well as post installation services to the customers at competitive prices.

OREDA has already launched a customer interface website www.rts.odisha.gov.in where the customer after determining the capacity of the power plant she/he is eligible for (subject to the limitations provided in the regulations, available roof space, transformer capacity etc.) will have the choice to select any one of the empanelled vendors. Once selected the vendor will receive a message for a personal interview, site assessment and proceeding further with the execution of the project.

OREDA also intends to remotely monitor all the installed systems on a single dashboard for which the empanelled vendors will have to cooperate and agree to share their remote monitoring protocols with OREDA. For this purpose the vendor may have to obtain prior permission from the OEMs of their CPUs.

Important Dates

S/N	Event	Date	Time
1	Commencement of Sale of Applications	24.10.2017	11.00 AM
2	Last date for Sale of Applications	08.12.2017	4.00 PM
3	Pre empanelment discussions	3.11.2017	11.00 AM
4	Last date for submission of applications	11.12.2017	3.00 PM
5	Date of opening of applications	11.12.2017	4.00P.M.

Check list of Documents to be submitted along with the Application

S/N	Particulars	Complied	Page-no / Flag
1	Bank draft for Rs.10,500/- or original money receipt issued by OREDA as proof of purchase of application form	Bank No Dt	Envelope
2	Forwarding letter duly signed and stamped by the applicant		
3	Undertaking duly signed and stamped by the applicant.		
4	Undertaking to unconditionally accept all terms and conditions laid in for empanelment.		
5	Copy of Board Resolution in the prescribed format comprising of requirements at Sl. No. 4, 14,18 (Applicable to Companies only)		
6	Valid document registering the status of the applicant as manufacturer /systems integrator		
7	Organizational Profile containing the original documents defining the constitution or legal status, place of registration / branches, annual off-grid and on-grid wise capacity of solar power plants installed for last 3 years.		
8	Copy of the PAN card of the applicant's firm		
9	Copy of the TIN card of the applicant's firm		
10	Copies of Tax returns, VAT/ e-filing and GST registration certificate		
11	Document stating no loss certificate duly signed and stamped by a registered chartered accountant on the letter head of the chartered accountant		
12	Declaration /Original Board resolution to undertake the work under the jurisdiction of the local office, if qualified		
13	Undertaking to supply Indigenous items as per relevant guidelines of MNRE, GoI		
14	Willingness to open service centre in the state of Odisha and local registered office for execution of the works.		
15	Filled in application form along with copy of the document duly signed and stamped at the bottom of each page.		
16	Power of attorney to sign the agreement on behalf of applicant & partnership deed articles, if any		
17	Confirmation to Limitation of liability (Annexure-C)		
18	Letter of Authorization		

1. Eligibility Criteria:-

In order to be eligible to be empanelled, the vendor must fulfil the following eligibility criteria.

- a) The vendor must be a company (registered under Indian Companies Act 1956) or a Partnership Firm (registered under Indian Partnership Act 1932) or a Sole Proprietorship Firm and should have registered under GST.
Any of the above entities if registered as Medium or Small Enterprise under MSME Development Act 2006 in Odisha can avail the benefits for MSMEs as mentioned in this document.
- b) The company/firm must be an integrator of solar PV power plants of capacities ranging between **1 KW to 500 KW**.
- c) The cumulative capacity for integrating solar PV power plants should be minimum 500 KW per annum. **This must be reflected in the stores details certified by NSIC/OSIC/DIC/such other certifying organizations.**
- d) During last 3 years (14-15,15-16,16-17) the vendor must have commissioned solar PV projects for a cumulative capacity of 100 kWp including off-grid/on-grid/hybrid projects in government sector or for PSUs, Health Institutions, Medical Colleges & Hospital, Universities, Educational Institutions, Community Centers, Welfare Homes, Old age Homes, Orphanages, Common Service Centers, Trust/NGO/Voluntary Organizations /Training Institutions, any other establishment registered under the Society Registration Act 1860 or The Indian Trust Act 1882) and private, commercial & industrial sector.
As proof of installation the vendor must submit the following documents in favour of each installation:
 - a. Plant location
 - b. Customer's Name & Contact Details
 - c. Capacity of power plant
 - d. Date of commissioning of the project
 - e. Photograph of the project with the customer in the inset.
 - f. Joint commissioning certificate duly signed by customer & the applicant
 - g. Copy of completion report submitted to MNRE or State Nodal Agency in case subsidy has been availed.
 - h. URL of GPS tagged site location as uploaded on MNRE SPIN website etc.
- e) The vendor must provide type test certificates from MNRE authorized laboratories against various components such as solar PV module, PCU, Battery, junction boxes, Module Mounting Structure, Wire & Cable, Surge Arresters, Earthing, and Energy meter etc. used in the installed Rooftop Solar power plants along with the respective project completion reports. Based on the same disbursement of subsidy will be considered. The component wise requirement of test certificates has been given at Annexure-B.
- f) The company/firm must have established quality assurance system and organization in line with the requirements under this call for empanelment.

