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PUNJAB STATE POWER CORPORATION LTD.

Regd. Office: PSEB H.O. Building, The Mall, Patiala
E-tendering website-https://pspcl.abcprocure.com

TENDER ENQUIRY NO: 23/IPC/RTS/2019-20

Tender Notice for EPC companies, manufacturers, suppliers & system integrators of Solar PV Power Projects for design, manufacture, testing, supply, installation and commissioning of different capacity Grid Connected Roof Top Solar Power Projects, varying from 1KWp to 1000KWp are invited.

In order to facilitate the public, MNRE vide letter no 318/331/2017-Grid connected Rooftop ,GOI, MNRE, made arrangements that the DISCOM's i.e. PSPCL, will be the Nodal Agency to empanel the EPC companies, manufacturers, suppliers & system integrators of Solar PV Power Projects for installation of Grid connected Rooftop SPV Power Plants anywhere in the State of Punjab and in the process of compiling information of rates of different capacity rooftop solar power projects which are to be displayed on the website of PSPCL for the information of the users. The residents of Punjab desirous to install Rooftop SPV power plant and want to avail subsidy from MNRE through PSPCL for the same shall have to install the Rooftop SPV Power Plant from any empanelled agency of PSPCL. EPC Companies desirous of getting their information displayed may upload the technical detail of their systems/ equipment and pricing in the Performa available upto the last date as specified hereunder. The terms and conditions along with technical specifications are mentioned in NIT.

1. **DUE DATES & TIME :**

i	Last date for downloading of Specification / Tender documents from PSPCL website.	:	13.11.2019 upto 11:00 AM
ii	Last date & time for Submission of Tenders	:	14.11.2019 upto 11:00 AM
iii	Date & time for opening of Tenders	:	14.11.2019 at 11:30 AM

2. **TELEPHONES / CONTACTS :**

i	Dy. Chief Engineer/Investment Promotion Cell	:	0175-2220784 email : rts-ipc@pspcl.in

NOTES: -

1. In case the due date for opening of tender happens to be a holiday, then tenders would be received & opened on the next working day at the same time.
2. Tender specification can only be downloaded from PSPCL's website **https://pspcl.abcprocure.com** and no hard copy of the same will be issued by this office. Details regarding E-tendering is available on website www.pspcl.in
3. The prospective bidders are requested to get clarification from this office and/or E-Procurement Technologies Ltd (EPTL) at their number: +91-7968136854/50/49, +91-9374519729 & +91-9904406200in case of any difficulty regarding uploading of the tender well in time. No last minute request for extension in the date and time of opening of tender on this account will be entertained. **It is also requested to get their digital signature well in time so as to submit tenders through e-tendering only.**

4. The prospective bidders are requested to be extra cautious in filling the tender and to get in touch with this office in case of any difficulty. Once the tender is opened, no request regarding giving relaxation or for overlooking any mistake committed by the bidder will be entertained.

Dy. Chief Engineer
Investment Promotion Cell,
Shakti Vihar, PSPCL Patiala.

CONTENTS

PUNJAB STATE POWER CORPORATION LTD

Regd Office: PSEB Head Office, The Mall, Patiala-147001

Corporate Identification Number (CIN) : U40109PB2010SGC033813 GSTIN 03AAFCP5120Q1ZC

OFFICE OF DY.CHIEF ENGINEER/INVESTMENT PROMOTION CELL,T8, SHAKTI VIHAR, PSPCL,PATIALA

Phone No.0175-2220784 Mob: 096461-23332, 096461-29246

e-mail: rts-ipc@pspcl.in, e-tendering page: https://pspcl.abcprocure.com.

TENDER NOTICE

Department Name	Investment Promotion Cell ,PSPCL
Tender Specification No.	23/IPC/RTS/2019-20
Tender Issuing Authority	Dy.Chief Engineer / Investment Promotion Cell ,PSPCL
Address details of issuing authority	T8,Shakti Vihar ,Thermal Complex, PSPCL, Patiala
Place	T8,Shakti Vihar ,Thermal Complex, PSPCL, Patiala
Short Description	Design, Manufacture, Supply, Erection, Testing & Commissioning along-with Comprehensive Maintenance contract for 5 years for different capacity Grid-Connected Rooftop SPV Power Plants in Punjab varying from 1 KWp to 1000 KWp.
Start date for down loading of Specification/ tender documents from PSPCL's web site https://pspcl.abcprocure.com	16.10.2019.
Last date for down loading of Specification/ tender documents from PSPCL's web site https://pspcl.abcprocure.com	13.11.2019 upto 11:00 AM
Pre-Bid Meeting	30.10.2019 at 10:00 AM
Last date for Bid Submission	14.11.2019 upto 11:00 AM
Techno commercial Bid Opening date.	14.11.2019 at 11:30 AM
Tender Cost (Non-Refundable)	Rs.5000/- + Rs.900/- (GST @ 18%)= Rs. 5900/-
EMD	Rs.50000/-
Payment mode.	Demand Draft payable at Patiala
Payment in favour of	A.O/Thermal Design, PSPCL, Patiala

NOTES: -

1. In case the due date for opening of tender happens to be a holiday, then tenders would be received & opened on the next working day at the same time.
2. Tender specification can only be downloaded from PSPCL's website **https://pspcl.abcprocure.com** and no hard copy of the same will be issued by this office. Details regarding E-tendering is available on website www.pspcl.in
3. The prospective bidders are requested to get clarification from this office and/or E-Procurement Technologies Ltd (EPTL) at their number: +91-7968136854/50/49, +91-9374519729 & +91-9904406200 in case of any difficulty regarding uploading of the tender well in time. No last minute request for extension in the date and time of opening of tender on this account will be entertained. **It is also requested to get their digital signature well in time so as to submit tenders through e-tendering only.**
4. The prospective bidders are requested to be extra cautious in filling the tender and to get in touch with this office in case of any difficulty. Once the tender is opened, no request regarding giving relaxation or for overlooking any mistake committed by the bidder will be entertained.

Dy. Chief Engineer,
Investment Promotion Cell
Shakti Vihar, PSPCL Patiala.

CONDITIONS:

1. PSPCL is inviting tender for Empanelment of parties for supply, installation, testing, commissioning and comprehensive maintenance contract for five years of Rooftop Solar Photovoltaic Power Plants in Punjab and display the lowest rates on the PSPCL website.
2. PSPCL will also allocate the work to the empanelled agencies for setting up of Rooftop Solar power plants through this tender to L1 bidder on the L1 rates. The empanelled agencies are to contact & get their work for private clients directly at their own.
3. The firms may download tender specifications form PSPCL Website **https://pspcl.abcprocure.com**.
4. All tenders must be accompanied by cost of tender document & Earnest Money (EMD) at the rates prescribed in the tender documents.
5. The Blacklisted and debarred firms by PSPCL/any other Govt./Semi govt. organization shall not be eligible for participation in the tender.
6. The offers should be kept valid for at least 120 days from the date of opening of tenders.
7. Telegraphic or conditional quotations will not be accepted.
8. PSPCL reserves the right to nullify the NIT without assigning any reason.
9. In case the due date of opening of tenders happens to be a holiday, tenders shall be received and opened at the same time on the next working day.
10. Before uploading the e-tender, bidders are requested to read the specifications carefully and take cognizance of corrigendum/ amendments uploaded on e-tendering website, so that their offer may not be rejected on account of amendments/ revisions in the earlier specifications (if any).
11. Corrigendum, if any, after the publication of this tender enquiry shall only be uploaded on e-tendering website and will not be published in any newspaper.
12. The whole tender should be properly page numbered (by print/ typed) with index showing all the contents of the tender documents.
13. Every Agency/ firm has to inform their GSTIN No. at the time of payment of applicable fees.
14. The instructions issued under this NIT, will be read together with MNRE regulations for Grid Connected Rooftop as well as instructions for Net-Metering for Grid Connected Roof Top Solar PV Power Plants in PSPCL's Electricity Supply Instruction Manual 2018, amended time to time.
15. Any change/ addition / deletion/alteration/modification in any terms & conditions of this tender finalised after pre-bid meeting will become the part of this tender and will be binding on the bidders/firms/contractors.

Dy. Chief Engineer,
Investment Promotion Cell
Shakti Vihar, PSPCL Patiala.

CHECK LIST OF DOCUMENTS CONSISTING OF TENDER/OFFER

BIDDER TO ENSURE THAT FOLLOWING DOCUMENTS ARE MANDATORILY SUBMITTED/UPLOADED/FILLED ONLINE WITH THE TENDER FOR IT TO BE COMPLETE:-

Sr. No.	DETAILS	PART	REMARKS
1.	Tender Document Cost &EMD	**Part-I**	Submit original DD for tender cost & EMD in separate envelopes in the o/o Dy. CE/IPC,PSPCL before the last date & time of submission of bids **as well as** Fill up the DD details on line.
2.	Annexure-A Tender Undertaking	**Part-II**	FILL ON-LINE AS WELL SUBMIT ALL COPIES OFF-LINE.
3.	Annexure-B Schedule of Deviations		
4.	Annexure-C Power of Attorney		
5.	Annexure-D Schedule Experience / Proof of Ability certified by registered C.A along with authorized signatory of the bidder.		
6.	Annexure-E Guaranteed Technical Particulars		
7.	Annexure-F General Particulars of Bidder		
8.	Annexure- G Annual Turnover Certificate		
9.	Annexure-H Declaration By Bidder		
10.	Annexure-I General Commercial particulars		
11.	Annexure-L Service Support Details		
12.	A Registered manufacturing Company/Firm/ Corporation duly incorporated under the relevant laws of its jurisdiction.		
13.	Memorandum & Article of Association for public/ private Ltd firm, Partnership deed for Partnership firms and supporting document for proprietary firm		
14.	A copy of valid GST registration certificate.		
15.	**Others:** Firm/bidder will submit Affidavit duly attested by Magistrate/Notary that it has not been debarred or Blacklisted by any Government/Semi Govt. department or undertaking.		
16.	Acceptation of Standard terms & conditions of PSPCL.		
17.	Undertaking that the firm will not pay any commission etc. or engage any Commission Agent or Liason Agent for dealing with the PSPCL.		
18.	Any other supporting documents enclosed mentioning the purpose		
19.	Annexure-K Price Schedule (Breakup of prices)	**Part-III**	FILL ON-LINE ONLY

Note:

i) All scanned copies must bear full signature of person authorized as per constitution and composition of the firm.

ii) Please flag the annexure and write flag number in the box.

iii) Bids received without supporting documents for the various requirements mentioned in the tender document may be rejected.

(Signature of Bidder)
With Seal

2. DEFINITIONS:

The words and expressions beginning with capital letters and defined in the E-Tender document set up under the Electricity Act 2003;

"Approved Rate" shall be those rates which are discovered & finalized by PSPCL after Opening of part-III/Financial Bid for allocation of capacity/work to any firm/bidder for executing Solar Power Projects.

"Beneficiary" shall mean the Residential category Consumers of PSPCL, in Punjab State for 1-phase / 3-phase connection of Supply of Electricity and who have applied to participate in the Residential Solar Rooftop Subsidy Scheme of Government

"B.I.S" shall mean specifications of Bureau of Indian Standards (BIS);

"Bids" shall mean the Technical Bid and the Financial Bid submitted by the Bidder electronically at the prescribed web portal, in response to the e-bid document, in accordance with the terms and conditions hereof;

"Bid Deadline" shall mean the last date and time for submission of Bid in response to the e- bid document, and as may have been extended in accordance with the e-bid document;

"Bidding Company" shall refer to such single company that has submitted the Bid in accordance with the provisions of the e-tender document;

"Bid Capacity" shall means capacity offered by the bidder in his Bid under invitation.

