

TENDER No. 1/ SOURA-200 MWp/2019-20

**TENDER DOCUMENT FOR GRID CONNECTED ROOFTOP/GROUND MOUNTED
SOLAR PV PLANTS UNDER SOURA SCHEME
(Volume-I)**

**STATE NODAL OFFICER
SOURA PROJECT, KSEB Ltd.
VYDYUTHI BHAVAN, PATTOM
THIRUVANANTHAPURAM -695 004**

TENDER No. 1/ SOURA-200 MWp/2019-20

**EMPANELMENT OF EPC CONTRACTORS AND PLANT DEVELOPERS FOR
IMPLEMENTATION OF GRID CONNECTED ROOF TOP/GROUND MOUNTED
SOLAR PV SYSTEMS OF VARIOUS CAPACITIES AGGREGATING TO 200MWp
AT IDENTIFIED LOCATIONS IN KERALA DURING 2019-20.**

TENDER NO.1/ SOURA-200 MWp/2019-20

DATE: 5.9.2019

**STATE NODAL OFFICER
(SOURA PROJECT, KSEB Ltd.)
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September/2019

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'SOURA Phase-1 200MWp' PROJECT

**STATE NODAL OFFICER
SOURA PROJECT, KSEB LTD.
VYDYUTHI BHAVAN, PATTOM
THIRUVANANTHAPURAM -695 004**

Tender No:1/ SOURA-200 MWp/2019-20

Date: 5.9.2019

'State Nodal Officer', 'SOURA' Project, KSEBLtd., invites bids for empanelment of EPC Contractors and Plant Developers for implementation of grid connected Roof Top/ground mounted Solar PV systems of various capacities aggregating to 200MWp(50MWp under EPC basis and 150MWp under Tariff basis) at identified locations in Kerala during 2019-20.

Bidder shall submit bid along with non-refundable tender cost, complete in all respect as per the Notice Inviting Tender. Bid received without or lesser than the prescribed tender cost and EMD for the offered capacity will not be considered. In the event of any date indicated above is a declared Holiday, the next working day shall become operative for the respective purpose mentioned herein.

Tender documents which include "Conditions of bid and contract" , "Prequalification bid", "Technical Specifications", various conditions of contract, formats etc can be downloaded from website www.mstcecommerce.com/www.sourakseb.in/www.kseb.in. Any amendment (s)/corrigendum/clarifications with respect to this tender shall be uploaded on www.kseb.in/www.sourakseb.in/www.mstcecommerce.com website only. The Bidder should regularly follow up for any Amendment/Corrigendum/Clarification on the above website.

Sd/-

**STATE NODAL OFFICER
SOURA PROJECT, KSEB LTD**

DISCLAIMER:

1. Though adequate care has taken while preparing the tender document, the Bidders/Applicants shall satisfy themselves that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within twenty (20) days from the date of notification of tender/Issue of the tender documents, it shall be considered that the tender document is complete in all respects and has been received by the Bidder.
2. State Nodal Officer, 'SOURA' Project, KSEB Ltd. reserves the right to modify, amend or supplement this tender document including all formats and Annexure.
3. While this tender has been prepared in good faith, neither State Nodal Officer, 'SOURA' Project, KSEB LTD. nor their employees or advisors make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this tender, even if any loss or damage is caused by any act or omission on their part.

'SOURA Phase-1 200MWp' PROJECT

E-Tender - Notice Inviting Tender

Tender No. 1/SOURA 200MWp/2019-20 DATED: 5.9.2019

State Nodal Officer, "SOURA" Project, KSEB LTD., invites competitive bids for empanelment of EPC Contractors and Developers on **EPC and Tariff basis** for the design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted (within consumer premise) Solar PV Power plants (and supply of power for 25 years in case of tariff basis) **under Part-A, Part-B and Part-C**, aggregating to 200MWp (50 MWp under EPC and 150MWp under Tariff basis) at identified locations in Kerala during 2019-20, including Operation & Maintenance of the plant as per the scope of the work specified under clause 2.2.2 of this tender document.

Name of Work	<p>EPC basis: Design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted (within consumer premise) Solar PV Power plants :</p> <p>Part-A: <=10kWp Part-B: 11-100 kWp Part-C: >100kWp</p> <p>Tariff basis: Design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted (within consumer premise) Solar PV Power plants and supply of power from these plants for 25 years.</p> <p>Part-A: <=10kWp Part-B: 11-100 kWp Part-C : >100kWp</p> <p>The scope of work also includes Operation & Maintenance of the plant as per clause 2.2.2 of this tender document.</p>												
Bid Capacity	<p>EPC Basis: Bids are invited under EPC basis for the whole State under Part-A, Part-B and Part-C with minimum and maximum capacities as follows. The bidders can quote for Part-A/Part-B/Part-C or in combinations.</p> <table border="1"><thead><tr><th>Capacity range</th><th>Minimum Capacity (MWp)</th><th>Maximum Capacity (MWp)</th></tr></thead><tbody><tr><td>Part-A: <=10kWp</td><td>5</td><td>30</td></tr><tr><td>Part-B: 11-100kWp</td><td>5</td><td>12.5</td></tr><tr><td>Part-C: >100kWp</td><td>5</td><td>7.5</td></tr></tbody></table> <p>The minimum bid capacity is 5MWp and maximum bid capacity (combined capacity of all range) under EPC basis is 50MWp.</p>	Capacity range	Minimum Capacity (MWp)	Maximum Capacity (MWp)	Part-A: <=10kWp	5	30	Part-B: 11-100kWp	5	12.5	Part-C: >100kWp	5	7.5
Capacity range	Minimum Capacity (MWp)	Maximum Capacity (MWp)											
Part-A: <=10kWp	5	30											
Part-B: 11-100kWp	5	12.5											
Part-C: >100kWp	5	7.5											