- g) Following empanelment, the vendor must open service centres adequately equipped with technical personnel, spares, tools and tackles etc. to provide proper timely (48 Hrs of response time) maintenance services to the installed systems.
- h) The vendor must not have been debarred / blacklisted / defaulted by any Govt. Dept, agency, PSUs / institution / agencies / autonomous organizations. As proof of the same the vendor shall submit duly notarized a self-certificate by an authorized person of the applicant's company/firm.
- i) The applicant shall submit an affidavit (on Non-Judicial Stamp Paper worth Rs 10/- towards the submission of above documents in support of authenticity of documents.
- j) Registered Local SMEs subject to their meeting all the specifications and terms/conditions except Experience can be considered to execute the above mentioned work.
- k) Vendors already empanelled with OREDA vide tender call notice No. 1798/OREDA, dt. 23.04.2016 floated for empanelment of Vendors need not apply afresh.

2. Scope of the work:-

The broad scope of the work includes supply, installation, commissioning, testing and maintenance (for 5 years) of solar PV power plants of different capacities ranging from **1 KW to 100 KW**. The vendor is free to extend his scope of work to proactively deal with individual customers to augment his own business interest.

Specific requirements under these scopes are

- a. Subject to short listing/ selection of the vendor by a customer, the representative of vendor must visit the customer as per the convenience of the latter and explain the customers about different aspects of the project.
- b. During the visit the vendor in consultation with the customer should undertake a site assessment for installation of the power plant, grounding, connectivity etc.
- c. After receipt of a written consent from the customer the vendor may collect advance amount as may be mutually agreed between him and the customer and undertake the following activities on behalf of the customer
 - Process his/her application for loan if it is not a self-finance case.
 - Submit application to the concerned DISCOM and obtain NOC
 - Subject to obtaining of the NOC submit an application to the DISCOM for approving the connectivity drawing and providing a net meter or certifying the net meter to be provided by the PE.
- d. Subject to sanction of the loan and obtaining of the NOC, Net Meter etc. the vendor in consultation with the customer should decide a date for supply of materials.
- e. Supplying all materials as per the BOQ and install the power plant.
- f. Commission the project and test the same in the presence of the customer, representative of OREDA and the DISCOM and obtaining necessary commissioning certificate.

- g. Collection of all documents, including GPS tagged photograph showing the PV array, with the customer in the inset.
- h. Hang /affix the “Solar Home” logo (design to be provided by OREDA) in a prominent place (main gate, facade etc.) and take a picture of the same with the owner of the power plant.
- i. Collect and Compile the Customer’s Information and hand it over to the CRM Dept of OREDA for assignment of Customer ID and building up of Master Consumer Database.
- j. Submit the Joint Commissioning Report to OREDA for consideration of subsidy
- k. Extend both periodic and on call maintenance services through the CRC of OREDA as detailed elsewhere in this document.
- l. Open service Centre/keeping servicing personnel and making available all essential spares in the vicinity of the solar systems.
- m. Submission of periodic reports and returns as per the MIS prescribed by OREDA from time to time.
- n. For certification of module mounting structures, the vendor may give self-certification to the effect that their proposed module mounting structures are non-invasive in nature and can withstand wind speeds up to 200 km/hr. To prove the same the vendors must submit drawings, design parameters and calculations for wind speed resistance for different capacities of power plants and different capacities of modules.

3. Instructions to Applicant:

Intending vendors are requested to carefully study the instructions contained hereunder before submission of their applications..

- a. A vendor shall submit a single application only.
- b. The application must be submitted in the prescribed format only.
- c. All other relevant documents as asked for must be given as annexures to the applications
- d. The application along with all annexures must be submitted in a **single hard boundbook form** duly page numbered and indexed. **No loose or separate papers or spiral bound documents will be accepted. Submission of loose papers or spiral bound documents shall lead to the rejection of the same.**
- e. Demand Drafts towards cost of document should be submitted in a separate envelop.
- f. Applications must be submitted in English language only.
- g. Incomplete, telegraphic or conditional applications shall not be accepted.
- h. Applicant must sign at the bottom of each page of the documents at the time of submission in token of unconditional acceptance of the departmental terms and conditions, technical specifications etc.

- i. Valid TIN / VAT / CST / E-filing submission document duly attested must be submitted.
- j. Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted under any condition.
- k. The vendor shall submit copies of documents defining the constitution or legal status, place of registration and principle place of business of company or firm.
- l. The vendor shall furnish a brief write up backed with adequate data, explaining capacity and experience (both technical and commercial) for the manufacture and supply of the required systems, equipments within the specified time of completion after meeting all their commitments.
- m. Applications received late due to postal delay or otherwise **will not be considered**.
- n. Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.
- o. Power of attorney to sign the agreement on behalf of applicant & partnership deed articles, if any, should be enclosed along with original documents.
- p. All pages of the documents must be signed & sealed by the authorized person on behalf of the vendor.
- q. The last date of receipt of the applications is **11.12.2017 up to 3.00 PM**. sealed offers (**revised and final**) shall only be dropped in the specified box kept in the conference hall of OREDA during office hours on working days.
- r. The applications will be opened on **11.12.2017 at 4.00 PM** in the OREDA office, Bhubaneswar in presence of the vendors or their authorized representatives, who may like to be present at the time of opening.
- s. Deviation of any terms and conditions and technical specification shall not be entertained under any circumstances.