"CEA" shall mean Central Electricity Authority.

"Commissioning" means Successful operation of the Project / Works by the Contractor, for the purpose of carrying out Performance Test(s) as defined in tender document.

"Capacity Utilization Factor (CUF)" shall mean the ratio of actual energy generated by SPV project over the year to the equivalent energy output at its rated capacity over the yearly period. *CUF – actual annual energy generated from the plant in kWh / (installed plant capacity in kW* 365 * 24).*

"Consents, Clearances and Permits" shall mean all authorizations, licenses, approvals, registrations, permits, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained from or provided by any concerned authority for the purpose of installation of the generation plant or captive consumption of such generation;

"Earnest Money Deposit" shall mean the unconditional and irrevocable bank guarantee of an amount as mentioned in this document, to be submitted along with the Bid by the Bidder as prescribed in this tender document;

"Electricity" means the electrical energy in kilowatt hours;

"Electricity Act 2003" shall mean the Electricity Act, 2003 and any rules, amendments, regulation, notifications, guidelines or policies issued there under from time to time;

"Financial Bid" shall mean the e-Bid, containing the Bidder's Quoted Capital Cost for in the Part - III of the e-bid document;

"IEC" shall mean specifications of International Electro-technical Commission;

"KWp" shall mean kilo-Watt Peak;

"KWh" shall mean kilo-Watt-hour;

"MNRE" shall mean Ministry of New and Renewable Energy, Government of India;

"O&M" shall mean Operation & Maintenance of Rooftop Solar PV system for 5 years; **"Owner of the project"** shall mean anyone who has ownership(including lease ownership also) of the roof and is the legal owner of all equipment's of the project.

"Plant" shall mean rooftop solar photovoltaic power generation plants implemented on the individual site;

"PV" shall mean photovoltaic;

"Eligibility Condition" shall mean the qualification requirements set forth in Clause 4 of General terms & conditions.

"Quoted Rate" shall mean the capital cost requirement, in KWp, quoted by the Bidder in accordance with the prescribed Annexure-K and shall be construed to have considered the capital cost for Design, Supply, Installation, Testing and Commissioning of Grid Connected Rooftop Solar Photovoltaic Power Plants including its Operation and Maintenance for five (5) years. The quoted capital cost shall also include development of necessary evacuation infrastructure and its Operation and Maintenance.

"Rs. or ₹" shall mean Indian rupees;

"PSERC" means the Punjab State Electricity Regulatory Commission constituted under Section82of the Electricity Act 2003 for the State of Punjab;

"Punjab State Electricity Grid Code" or **Grid Code** or **PSEGC** shall mean the document notified by the PSERC describing the responsibilities for planning and operation of the power system in Punjab and amended from time to time;

"Performance Ratio (PR)" means the ratio of plant output versus installed plant capacity at any instance with respect to the radiation measured. PR= (Measured output in kW / Installed Plant capacity in kW * (1000 W/m^2/Measured radiation intensity in W/m^2).

"Security Deposit/Performance Guarantee" shall mean the bank guarantee to be provided from a Selected Bidder to the PSPCL in accordance with the allocated capacity in KW to the bidder after getting LOA/LOI.

"Successful Bidder(s) /Contractor/Project Developers(s)" shall mean the Bidder(s) selected by PSPCL pursuant to this TENDER for Implementation of Grid Connected Roof Top Solar PV System as per the terms of the this document, and to whom an Empanelment Letter has been issued;

Wp shall mean Watt Peak.

"1KWp" for the purpose of conversion in **Wp** shall be considered as1000Wp

GENERAL INSTRUCTIONS TO BE OBSERVED BY TENDERERS:

1. The following instructions must be carefully observed by all tenderers. Quotations/ tenders, not strictly in accordance with these instructions, will be liable to be rejected.

i) The tender must be complete in all respects. The following points should carefully be studied in order to ensure uploading/submission of a complete and comprehensive tender. Failure to comply with any of these instructions or to offer brief explanation for non-compliance is likely to render effective comparison of the tender as a whole impossible and may lead to rejection of an otherwise competitively lowest offer.

ii) Telegraphic quotations will not be accepted.

iii) The tenders shall be uploaded/submitted in three parts i.e. Part-I, Part-II & Part-III. The following procedure will be adopted for the opening of tenders.

Part-I: Tender Document Cost &Earnest Money Deposit (EMD): The first part will consist of two separate envelopes consisting of Tender Cost and Earnest Money Deposit (EMD) in the form of Demand Draft in favour of Accounts Officer/ Thermal Design, PSPCL Patiala payable at Patiala. *Part-I shall be submitted manually till e-payment gateway is made operational.*

Part-II: Technical/Commercial bids: The second part will consist of technical specification & all other terms and conditions except the rates. *For Part-II, it is mandatory for all the agencies/ firms to submit their Tender documents in both forms i.e. online (tender document) and physically before scheduled date and time.*
While opening the Tenders, Tender Cost & Earnest Money deposit shall be evaluated first. Part II of the Tender shall be opened for only those tenders, who will deposit Tender Cost and Earnest Money in accordance with the terms of Notice Inviting Tender; failing which the tender will be liable to be rejected.

Part-III: Price Bids: After opening Part-II of the bids (technical/commercial), the bids will be technically & commercially evaluated by PSPCL. The third part of the bids (Price bid) shall be opened in case of only those firms whose part-II of the bids after evaluation is found to be conforming to the specifications. The date and time for opening Part-III of the tender will be intimated to the qualifying firms. The price bids (Part-III) will be opened in the presence of the representative of the qualifying bidders who choose to attend. **Part-III shall be submitted ONLINE through e-Tendering portal ONLY.**

2. PSPCL reserves the right to modify/amend technical particulars, terms and conditions of the tender and to reject any or all the tenders received without assigning reasons. PSPCL will not be responsible for and will not pay any expenses or losses that may be incurred by the **bidder** in the preparation of the tenders **and nothing shall be paid on this account.**
3. Quotations/Tenders shall be uploaded on given website up to specified hours of the due date given in the tender notice and shall be opened immediately thereafter in the presence of tenderers or their agents who may like to be present.
4. In case the due date of opening tenders happens to be a holiday, tenders shall be received and opened at the same time on the next working day.
5. **Preparation Of e-tender:**

5.1 **Documents Comprising the Bid**

The e-tender prepared by the Bidder shall comprise the following components:

(a) Demand Draft of any Nationalized Bank of Requisite amount of Tender Document & EMD in separate envelopes in favour of Accounts Officer/Thermal Design, PSPCL Patiala, Payable at Patiala.

(b) Tender undertaking letter as per Annexure-A provided in e-tender document.

(c) General particulars of bidder, as provided in e-tender document.

(d) Declaration by The Bidder, as provided in e-tender document.
(e) Details for Past Experience meeting Qualification Requirement as prescribed in Annexure-D with documentary evidence establishing that the bidder is eligible to Tender and is qualified to perform the contract if it's tender is accepted.
(f) Check list of Annexure as provided in e-tender document in proper sequence with proper numbering and flags for identification.
(g) Details of Guaranteed Technical Particulars as per Annexure-E.
(h) Acceptance to all terms & conditions of PSPCL specified in NIT.
(i) Bidder will submit an Affidavit that he has not been debarred or Blacklisted by any Government/Semi- Govt. Organization.
(j) A copy of the e-tender document signed on each page, as a confirmation by the Bidder regarding acceptance to all technical specifications / commercial conditions along with all necessary enclosures.
(k) Authorization letter/Power of Attorney as per Annexure-C of the Bidder, for the person representing his Company/Firm/ Corporation, that he is authorized to discuss/sign the documents related to this e-tender 23 /TE/IPC/RTS/2019-20.
(l) Each bidder will supply the tentative completion schedule for each capacity range as per Annexure-I.

5.2 Price Bid (Online Mode Only):

a) The Bidder shall indicate prices as prescribed in Annexure-K.
b) Bidder may quote /apply for single category or all categories as per eligibility.

5.3 Bid Currencies:

Prices shall be quoted in Indian Rupees (INR) only

5.4 Security Deposit/ Performance Guarantee:

The successful Bidders, who are selected for empanelment by PSPCL for the work, shall have to furnish security amount in the form of DD/ Bank Guarantee as applicable. The Bank Guarantee must be valid for a period of 66 months (up to 30.09.2025) from last day of validity of empanelment. The Bank Guarantee shall be issued by a Nationalized Bank or State Bank of India or its subsidiary bank. Bank Guarantee shall be in favour of "Dy. CE/IPC, PSPCL Patiala". The aforesaid Bank Guarantee along with prescribed Empanelment Fee shall be furnished after issue of LOA/LOI, failing which the eligibility for empanelment is liable to be cancelled. Letter of Empanelment shall only be issued after submission of requisite Empanelment Fee & Bank Guarantee. Any Bank Guarantee less than the prescribed amount as per particular Capacity Range and validity as explained above shall not be accepted by PSPCL.

5.5 Format and Signing of e-tender:

a) The bid must contain the name, residence and places of business of the persons making the e-tender and must be signed and sealed by the Bidder with his usual signature. The name and designations of all persons signing should be typed or printed below the signature.

b) e-tender by corporation/ company must be signed with the legal name of the corporation/ company/firm by the "President, Managing Director or by the Secretary" or any other designation or a person duly authorized.

c) The original copy of the e-tender shall be typed and signed by the Bidder or a person duly authorized. All the pages of the bid shall be initialed by the person or persons signing the tender.

d) The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case, such corrections shall be initialed by the person or persons signing thee-tender.

5.6 **Uploading of e-tender:**

The bid shall be uploaded online as per guidelines of PSPCL.

a) The tender must be complete in all technical and commercial aspect and should contain requisite certificate, drawings, informative literature etc. as required in the specification.

b) Part-I : This part contains Requisite tender cost & Earnest Money in the form of Demand Draft in favour of Accounts Officer/Thermal Design, PSPCL Patiala Payable at Patiala. Bidder should upload scanned copy of DD for tender document cost as well as for EMD in this Part.

c) Part-II: This Part contains technical specification, brochure literature etc. All parts of tender documents except financial bid should be uploaded on PSPCL site. Various documents related to Tender, Annexures, copy of NIT duly signed by the authorized signatory of the bidder must be uploaded in this part. The Bidder should NOT submit price bid in Part-II.

d) The original copy of uploaded document i.e. Part-1& Part-II must be submitted by Post/courier/by hand to PSPCL before opening of Technical bid.

e) Part-III: This part contains price of Solar Panel in Rs./KWp basis for each of the Rooftop SPV system Capacities Range inclusive of total system cost i.e. its installation, testing, commissioning, transportation, insurance, five years AMC/CMC and applicable fee and taxes for determining L1 rate in each of the Rooftop SPV Capacity Range.

f) MNRE vide its notification no. 318/33/2019-Grid connected Rooftop Dt 16.07.2019 have decided the following benchmark costs which are inclusive of total system cost i.e. its installation, testing, commissioning, transportation, insurance, five years AMC/CMC and applicable fee and taxes.

Sr. No.	Capacity Range	Benchmark Cost (Rs/KWp) other than special category states
1	Above 1KW to up to 10 KW	54000
2	Above 10 KW to up to 100 KW	48000
3	Above 100 KW to up to 500 KW	45000
4	Above 500 KW to up to 1000 KW	Not discovered by MNRE

NOTE: In the event that the discovered lowest price is higher than that the benchmark cost of MNRE, the benchmark cost shall only be treated as lowest price. However, PSPCL reserves the right to reject/review very low or unrealistic rates.