'SOURA Phase-1 200MWp' PROJECT

	<p>Tariff basis: For Tariff based bidding under Part-A and Part-B, the whole State is divided into regions and each region comprises of 3 to 4 revenue districts as defined under clause 2.2.2 of this document. Part-A bids are invited separately for the 4 regions. For Part-B, two bids are invited – one bid for Region 1 and Region 2 combined and second bid for Region 3 and Region 4 combined. Part-C bids are invited for the whole State with no regional segregation.</p> <table border="1"> <thead> <tr> <th>Capacity range</th> <th>Minimum/Maximum Capacity (MWp)</th> <th>Region 1</th> <th>Region 2</th> <th>Region 3</th> <th>Region 4</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Part-A: <=10kWp</td> <td>Min</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> </tr> <tr> <td>Max</td> <td>20</td> <td>28</td> <td>25</td> <td>17</td> </tr> <tr> <td rowspan="2">Part-B: 11-100kWp</td> <td>Min</td> <td colspan="2">5</td> <td colspan="2">5</td> </tr> <tr> <td>Max</td> <td colspan="2">20</td> <td colspan="2">20</td> </tr> <tr> <td rowspan="2">Part-C: >100kWp</td> <td>Min</td> <td colspan="4">5</td> </tr> <tr> <td>Max</td> <td colspan="4">20</td> </tr> </tbody> </table> <p>Bidders quoting under Part-B or Part-C have to mandatorily quote under Part-A at least 25% of their quoted capacity under Part-B and Part-C. Otherwise such bids shall be treated as non responsive. Bidders can bid for Part-A alone also.</p> <p>Minimum bid capacity shall be 5MWp and Maximum bid capacity (combined bid capacity under Part-A/Part-B/Part-C for all the regions) under Tariff basis shall be 150MWp.</p>	Capacity range	Minimum/Maximum Capacity (MWp)	Region 1	Region 2	Region 3	Region 4	Part-A: <=10kWp	Min	5	5	5	5	Max	20	28	25	17	Part-B: 11-100kWp	Min	5		5		Max	20		20		Part-C: >100kWp	Min	5				Max	20			
Capacity range	Minimum/Maximum Capacity (MWp)	Region 1	Region 2	Region 3	Region 4																																			
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	Max	20		20																																				
Part-C: >100kWp	Min	5																																						
	Max	20																																						
<p>Selection criteria</p>	<p>The bidders have the option to quote on EPC or tariff basis or both. The bidders will be selected based on e-reverse bidding followed by e-reverse auction and L-1 matching. Bucket filling by matching at L-1 rate may be adopted, if required quantum is not obtained.</p> <p>EPC basis :The upper ceiling rate in e-reverse bidding including 2 years O&M from CoD and inclusive of all taxes are as follows: Part-A: <= 10kWp : Rs. 51,500/kWp Part-B: 11 - 100kWp :Rs. 45,500/kWp Part-C: >100 kWp :Rs. 42,500/kWp The bidder at his discretion may quote O&M charges of solar PV plants for the period from 3rd year onwards.</p> <p>Tariff basis : The Upper ceiling rate of tariff including 25years O&M is as follows: Part-A: <= 10kWp : Rs. 3.70/unit Part-B: 11 - 100kWp :Rs. 3.35/ unit</p>																																							

'SOURA Phase-1 200MWp' PROJECT

	Part-C: >100 kWp :Rs. 3.20 / unit
Date of publishing bid documents	6.09.2019; at 03.00 pm
Last date of receiving queries	18.09.2019; 05.00 pm
Pre-bid meeting	19.09.2019; at New Delhi 5.10.2019; at Thiruvananthapuram Venue and time of the meeting will be published in the website
Start date of bid submission	1.10.2019; 10.00 am
Date of publication of clarifications on queries	10.10.2019; 5.00 pm
Last Date & Time of online Submission of Bid document	16.10.2019; 3.00 pm
Deadline for submission of Hardcopies of Attachments to the Office of the tendering authority	21.10.2019; 10:30 am
Opening of nonfinancial Bids (cover 1 & 2)	21.10.2019; 11.00am
Earnest Money Deposit	Rs. 100/- (Rupees Hundred) per kWp subject to maximum of Rs.2Crore. Separate EMD as above shall be furnished by bidders quoting under EPC and tariff basis subject to maximum of Rs.2Crore for the entire bid.
Tender cost	Rs.17,700.00/- (Including GST) shall be remitted online to Account No 57065480104 of State Bank of India, KSEBL Administration Complex, Vydyuthi Bhavanam, Pattom , Thiruvananthapuram – 695004
e-tender Platform fee(Transaction Fee)	Rs.20,000/- plus GST for each event (EPC/Tariff)

‘SOURA Phase-1 200MWp’ PROJECT

Opening of financial bids (cover 3)	21.11.2019; 11.00 am
E-reverse auction timelines	E-Reverse auction start: 21.11.2019; 1.00pm Close of e-reverse auction: [180 minutes from the start of e-Reverse Auction subject to Auto Extension as applicable]
L-1 matching process	At the close of the e-Reverse Auction, there will be an L-1 Matching Round for 30 minutes.
Bucket filling process	In case the requisitioned quantum is not obtained after L1 matching, the buyer reserves the right to go for bucket filling through matching at L-1 rate for obtaining the requisitioned quantum.
Publishing of empanelled list	26.11.2019
Issue of letter of Award	02.12.2019
Execution of Contract Agreement/PPA	20.12.2019
Time of Completion	As per the timelines specified under clause 2.2.2.3 of this tender document.

The tender document can be downloaded from the website www.kseb.in/ www.sourakseb.in/ www.mstcecommerce.com from 3.00 PM on 06.09.2019. A non-refundable tender cost of Rs. 17,700/- shall be remitted to the account number given in the remittance form provided by the e-procurement system for this particular tender. Only INTERNET BANKING remittance is allowed for tender cost. No other mode of payment is allowed. EMD has to be submitted as BG in the prescribed format. The necessary non-refundable fee for e-tender platform has to be remitted by the bidder. Bidders are advised to visit the “Bidders Guide” and “Notifications” section of website www.mstcecommerce.com and www.sourakseb.in also. The NEFT facility for the online payment may be exercised at least 48 hours before the closing date of bid to ensure that the payment towards tender cost is credited and a confirmation is reflected in e-procurement system.