4. Security Deposit:

Upon being eligible for empanelment each vendor shall deposit security money in the form of Bank Guarantee/term deposit for a period of 5 years as detailed below:

- a. Vendors registered as Local MSMEs : Rs.1.00 Lakh
- b. All other vendors : Rs 5.00 Lakh

5. Programme Execution Schedule

The program execution schedule will be mutually decided between the user and the vendor.

6. Quality Check and Inspection

- a. All tests and inspections shall be made at the place of delivery. OREDA Officer shall be entitled at all reasonable time to inspect and supervise and test during erection and commissioning. Such inspection will not relieve the executing firm of their obligation in the contract.
- b. OREDA has the right to have the tests carried out at its own cost by an independent agency at any point of time. Pre- delivery inspection at the factory site if necessary will be carried out by OREDA.
- c. Upon intimation about commissioning of a systems by the vendor/user an inspection will be carried out by OREDA essentially to ascertain compliance to the technical specifications and other TOR as specified in this document.
- d. Following such inspection a commissioning report shall be brought out in the prescribed format, which shall form a part of the documents for release of applicable subsidy.

7. Warranty

- a. Each RTS project must be warranted for a period of 5 years from the date of commissioning of the same which will include Repair/Replacement of components in case of manufacturing defects.
- b. The SPV Modules shall be warranted for a minimum period of 10 years against any manufacturing defect or bad workmanship for a period of 10 (Ten), Such warranty should specify that under testing conditions the output per watt peak capacity of the module should not be less than 90% and 80% at the end of the 25th years.
- c. Defects noticed during the warranty period should be rectified /replaced free of cost by the vendor upon due intimation by the customer and confirmation of the defect /malfunctioning by competent authority. The warranty period shall be extended by the period during which the system remains in-operative due to reasons within the control of the vendor.
- d. The vendor shall provide warranty card to the above effect to each customer.
- e. Care should be taken by the vendor to make the systems operational within one week of reporting of defect/ malfunctioning.
- f. All complaints must be routed through the CRC of OREDA for proper monitoring of the same.

8. Operation and maintenance manual

An operation and maintenance manual in English/Odiya language must be provided with each system containing description of the system, description of different components, line diagram, Do's and Dont's, contact details of CRC etc.

9. Payment

The cost of the system including that of 5 years maintenance shall be paid to the vendor by the concerned customer only. The mode of the payment is to be mutually decided between the customer and the vendor.

10. Execution

Execution of work shall be carried out in an approved manner as outlined in the technical specification or where not outlined, in accordance with relevant Indian Standard Specification, to the reasonable satisfaction of the Authorized OREDA Officer..

11. Acceptance/ Rejection of applications

Chief Executive, OREDA reserves the right to reject or accept any of the applications or annul the entire empanelment process at any time prior to empanelment without having prejudice of incurring any liability to the affected applicants or any obligation to inform the applicants.

12. Dispute

For adjudication of any dispute between OREDA and the applicant arising in this case, reference can be made to any Law courts under the jurisdiction of Orissa High court only. The Chief Executive, OREDA reserves the right to accept or reject any or all application without assigning any reason thereof.

13. Arbitration between Customer and Vendor

As the enforcer of the MNRE guideline OREDA undertakes the responsibility to protect the customers' interest to the extent of his agreement with the Vendor. Release of subsidy within a reasonable period of time is largely dependent upon the successful performance of the installed system. If OREDA at any point of time realises that the customer has been short changed/harassed by the vendor during the course of execution / maintenance of the project it reserve the right to Suspend/Deregister/Blacklist the vendor.

Chief Executive

I/We have carefully read and understood the above terms and conditions of the empanelment and agree to abide by the same.

SIGNATURE OF APPLICANT WITH SEAL

Specification of Product and Service

A. Service Procedures and Standard:

- The customer upon installation and commissioning will be given a unique customer id generated from the CRMS database of OREDA.
- The vendor while activating the installation is mandated to familiarise the customer with the Service request Protocol of OREDA (Toll Free Number, Procedure and Follow up Procedure)
- The vendor will conspicuously display the Toll Free number of the OREDA CRC and the Customer ID on the hardware itself and on the operation manual.
- The vendor through this empanelment agrees to serve the customer throughout the economic life of the hardware and an AMC of 5 years as per the MNRE guideline. The terms of AMC in terms of repair and maintenance is enclosed.
- The vendor has to encourage the customer for insurance coverage of the component of service not covered under AMC.
- The CRMS as per the policy will track individual service request of the customers and it reasonably expected to provide solution within 48 hours of such logging. Non adherence to the standard of service will be treated as a non-compliance and repeated non compliances may attract action like suspension and blacklisting of the vendor.