6. **Procedure for Finalization of Bid:**

The Procedure for Finalization of Bid will be as follows:

a) Part-I: First Fee stage bids i.e. Tender document cost & Earnest Money Deposit (EMD) shall be opened and evaluated.

b) Part-II: Then the Technical & Commercial bids shall be opened and evaluated.

c) Part-III: Then the price bid of technically qualified bidders shall be opened on a specified date and time (to be intimated to all technically qualified bidders).

7. **Finalization of Empanelment:**

a) The lowest rate (i.e. L-1) for each capacity range received (and in turn approved by the competent authority) would be the "Approved Rate" for that particular capacity range.

b) "Approved Rate" for each capacity range would be offered to other bidders (i.e. to L-2, L3 and so on) whose rates are within L1+20% (i.e. 20 % above the approved lowest rates) to work on lowest approved rates. Further, if total number of empanelled agencies/bidders/firms are found to be less than 5 in a particular capacity range, then PSPCL may also include those agencies who fall in L1+25% (i.e. 25 % above the approved lowest rates), provided they agree to accept the approved lowest rates. In NO case the firms/bidders/ falling outside the above specified range i.e.20% or 25% as the case may be, of the L1 Rates will be considered.

c) L1 i.e. Lowest Rate Bidder for each capacity range will be allocated maximum up to 15% of the bid

quantity of such capacity range or as per his capacity given in the bid, whichever is lower.

d) In start-up/new entrepreneur category –B, the maximum allocation to one firm will be initially 50 KW. After successful commissioning, they may be allotted additional capacity based on the performance and availability of capacity for completion.
e) All successful bidder(s) can get work directly from residential sectors as per their allocation.
f) Training of the user will be provided by the firm/bidder/agency.
g) If required, PSPCL reserves the right to negotiate with (lowest) L-1 bidder before finalization of the tender.
h) PSPCL reserves the right to accept any bid and to reject any or all of the bids without assigning reasons thereof.

8. Notification of Empanelment:

List of successful Bidder(s) for each capacity range shall be displayed on PSPCL's website and shall be intimated in writing to the firm/Agency/bidders.

9. Issue Of Letter Of Empanelment:

After Submission of Empanelment fee & Performance Bank Guarantee, the name of successful bidder(s) will be displayed in website of PSPCL and Letter of Empanelment will be sent to the qualified bidder(s).

All the SPV Rooftop systems installed will be inspected by the representative of PSPCL/MNRE/third party within 15 days of receipt of Installation & Commissioning report from beneficiaries/empanelled agency. The eligible subsidy will be released only for the systems installed in compliance to the technical specification of MNRE/PSPCL. During the Inspection, if the system installed is found faulty (or) not in compliance to the technical specification, the cost for re-inspection by PSPCL/MNRE/third party after rectification /replacement shall be borne by the Empaneled Agency.

In case the systems are not as per standards, non-functional on account of poor quality of installation, or non-compliance of AMC/CMC, the PSPCL/MNRE reserves the right to blacklist the vendor. Blacklisting may inter-alia include the following: -

a. The Vendor/Firm/Agency will not be eligible to participate in tenders for Government supported projects for a specified period as decided by the competent authority.
b. The EMD and security deposited/Bank Guarantees by the firm/vendor/agency will be forfeited.

Dy. Chief Engineer,
Investment Promotion Cell
Shakti Vihar, PSPCL Patiala.

INTRODUCTION TO PROGRAMME:

MNRE has accorded sanction for installation of Grid-connected Solar Rooftop Power Plants in Punjab under **"Grid connected Rooftop Solar Programme, Phase-2"** of MNRE. The generated solar power may be utilized for captive application and the surplus power may be fed to the grid as per the grid connectivity specified in PSERC guidelines on Net Metering.

PSPCL issues this tender notice to discover the rates of Grid connected Solar Rooftop System for various Capacity Ranges and for Empanelment of bidders for the implementation of about 30MW Grid Connected Rooftop Solar PV Power Plants under the CAPEX models for the financial year 2019-20. The capacity is tentative depends on MNRE allocations of current years, the final capacity will be as per MNRE allocation for the State. PSPCL hereby invites interested bidders to participate in the bidding process for installation of "Grid connected Rooftop Solar Power Plants under CAPEX net metering mode in Punjab.

All successful bidder(s) who participated in this tender and willing to execute the work at "Approved Rate" will be empaneled to work in Punjab.

Availability of Central Financial Assistance (CFA)

Type of residential sector	CFA (as percentage of benchmark cost or cost discovered through competitive process, whichever is lower)
Residential sector (maximum up to 3 kW capacity)	40 % **
Residential sector (above 3 kW capacity and up to 10 kW capacity)*	40 % up to 3 KW** Plus 20% for Rooftop Solar System above 3 kW and up to 10 kW. No CFA beyond 10 KW CFA@20% for GHS/RWA capacity up to 500 KW(Limited to 10KW per house and total up to 500KW)

**The residential sector users may install RTS plant of even higher capacity as provisioned by respective State Electricity Regulations; however, the CFA will be limited up to 10 kWp capacity of RTS plant.*

*** CFA shall be on benchmark cost of MNRE or lowest cost discovered through the tender, whichever is lower*

Mode of Execution of Programme:

The selected bidders shall identify beneficiaries to design, supply, install, and commission Solar Rooftop Systems and provide mandatory maintenance services/support for 5 years. To ensure effective operation and maintenance of the system during 5 years of comprehensive warranty and maintenance of system, the bidder should set up their Repair and Maintenance Centers as per requirement. Vendors shall, preferably, establish a service center in each District for supply and installation of the RTS. In case, if it is not economically viable for an individual vendor, then Group of vendors can establish Service Centre in each District. Their contact details will be made available on the website. These service centers have to provide services to the RTS owners within the timelines specified in the contract, free of cost for first five years (Warranty period) of commissioning of the RTS. Non-performing/Under-performing PV Panels will be replaced free of cost in the warranty period. Non-compliance of the service standards by the vendor will make it ineligible for future work orders by the Government and may be blacklisted.

The Programme shall be carried out as given here under:-

(i) The bidders shall be allowed to install the systems conforming to the specifications mentioned in this tender document and MNRE guide lines after allocation of Capacity by PSPCL.

(ii) For this PSPCL shall allocate capacity/targets to each selected bidders by empanelling them.

iii) The work covers Consumer identification, Site selection, design, supply, installation, commissioning and comprehensive maintenance for five years.

CAPACITY DISTRIBUTION AND ELIGIBILITY CONDITIONS FOR BIDDERS:

Tentative allocation of 30 MW (shall be corrected, based on final allocation to the PSPCL by MNRE) will be distributed among all the Eligible firms/bidders/agencies in all Capacities Range depending upon the response of tender. Any decision regarding allocation of quantity to bidders as well as to various Capacity ranges shall be sole discretion of PSPCL and binding to all. No request in this regard will be entertained. During the execution of work, the allocated capacity/quantity in different capacity range can be altered keeping in view the installation of rooftop solar in that capacity range. The decisions of PSPCL in this regard shall be final and binding to all.

In case a Successful Bidder is facing genuine difficulty in execution of project as per letter of allocation, PSPCL reserves the right to transfer the allocated capacity in full or part to the other Empaneled firms. Apart from this PSPCL may review the progress in order complete the work within stipulated period if required the capacity allocation may change.

Dy. Chief Engineer,
Investment Promotion Cell
Shakti Vihar, PSPCL Patiala.

GENERAL TERMS AND CONDITIONS:

1. Eligibility Criteria and other Terms & Conditions:

This invitation open to all EPC companies, manufacturers, suppliers & system integrators of Solar PV Power Projects who have not been debarred/black listed by any Govt./Semi Govt. organization for design, manufacture, supply, installation, testing and commissioning of different capacity Roof Top Solar Power Projects subject to adherence to following conditions.

a. The offers shall be accompanied with set of complete technical literature, operation and maintenance manual of the product.

b. Material shall be strictly as per laid down specifications and if there is any left out specification in the Information Document, the same shall be **considered as per the latest MNRE specifications and guidelines**.

c. The solar photovoltaic technology (including all forms of photo voltaic) based RTS projects for generation of electricity will be deployed under the Programme. Project proponents to adhere to the national/ international standards specified by MNRE from time to time. **Being subsidized projects (i.e. residential projects) only indigenously manufactured PV panels (both cells and modules) should be used.**

d. The individual SPV modules shall be warranted for 25 years and being subsidized, only indigenous manufactured PV panels (Both Cells & modules) shall be allowed. The complete SPV systems would be warranted by the manufacturer for five years from the date of commissioning of the Project. After Installation & Commissioning, Solar Rooftop Power Project shall be jointly visited by a committee of supplier/empanelled agency, user and officer of PSPCL/MNRE within 15 working days.

e. The companies should have their service network in Punjab and shall provide address of service centers in Annexure –L.

f. All disputes relating to this work shall be subject to the jurisdiction of Patiala only.

g. The bidder should also submit an undertaking on its letterhead that all the terms & conditions of the NIT are acceptable to the bidder as per Annexure-A.

h. The validity of empanelment is only for up to 31.03.2020.

i. The empanelled agency shall not claim any subsidy / incentive from MNRE / any other organization for the project sanctioned by PSPCL. An undertaking to this regard has to be submitted with each completion report/ subsidy claim. PSPCL shall submit all subsidy claim details to MNRE, GOI.

j. This is a ZERO Deviation Bidding Process. Bidder is to ensure compliance of all provisions of the tender document and submit their Bid accordingly. Tenders with any deviation to the bid conditions shall be liable for rejection.

2. Classification of Bidders:

There are two types of bidder categories to be empanelled through this Tender.

(i) Category A bidders

(ii) Category B Bidders

Category "A" bidders: shall be those bidders who have experience of successful installation & commissioning of minimum aggregate capacity as detailed below of Grid connected Rooftop Solar in any sector viz. residential, social, industrial, commercial, government, under any such other scheme before scheduled date of submission of technical bid. Such experience should be of the bidder himself.

Sr. No.	Capacity Range	Minimum financial turnover during any one of last three years	Minimum Capacity of single system or cumulative systems installed during last three years
	(1)	(2)	(3)
i	1 KWp to 5KWp	Rs. 5.00 Lac.	2KWp or 10KWp Cumulative
ii	More than 5 KWp to 10 KWp	Rs. 10.00 Lac.	7 KWp or 20 KWp Cumulative
iii	More than 10 KWp to 50 KWp	Rs. 20.00 Lac.	20 KWp or 100 KWp Cumulative
iv	More than 50 KWp to 100KWp	Rs. 50.00 Lac.	60 KWp or 200 KWp Cumulative
v	More than 100KWp to500 KWp	Rs. 100.00 Lac.	200 KWp or 500 KWp Cumulative
vi	More than 500KWp to1000 KWp	Rs. 200.00 Lac.	500 KWp or 1000 KWp Cumulative

Bidder is required to submit the performance certificate for experience and eligibility. The bidder is also required to submit the documentary proof like copy of work orders, completion reports, performance certificate and Balance sheet along with CA certificate of turnover. Unaudited balance sheet will not be accepted.

Note: Bidders not meeting the minimum experience criteria & minimum financial turnover for particular Capacity Range as explained in above table shall not be considered for that particular capacity range.

Category "B" bidders: shall be those bidders who are new entrepreneur and/or those bidders who are not covered under Category A. These bidders will only be empanelled through this tender provided they agree to Approved Rate (L1 Rates) and shall not be required to submit the price bid.