All the Tender documents are to be submitted online only and in the designated covers on the above website and no manual submission will be entertained. The pre-qualification/non-financial bid shall be opened online at the office of the State Nodal Officer, ‘SOURA’ on the date and time mentioned above in the presence of the bidders/ their representatives who wish to attend. All other existing conditions related to the tenders of KSEB Ltd will be applicable to this tender also. The tender details will also be available in the office of the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd./‘www.sourakseb.in/’/‘www.kseb.in/’. The bid shall be valid for **6 months** reckoned from the date of opening of financial bid. O&M price bids of successful bidders shall be valid for 30 months from the opening of financial bid. No queries will be entertained after the pre bid meeting. No correspondence would be made with the bidders once the bid is

'SOURA Phase-1 200MWp' PROJECT

submitted. The bidder shall familiarize with the terrain conditions of the region before submitting the bid preferably before the pre bid meeting. The decision taken by the State Nodal Officer, 'SOURA' Project, KSEB Ltd. shall be final. Bidders should have a **Class III** or above **Digital Signature Certificate (DSC)** to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on website using the link <https://www.mstcecommerce.com/auctionhome/renergy/index.jsp> for participating in this tender. Website registration is a one-time process with transaction fee as specified in NIT. Bidders have to procure DSC at their own cost. Bidders may contact e-Procurement support desk of MSTC Limited over telephone at 033-22901004 / 0471-2529137 or through email: mstctvm@mstcindia.co.in for assistance in this regard. More information given elaborately under Part 2 of 2.7 Instruction to bidders for submission of online bids in e-tender and e-reverse auction.

Further details can be had from the (State Nodal Officer, 'SOURA' Project, KSEB LTD.).
Phone: 0471 2514601/2514602/9446008475/9496018313
E mail: snosoura@kseb.in, sourakseb@gmail.com

Sd/-
STATE NODAL OFFICER
SOURA PROJECT, KSEB Ltd.

VOLUME I

TENDER No.1/SOURA/200MWp/2019-20

CONDITIONS OF BID AND CONTRACT

FOR

Empanelment of EPC Contractors and Developers on **EPC and tariff basis** for the design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted(within consumer premises)Solar PV Power plants (and supply of solar PV power for 25 years in case of tariff basis) **under Part-A, Part-B and Part-C**, aggregating to 200MWp (50 MWp under EPC and 150MWp under Tariff basis)at identified locations in Kerala during 2019-20, including Operation & Maintenance of the plant as per the scope of the work specified under clause 2.2.2 of this tender document.

Sd/-

**STATE NODAL OFFICER
(SOURA PROJECT)
(KSEB Ltd.)**

Phone : 0471 2514601/2514602/9446008475/9496018313

E mail: snosoura@kseb.in, sourakseb@gmail.com

Part 1

DEFINITIONS AND INTERPRETATIONS

1. **'Accepted schedule'** is the schedule of items of work containing the agreed rates based on which the EPC contract /Power Purchase Agreement is drawn for execution of the work.
2. **"Affiliate"** shall mean a company that either directly or indirectly controls or is controlled by or is under common control with a Bidding Company and "control" means ownership by one company of at least fifty one percentage (51%) of the voting rights of the other company.
3. **'Agreed rates'** shall mean the rates accepted and agreed by the 'State Nodal Officer', 'SOURA' Project, KSEB Ltd. and the Contractor after the bid process and which shall be given in the schedule forming part of the contract agreement/Power Purchase Agreement and valid during the period of contract.
4. **'Agreement Authority'** shall mean 'State Nodal Officer', 'SOURA' Project, KSEB Ltd. or any other officer authorized to execute the agreement with the Contractor/developer for executing the work/plant or supply power.
5. **"ANERT"** shall mean Agency for Nonconventional Energy and Rural Technology.
6. **'Bank'** means State Bank of India and its subsidiaries /associates, Nationalized Banks, Kerala State Co-operative Bank and includes Scheduled Banks and District Co-operative Banks, if approved by the 'State Nodal Officer', 'SOURA' Project, KSEB Ltd.
7. **'Bid'** The words 'Bid' and 'Tender' shall have the same meaning anywhere in these documents. **"Bid"** shall mean the Non financial and financial Bid submitted by the Bidder along with all documents/credentials/attachments annexure etc., in response to this bid, in accordance with the terms and conditions hereof.
8. **'Bidder (s)'** shall mean Company/Limited Liability Partnership (LLP) firm/Partnership Firm/Proprietorship firm submitting the Bid. Any reference to the Bidder includes its successors, executors and permitted assigns as the context may require.
9. **'Bid Amount/ Bid Price'** means the EPC cost/tariff quoted by the bidder. **"Bid price"** shall be an all-inclusive price on a "single responsibility" basis covering all the obligations

mentioned in the Bidding Documents in respect of Design, Supply, Erection, Testing and Commissioning including Warranty, freight, taxes, duties, insurance and Operation & Maintenance for a period of 2 years from CoD in case of EPC and supply of power including O&M for a period of 25 years from CoD in case of Tariff basis.

10. **"Bid Capacity"** shall mean capacity offered by the bidder in his Bid under invitation.
11. **"Bidding Company:** Such single company or a Lead Member (in the case of a Consortium) that has submitted the Bid in accordance with the provisions of this document.
12. **'Bidding Consortium or Consortium'** shall refer to a group(not more than three) of bidding Company/Limited Liability Partnership (LLP) firm/ Partnership Firm/Proprietorship firm that has collectively made a Bid, in response to this bid.
13. **"Bid Due date"** shall mean the last date and time for submission of Bid in response to this bid as specified in Notice Inviting Tender.
14. **'BIS'** shall mean specifications of Bureau of Indian Standards(BIS);
15. **'Bid Security'** or **'Earnest Money Deposit'** shall have the same meaning.
16. **"Capacity Utilization Factor" (CUF)** shall mean the ratio of the actual kwh(units) of energy generated by a solar plant in a Year and the contracted capacity in kWp multiplied with the number of hours in the same Year. (CUF = Cumulative Annual Plant output in kWh/(Installed Plant capacity in kWp x 24 x 365)).
17. **"CEA"** shall mean Central Electricity Authority.
18. **'Commercial Operation Date (CoD)'** shall mean the date on which the commissioning certificate is issued upon the successful commissioning of the full capacity of the plant and after demonstrating Performance Ratio as per this tender document.
19. **'Company'** shall mean a body incorporated in India under the Companies Act, 1956 or Companies Act, 2013 including any amendment thereto.