B. Technical Specifications

The general scope under this contract includes design, manufacture, testing ,inspection, packing and forwarding, transportation up to project site, loading & unloading, storage in safe custody, erection, carrying out preliminary tests at site, commissioning, performance testing, operation and maintenance for 5 years & handing over to all the equipment of SPV Power plant on the respective sites / as per instruction from time to time. The illustrative Schedule of requirements is in accordance with the specifications contained in this document

System Details:

S/ N	Brief Description	Units	Make
1	SPV modules as per specifications.	1 Set	Compliant to spec's
2	SPV module mounting structure suitable for accommodating capacity SPV modules including foundation as	1 Set	As per IEC / BIS

	per specifications on rooftop		
3	PCUs as per specifications	As per spec	SMA / OPS/Schneider/KACO Siemens / ABB / Emerson / Refusol / Delta /equivalent
4	Array Junction Boxes	1 Set	Tyco / Hensel/ spelberg / equivalent
5	Main Junction Boxes	1 Set	Tyco / Hensel/ spelberg / equivalent
6	Data Logging system with remote monitoring as per specification	1 Set	system as per specifications
7	DC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/ L&T / equivalent
8	AC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/ L&T / equivalent
9	Cables requirement as per design	Mtrs. As required at site for full plant commissioning	Finolex / Polycab / Havells /equivalent
10	Fire extinguisher in accordance with BIS codes for electrical short circuit fires along with sand buckets	1 Set	
11	Lightning arrester complete set as per specification	1 Set	As per BIS compliant
12	Earthing complete set as per specification	1 Set	As per BIS compliant
13	Spares, tools and plant for 5 years operation and maintenance	As per list	
14	Fuses, Transfer switches, Printed Circuit boards required for power plant	1 Set	
15	Providing training to customers for operating Maintenance and trouble shooting skills		
16	Operation and maintenance of the		

	SPV Power Plant for a period of 5 years from date of commissioning of the power plant.		
17	Engineering, electrical drawings and installations and O&M manuals	1 Sets	
18	Any other equipment required to complete the installation		

All the items against which no make has been mentioned must confirm to ISI standards and not below REC specifications .

C. Product Specifications

1. Specification of Solar PV Modules:-

Solar PV modules shall be of the crystalline silicon type, manufactured in India. Detailed specifications of the solar PV modules are given below:

<i>Type</i>	Crystalline silicon
<i>Origin</i>	Manufactured in India
<i>Efficiency</i>	>13%
<i>Fill factor</i>	>70%
<i>Degradation</i>	>=90% of design nominal power after 10 years.
<i>Warranty</i>	>=80% of design nominal power after 20 years.
<i>Module frame</i>	Non-corrosive and electrolytic compatible with the mounting structure material.
<i>Termination box</i>	Thermo-plastic, IP 65, UV resistant
<i>Blocking diodes</i>	Schottky type
<i>Module minimum rated power</i>	The nominal power of a single PV module shall not be less than 74Wp.

RF Identification tag for each solar Module	Yes. Must be able to withstand environmental conditions and last the life of the solar module and shall be kept inside the module. As per guidelines issued for off-grid and decentralized applications programme under JNNSM, the RFID tag must be inside of the module .
RF Identification tag Data	<ul style="list-style-type: none"> a) Name of the manufacturer of PV Module b) Name of the Manufacturer of Solar cells c) Month and year of the manufacture (separately for solar cells and module) d) Country of origin (separately for solar cells and module) e) I-V curve for the module f) W_m, I_m, V_m and FF for the module g) Unique Serial No and Model No of the Module h) Date and year of obtaining IEC PV module qualification certificate i) Name of the test lab issuing IEC certificate j) Other relevant information on traceability of solar cells and module as per ISO 9000
Power output rating	To be given for standard test conditions (STC). I_V curve of the sample module should be submitted.
Compliance with standards and Codes	IEC 61215 / IS 14286 IEC 61730 Part 1 and 2
Salt Mist Corrosion Testing	As per IEC 61701

2. Solar PV Module Mounting Structure

The PV modules shall be mounted on fixed metallic structures of adequate strength and appropriate design, which can withstand the load of the modules and high wind velocities up to 200 km per hour. The support structure shall be hot dip galvanized steel or aluminium.

Detailed specifications for the mounting structure are given below:

<i>Wind velocity withstanding Capacity</i>	200 km / hour
<i>Structure material</i>	Hot dip galvanised steel with galvanisation thickness of min 120 micron or aluminium alloy.
<i>Bolts, nuts, fasteners, panel mounting clamps</i>	Stainless steel SS304
<i>Mounting arrangement for flat Roofs Mounting arrangement for metal</i>	With Removable concrete ballast made of Pre-fabricated PCC (1:2:4), M15 Mounting directly on the sheet metal,