Note:

1. *Category B bidders shall be required to complete all the process of submitting tender related documents as mentioned in this document to make them qualified in technical bid evaluation process. Those bidders, who are technically qualified, shall be empanelled subject to their willingness/acceptance to Approved Rate (L1 Rates) for the Capacity Range I i.e. for 1 KWp to 5 KWp only. The maximum allocation to one Category B firm will be initially 50 KW.*
2. *Any Bidder who is rejected in all capacity ranges of Category-A, may be considered for empanelment under Category-B subject to request of the firm/bidder/agency to PSPCL.*

Price bid of only those bidders will be opened in online bid opening process who have the experience of successful installation and commissioning of minimum aggregated capacity in KW of Grid connected Rooftop Solar Systems as explained in category-A above and fulfill eligibility conditions & evaluation criteria of Tender and fall under Category-A. Bidders, which are not falling under Category-A, shall be eligible to Empanel in the Category-B subject to fulfilling all other required criteria.

3. Earnest Money:

i) The Tenderer shall be required to submit Earnest Money for all Capacity Ranges in the form of Demand Draft of Rs.50000/- (Fifty Thousand Only) in Favour of Accounts Officer, Thermal Design, PSPCL Patiala payable at Patiala from any Nationalized Bank along with the tender.

ii) In case of Tender not accompanied by full amount of Earnest Money, the tender of such bidder shall be ignored/ rejected.

iii) Earnest Money shall be forfeited in case of withdrawal/modification of an offer within the validity period of 120 days from the date of opening of tender, as required in the NIT/Tender Specification after opening of Tender.

iv) In case of successful Tenders, Earnest Money shall be converted into Security Deposit and shortfall, if any shall be got deposited for faithful execution of projects, valid for a period of 66 months (up to 30.09.2025) from last day of validity of empanelment.

(v) If the successful bidder opt for submitting the Bank Guarantee for full amount of security deposit as prescribed in Clause 6 from any Nationalized Bank, then the full amount of EMD deposited by the

firm will be refunded within 30 days of the issue of letter of empanelment to various successful bidders subject to verification of Bank Guarantee from the concerned bank.

(vi) In case of Tenders not accepted, the Earnest Money shall be refunded within 30 days of the issue of letter of empanelment to various successful bidders.

(vii) If a firm withdraws its bid before the due date of opening of Tender, the EMD of the firm shall be refunded immediately.

(ix) No Interest shall be paid by PSPCL on EMD deposited by the tenderer/bidder

4. Price:

a) Price rate in Rs_____/ KWp are to be quoted by the bidders for the each Capacity Range as defined in eligibility criteria i.e. 1 KWp to 5 KWp; > 5 KWp to 10 KWp; > 10 KWp to 50 KWp; > 50 KWp to 100 KWp; > 100 KWp to 500 KWp & > 500 KWp to 1000 KWp.

b) All tender offers shall be evaluated on the price rate in Rs____/KWp basis for each of the Rooftop SPV System Capacity Range inclusive of total system cost and its installation, testing, commissioning, transportation, insurance, five years AMC/CMC and applicable fee and taxes for determining L1 rate in each Capacity Range.

c) If price quoted by the L1, L2, L3... bidders in respective Capacities Ranges is found to be unacceptable to the PSPCL, in that case the decision of the PSPCL shall be final and binding to all. In case of such bidder(s), who has quoted unrealistic rate and not considered by PSPCL for further process, PSPCL may consider next realistic rate for that Capacity Range and consider it as the Approved rate.

d) The rates quoted by the bidder will be inclusive of GST, or any other taxes applicable to such work, any escalation in such taxes/levies during the Empanelment Period will not be paid by the Consumer/Beneficiary and **bidders are advised to take into consideration any such escalation in the prevailing taxes / levies /duties. In no circumstances, escalation in price will be entertained.**

e) The tenderer shall quote the rate both in figure as well as in words.

f) The "Approved Lowest Rate", discovered during the tender process, will become the basis for Central Finance Assistance (CFA) to be given to the eligible Consumers/ beneficiaries. In the event that the discovered lowest price is higher than that the benchmark cost of MNRE, the benchmark cost shall only be treated as lowest price. However, PSPCL has right to reject/review very low or unrealistic rates.

5. Fee for Empanelment:

All successful bidders, who have matched their price with approved L1 rate have to pay Empanelment Fee as detailed Below:

Sr No	Category of Bidder	Capacity range	Empanelment fee (in Rs)	GST @ 18%	Total (in Rs)
1	Category A & B	1 KWp to 5KWp	10000	1800	**11800**
2	Category A Only	More than 5 KWp to10 KWp	20000	3600	**23600**
3	Category A Only	More than 10 KWp to50 KWp	30000	4800	**34800**
4	Category A Only	More than 50 KWp to 100KWp	40000	7200	**47200**
5	Category A Only	More than 100KWp to500 KWp	50000	9000	**59000**
6	Category A Only	More than 500KWp to 1000 KWp	60000	10800	**70800**

Note: If any Bidder/ firm/agency is selected for multiple capacity ranges for empanelment, then he has to deposit the Highest Empanelment Fee applicable from the capacity ranges in which the

bidder/firm/agency is selected. At Any stage if any Empaneled Agency/Firm wants to upgrade its Capacity Range after fulfilling the eligibility criteria of particular Capacity Range in which it wants to get empaneled/ upgraded, then the firm has to deposit appropriate fee along with Proof of experience. During upgradation of capacity range of a particular bidder, the bidder shall have to pay only the difference amount from its earlier submitted empanelment fee.

6. **Security Deposit/Performance Bank Guarantee:**

a) The amount of Performance Bank Guarantee shall be Rs.200000/- (Two Lakh) or @ Rs.2000/- (Two Thousand) per KWp of the total allocated capacity in all Capacity ranges, whichever is Higher.

b) If the Empaneled Agency does not install any plant during empanelment period than Performance Bank Guarantee will be returned after the completion of Empanelment Period.

c) The Bank Guarantee must be valid for a period of 66 months (up to 30.09.2025) from last day of validity of empanelment. The Bank Guarantee may be issued by a Nationalized Bank or State Bank of India or its subsidiary bank. Bank Guarantee shall be in favour of "Dy. CE/IPC, PSPCL Patiala".

d) The aforesaid Bank Guarantee along with prescribed Empanelment fee shall be furnished after issue of LOA/LOI, failing which the eligibility for empanelment is liable to be cancelled.

Dy. Chief Engineer,
Investment Promotion Cell
Shakti Vihar, PSPCL Patiala.

OTHER CONDITIONS:

1. SCOPE OF SUPPLY:

The Rooftop SPV Power Plants should be supplied & installed by the companies as per specifications given in technical specifications which comply with the MNRE, GOI Guidelines. Following parts for each SPV project are mainly required to be supplied.

a) SPV Module of capacity range from 250Wp and above.
b) Power conditioning Unit (PCU) of 1KW and above.
c) PVC insulated Copper cables as per BIS Codes for AC & DC inter-connections.
d) Junction Boxes with Surge Protection Device (SPD).
e) Structure for solar PV project -Aluminum / MS Galvanized
f) AC Distribution Panel Board (ACDPB) with SPD and MCB/MCCB, Uni-directional solar meter and necessary protection as per CEI rules and safety regulations.
g) Lightening Arrestor.
h) Danger Board.
i) Earthing as per BIS/ISI standards required for the SPV Power Plant.
j) Remote monitoring system on all the system installed, if required.
k) O&M manual and warranty card. The manual shall include the all diagrams and instructions to operate and maintain the whole plant.
l) The process and expenditure of meter testing and electrical inspection.
m) Any other part as per site requirement.

2. COMPREHENSIVE MAINTENANCE CONTRACT DURING WARRANTY PERIOD OF FIVE YEARS:

a) Visit to the site on call basis to provide maintenance services within three days of lodging of complaint.
b) Corrective & remedial maintenance services to set right the malfunction of the SPV-projects include supply and replacement of all damaged parts/ components including electronics/ charge controller, Inter connected cables/ parts and fuse etc. with new parts.

3. OPERATION & MAINTENANCE MANUAL:

An Operation, Instruction and Maintenance Manual should be provided with the Solar PV projects. The following minimum details must be provided in the Manual:-

a) Basic principles of Photovoltaic.
b) A brief write-up (with a block diagram) on the Solar PV project - its components, PV module, inverter, junction boxes and expected performance shall be provided.
c) Type, Model number, Voltage & capacity of inverter, used in the system.
d) The make, model number, country of origin and technical characteristics of all the components are required to be provided.
e) Clear instructions on regular maintenance and troubleshooting of the Solar PV Projects.
f) DO's and DONT's.
g) Name, address and Mobile No. of the contact person for repair and maintenance, in case of non-functionality of the SPV Projects.

4. **INSPECTION AND TESTS:**

Duly authorized representative of PSPCL shall have, at all reasonable time, access to the beneficiary premises and shall have the power at all reasonable time to inspect and examine the materials and workmanship of the works during installation and after commissioning .

5. **WARRANTY:**

a) The Firm/Bidder/agency shall be solely responsible for commencement to completion of the work. It shall be responsible for any loss or damage happened at the work place or during the erection of the plant, not already approved by PSPCL, and shall, at its own cost, arrange for repair or compensation.

b) The Firm/Bidder/agency shall warranty that the equipment used in installing the plant are new and unused.

c) The Firm/Bidder/agency shall provide warranty, of the complete power plant towards any defect in design of the plant, equipment used including spare parts for a period of five (5) years from the date of Commissioning of the plant.The Warranty period shall be of 25 Years for the PV modules.

d) Any defect noticed in the power plant during the period of five (5) years from the date of Commissioning of the power plant shall be rectified/replaced by the Firm/Bidder/agency on its own motion or on due intimation by the PSPCL or by the owner/beneficiary of the plant, as the case may be, free of charges.

e) The PV module(s) shall be warranted for a minimum period of 25 years from the date of commissioning of the project. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.

f) The replacement of the defective component at the cost of Firm/Bidder/agency shall be made with similar and/or equivalent make. The replaced components shall not, under any situation, reduce the performance of the plant.

g) The Firm/Bidder/agency shall commence the replacement/rectification of the defect within three (3) days from the date of identification of such defect and shall rectify the defect within mutually agreed time; failure in doing so shall enable the PSPCL to rectify the defect at the expense of Contractor/Bidder.

h) The Firm/Bidder/agency shall provide warranty certificate along with the Commissioning report to the Beneficiaries/PSPCL

i) Since the maintenance of the system may also be taken up by the Firm/Bidder/agency after expiry of 05 years of warranty period if the end user/"PSPCL" so desires, the Firm/Bidder/agency shall take up annual maintenance of the installed system.

j) The Firm/Bidder/agency hand-over the respective plant to the user after its successful commissioning in excellent condition. At the time of handing over all the performance tests of the major equipment shall be demonstrated to the user and PSPCL to ensure Generation from the Solar Photovoltaic Powe Plant. While handing over the plant, the Firm/Bidder/agency shall also hand over all technical documents, literature, instruction manuals, lists of spare part & tools & tackles.

k) The Comprehensive Maintenance (within warranty period) may be executed by the firm themselves or through the service center of the firm in the concerned district/Division with the consumer/beneficiary.

l) The service personnel of the Successful Bidder will make routine quarterly maintenance visits. The maintenance shall include thorough testing & replacement of any damaged parts, apart from any complaint registered/ service calls received / faults notified in the report generated by the IVRS, should be attended to and the system should be repaired/ restored/ replaced within 3 days.

m) Normal and preventive maintenance of the SPV Rooftop Power Plant systems will also be the duty of the deputed personnel during quarterly maintenance visits.

n) During operation and maintenance period of the SPV Rooftop Power Plant systems, if there is any loss or damage of any component due to miss management/miss handling or due to anyother reasons pertaining to the deputed personnel, what-so-ever, the Firm/Bidder/agency shall be responsible for

immediate replacement/rectification. The damaged component may be repaired or replaced by new component.

o) Vendors shall establish a Service Centre, preferably, in each District for supply and installation of the RTS. The vendor shall put contact details of Service Centre (at any suitable place) at every Project Site. In case, if it is not economically viable for an individual vendor, then Group of vendors can establish service Centre in each District. Their contact details will be made available on the website. These service centers have to provide services to the RTS owners within the timelines specified in the contract, free of cost for first five years (Warranty period) of commissioning of the RTS. Non-performing/Under-performing PV Panels will be replaced free of cost in the warranty period. Non-compliance of the service standards by the vendor will make it ineligible for future work orders by the Government and may be blacklisted.