20. **“Competent Authority”** shall mean the State Nodal Officer, ‘SOURA’ Project, KSEB LTD. himself and/or a person or group of persons nominated by State Nodal Officer for the mentioned purpose herein.
21. **‘Contract’** shall mean the contract resulting from the acceptance by the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd. of this tender whether in whole or in part and include the conditions of bid and contract agreed to, specifications, schedules, drawings, annexure, letter of application, accepted rate and the agreement to be entered into.
22. **‘Contract agreement’** shall mean the agreement entered into between the Contractor and the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd. This can also include power purchase agreement executed with the developer.
23. **“Contract amount”** shall mean the agreed rates based on which the EPC contract /Power Purchase Agreement is drawn for execution of the work.
24. **‘Contractor’** shall mean the bidder whose bid has been accepted by ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd. and shall include the Contractor, legal personnel, representatives, successors and assignees.
25. **‘Contractor’s Representative’** means the person authorized by the Contractor in writing and approved by the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd. to act on behalf of the Contractor for the purpose specified in the letter of authorization.
26. **‘Contractor’s Personnel’** means the Contractor’s representative and all personnel whom the Contractor authorizes and utilizes at site who may include staff, laborer and all other employees and any personnel assisting the Contractor in the execution of work.
27. **“Controlling Equity”**
 - (i) If the Selected Bidder is a consortium of members and the Selected Bidder has incorporated a special purpose vehicle, then the members of the consortium whose technical and the financial qualification were used to meet the technical and financial requirements in the Tender Documents will jointly hold at least 51% of the equity share, and Lead Consortium Member (i.e., the Consortium Member meeting the financial qualifications will be the Lead Consortium Member) should hold at least 26% of the equity share ,and Consortium Member with technical qualifications will hold at least 5% of the

equity share, commencing on the incorporate of the bidder for a period of two (2) years from the Commercial Operation Date .

(ii) If the Selected Bidder is a person and the Selected Bidder has incorporated a special purpose vehicle, then the Selected Bidder will hold at least 51% of the equity share, commencing on the incorporate of the bidder for a period of two (2) years from the Commercial Operation Date.

28. **“Consents”** : shall mean all authorizations, licenses, approvals, registrations, permits, clearances, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained from or provided by any Governmental Instrumentality for the purpose of setting up of the Solar Plant and/ or supply of power from the Solar Plant;
29. **‘Defect’** shall mean any part of the work not completed or not performing in accordance with contract or specifications.
30. **“Defects Liability period”** shall mean 5 years from date of Commercial Operation of the solar plant during which the contractor is liable to rectify any defect or damage in the equipment of the solar plant at his cost.
31. **‘Drawing’** shall mean collectively all the drawings, revisions and additions/ modifications as per the contract issued from time to time and drawings submitted by the Contractor and accepted by the Authorized representative of ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd.
32. **‘Eligibility Criteria’** shall mean the Eligibility criteria set forth in clause 3.3.
33. **‘Empanelment’** shall mean the process of selection of contractors/developers for the execution of the work under the scope of work mentioned in this tender document.
34. **‘EPC’ shall mean Engineering, Procurement and Construction (EPC)** where the EPC contractor is responsible for all the activities including design, supply, construction, testing, commissioning, O&M for 2 years and defect liability period as per this tender and handing over of the plant to the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd. EPC cost is the cost inclusive for all the above activities mentioned in Rs. per kWp.

‘SOURA Phase-1 200MWp’ PROJECT

35. **‘Financial year’** shall mean a year beginning on first April and ending on 31st March in the succeeding year.
36. **‘Financial bid/Price bid’** shall mean the Cover-III of the bid containing the bidder’s quoted plant cost in Rs/kWp and O&M price in Rs/kWp or tariff of energy supplied in Rs/kwh as per Annexure 19.
37. **‘Handing over of plant’** shall mean handing over of the Solar Plant to the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd.
38. **‘IEC’** shall mean specifications of International Electro-technical Commission.
39. **‘IS’** means the Indian Standard Specifications of the Bureau of Indian Standards.
40. **‘kWp’** shall mean Kilo watt peak.
41. **‘kWh’** shall mean kilowatt hour.
42. **‘Letter of Award’** shall mean the letter of formal acceptance signed and issued by the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd. intimating the award of work.
43. **‘Letter of Application’** shall mean the letter of the bid offering to carry out the works, furnished by the bidder and includes the signed bid documents in full.
44. **‘Location’** shall mean rooftop of any building or structure or part thereof or combination thereof or land with accompanied building, which is included in the details or sketches specified in the consent or in the agreement for installation of solar plant.
45. **‘Maximum bid capacity’** shall mean 50MWp under EPC basis and 150MWp under Tariff basis, which is the maximum capacity for which the bidder can submit his bid. The maximum bid capacity shall be the aggregated quoted bid capacity under Part-A, B and C specified in this bid for the whole State. During the evaluation of Bids and based on the competitiveness of the bid process, the State Nodal Officer retains the right to increase or decrease the bid Capacity/ Requisitioned Energy. Capacity mentioned is on DC Side.

46. **'Minimum Bid Capacity'** shall mean 5MWp under EPC basis and 5MWp under Tariff basis, which is the minimum capacity for which the bidder can submit its bid, .Bidders(s) quoting less than the minimum bid capacity shall be out-rightly rejected. During the evaluation of Bids and based on the competitiveness of the bid process, the State Nodal Officer retains the right to increase or decrease the bid Capacity. Capacity mentioned is on DC Side.
47. **'Month'** shall mean 'Calendar month'.
48. **'O&M'** shall mean Operation & Maintenance of the entire solar PV plant installation in a location including solar panels, inverter, mounting structures, cables, transformers, spares or any other associated items required for the operation of the plant.
49. **'Parent'** shall mean a company, which holds more than 51% equity either directly or indirectly in the bidding company or plant company or a member in a consortium developing the plant.
50. **'Part Bill'** is any bill preferred during the course of work or presented before the final bill.
51. **'Performance Certificate'** shall mean the certificate issued by the authorized representative of the 'State Nodal Officer', 'SOURA' Project, KSEB Ltd. on the performance of the obligations of Contractor under the contract, when completed and this constitutes the acceptance of the work in total. This certificate will be issued by the State Nodal Officer, SOURA based on the application of the Contractor and only after the successful commissioning of the plant.
52. **'Performance Bank Guarantee'** shall mean the Security amount to be remitted as Bank Guarantee by the Contractor/developer for Guaranteed performance of the Contract along with the respective Contract agreement and it shall be an amount equal to 10% of the total contract amount in case of EPC contract and Rs.50 lakhs/ MWp (proportional to the awarded plant capacity as mentioned in the Letter of Award) in case of tariff basis. The Bank Guarantee submitted by the contractor will be rounded off to the higher multiple of Rs 1000.
53. **'Performance ratio (PR)'** is a measure for performance of a Solar PV system taking in to account environmental factors (temperature and irradiation). PR will take in to account the

availability of grid, minimum level of irradiation needed to generate electrical energy, irradiation levels at a given period.