Sheet roofs	ensuring stability and wind withstanding capacity, or penetrating the sheet metal and fixing to the substructure, ensuring that the roof remains water proof and ensuring stability and wind withstanding capacity.
Mounting arrangement for elevated structures	The elevated structure has to be securely anchored to the supporting surface. Concrete foundations of appropriate weight and depth for elevated structures mounted directly on the ground; Bolted with anchor bolts of appropriate strength for elevated structures mounted on RCC surfaces.
Mounting arrangement for ground installations	With removable concrete ballast made of pre-fabricated PCC (1:2:4), M15; assuring enough ground clearance to prevent damage of the module through water, animals and other environmental factors.
Installation	The structures shall be designed for simple mechanical on-site installation.
Minimum distance between roof edge and mounting structure (Horizontal Clearance)	≥ 0.60 m
Minimum clearance between	Shall not be less than 100mm
Access for panel cleaning and Maintenance	All solar panels must be accessible from the top for cleaning and from the bottom for access to the junction box.
Panel tilt angle	North – south orientation with a fixed tilt angle of 30degrees (depending on location) south facing.

3. Solar Array Fuse:-

The cables from the array strings to the solar grid inverters shall be provided with DC fuse protection. Fuses shall have a voltage rating of 1,000V DC, current rating as required and shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers

4. Solar Grid Inverter:-

The solar grid inverter converts the DC power of the solar PV modules to grid-compatible AC power.

The detailed specification of the solar grid inverter is given below.

Total output power (AC)	To match solar PV plant capacity while achieving optimum system efficiency
Input DC voltage range	As required for the solar grid inverter DC input
Maximum power point (MPPT) Tracking	Yes
Number of independent MPPT Inputs	1 or more
Output AC voltage	Single phase 230V or Three phase 415V (+ 12.5%, -20%)
Operating Frequency range	47.5 – 52.5 Hz
Nominal frequency	50 Hz
Power factor of the inverter	>0.98 at nominal power

Total harmonic distortion	Less than 3%
Built-in Protection	AC high / low voltage; AC high /low Frequency
Anti-islanding protection	As per VDE 0126-1-1 or IEC 60255.5 or IEC 62116 or equivalent standards
Operating ambient temperature range	-10 oC - +60 oC
Humidity	0 – 95% Rh
Inverter efficiency	:>=95%
weighted efficiency	:94%
Protection degree	IP 65 for outdoor mounting, IP 54 for indoor mounting
Communication interface RS 485 / RS 232 and RJ45	IEC 62103, IEC 62109-1, IEC 62109-2
Safety compliance	Galvanic Isolation
Cooling Convection	LCD for data display. LCD / LED for status display
Display type	
Display parameters to include	Output power (W), cumulative energy (Wh), DC voltage (V), DC current(A), AC voltage(V), AC frequency(Hz), AC current(A); cumulative hours of operation,
Compliance with standards and codes	IEC6163 / IS 61683 & IE 60068 -2(1,2,14,30)

5. DC Distribution Box:-

A DC distribution box shall be mounted close to the solar grid inverter. The DC distribution box shall be of the thermo plastic IP65 DIN rail mounting type and shall comprise the following components and cable terminations:

- Incoming 2 core(Positive and negative DC) cables from the DC Combiner Box;
- DC circuit breaker, 2 pole (the cable from the DC Combiner Box will be connected to this circuit breaker on the incoming side);
- DC surge protection device (SPD), class 2 as per IEC 60364-5-53;
- Outgoing 2 core cable(Positive and negative DC) to the solar grid inverter.

As an alternative to the DC circuit breaker a DC isolator may be used inside the DC Distribution Box or in a separate external thermoplastic IP 65 enclosure adjacent to the DC Distribution Box. If a DC isolator is used instead of a DC circuit breaker, a DC fuse shall be installed inside the DC Distribution Box to protect the DC cable that runs from the DC Distribution Box to the Solar Grid Inverter.

6.AC Distribution Box:-

An AC distribution box shall be mounted close to the solar grid inverter. The AC distribution box shall be of the thermo plastic IP65 DIN rail mounting type and shall comprise the following components and cable terminations:

- Incoming 3 core / 5 core cable from the solar grid inverter
- AC circuit breaker, 2 pole / 4 pole
- AC surge protection device (SPD), class 2 as per IEC 60364-5-53
- Outgoing cable to the building electrical distribution board.

7. Connection to Building Electrical System:-

- a. The AC output of the solar grid inverter shall be connected to the building's electrical system after the DISCOM service connection meter and main switch on the load side. The solar grid inverter output shall be connected to a dedicated module in the Main Distribution Board (MDB) of the building. It shall *not* be connected to a nearby load or socket point of the building.
- b. For buildings or loads with diesel generator backup, the wiring of the solar grid inverter shall be such that the solar grid inverter *cannot* run inparallel with the diesel generator. This implies that the solar grid inverter must be connected to a distribution board on

the grid side of the automatic or manual change-over switch or as per the requirement of DISCOM.