6. PATENT RIGHT AND ROYALTIES:

The Firm/Bidder/agency shall indemnify the "PSPCL" against all third party claims of Infringement of patent, royalty's trademark or industrial design rights arising from use to the goods or any part thereof.

7. TERMINATION FOR INSOLVENCY:

PSPCL may, at any time, terminate the Empanelment by giving written notice to the Firm/Bidder/agency without compensation to the Firm/Bidder/agency, if it becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the "PSPCL".

8. TERMINATION OF EMPANELMENT:

Unless otherwise extended, the tenure of empanelment for all the bidders in all capacity ranges will expire on 31.03.2020.

In addition to this, at any stage, if it is found that any empaneled agency is not commissioning/has not commissioned the projects as per PSPCL/MNRE guidelines or using /have used material /equipment which is not prescribed in PSPCL/MNRE guidelines, then the empanelment is liable to be cancelled along with blacklisting of the firm as decided by the competent authority.

9. OTHERS:

a) I-V curve of the each module, technical details such as Voc, Isc, FF, Cell Efficiency and Pmax etc. shall be supplied along-with each consignment and uploaded on PSPCL web portal by Vendor, copy of same shall be handed over to Beneficiaries/PSPCL.

b) The Firm/Bidder/agency will ensure the training to end users/beneficiary, focusing on main features, operation and maintenance of these systems.

c) The Firm/Bidder/agency shall continue to provide spare parts after the expiry of warranty period at the end users/Beneficiary cost. If the Firm/Bidder/agency fails to continue the supply of spare parts and services to users, PSPCL shall take appropriate action against the Firm/Bidder/agency.

d) It shall be the sole responsibility of the Firm/Bidder/agency to get verified the quality & quantity of the supplied material at the site of delivery.

10 POST COMMISSIONING ACTIVITIES:

On completion of work, the Firm/Bidder/agency shall submit all the documents related to the execution of contract and implementation of Rooftop Solar Photovoltaic Power Plants including,

a) Detailed Project Report including layout and drawings of the commissioned plant.

b) All the consent, clearance and approvals.

c) Testing Certificate of Solar Module (including Serial No and other details), PCU and Battery from MNRE Authorized Test Center.

d) Plant Charging/ Commissioning Certificate.

e) Photograph of site before Installation and after Installation.

11. PAYMENTS:

a) Payment of the project cost, **excluding the MNRE Subsidy**, shall be paid by the beneficiaries directly

to the empaneled firm. The MNRE Subsidy shall be paid by **PSPCL** (AUTHORISED BY MNRE) to the empaneled Firms on completion of the project, verification by PSPCL / third party inspector appointed by PSPCL and receipt/availability of the CFA/MNRE Subsidy as per MNRE guidelines.

b) Copies of invoices after joint inspection shall also be uploaded to PSPCL/SPIN Solar Rooftop Web Portal along with Inspection Report, photographs and required documents as per the checklist.

c) The eligible Central Financial Assistance (CFA) of MNRE shall be claimed as per MNRE/ PSPCL guidelines through online web portal and by submitting original hard copy of bill. PSPCL shall release the eligible CFA to firm based on sanction received by MNRE/Government of India and availability of funds. Any delay in releasing of Subsidy/CFA by MNRE will not be attributed towards PSPCL.

12. PROJECT INSPECTION:

a) Project(s) shall be got inspected by the bidder from PSPCL experts/ Agency Authorized by PSPCL as per the checklist requirement for release of subsidy. All the expenses for third party expert inspection in this regard shall be borne by the Firm/Bidder/agency only. The empaneled third party inspector, if any, shall be displayed on PSPCL Rooftop web portal.

b) PSPCL reserves the right to do sample inspection checks for the projects commissioned by the Bidder.

c) In case the systems are not as per standards, non-functional on account of poor quality of installation, or non-compliance of AMC, the PSPCL/MNRE reserves the right to blacklist the vendor.

Dy. Chief Engineer,
Investment Promotion Cell
Shakti Vihar, PSPCL Patiala.

SCOPE OF WORK ANDTECHNICAL SPECIFICATIONS

A) Scope Of Work:

a) Scope of work covers Design, Supply, Installation, Testing, Commissioning and five years Comprehensive Warranty, Maintenance and Operation of Grid Connected SPV Rooftop Plant under Net Metering as per the technical specifications of the Tender.
b) Wiring up to Distribution Board from the SPV Rooftop system will be in the scope of the Contractor.
c) Performance testing of the complete system.
d) The Contractor will collect firm work order from the purchasers. The Invoice, technical details of Module, PCU etc. along with test reports, testing and commissioning report of plant, Statement of Expenditure, Joint Inspection Report, Net Metering, Work Completion & Synchronization Reports, Installed System Photographs, and Bill of Material has to be uploaded to PSPCL/SPIN rooftop website for release of CFA of MNRE subsidy.
e) A leaflet containing the details of operation and address/contact details of the service centers shall be provided to each end user/beneficiary.
f) The Firm/Bidder/agency shall do necessary coordination with concerned agencies like DISCOM for procuring necessary approvals on behalf of the End User/ Beneficiary.

B) Technical Specifications:

1. Solar Photovoltaic Modules:

Each Solar PV Plant Array Capacity should not be less than the capacity of the same SPV Plant capacity and it should comprise of solar Mono/Multi Crystalline Modules of minimum 250 watts. The Photovoltaic Modules must be tested & approved by one of the IEC authorized test centers, test Certificates can be from any of the NABL / BIS accredited testing / calibration laboratories. The module type must be qualified as per IEC 61215 (Second Edition). In addition, PV modules must qualify to IEC 61730 Part I to II for safety qualification testing. SPV module conversion efficiency should not be less than 15.0% under STC.

The module shall have warranty of 25 years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period. The Bidder will have to furnish a Corporate Guarantee on a required stamp paper for the same.

2. Identification and Traceability:

Each PV module used in any solar power project must use a **RFI identification Tag (RFID)**, which must contain the following Information:

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 Modules).
b) Country of Origin (separately for Solar Cells and Modules)
c) I-V Curve for the Module
d) Peak wattage , Im , Vm and FF for the Module
e) Unique Serial No and Model No of the Module
f) Date and year of obtaining IEC PV module qualification certificate.
g) Name of the test lab issuing IEC certificate

3. SPV Panel Array Structures:

The supplier shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to the following:

a) Determination of "true south" at the site

b) Array tilt angle to the horizontal, with permitted tolerance
c) Details with drawings for fixing the modules
d) Details with drawings of fixing the junction/terminal boxes
e) Interconnection details inside the junction/terminal boxes
f) Structure installation details and drawings
g) Electrical grounding (earthing)
h) Inter-panel/Inter-row distances with allowed tolerances and
i) Safety precautions to be taken

The array structure shall support SPV modules at a given orientation to absorb and transfer the mechanical loads to the roof properly. The portion of array structure if any lying within the column shall be of GI of superior quality/ Aluminum as per scope of supply. All nuts and bolts shall be of very good quality stainless steel.

a) Wherever required, Suitable number of PV panel structures shall be provided. Structures shall be of flat-plate design and can be a combination of I, C and L or any sections as per structure design requirement.
b) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent which provides at least spraying thickness of 70 microns as per IS5909, if steel is used.
c) MS Galvanized / Aluminum/ Stainless Steel/ MS Painted / Prefabricated Galvanized Iron structures with adequate strength and in accordance with relevant BIS standards shall be used with proof that the design of the structure can withstand a wind speed up to 170KM per hour. The structure should be non -penetrating and low height.
d) Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.
e) Each structure should have angle of inclination as per the site conditions to take maximum insulation.
f) The base plate and vertical section of the structure should be minimum of 3 mm thickness.
g) Each panel frame structure be so fabricated as to be fixed on the rooftop column/wall structures. The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the empaneled firm/bidder will make such arrangements as per suitability/standards. All nuts and bolts shall be of very good quality stainless steel except foundation bolts which will be of MS (GI Coated).
h) If possible, 4 ft. offset from boundary of rooftop from all sides should be kept while installing structure for modules.
i) The cost of civil work / grouting of structure shall be in the scope of the bidder only and no extra cost to be demanded by the empaneled vendor.
j) No damage in any way should be caused to the building rooftops while installation of SPV Power Plant. If any damage done it will wholly be the responsibility of the bidder and cost shall be recovered from the bidder.
k) In case the bidder installs SPV Power Plant on raised structure with lower edge at 7 feet and above, then the party shall submit Structure Safety Certificate from Chartered Structure Engineer/Architecture that structure is safe up to the wind speed of 170km/hr.

4. **Power Conditioning Unit (String Invertors):**

The power conditioning units of different capacity SPV Power Plants should not be less than the capacity of SPV Power Plant and it should be provided to convert DC power produced by SPV modules, in to AC power. A multifunction power conditioning system combining the functionality of a grid interactive solar inverter with a highly efficient conversion unit is having following Technical Specifications of String Inverters:

Type	:	Self-commuted, current regulated, high frequency IGBT based with Trench Gate Structure
Output voltage	:	Single Phase, 230VAC & 3 Phase, 415VAC (+12.5% - 20% VAC)
Frequency	:	50 Hz ±1 Hz
Continuous rating	:	Not less than system capacity individually
DC input Operating range	:	Up to 1000 V nominal
Total Harmonic Distortion	:	less than 3 %
Operating Temperature Range	:	0 to 55 deg C
Housing cabinet	:	PCU to be housed in suitable cabinet with minimum IP65 standard
Inverter efficiency	:	>95 % at full load.
Power Control	:	MPPT

The Technical Specifications of Micro Inverters are as following:

Type	:	Self-commuted, current regulated, high frequency FET / IGBT based
Output voltage	:	Single Phase, 230V, AC/ 3 phase, AC can be produced by changing the topology of connections of Micro Inverters (+12.5%, - 20%V, AC) as per requirement.
Frequency	:	50 Hz ±1Hz
Continuous rating	:	Not less than the max power output of modules
DC input Operating range	:	It should in between 16V to 62 V
Total Harmonic Distortion	:	less than 3%
Operating temperature Range	:	0 to 55 deg C
Housing cabinet	:	PCU to be housed in suitable cabinet with minimum IP67 standard
Inverter efficiency	:	>95 % at full load.
Power Control	:	MPPT

The bidder shall use the original parts in case of any fault in the PCU/Inverter during the CMC period of 5 years. In case the original part/parts are not available with the manufacturer of the PCU/Inverter (Based on certificate from the manufacturer), the bidder shall use the new parts of other standard brands available in the market or will use the repaired parts.