54. **'Period of contract at a location'** shall mean the period covered from the date of contract agreement to the satisfactory completion of the work, O&M for 2 years handing over of the plant back including duly sanctioned period of extensions and 5 years' defect liability period from COD . For tariff basis, period of contract shall mean the period covered from the date of power purchase agreement to the satisfactory completion of 25 years from CoD of the last plant installed by the developer as per the PPA.
55. **"Plant"** shall mean the solar PV plant installed in a location consisting of solar panels, inverter, mounting structures, cables, transformers, meters or any other associated items required for the safe and satisfactory operation of the plant.
56. **'Plant Capacity'** shall mean capacity in kWp that can be installed at a location as identified by the 'State Nodal Officer', 'SOURA' Project, KSEB Ltd. The minimum capacity at a location shall be 2kWp.
57. **"Power Purchase Agreement"** shall mean the contract entered into between the State Nodal Officer, SOURA and the plant developer for supplying power from the solar plant.
58. **"Price Bid/Financial bid"** shall mean Cover III of the Bid, containing the Bidder's quoted Price as per the Annexure 19 of this tender;
59. **"Project Company"** shall mean Company incorporated by the bidder as per Indian Laws in accordance with Clause no 3.4.
60. **'Region'** shall comprise of an area containing 3 to 4 revenue districts of Kerala. The entire districts of Kerala are grouped under 4 regions coming under the 4Distribution Chief Engineer offices of KSEB Ltd. for solar PV installation under Tariff basis under Part-A and Part-B as defined under clause 2.2.1.
61. **"Renewable Purchase Obligation"** shall mean the mandatory Renewable Purchase Obligation requirement to be met by KSEB Ltd. as per the Regulations of Kerala State Electricity Regulatory Commission.

62. **“Requisition”** shall mean independent bid requirement under each region/ category/under EPC/under Tariff basis. There shall be 7 requisitions as per this bid document for execution of solar PV installations corresponding to various capacities in the State under Tariff basis and 3 requisitions under EPC basis.
63. **‘Schedules’** mean the documents completed and submitted by the Contractor/developer with the bid and included in the contract, which include the quantities, rates, general specifications and technical particulars.
64. **‘Scheduled Bank’** shall mean Scheduled Banks included in Schedule II of RBI Act.
65. **‘State Nodal Officer (SNO),** shall mean the ‘State Nodal Officer’, ‘SOURA’ Project, KSEB Ltd., who shall be the tendering and agreement authority for this tender and shall include all the successors and permitted assigns.
66. **‘Specification’** shall mean collectively, all the terms and stipulations contained in the bid, contract agreement/Power purchase agreement and any additions/modifications in accordance with the contract, technical provisions as per relevant BIS Codes and/or National Building Code and those specifically mentioned in construction drawings and its modifications and revisions which specifies the work wherever applicable or written directions of authorized representative of the SNO.
67. **‘Start-up’** shall mean an entity meeting the criteria as defined by Ministry of Commerce and Industry vide its notification dated 17-2-2016 and any amendments thereof.
68. **‘Statutory Auditor’** shall mean the auditor of a Company appointed under the provisions of the Companies Act, 2013 or under the provisions of any other applicable governing law.
69. **‘Sub-contractor’** shall mean any person named in the bid and agreement for any part of the work and the legal representatives, successors and assignees of such persons.
70. **“Successful Bidder(s) /Contractor/Plant Developers(s)”** shall mean the Bidder(s) selected by SNO for implementation of Grid Connected Rooftop/Ground mounted Solar PV System as per the terms of this tender Document, and to whom a letter of award has been issued.

71. **'Tariff'** shall mean the tariff in Rs/kWh offered by the bidder for 25 years for the scope of work as per bid document.
72. **'Temporary works'** are such works of any kind designed, constructed and installed by the Contractor on site which are needed for the execution and completion of the works contemplated in the contract and for the remedy of any defects notified to the Contractor, for which the Contractor is not entitled for any separate payment.
73. **Tender/Bid** shall have the same meaning and includes all the documents which the bidder has submitted with the Letter of Application as stipulated by the SNO and forms part of the contract agreement/ power purchase agreement.
74. **'Tendering authority/bidding authority'** shall mean 'State Nodal Officer', 'SOURA' Project, KSEB Ltd.
75. **'Test'** means the tests, which are specified in the contract, and mandatory tests specified by rules or regulations, to be carried out in accordance with the specifications before the works or on completion of work to the satisfaction of the SNO or his authorized representative.
76. **'Time of Completion'** shall mean the date within which the work under the contract is required to be completed satisfactorily in accordance with the specifications, drawings etc., including all extra items required to be executed for satisfactory completion of the work and including all extension of time duly granted by the SNO as per the terms and conditions in the EPC Contract/Power Purchase Agreement.
77. **'Work'** means Design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted Solar PV Power plants of various capacities under EPC/Tariff basis or both including Operation & Maintenance of the plant as per the scope of the work specified under clause 2.2.2 of this tender document.
78. **'Writing'** shall include any manuscript, type written or printed statement under or over signature or seal as the case may be.

INTERPRETATIONS

1. Words comprising the singular shall include the plural & vice versa
2. An applicable law shall be construed as reference to such applicable law including its amendments or re-enactments from time to time.
3. A time of day shall save as otherwise provided in any agreement or document be construed as a reference to Indian Standard Time.
4. Different parts of this contract are to be taken as mutually explanatory and supplementary to each other and if there is any differentiation between or among the parts of this contract, they shall be interpreted in a harmonious manner to give effect to each part.
5. The table of contents and any headings or sub headings in the contract has been inserted for case of reference only & shall not affect the interpretation of this agreement

**Part 2
INTRODUCTION AND BID DETAILS**

2.1 INTRODUCTION

2.1.1 **'SOURA'** is a scheme of Government of Kerala (GoK) aimed at developing Solar PV Rooftop/Ground mounted plants aggregating to 1000MWp in the State in the true spirit of MNRE goal of achieving 100 GW of solar plants by the year 2022. SOURA scheme of the GoK includes 500MWp through roof top program within coming 3 years. KSEB Ltd. is in the process of creating a Special Purpose Vehicle for the smooth implementation of the project. As part of this endeavor, the 'State Nodal Officer', 'SOURA' Project, KSEB Ltd. is authorized to invite bids for empanelment of EPC Contractors and Plant Developers on **EPC and tariff basis** for the design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted (within consumer premise) Solar PV Power plants of various capacities aggregating to 50MWp under EPC basis and 150MWp under Tariff basis at identified locations in Kerala during 2019-20 including Operation & Maintenance of the plant as per the scope of the work specified under clause 2.2.2 of this tender document. KSEB Ltd. reserves the right to assign the project either partly or fully to the Special Purpose Vehicle during the implementation of the project.