8. Cables:-

- All cables shall be supplied conforming to IEC 60227/ IS 694 & IEC60502/ IS 1554 Voltage rating: 1,100V AC, 1,500V DC
- For the DC cabling, XLPE insulated and PVC sheathed, UV stabilised single core flexible copper cables shall be used. Multi-core cables shall not be used.
- or the AC cabling, PVC or XLPE insulated and PVC sheathed single or multi-core flexible copper cables shall be used. Outdoor AC cables shall have a UV-stabilised outer sheath.
- The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%.
- The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%
- The DC cables from the SPV module array shall run through a UVstabilised
- PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm. Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors and couplers.
- All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm.
-
- The minimum DC cable size shall be 4.0 mm² copper. The minimum AC cable size shall be 4.0 mm² copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires. The following colour coding shall be used for cable wires:
 - DC positive: red (the outer PVC sheath can be black with a red line marking)
 - DC negative: black
 - AC single phase: Phase: red; neutral: black
 - AC three phase: Phases: red, yellow, blue; neutral: black
 - Earth wires: green

Cable conductors shall be terminated with tinned copper end-ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

9.Earthing:-

- The PV module structure components shall be electrically interconnected and shall be grounded.
- Earthing shall be done in accordance with IS 3043-1986, provided that earthing conductors shall have a minimum size of 6.0 mm² copper, 10 mm² aluminium or 70 mm² hot dip galvanised steel . Unprotected aluminium or copper-clad aluminium conductors shall not be used for final underground connections to earth electrodes.
- A minimum of two separate dedicated and interconnected earth electrodes must be used for the earthing of the solar PV system support structure with a total earth resistance not exceeding 5 ohm.
- The earth electrodes shall have a precast concrete enclosure with a removable lid for inspection and maintenance. The entire earthing system shall comprise non-corrosive components.

10.Surge Protection:-

- Surge protection shall be provided on the DC side and the AC side of the solar system.
- The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar grid inverter.
- The AC SPDs shall be installed in the AC distribution box adjacent to the solar grid inverter.
- The SPDs earthing terminal shall be connected to earth through the above mentioned dedicated earthing system. The SPDs shall be of type 2 as per IEC 60364-5-53

11.Junction Boxes:-

Junction boxes and solar panel terminal boxes shall be of the thermo plastic type with IP 65 protection for outdoor use and IP 54 protection for indoor use. Cable terminations shall be taken through thermo-plastic cable glands. Cable ferrules shall be fitted at the cable termination points for identification.

12.Caution Signs:-

The standard caution and danger boards or labels as per Indian Electricity Rules, the AC distribution box near the solar grid inverter and the building distribution board to which the AC output of the solar PV system is connected shall be provided with a noncorrosive caution label.

13. Metering:-

The existing service connection meter needs to be replaced with a bidirectional (import kWh and export kWh) service connection meter for the purpose of net-metering.

Installation of the Solar Service Connection Meter will be carried out by DISCOM.

It is mandatory that the Solar Rooftop PV system shall be connected to the Grid as per the guidelines of DISCOMs along with necessary protection devices.

14. Documentation:-

The Installer shall supply the following documentation:

- a) System description with working principles.
- b) System single line diagram.
- c) Solar PV array lay-out.
- d) Routing diagram of cables and wires.
- e) Data sheets and user manuals of the solar PV panels and the solar grid inverter.
- f) A system operation and maintenance manual.
- g) Name, address, mobile number and email address of the service centre to be contacted in case of failure or complaint.
- h) Warranty cards.
- i) Maintenance register.

15. Test Certificates and Reports to be Furnished:-

Test Certificates / Reports from IECQ / NABL accredited laboratory for relevant IEC / equivalent BIS standard for quoted components shall be furnished. Type Test Certificates shall be provided for the solar modules and the solar grid inverter to provide evidence of compliance with standards as specified by Ministry of New and Renewable Energy (MNRE). OREDA reserves the right to ask for additional test certificates or (random) tests to establish compliance with the specified standards.

16. CONFIRMATION TO MNRE TECHNICAL SPECIFICATIONS AND STANDARDS:-

- The vendor should ensure that all components and systems used under this Scheme shall strictly adhere to the Technical Specifications and Guidelines issued by MNRE vide Notice no: 30/11/2012-13/NSM dated 26th May 2014, as
- “Operational Guidelines for Implementation of Off-Grid and Decentralized Solar Applications Sub Scheme – “Off-Grid and Decentralized Solar PV Applications” during 12th Plan Period”, and as amended from time to time.
- The vendor should also ensure all compliance to OERC Order No OERC-Engg.02/2010(Vol-III)/1597(A) Dated 26.11.2014 and its subsequent amendments.