IEC Certificates required with Micro Inverters:

Sr. No.	IEC Certificates
1	Environmental Testing IEC 60068-2, all relevant clauses.
2	Efficiency Measurements IEC 61683:1999

3	Product Safety Standards IEC 62109-1 (2010) IEC 62109-2 (2011)
4	Grid Connectivity Standard/Utility Interface IEC 61727:2004
5	Test Procedure for Islanding prevention IEC 62116:2008 or IEEE 1547 & 1547.1
6	Electromagnetic Compatibility & Electromagnetic interface IEC61000-6-1:2007 61000-6-3:2007, 61000-3-2:2006, 61000-3-3:2007

Other Important Features/ Protections Required in the PCU (String/Micro):

a) Authentic tracking of the solar arrays, maximum power point tracking (MPPT).

b) Array ground fault detection.

c) LCD and piezoelectric keypad operator interface Menu driven. Not required in case of Micro Inverter.

d) Automatic fault conditions reset for all parameters like voltage, frequency and/or blackout.

e) MOV and gas filled spark gap technology type Surge Arresters on AC and DC terminals for over voltage surge protection from any source.

f) PCU should be rated to operate at 0 to 55 deg. centigrade above ambient temperature.

g) All parameters should be accessible through an industry standard communication link.

h) The PCU should go in sleep mode when there is no grid supply.

i) The string inverter should have display of adequate size on its front panel to show various parameters.

j) Since the PCU is to be used in Solar Photovoltaic Energy System, it should have high operational efficiency. The idling current at no load must not exceed 2% of the full-load current.

k) A suitable Surge Protection Device separately at output (A.C. side) shall be provided for each SPV Power Plant.

l) The PCU output shall be 230VAC for single phase and 415VAC, 50 Hz for 3 phase.

m) The PCU shall include appropriate self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker. The PCU shall go to shut down/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay; in sufficient solar power output etc.

(i) Insufficient Solar Power Input

When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to a standby/shutdown mode. The PCU control shall prevent excessive cycling during rightly shut down or extended periods of insufficient solar radiation.

The power conditioning units / inverters should be as per applicable IEC/ equivalent BIS standard for efficiency measurement and environmental testing as per standard code IEC 61683 and IEC 60068 2(6,21,27,30,75,78). The charge controller/ MPPT units should qualify IEC 62093 and IEC 60068 2 (6,21,27,30,75,78). The junction boxes/ enclosures should be IP 65 (for outdoor)/ IP 54 (indoor) and as per IEC 62208 specifications.

The PCU's should be tested from the MNRE approved test centres / NABL/BIS accredited testing-calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses. Party must supply and upload the test report of PCU /inverter along with the tender document.\

(ii) Utility-Grid Over or Under Frequency

a) The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned within limits for minimum of two minutes.

b) The PCU generated harmonics measures at the point of connection to the utility services when operating at the rated power shall not exceed a total harmonic current distortion of 3 percent, a single frequency current distortion of 3 percent and single frequency voltage distortion of 1 percent, when the first through the fiftieth integer harmonics of 50 Hz are considered.

c) The PCU Power factor at the point of utility service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output, but may be less than 0.95 lagging below 25 percent of the rated output.

d) The high voltage and power circuits of the PCU shall be separated from the low-voltage and control circuits. All conductors shall be made of standard copper.

e) The PCU shall withstand a high voltage test of 2000 V rms, between either the input or the output terminals and the cabinet (chassis).

f) Full protection against accidental open circuit and reverse polarity at the input shall be provided.

g) The PCU shall not produce Electromagnetic Interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.

h) The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and ac and the dc disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front cover of the PCU enclosure.

5. Electrical Safety, Earthing and Protection:

a) Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.

b) Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

c) Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

d) Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

e) Fast acting semiconductor type current limiting fuses at the main bus- bar to protect from the grid short circuit contribution.

f) The PCU shall include an easily accessible Emergency OFF button located at an appropriate position on the unit.

g) The PCU shall include ground lugs for equipment and PV array grounding. The DC circuit ground shall be a solid single point ground connection in accordance with WEC69042.

h) All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise

suitably protected to survive a nominal 10 years design life of the unit.

i) The PCU enclosure shall be weatherproof and capable of surviving *climatic changes and should keep the PCU* intact under all conditions. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.

j) Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

k) All doors, covers, panels and cable exists shall be gasketed or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95cm.

l) The design and fabrication of the PCU, the site temperature ($0^{O}$to 70^{O} C), incident sunlight and the effect of ambient temperature on component life shall be considered carefully. Similar consideration shall be given to the heat sinking, for blocking diodes and similar components.

6. Factory Testing:

a) Preparation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.

b) Operation of start-up, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.

c) Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.

d) A Factory Test Report (FTR) shall be supplied along with the unit. The FTR shall include detailed description of all parameters tested qualified and warranted.

7. Operating Modes:

The following operating modes are to be made available.

a) Night or Sleep Mode: Where the inverter is almost completely turned off, with just the timer and control system still in operation, losses should not exceed 2 watts per 5 kilowatt.

In case of Grid Failure, the PCU should go in sleep mode/ turned off immediately.

b) Standby Mode: Where the control system continuously monitors the output of the solar generator until pre-set value is exceeded (typically 20 watts).

c) Operational or MPP Tracking Mode: The control system continuously adjusts the voltage of the generator to optimize the power available. The power conditioner must automatically re-enter stand-by mode when input power reduces below the standby mode threshold. Front Panel display should provide the status of the PCU, including AC Voltage, Current, Power output & DC Current, Voltage and Power input, pf and fault Indication (if any).

8. Harmonics Standard:

As per the standard of IEEE 519, the permissible individual harmonics level shall be less than 3% (for both voltage and current harmonics) and Total Harmonics Distortion (THD) for both voltage and current harmonics of the system shall be less than 5%.

Technical and interconnection requirements:

Equipment	BIS / IEC / IEEE	BIS / IEC / IEEE
Overall conditions of service	State Distribution/Supply Code	State Distribution/Supply Code

Overall Grid Standards	Central Electricity Authority (Grid Standard) Regulations 2010	Central Electricity Authority (Grid Standard) Regulations 2010
Meters	Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time	Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time
Safety and supply	Central Electricity Authority (measures of safety and electricity supply) Regulations, 2010	Central Electricity Authority (measures of safety and electricity supply) Regulations, 2010
Harmonic Requirements Harmonic Current	IEEE 519 CEA (Technical Standards for Connectivity of The Distributed Generation Resources) Regulations 2013	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013
Synchronization	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Photovoltaic system must be equipped with a grid frequency synchronization device. Every time the generating station is synchronized to the electricity system. It shall not cause voltage fluctuation greater than +/- 5% at point of connection.
Voltage	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The voltage-operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 second, the photovoltaic system must isolate itself from the grid.
Flicker	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Operation of Photovoltaic system should not cause
Frequency	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), There should be over and under frequency trip functions with a clearing time of 0.2 seconds.
DC injection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions.
Power Factor	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	While the output of the inverter is greater than50%, a lagging power factor of greater than 0.9 should operate.
Islanding and Disconnection	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The photovoltaic system in the event of fault, voltage or frequency variations must island/ disconnect itself within IEC standard on stipulated period.
Overload and Overheat	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013.	The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored.

Paralleling Device	IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013.	Paralleling device of photovoltaic system shall be capable of withstanding 220% of the normal voltage at the interconnection point.

The installation should be as per the technical compliance and latest installation practices of MNRE, PSPCL guidelines and all other statutory regulations specified. Any amendments / modifications issued time to time will be incorporated.

9. Energy Meter Configuration Options:

The Metering System for Rooftop Solar System, under Net-Metering arrangement, shall be as under:-

One Bi-directional Energy Meter as Main Meter and One No. Uni-directional Energy meter as solar meter with necessary CTs/PTs, as per requirement.

The Bi-Directional Meter will be part of the SPV Power Plant and the cost shall be borne by the EPC Contractor/Empaneled agency.

Other conditions/guidelines regarding Metering shall be as per ESIM-2017 (amended upto date) as detailed below:

1. The metering system shall be as per CEA (Installation and Operation of Meters) Regulations, 2006, as amended from time to time.
2. The solar meter (a unidirectional meter) is required to be installed as an integral part of the net metering system at the point at which the electricity is generated by Solar Energy System and delivered to the main panel.
3. The net metering equipment (Bi-directional meters) and the Solar meter (unidirectional) as per CEA Regulations shall be installed and maintained by the distribution licensee at the cost of the eligible consumer: Provided the eligible consumer may procure the net meter/solar meter and present the same to the distribution licensee for testing and installation as per Regulation 21.2 of the Supply Code-2014. No meter rental shall be charged from the consumer. In case meters are provided by the distribution licensee, consumer shall be liable to pay meter rental as approved by the Commission. The location of the meter shall be as per CEA Metering Regulation.
4. The installed meters shall be jointly inspected and thereafter sealed by the distribution licensee in the presence of the consumer as per the procedure laid down in Supply Code: Provided that in case the eligible consumer is under the ambit of TOD Tariff, the meter compliant of recording time of day consumption/generation shall be installed.
5. The meter reading taken by the distribution licensee shall form the basis of commercial settlement.

The Solar power generated at rooftops will be collected at one central point/one termination point in the same building from where it will be fed on LT side.

If required, any protection device/adapter panel/breaker/switchgear/RMU to be provided to terminate the each SPV Power Plant output on LT side shall be arranged by the party at its own cost. The bi -directional meter, if required, be installed by consumer on its own cost, but the technical guidance will be the provided by the Empaneled Agency.

10. ONLINE MONITORING:

The bidder will provide the online monitoring device for monitoring of Solar generation either by providing web enabled uni-directional solar meter or web enabled Solar inverter or separate remote monitoring device. The online monitoring device should be SIM/Wifi enabled and have

GPRS facility through which the data will be transferred.

11. **Meter Testing & Electrical Clearance:**

All installation work should be done as rules & regulations of Indian Electricity Act., PSPCL /MNRE and PSERC. The consumer shall have to take the clearance from PSPCL/Electrical Inspector, as the case may be, at its own cost before connecting to the Grid. The process and expenditure of meter testing and electrical inspection to be met by Empaneled Agency/ Bidder.

12. **Substation:**

High power evacuation substation with Dry type/ Oil type, same or higher capacity transformer of the capacity of SPV Power Plant, 415V/11kV, 50Hz step up along with all protections, switchgears, required vacuum circuit breakers (630 Amps), RMU panel, Metering panel and cables etc. along with required civil work will be housed in prefabricated structure or Outdoor type as per requirement be provided for 100 kWp to upto 500 kWp, if required.

(The system should be as per latest specifications of PSPCL.)

13. **Surge Protection Device (SPD):**

There should be a separate Array Junction Box with Metal Oxide Varistors (MOV) based Surge Protection Device with fuses to be provided for each string inverter on D.C. Side.

Further, on A.C. Side, the Surge Protection Device should be provided in ACDB, besides the existing SPD device in PCU.

In case, the inverter has provision of inbuilt array junction box, then the separate array junction box is not required but the surge protection device should be provided separately on D.C. and A.C. (both side) in addition to Inverters.

14. **Common AC Distribution Panel Board (ACDPB):**

Common AC Distribution Panel Board (DPB) shall control the AC power from inverter. AC Distribution panel (ACDP) should consist of appropriate size of MCB/MCCB with appropriate breaking capacity as incomer and suitable numbers of MCB/MCCB with appropriate size breaking capacity outgoing switches.The panel should have space for Energy Meter.

15. **Cables:**

a) ISI marked **as per MNRE, GOI Guidelines,** PVC insulated Copper Cond. Cable of various sizes as per load requirement for connecting all the modules / arrays to Jn. Boxes and from Jn. Boxes to AJB and from AJB to inverter. Copper/ Aluminum **armored** Cables of appropriate size from Inverter onwards in A.C. side.

b) Cabling: Cabling shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers.

c) Wires: Only copper wires of appropriate size **based on load requirements** of reputed make as specified by MNRE ,GOI shall have to be used. However aluminum cables can be used on A.C side of transmission. However on D.C Side, only solar D.C. Cable should be used. PVC/XLPE insulated armoured sheathed cables required for the plant will be provided by the manufacturer. All cable schedules/ layout drawings have to be got approved from the purchaser prior to installation

d) Cables Ends: All connections are to be made through suitable cable/ lug/ terminals; crimped properly & with use of Cable Glands.

e) Cable Marking: All cable/wires are to be marked with proper manner by good quality ferrule or by other means so that the cable can be easily identified.

f) All cable schedules/ layout drawings have to be got approved from the purchaser prior to

installation.