2.1.2 State Nodal Officer, 'SOURA' Project, KSEB Ltd., hereby invites interested Bidders to participate in the bidding process for the selection of bidder(s) who will be empanelled for the design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted (within consumer premises) Solar PV Power plants (and supply of solar PV power for 25 years in case of tariff basis) as per the terms and conditions of the Bidding Documents.

2.1.3 Brief particulars of the work are as follows:

The work includes design, supply, installation, testing and commissioning of Grid Tied Rooftop/Ground mounted Solar PV Power plants (and supply of power for 25 years in case of tariff basis) **under Part-A, Part-B and Part-C**, aggregating to 50MWp under EPC basis and 150MWp under Tariff basis at identified locations in Kerala during 2019-20, including Operation & Maintenance of the plant as per the scope of the work specified under clause 2.2.2 of this tender document.

The plant location comprises of roof tops of domestic/ Government/ educational/ industrial buildings/hospitals/Commercial etc. and vacant lands appurtenant thereto,

which will be handed over to the contractor in phased manner by the State Nodal Officer for the installation, testing and commissioning of Grid Tied Rooftop/Ground mounted Solar PV Power plants of various capacities. Ground mounted solar plants alone or vacant land are not considered under this tender unless they are part of consumer premises.

The solar PV plants are to be commissioned and handed over to the State Nodal Officer within the timelines specified in this bid document under EPC model. The EPC contractor has to mandatorily carry out O&M of the plant for 2 years from CoD of the plant. The contractor shall be responsible for rectification/replacement of the defects of the equipment free of cost till the end of defect liability period. The execution of O&M by the EPC contractor for the subsequent years shall be at the discretion of the State Nodal Officer, for which separate O&M agreement shall be executed at the O&M charges discovered through this bid.

Under tariff model, the developer shall commission the solar PV plants within the timelines specified in this bid document and shall execute Power Purchase Agreement with the State Nodal Officer for supply of power from the plants for a period of 25 years from CoD of the plants.

- 2.1.4 The energy from the plants shall be accounted against the Renewable Purchase Obligation (RPO) of KSEB Ltd.
- 2.1.5 The SNO proposes to select the bidder(s) having the prescribed qualifications and whose quoted bid price /tariff is determined to be acceptable as per the provisions of this tender as successful bidder. The successful bidder shall commission the solar PV plant/supply solar power, as applicable, pursuant to and as per the terms and conditions of the Contract/Power Purchase Agreement to be signed between the SNO and the successful bidder. The SNO shall pay to the EPC Contractor/plant developer, the EPC cost/Tariff as per the terms and conditions of the Contract/Power Purchase Agreement. For Solar PV plants installed under EPC, O&M for a period of 2 years from CoD of the plant is compulsory. O&M charges for each year shall be paid after proving the PR as mentioned in the clause 2.2.2 of this tender document. In the case of solar PV plants installed under EPC, the SNO shall pay towards the successful bidder the charges towards O&M for the 3rd year onwards as per the O&M rate discovered in the bid and as agreed in the O&M agreement, if any, executed separately.
- 2.1.6 The bidder shall be deemed to have examined the bid document, to have obtained his own information in all matters whatsoever that might affect the carrying out the works/supply in line with the scope of work specified in the document at the offered rates and to have

satisfied himself to the sufficiency of his bid. The bidder shall be deemed to know the scope, nature and magnitude of the works and requirement of materials, equipment, tools and labour involved, wage structures and as to what all works he has to complete in accordance with the bid documents irrespective of any defects, omissions or errors that may be found in the bid documents.

2.2 BID DETAILS

2.2.1 Bid capacity:

The minimum capacity of solar PV system at one location is 2kWp. The aggregated maximum capacity of solar PV systems for the whole State is 200MWp at identified locations in the State of Kerala. The locations shall be identified by the authorized representative of the State Nodal Officer and include residential/commercial/industrial/Government buildings/hospitals/institutions etc. Ground mounted solar plants alone or vacant land are not considered under this tender unless they are part of consumer premises.

Bids are invited from the prospective bidders for the tendered capacity upto 200MWp (50MWp under EPC and 150MWp under Tariff basis). The minimum bid capacity shall be 5MWp under EPC and 5MWp under Tariff basis as per the scope of work in this tender. The entire districts of Kerala are grouped under 4 regions coming under the 4 Distribution Chief Engineer offices of KSEB Ltd. for solar PV installation under Tariff basis under Part-A and Part-B as given under:

Region 1: Areas under the jurisdiction of Chief Engineer, Distribution South, Thiruvananthapuram

- Districts – Thiruvananthapuram, Kollam, Pathanamthitta, Kottayam

Region 2: Areas under the jurisdiction of Chief Engineer, Distribution Central, Ernakulam

- Districts – Alappuzha, Ernakulam, Thrissur, Idukki

Region 3: Areas under the jurisdiction of Chief Engineer, Distribution North, Kozhikode

- Districts – Palakkad, Malappuram, Kozhikode

Region 4: Areas under the jurisdiction of Chief Engineer, Distribution North Malabar, Kannur