Application Form

A. Vendor's Details:-

1	Name of the Vendor	
2	Contact Details	Address Line 1
		Address Line 2
		Address Line 3
		City
		State
		PIN
		Phone 1
		Phone 2
		Phone 3
		Fax
		Email
		Website
3	Name of authorised Person for all Contacts by OREDA /Users	
		Address Line 1
		Address Line 2
		Address Line 3
		City
		State
		PIN
		Phone 1
		Phone 2
		Fax
	Email	
4	Category	Company
		Firm
5	Registration Details <i>(Enclose Copy)</i>	Registering authority
		Registration No
		Date of Registration
		Place of Registration
6	Type <i>(Enclose Copy)</i>	Manufacturer
		System Integrator
7	Accreditation Details <i>(Enclose Copy)</i>	Name of the Agency
		Date of accreditation

		Rating given	
		Valid through	
8	Tax Registration Details (Enclose Copy)	VAT & GST	
		OVAT	
		STCC	
		ITCC	

B. Details of Technical and Financial Capability

1	Types of PV systems manufactured /integrated by the Vendor	System 1		
		System 2		
		System 3		
		System 4		
2	Annual Capacity to manufacture/ Integrate Solar PV systems (MW) (Enclose Stores Details Certificate by Competent Authority)			
3	No/Capacity (MW) of PV systems installed so far	System 1	Nos	Cumulative Capacity
		System 2		
		System 3		
		System 4		
4	No/Capacity (MW) of rooftop PV systems installed so far	Nos	Cumulative Capacity (MW)	
5	Minimum Capacity of Roof-top PV Power Plant (single unit)installed (KW)			
6	Maximum Capacity of Roof-top PV Power Plant (single unit) installed (KW)			
7	Names of Major Customers	Customer 1		
		Customer 2		
		Customer 3		
		Customer 4		
		Customer 5		
8	Quality Assurance System adopted	Product Compliance		

		Process compliance	
		Environmental Compliance	
9	Annual Turnover (in Rs Lakhs) in the business of Solar PV alone for last 3 years	2016-17	
		2015-16	
		2014-15	
10	Amount of taxes deposited (In Rs lakhs) during FY 2016-17	Tax 1	
		Tax 2	
		Tax 3	
		Tax 4	

Signature of Applicant
Date :

Forwarding Letter
(To be submitted in the letter head of the applicant)

To,

The Chief Executive
Odisha Renewable Energy Development Agency (OREDA)
S.59. MIE, Bhubaneswar -751010
Odisha.

Sub:- Submission of application for empanelment with OREDA for Supply, Installation, Commissioning & Maintenance of rooftop solar power plants directly in customers 'premises under the Off-grid and Decentralized Solar Applications under JnNSM, MNRE, Gol.

Sir,

Having studied the call for empanelment document carefully I/we, the undersigned, offer to submit our application for empanelment for Supply, Installation, Commissioning & Maintenance of rooftop solar power plants directly in customers 'premises under the Off-grid and Decentralized Solar Applications under JnNSM, MNRE, Gol in conformity of the said document.

I/We have also read the various provisions therein and confirm that the same are acceptable to us. We further declare that any additional conditions, variations, deviations, if any, shall not be given effect to. We further understand that **any deficiency / illegibility in documents shall make our application liable for rejection.**

I/we submit our application understanding fully well that

- (a) The documents submitted along with our application are subject to verification by appropriate authorities.
- (b) OREDA reserves the right to accept or reject any application or the empanelment process itself without assigning any reasons thereof and shall not be held liable for any such action.
- (c) Any genuine changes made by OREDA in the interest of the work with respect to the technical requirement during the course of project implementation will be acceptable.
- (d) All acts, rules, regulations, norms and conditions of Govt of India and Govt of Odisha shall be applicable during the process of empanelment as well as during the period of execution of project.

We hereby declare that all the information and statements made in this proposal are complete, true and correct and also accept that any misinterpretation contained in it may lead to our disqualification.

We hereby declare that our application has been submitted in good faith and the information contained is true and correct to the best of our knowledge and belief.

Yours faithfully,

Signature of Applicant

UNDERTAKING BY THE APPLICANT

I/we here by undertake that

1. We have thoroughly read and examined the call for empanelment document along with all its schedules, annexure etc.
2. In case our application is incomplete in any respect or we violate any of the prescriptions given therein OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the application fee, processing fee deposited by us.
3. In case of award of supply / installation in our favour OREDA shall have the right to convert the fee deposited by us in to full or part (as the case may be) of the security deposit to be deposited by us against award of the supply / installation.
4. I/We shall abide by all the laws prevailing at the time of the execution of the work and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.
5. The entire CALL FOR empanelment document has been discussed in the Board meeting and a resolution has been concurred for participation in the empanelment process (copy enclosed as given format)
6. We are not involved in any litigation that may have an impact of affecting or compromising the delivery of services as required therein.
7. We are not blacklisted / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.
8. In case any false documents submitted and found any time in future the firms shall be liable to be proceeded against as per prevailing laws.
9. Our state commercial tax / TIN registration no. is _____ and
CST registration No. _____.
The PAN No. under the Income Tax Act is _____ and
Service Tax Registration No. is _____ GST registration No. is _____
10. I/We shall be responsible for the payment of the respective taxes to the appropriate authorities.

Signature of Applicant with stamp & date

Letter of Authorization

(To be submitted in the letter head of the applicant)

To,
The Chief Executive,
Odisha Renewable Energy Development Agency,
S-59, MIE, Bhubaneswar-751010, Odisha.