16. **Lightning Protection:**
There shall be the required number of suitable lightning arrestors installed in the array area. Lightning protection shall be provided by the use of metal oxide arrestors and suitable earthing such that induced transients find an alternate route to earth. Protection shall meet the safety rules as per Indian Electricity Act/ PSPCL. For capacities 20kWp and above Party will install ESE type LA.

17. **Earthing Protection:**
Each array structure of the PV yard should be grounded/ Earthing properly as per IS:3043-1987. In addition the lighting arrester/masts should also be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian Electricity Act./IE Rules/PSPCL. Earth Resistance should be tested in presence of the representative Department after earthing by calibrated earth tester. PCU and ACDB should also be earthed properly.

18. **Comprehensive Maintenance:**
All the equipment shall be provided with comprehensive Maintenance for 5 years against unsatisfactory performance and/or break down due to defective design, workmanship of material (in case of SPV Modules the guarantee period is 25years). The equipment or components, or any part thereof, so found defective during Comprehensive Maintenance period shall be forthwith repaired or replaced free of cost to the satisfaction of the beneficiary.

19. **Jet Pump 1/2 HP (Crompton/ Kirloskor):**
As per site requirement, minimum 1 No. 1/2 HP BIS approved surface pumps shall be installed for each SPV Power Plant for 50KWp and above. Suitable Nos. of water outlets shall be provided through B-class ISI Marked GI Pipes for cleaning of the modules.

20. **Drawings & Manual:**
One set of Engineering, Electrical drawings and installation and O&M manuals are to be supplied. Bidder shall provide complete technical data sheets for each equipment giving details to the specifications along with makes.

21. **Scope of CMC of SPV Power Plant for a Period of 5 years from date of Commissioning:**

a Proper CMC of the SPV Power Plant for a period of five years after commissioning along with supply of consumable items as and when necessary and submission of daily performance data of the power plant shall come, under the CMC contract. The break down maintenance of the entire system including supply of necessary spare parts, if any, are already under the coverage of warranty clause of the specific condition for a period of 60 months from date of commissioning of power plant. The CMC schedule of the SPV power plant during the 5 years contract period shall be as detailed below.

b The security of the power plant will rest with the supplier/agency till such time operation and maintenance of the power plant is not handed over to the purchaser/department.

c The deputed personnel shall be qualified and well trained so that they can handle any type of operation hazard quickly and timely.

d The deputed personnel shall be in a position to check and test all the equipment regularly, so that, preventive actions, if any, could be taken well in advance to save any equipment from damage. Any abnormal behavior of any equipment shall be brought to the notice of Engineer-in-Charge immediately for appropriate action.

e. Normal and preventive maintenance of the power plant such as cleaning of module surface, tightening of all electrical connections etc. the module cleaning should be responsibility of bidder.

f. During CMC period of 5 years of the power plant, if there is any loss or damage of any component of the power plant due to miss management/miss handling or due to any other reasons, what-so-ever, the supplier/firm shall be responsible for immediate replacement/rectification. The damaged component may be repaired, if it is understood after examination that after repairing, performance of the component shall not be degraded, otherwise the defective component shall have to be replaced by new one without any extra cost.

22. <u>Confirmation to MNRE Technical Specifications and Standards</u>:

The Tenderer should ensure that all components and systems used under this Scheme shall strictly adhere to the Technical Specifications and Guidelines issued by MNRE, and as amended from time to time.

Dy. Chief Engineer,
Investment Promotion Cell
Shakti Vihar, PSPCL Patiala.

PROCESS OF GETTING REGISTERED ON PSPCL SOLAR PORTAL AND INSTALLING SOLAR PANEL:

a) A consumer intending to set up the rooftop SPV system shall show interest by registering/submitting all details like Name, Address, PSPCL Account No., Mobile No. etc. at PSPCL web portal.

b) Afterwards, Consumer shall choose/select vendor from the list of Empaneled Agencies/Vendors approved by PSPCL.

c) Then the vendor shall register details regarding proposed solar roof top plant e.g. Sanctioned Load, Beneficiary Category, Connection/Roof Type, Available Shadow Free Area, Proposed Capacity etc. for approval.

d) Vendor shall then download the "Agreement" form from the website of the distribution licensee free of cost and shall submit the same along with processing fee of Rs.50/kVA or part thereof subject to maximum of Rs.10000/ to designated officer of the distribution licensee for grant of permission to set-up the plant.

e) After checking the feasibility, the applicant shall be issued Letter of Approval by distribution licensee within 30 days of receipt of application.

f) Once approved by PSPCL, The Vendor shall set up the plant and submit the work completion report along with Single Line Diagram of the synchronizing and protection arrangement issued by the plant supplier/EPC contractor as per standards and specifications approved by the State Nodal Agency, within 180 days.

g) All technical details like Capacity, Solar Panel/Module Technology, Sr. no./Make/Capacity and Quantity of Solar Modules, Sr. no./Make and Capacity of Meter, Make/Capacity of PCU etc. as required by MNRE/PSPCL are required to be registered on web portal.

h) Before any application for setting up rooftop solar plant at a particular distribution transformer is rejected by the distribution licensee due to any reason, the consumer shall be served with a 15 days notice to attend to the observations and remove the deficiencies. In case the approval cannot be granted due to non-availability of capacity, then the application of the consumer may be considered after availability of the capacity, if the consumer so opts.

i) After site verification, distributing licensee shall install and seal the Bi-directional energy meter within 10 days of the submission of completion report and plant will be treated as commissioned for net-metering commercial operations from that date.

j) In case of delay, the vendor/consumer shall have to get further extension from distribution licensee. Such extension will be granted for a maximum period of 2-months only and the approval granted will lapse automatically if the project is not set-up even in the extended 2 months period. However, the consumer will be eligible to apply afresh in the next financial year but his application will be kept at the bottom of the list of applicants. Such consumer will be permitted to set-up the plant only if after allotting the capacity to all successful applicants above him, there is still capacity available for allotment.

k) The distribution licensee shall circulate the procedure and formats including standard "Agreement" form after approval from the Commission and upload the same on its website for information of stake holders within a month of the notification of the regulations.

Note: All other conditions shall be as per PSPCL Electrical Supply Instruction Manual.

NOTE: All the annexures are required to be filled up with correct information and Submitted with the Tender Documents (EXCEPT PRICE BID ANNEXURE-K)

ANNEXURE-A

Tender conditions Undertaking

(To be submitted in 'on-line' and physical mode by Both 'Category-A' and 'Category- B' bidders/tenderers on the their letter head)

From:- (Full name of EOI Applicant) ....
Address of the Organization ....
Email ID: .....
PHONE /MOBILE NO.: .....

To

The Dy. Chief Engineer
Investment Promotion Cell,
T-8, Thermal Design Complex, Shakti Vihar,
Punjab State Power Corporation Limited,
Patiala (PUNJAB)-147001.

Sub: Tender Documents for Empanelment of Agencies for Design, Supply, Installation, testing & commissioning of Grid connected Rooftop Solar Photovoltaic Systems against Tender Enquiry no. /IPC/RTS/2019-20.

Dear Sir,

In connection with the above subject, I / We confirm the following:

1. I/We, the undersigned..... [insert name of the 'Bidder'] having read, examined and understood in detail the Tender document hereby submit our Tenderinfullcompliancewithterms&conditionsoftheabovereferredTender.Acopyofthe tender documents, except Price BID/Part-III duly signed on each page is also submitted as a proof of our acceptance of all specifications as well as terms/ Conditions. I/ We have submitted the Tender offer in electronic form on ON-LINE mode.

2. I/We have paid the requisite amount of EMD. I/we understand that without payment of the EMD by us, our offer shall out rightly be rejected.

3. If, I/we are selected and shortlisted for the empanelment, we agree to pay the non-refundable Requisite Empanelment Fee plus GST for the highest capacity range for which 1/we got selected. We agree to convert our EMD towards Security Deposit (SD) which is to be retained for the Empanelment period and to be adjusted against the PBG as per the Tender terms& Conditions. I/We understand that I/we shall not be empanelled if we fail to pay complete registration fee in stipulated time.

4. I/We agree to treat the bid document and other records connected with the Works as secret and confidential documents and shall not communicate information described therein to any person other than the person authorized by you or use the information in any manner prejudicial to the safety of the Works.

5. I/We understand that you are not bound to accept the lowest or any proposal you may receive.

6. I/ We are participating, as Bidders, in not more than one Bid in this Bidding process.

7. I / We declare that our offer is strictly in line with Tender Document Specification and there is no deviation. Further, I/We also agree that additional conditions / deviations, if any, found in our offer, the offer shall be out rightly rejected without assigning any reason thereof. We shall ensure that we execute such Tender Documents as per the provisions of the Tender and provisions of such Tender Documents shall be binding on us. I/We confirm that we have not taken any deviation so as to be deemed non-responsive.

8. I/We hereby unconditionally and irrevocably agree and accept that the decision made by PSPCL in respect of any matter regarding or arising out of the Tender shall be binding on us. We hereby expressly waive any and all claims in respect of Bid process.

9. I/We confirm that there are no litigations or disputes against us, which materially affect our ability to fulfill our obligations with regard to execution of projects.

10. I / We hereby submit our offer and undertake to keep our offer valid for a period of 120 daysfromthedateofopeningoftechnicaloffer.I/Weherebyfurtherundertakethatduring the said period, I / We shall not vary/alter or revoke my/ our offer.

11. I/We also agree to abide by and fulfill all the terms, conditions and provisions of the above mentioned Tender offer documents.

(Signature of Tender Applicant bidder)
With Seal

ANNEXURE-B

SCHEDULE OF DEVIATIONS

(To be filled by Both Category-A & Category-B Bidder/tenderer)

Tenderer shall carefully state below any and all points in this proposal which are not in accordance with PSPCL's Technical Specification and the General Instructions:-

Sr. No.	Para no.	Technical Deviation, if any.
1. 2. 3. contd...		
Sr. No.	Para no.	General Deviation, if any.
1. 2. 3. contd...		

We hereby certify that the above mentioned are the only deviations from PSPCL's aforesaid specifications and general conditions.

(Signature of EOI Applicant bidder)
With Seal

Note: The tenderer is to clearly indicate any deviation in technical & general terms and conditions in this Annexure only. In case, the Technical Specification as well as General conditions of Tender Specifications are acceptable in toto, the word 'NIL' shall invariably be put in the above Columns. In case, nothing is mentioned here then it shall be presumed that there is no deviation in the offer and terms and conditions of the specifications are acceptable to the bidder in toto.

ANNEXURE- C

POWER OF ATTORNEY

(To be filled by Both Category-A & Category-B Bidder/tenderer)

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.)

Power of Attorney to be provided by the Bidding Company in favour of its representative as evidence of authorized signatory's authority.

Know all men by these presents, We .....
(name and address of the registered office of the Bidding Company as applicable) do hereby constitute, appoint and authorize Mr./Ms. ..... (name& residential address) who is presently employed with us and holding the position of as our true and lawful attorney, to do in our name and on
our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of our Bid for implementation of grid connected Roof top solar PV scheme in selected States in India in response to the Tender BID DOCUMENT. No.....
dated ..... issued by PSPCL, Patiala, including signing and submission of the Bid and all other documents related to the Bid, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the PSPCL may require us to submit. The aforesaid Attorney is further authorized for making representations to the PSPCL, Patiala and providing information / responses to PSPCL, Patiala representing us in all matters before PSPCL, Patiala and generally dealing with PSPCL, Patiala in all matters in connection with this Bid till the completion of the bidding process as per the terms of the above mentioned BID DOCUMENT.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the BID DOCUMENT.