- Districts – Kannur, Kasargode, Wayanad

2.2.2 SCOPE of works

2.2.2.1 EPC basis: The scope of work for bidders quoting under EPC basis is as follows:

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Sl.No	Scope	Details												
i.	Nature of work	The work includes design as per site conditions, engineering, manufacture/procurement, manufacturer's quality assurance, factory testing, transportation, handling, storage, erection including all civil/structural works, electrical and general works, piping, cabling, installation, metering, provision for data acquisition with communication facility to Centralized Monitoring System of KSEB Ltd. as specified in Volume-III of this tender document, testing, commissioning, training, services, permits/sanction/clearance if any, and insurance at all stages of this contract and handing over the solar PV Plants to State Nodal Officer to its full satisfaction after proving the performance ratio(AC) and mandatory O&M of the plant for a period of 2 years from Commercial operation Date(CoD) and 5 years defect liability period for the equipments.												
ii.	Contract Period	From the date of execution of contract agreement till a period of 5 years of defect liability period from CoD of the plant which shall include mandatory first 2 years of Operation & Maintenance.												
iii.	Bid Capacity (MWp)	<p>EPC basis: Bids are invited under EPC basis for the whole State under Part-A, Part-B and Part-C with minimum and maximum capacities as follows. The bidders can quote for Part-A/Part-B/Part-C or in combinations.</p> <table border="1"> <thead> <tr> <th>Capacity range</th> <th>Minimum Capacity (MWp)</th> <th>Maximum Capacity (MWp)</th> </tr> </thead> <tbody> <tr> <td>Part-A: <=10kWp</td> <td>5</td> <td>30</td> </tr> <tr> <td>Part-B: 11-100kWp</td> <td>5</td> <td>12.5</td> </tr> <tr> <td>Part-C: >100kWp</td> <td>5</td> <td>7.5</td> </tr> </tbody> </table> <p>The minimum bid capacity is 5MWp and maximum bid capacity (combined capacity of all range) is 50MWp. During the evaluation of Bids and based on the competitiveness of the bid process, the SNO retains the right to increase or decrease the bid Capacity/ Requisitioned Energy. Capacity mentioned is on DC Side.</p>	Capacity range	Minimum Capacity (MWp)	Maximum Capacity (MWp)	Part-A: <=10kWp	5	30	Part-B: 11-100kWp	5	12.5	Part-C: >100kWp	5	7.5
Capacity range	Minimum Capacity (MWp)	Maximum Capacity (MWp)												
Part-A: <=10kWp	5	30												
Part-B: 11-100kWp	5	12.5												
Part-C: >100kWp	5	7.5												
iv.	Minimum Installed Capacity to be made	2kWp												

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	available at a Single location	
v.	Location	Location identified by the authorized representative of the State Nodal Officer which can include residential/Commercial/agricultural/industrial/educational institutions/government/hospital building set corany other buildings or land with building. Ground mounted solar plants alone or vacant land are not considered under this tender unless they are part of consumer premises.
vi.	Scheduled Commissioning Date	Within 6 months from the construction start date.
vii.	Delivery point	shall mean the point at which the energy generated from the Solar Plant is delivered to the tendering authority (at the main electricity distribution board in the consumer premises)
viii.	Interconnection Point	The point at which energy generated by the solar PV plant is supplied to KSEB Ltd. grid (at the net metering point).
ix.	Installations and all allied works upto the interconnection point	It shall be the responsibility of the EPC Contractor to carry out all the installations and allied works upto the interconnecting point as per the CEA standards.
x.	Meters	Net meter and Solar energy meter shall be provided by the contractor. For capacity >10kWp, solar energy meter shall be with MODEM having facility of AMR and GPRS or Smart Meter(at the option of the bidder).
xi.	Cost of the modifications at the point of interconnection of KSEB Ltd./metering point	The cost of distribution infrastructure from the Solar Generation facility to the Interconnection point of equipment, Data acquisition including communication facility shall be borne by the EPC Contractor.
xii.	Renewable Purchase Obligation rights over the energy	Energy generated under this contract shall be accounted against the RPO of the KSEB Ltd. The bidder shall not have any rights whatsoever to accredit the plant under Renewable Energy Certificate mechanism or to make use of the energy against its own Obligation, in case it is an obligated entity.
xiii.	Operation & Maintenance	EPC contractor has to mandatorily carry out O&M for the first 2 years from CoD of the plant. The EPC Contractor shall execute

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		separate operation & maintenance agreement for carrying out O&M from 3 rd year onwards, if SNO desires so.
xiv.	Performance Ratio	Minimum of 75%.
xv.	Weather monitoring station	The EPC Contractor shall provide weather monitoring station at plant location for capacity above 50kWp.
xvi.	Permits/clearances/sanction/connectivity	The SNO shall provide reasonable assistance for grid connectivity of the plant to the interconnection point in obtaining sanction, clearances, including Electrical Inspectorate sanction, permit and approval from appropriate authorities. However, the contractor shall bear the fee for approval payable to Electrical Inspectorate, application fee and 20% of the registration fee as per regulations of Kerala State Electricity Regulatory Commission, connectivity fee as applicable to KSEB Ltd. for obtaining connectivity as per the extant rules and Regulations. It is the sole responsibility of the State Nodal Officer to collect consent of the building /land owner for installing solar plant. SNO shall also be responsible for any grid modifications beyond the interconnection point for connecting the solar plant to grid.
xvii.	Data room on identified locations	The SNO will provide a data room which can be accessed by the contractors who are awarded work. Data room contains information like geo co-ordinates of the buildings, land, indicative shade free area, road access, details of the building, proximity to KSEB Ltd. network ,images of the building, rooftop measurements wherever possible.

The bidder shall quote the EPC cost on 'Rs per kWp' basis. The bidder shall mandatorily quote the O&M charges of the solar PV plants for the first 2 years from CoD of the plant. The annual O&M charge for the first year from CoD shall not be lower than 1.5% of the EPC cost excluding O&M and for the second year shall not be lower than the first year O&M with escalation rate of 5.72%. Bids with annual O&M charges below the specified shall be rejected. The EPC Contractors may avail other fiscal benefits available for reducing the quoted price. The O&M charges for the 3rd year onwards upto 25th year of CoD of the plant, if quoted, have to be furnished separately for each year.

2.2.2.1.a Upper ceiling rate under EPC basis :

The upper ceiling rate for the various capacity solar PV plants are as under:

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Solar PV Plant capacity	Upper ceiling rate under EPC inclusive of 2 years O&M and all taxes
Part-A :<= 10kWp	Rs. 51,500/-
Part-B: 11- 100 kWp	Rs. 45,500/-
Part-C: >100 kWp	Rs. 42,500/-

The price of solar PV plants of different kWp ratings (Part-A, B&C shall be quoted separately. The annual O&M charges for the first 2 years from CoD of the plant shall also be quoted separately. The quoted bids above the upper ceiling rate specified shall be rejected. The quoted price shall be inclusive of all duties, taxes, freight, insurance etc and the breakup details are to be shown separately. The prices quoted by the firm shall be firm in all respect and no price variation /adjustment shall be payable. The bidder shall not be entitled to claim any additional charges that have resulted due to extension of completion period. The bidder shall not be entitled to claim any additional charges due to any additional works done at site except for some unforeseen works which are necessary for completing the installation, with prior approval of the SNO.

The bidder may quote annual O&M charges separately in the price bid as per Annexure 19, for 3rd year up to 25th year from the COD.

The operation & maintenance of Solar Photovoltaic Power Plant would include wear, tear, cleaning, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors / Power Conditioning Unit (PCU), spares, consumables & other parts for a period of 2 years from CoD.