Sub:- Submission of application for empanelment with OREDA for Supply, Installation, Commissioning & Maintenance of rooftop solar power plants directly in customers 'premises under the Off-grid and Decentralized Solar Applications under JnNSM, MNRE, GoI.

Ref: Call for empanelment **Notice No.** _____

Sir,

I/we hereby authorize Ms. /Mr. _____, Designationof our company to sign all relevant documents on behalf of the company/firm in dealing with the above empanelment. She / He is also authorized to attend all meetings and submit technical and commercial information as may be required by OREDA in the course of processing of the application.

We further authorize Ms. /Mr. _____ designation..... of our company to make technical presentation on behalf of the company.

Signature of the authorize persons

1. _____
2.

Signature attested

Name and designation of the attesting officer with stamp.

Yours faithfully

Head of the Applicant organization

Certificate of unconditionally accept all terms and conditions laid in for empanelment
(To be submitted on the letter head of the applicant)

We _____ a prospective applicant for the work of **“Call for Empanellment of Vendors for Supply, Installation and Commissioning of Grid Interactive Rooftop Solar PV Power Plants And Extending Maintenance Services Directly to Customers Under Off-grid and Decentralized Solar Application under JNNSM, MNRE, GOI”** here by certify that we have carefully studied and understood the contents of the entire document hoisted on the website of OREDA on _____ and hereby confirm our unconditional acceptance to each and every line of the said document.

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

(Common Seal).....

Annexure-B

S/N	Major Component	Test Certificates Required for the standard
1	Crystalline Silicon Terrestrial PV Modules	IEC 61215
		IEC 61730
		IEC 61701
2	Power Control Units (PCU)	IEC 61683
		IEC 60068
		IEC 62116
		IP 20
		IP21
3	Outdoor Junction Box	IP54
4	Battery (Stationary VRLA Lead Acid)	IS 15549 – 2005
5	Module Mounting Structure	IS 2062 or IS 4759
6	Wires and Cables	IEC60227 or IS694 & IEC60502 or IS1554 BSEL50618(for DC cables for PV systems)
7	Surge Arresters	IEC 61643-11:2011 or IS15086-5
8	Earthing	IEC 62561-1,2&7
9	Energy Meter	IS 16444

Confirmation to Limitation of liability

(To be submitted on the letter head of the company)

I/we here by undertake that

1. The role of OREDA in this empanelment process is limited to create a platform for the customers and vendors to meet and negotiate with each other for the best deal. The role of OREDA is limited to protecting the customer's interest in terms of Product and Post installation Service quality.
2. The transaction between the customer and vendor is exclusive and will be governed by the **Sales of Goods Act and Consumer Protection Act**. In no case OREDA can be made a party to deficiencies of either parties. Only when OREDA observes that the agreed transaction between the Customer and Vendor is closed, OREDA will release the Subsidy (If eligible or available).
3. OREDA, will, in no case be a party to any dispute or accident fatal or non-fatal, caused to any worker or outsider in course of transport or execution of work. All the expenditure including treatment or compensation will be entirely borne by the Executants. The Executants shall also be responsible for any claims of the workers including PF, Gratuity, ESI & other legal obligations.
4. In case of failure to deliver any or all of the above stipulation, OREDA after due adjudication of the matter is entitled to take such punitive action as suspending the vendors from execution of the program until the deficiencies are made good or for such time as may be decided by the Chief Executive, OREDA, debarring the vendor from execution of the program and blacklisting the vendor from executing all projects of OREDA.

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

(Common Seal).....

BOARD RESOLUTION
(To be submitted on pre-printed Corporate Letter Head)

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED IN THE MEETING OF THE BOARD OF DIRECTORS OF M/S.....
HAVING ITS REGISTERED OFFICE AT..... HELD ON DD/MM/YY AT....
HRS

Resolved that the company/firm do agree to participate in the "Call for Empanelment of Vendors" invited by OREDA vide Notice No for Supply, Installation and Commissioning of Grid Interactive Roof Top Solar PV Power Plants and Extending Maintenance Services directly to customers under off-grid and Decentralized Solar applications under JnNSM, MNRE, Gol.

RESOLVED FURTHER THAT, the company/firm does agree to unconditionally accept all terms and conditions mentioned in the aforementioned "Call for Empanelment" document.

RESOLVED FURTHER THAT, subject to empanelment the company/firm agree to open an effective service center in the state of Odisha, preferably in the vicinity of projects so as to cater regular maintenance services to the customers of the company/firm.

RESOLVED FURTHER THAT, Ms/Mr Director and/or Ms/Mr..... authorized signatory of the company be and hereby authorized to sign, execute and submit such applications, undertakings, agreements and other requisite documents writings and deeds as may be deemed necessary or expedient to implement the above assignment

AND RESOLVED FURTHER THAT, the common seal of the company is affixed, wherever necessary, in the presence of any Director of the company who shall sign the same as token of the presence.

For

Chairman/Company Secretary

Name of the Authorized person

Specimen Signature of Authorized person

The above signature to be attested by the person signing the resolution