Signed by the within named

..... (Insert the name of the executant company) through the hand of Mr.....
duly authorized by the Board(vide Board resolution No_____) to issue such Power of Attorney Dated this ..... day of .....

Accepted
Signature of Attorney
(Name, designation and address of the Attorney)

Attested

.....
(Signature of the executant)
(Name, designation and address of the executant)

.....
Signature and stamp of Notary of the place of execution

Common seal of ..... has been affixed in my/our presence

Pursuant to Board of Director's Resolution dated..... (Board of Director's Resolution is also enclosed)

WITNESS

i).....
Name..... (Signature)
Designation .....

ii).....
Name..... (Signature)
Designation .....

Notes:
The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.

ANNEXURE- D

SCHEDULE OF EXPERIENCE (Supply & Installation)

(To be filled by Category-A Bidder/tenderer ONLY)

(Please attach certificates in support, from the concerned nodal agency /Govt. Organization/ MNRE authorized Agency /Project owner for work executed in case of private owner the joint commissioning report along with officer of Nodal agency/Govt. organization)

Sr. No.	Details of SPV Systems installed during 2016-17, 2017-18, 2018-19 and till date of submission of BID.	Year	Deptt./Agency /Beneficiary for which work carried out	Size of Work in kW	Cost of works {Amt in Lakhs.}	Copy of work order/ performance certificate/ completion report
1.						
2.						
			TOTAL :			

(SIGNATURE & SEAL OF Bidder)
Certified by CA

ANNEXURE-E

Guaranteed Technical Particulars
(To be filled by Both Category-A & Category-B Bidder/tenderer)

e-tender No: /IPC/RTS/2019-20		
	Description	**To be furnished by the Bidder/Tenderer**
A	**Solar PV Module**	
	Type of Module:	
	Manufacturer of cell	
	Manufacturer of Module	
	Max power at STC Pmax (W)	
	Voltage at Max power Vmp(V)	
	Current at Max power Imp(A)	
	Open circuit voltage Voc (V)	
	Short circuit current Isc (A)	
	Module efficiency	
	Cell efficiency	
	Fill factor	
	Minimum Generation of units per KWp (in one year)	
B	**Solar Power Conditioning Unit**	
	Manufacturer :	MNRE approved ONLY/ meeting MNRE guideline
	Type String type/central	
	Operating voltage (DC)	
	Operating voltage AC (pure sine wave)	
	Details of Indicators provided	

(Signature of Bidder)
With seal

GENERAL PARTICULARS OF BIDDER

ANNEXURE-F

(To be filled by Both Category-A & Category-B Bidder/tenderer)

1	Name of Bidder					
2	Postal Address					
3	Mobile no.					
4	Telephone, Telex, Fax No					
5	E-mail					
6	Web site					
7	Pan No of the Bidder/firm					
8	Legal Status of Company/ type of company i.e. Proprietorship/Partnership/Private/ Public/ L LP. Attach Proof of company registration along with a copy of the partnership deep/Article of Association/ memorandum of Association					
9	Name, designation and Mobile Phone No. of the representative of the Bidder to whom all references shall be made					
10	Name and address of the Indian/foreign Collaboration if any					
11	Have the Bidder ever been debarred By any Govt. Deptt./ Undertaking for undertaking any work?					
12	Details of Partners/Directors of Firm	Sr No	Name of partner/Director as applicable	Address	Mobile no.	Email/ Fax no.
		1				
		2				
		3				
		4				
		5				
		6				
13	Bank Account Details of Firm/bidder:					
	a) Bank Name					
	b) Branch Name					
	c) IFSC Code of Bank					
	d) Account No.					
	e) Name of Account					

It is certified that the above information is to the best of my knowledge and belief. If any information found to be concealed, suppressed or incorrect at later stage, our Tender shall be liable to be rejected and our firm/agency debarred from executing any business with PSPCL.

(Signature of Bidder)
With Seal

ANNEXURE-G

Format for Annual Turnover Certificate

(To be submitted in 'on-line' and physical mode by 'Category-A' Only)

TO BE SUBMITTED ON LETTER HEAD OF CHARTERED ACCOUNTANT

TO WHOMSOEVER IT MAY CONCERN

We have verified the books of accounts and related record of M/s._____ situated at Address of the factory/firm> _____and on verification of the records, we hereby certify that **average Turnover** of the this mentioned entity/firm during the last three financial years are as under:

Sr. No.	Financial Year	Total Turnover Rs. In lacs
1	2016-17	
2	2017-18	
3	2018-19	
	Total	
Average Annual Turn Over of last three years		

Place:
Date:

Sign and seal of Chartered Accountant

ANNEXURE-H

DECLARATION BY THE BIDDER

(Regarding e-tender No_____IPC/RTS/2019-20)
(To be filled by Both Category-A & Category-B Bidder/tenderer)

We_____(hereinafter referred to as the Bidder) being desirous of e-tendering for the work under the above mentioned e-tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc. as mentioned in the e-tender document,

DO HEREBY DECLARE THAT

1. The Bidder is fully aware of all the requirements of the e-tender document and agrees with all provisions of the e-tender document.
2. The Bidder is capable of executing and completing the work as required in thee-tender.
3. The Bidder accepts all risks and responsibilities directly or indirectly connected with the performance of thee-tender.
4. The Bidder has no collusion with other Bidders, any employee of PSPCL or with any other person or firm in the preparation of the bid.
5. The Bidder has not been influenced by any statement or promises of PSPCL or any of its employees, but only by the e-tender document.
6. The Bidder is financially solvent and sound to execute the work.
7. The Bidder is sufficiently experienced and competent to perform the contract to the satisfaction of PSPCL.
8. The information and the statements submitted with the e-tender are true.
9. The Bidder is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Central Government that may affect the work, its performance or personnel employed therein.
10. The Bidder has not been debarred from similar type of work by PSPCL and or Government undertaking/Department.
11. This offer shall remain valid for acceptance for 120 days from the date of opening of e-tender.
12. The Bidder gives the assurance to execute the e-tendered work as per specifications terms and conditions.
13. The Bidder confirms the capability to Supply, Install, Testing and Commissioning including 5 years Operation ,Comprehensive Warranty and Maintenance of Grid Interactive Rooftop Solar PV Power Plants and power evacuation system – including meters and other necessary infrastructures of Grid Interactive Solar Rooftop PV Power /Plants and power evacuation system – including meters and other necessary infrastructures.

(Signature of Bidder)
With SEAL

ANNEXURE-I

GENERAL COMMERCIAL PARTICULAR

(To be filled by Both Category-A & Category-B Bidder/tenderer)

1.	**Capacity Range**		Quoted Capacity (In KWp)
	1	1 KWp to 5 KWp	
	2	More than 5 KWp to10 KWp	
	3	More than 10 KWp to 50 KWp	
	4	More than 50 KWp to 100KWp	
	5	More than 100KWp to500 KWp	
	6	More than 500KWp to 1000 KWp	
2.	**GSTIN No.**		
3.	**Validity of offer**		120 days
4.	**Terms of Payment of CFA**		As per PSPCL/MNRE terms & conditions
5.	**Tentative Time for completion of projects**		In weeks
	i	1 KWp to 5KWp	
	ii	More than 5 KWp to10 KWp	
	iii	More than 10 KWp to50 KWp	
	iv	More than 50 KWp to 100KWp	
	v	More than 100KWp to500 KWp	
	vi	More than 500KWp to 1000 KWp	
6.	**PAN of Firm/bidder/agency**		
7.	a) Name/ Designation of Contact person		
	b) Phone, Mob. No, Fax No.		
8.	Any other information to be mentioned by the bidders		

(Signature of Bidder)
With SEAL

ANNEXURE-J

Inspection Report (by PSPCL/MNRE)

(To be filled by Both Category-A & Category-B Bidder/tenderer after completion of each project)

Sr. No.	Component	Remarks
1	Registration No of User/beneficiary (for RTS)	
2	Consumer Contract No.(With PSPCL)	
3	Site /Location (with Complete Address)	
4	Sectioned Load of Consumer (in KW)	
5	Total Capacity of Rooftop Solar installed (KWp)	
6	Name of Manufacturer of Solar Panel	
7	Model of Solar Panel	
8	Total no of solar panels installed	
9	Sr. no. of each Solar Panel/module	
10	Capacity of each Solar Panel/Module	
11	Whether the system was installed in shadow free area or not? If not mention the details	
	Any inter module shading exists or not	
	Whether the modules contains information about company name, serial no and year manufacturing inside	
	RIFD pasted inside or outside	
12	Whether the Cell and modules, both are of Indigenous	
13	Does the height of the panels lowest part is 7feet above the base of plant?	YES/NO
	If NO, attach certificate for safety	
14	Structures:	
15	Cables Make and size:	
16	User Feed Back	
17	Any Specific problem	
18	Weather the system is installed as per the terms and conditions/ guidelines of PSPCL/MNRE.	YES/NO
19	Comments of inspecting Officer.	

Note: If any more information is required by MNRE/PSPCL, the same shall be included and the contractor shall be liable to provide the same.

1. Signature of User/Beneficiary with Stamp and date
2. Empanelled Agency signature with stamp and date
3. Signature of inspecting Officer and date

List of enclosures:

1. Copy of invoice billed to user
2. List of serial no. of modules installed in the system
3. Test certificates of the components
4. Statement of expenditure
5. Original Color photographs

(Signature of Bidder)
With SEAL

ANNEXURE-K

Financial Bid

e-tender NO. /IPC/RTS/2019-20

(To be filled by Category-A Bidder/tenderer ONLY)

Name of the Firm: ----------

Design, Supply, Installation, Testing and Commissioning of Grid Connected Rooftop Solar Photovoltaic Power Plant and power evacuation system and other necessary infrastructures including 5 years Comprehensive Warranty and Maintenance of Grid Connected Rooftop Solar Photovoltaic Power Plants and Power Evacuation system in various Districts in the State of Punjab as per technical specifications, Terms and Conditions of the tender document:-

Sr. No	Description	Cost of SPV Power plant per kWp including AMC/CMC for 5years (Rs)
1	1 KWp to 5KWp	
2	More than 5 KWp to 10 KWp	
3	More than 10 KWp to 50 KWp	
4	More than 50 KWp to 100KWp	
5	More than 100KWp to500 KWp	
6	More than 500KWp to1000 KWp	

NOTES:

1. Certified that rates quoted above are for the Rooftop Solar PV system as per MNRE guidelines/ requirements/specifications, terms & condition mentioned in the e-tender document.
2. The rates are inclusive of all taxes & duties, storage, transportation up to site, insurance etc., and any other job required to properly execute the work.
3. MNRE has issued the current year bench mark price for solar rooftop systems, hence the price quoted should not be more than the benchmark price.
4. **In the event that the discovered lowest price is higher than that the benchmark cost of MNRE, in such case the benchmark cost shall only be treated as lowest price. However, PSPCL has right to reject/review very low or unrealistic rates.**

(Signature of Bidder)
With seal

ANNEXURE-L

SERVICE SUPPORT DETAILS

(To be filled by Both Category-A & Category-B Bidder/tenderer)

		NEAREST SERVICE CENTRE							
Pack No.	Destination	Location							
		Phone no.	Telex/ Fax no.	Status of office working days and hours	No. of software engineers	No. of hardware engineers	No. of hardware staff	Value of Min. stock available at all times	List of models & types of Pcs. Serviced in last 2 years

(Signature of Bidder)
With seal