2.2.2.1.b Performance Ratio

Performance ratio (AC) shall be proved within a period of 7 consecutive days of energization for declaring Commercial Operation Date and at the end of each year for release of O&M charges under EPC basis.

The **performance ratio test** as per IEC 61724 has to be carried out at site by the EPC contractor in presence of authorized officials from SNO, deriving sample datas within a period of 7 consecutive days sufficient to provide operational data representing insolation and ambient conditions as desired by the agreement authority to prove the Performance ratio of 75% or above as per obligations under the EPC contract. This is mandatory for commissioning and handing over the plant to the SNO. It is also agreed that if the specified performance ratio is not achieved, the same shall be demonstrated within a period of another 7 days immediately following the previous testing and still if it is not achieved, EPC

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contractor shall enhance the module capacity of solar plant/improve the quality of the plant by replacement of module/other components with all suitable modification requirements on balance of systems at his own cost to achieve the performance ratio. The actual energy generated will be taken from the solar energy meter installed in the plant. If a Solar Plant achieves the Minimum Performance Ratio, then the State Nodal Officer will issue Commercial Operation Date Certificate. The day of issuance of the Commercial Operation Date Certificate by the State Nodal Officer will be the Commercial Operation Date of the solar plant.

For plants having capacities less than or equal to 50kWp, PR shall be measured at 15 minute intervals for the period from 11 hrs to 15 hrs during the above period and average of these values is taken for calculating PR . PR assessment shall be evaluated using the standard calibrated equipment of SNO. For plants having capacities above 50kWp, PR shall be measured using the irradiance data recorded in the weather monitoring station provided by the contractor/developer at the location and the solar energy meter reading.

The performance ratio (AC) can be checked at any time in between if deemed necessary by the authorized representative of the SNO. The contractor shall be liable to pay monetary compensation to SNO for lower generation for PR less than 75%, if found, during testing. Monetary compensation shall be computed as follows:

Previously measured PR	PR1
Current PR	PR2
Average PR during the measurement period	$PR_{av} = (PR1 + PR2)/2$
Energy generated during the measurement period	E units
Shortfall in energy due to PR below 75%	$B = E \times ((75\% - PR_{av}) / PR_{av})$ units
Monetary Compensation	= B X Solar Forbearance price as on bid date

The compensation is realized from the performance bank guarantee. The release of annual O&M charges shall be withheld on non-achievement of performance ratio. The contractor shall be responsible for all required activities at his own cost for the demonstration of the specified performance ratio. The contractor shall install Data Acquisition system as specified in volume-III of the tender document for measuring and monitoring of various parameters of solar plant. The contractor shall design the solar plant with sufficient number of solar PV panels to produce the agreed capacity at each location.

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2.2.2.2 Tariff basis: The scope of work for bidders quoting under tariff basis is as follows:

Sl. No.	Scope	Details																																							
i.	Nature of work	The work includes design as per site conditions, engineering, manufacture/procurement, manufacturer’s quality assurance, factory testing, transportation, handling, storage, erection including all civil/structural works, electrical and general works, piping, cabling, installation, metering, provision for data acquisition with communication facility to centralized monitoring system of KSEB Ltd. as specified in Volume-III of the tender document, testing, commissioning, services, Project financing, permits/sanction/clearance if any and insurance at all stages of this contract and supply of energy from the solar plant and operation and maintenance of the plant for a period of 25 years from CoD of the plants.																																							
ii.	Contract Period (in years)	From the date of execution of Power Purchase Agreement to 25 years from CoD of the solar plant.																																							
iii.	Bid Capacity (MWp)	<p>For Tariff based bidding under Part-A and Part-B, the whole State is divided into regions and each region comprises of 3 to 4 revenue districts as defined hereunder. Part-A bids are invited separately for the 4 regions. For Part-B, two bids are invited – one bid for Region 1 and Region 2 combined and second bid for Region 3 and 4 combined. Part-C bids are invited for the whole State with no regional segregation.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Capacity range</th> <th>Minimum/Maximum Capacity (MWp)</th> <th>Region 1</th> <th>Region 2</th> <th>Region 3</th> <th>Region 4</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Part-A: <=10kWp</td> <td>Min</td> <td>5</td> <td>5</td> <td>5</td> <td>5</td> </tr> <tr> <td>Max</td> <td>20</td> <td>28</td> <td>25</td> <td>17</td> </tr> <tr> <td rowspan="2">Part-B: 11-100kWp</td> <td>Min</td> <td colspan="2">5</td> <td colspan="2">5</td> </tr> <tr> <td>Max</td> <td colspan="2">20</td> <td colspan="2">20</td> </tr> <tr> <td rowspan="2">Part-C: >100kWp</td> <td>Min</td> <td colspan="4">5</td> </tr> <tr> <td>Max</td> <td colspan="4">20</td> </tr> </tbody> </table> <p>Bidders quoting under Part-B or Part-C have to mandatorily quote under Part-A at least 25% of their quoted capacity under Part-B and</p>	Capacity range	Minimum/Maximum Capacity (MWp)	Region 1	Region 2	Region 3	Region 4	Part-A: <=10kWp	Min	5	5	5	5	Max	20	28	25	17	Part-B: 11-100kWp	Min	5		5		Max	20		20		Part-C: >100kWp	Min	5				Max	20			
Capacity range	Minimum/Maximum Capacity (MWp)	Region 1	Region 2	Region 3	Region 4																																				
Part-A: <=10kWp	Min	5	5	5	5																																				
	Max	20	28	25	17																																				
Part-B: 11-100kWp	Min	5		5																																					
	Max	20		20																																					
Part-C: >100kWp	Min	5																																							
	Max	20																																							

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		<p>Part-C. Otherwise such bids shall be treated as non responsive. Bidders can bid for Part-A alone also. Minimum bid capacity shall be 5MWp and Maximum bid capacity (combined bid capacity under Part-A/Part-B/Part-C for all the regions) under Tariff basis shall be 150MWp. During the evaluation of Bids and based on the competitiveness of the bid process, the SNO retains the right to increase or decrease the bid Capacity/ Requisitioned Energy. Capacity mentioned is on DC Side.</p>
iv.	Minimum Installed Capacity to be made available at a Single location	2kWp
v.	Region	<p>The entire districts of Kerala are grouped under 4 regions coming under the 4 Distribution Chief Engineer offices of KSEB Ltd. for solar PV installation under Tariff basis under Part-A and Part-B as given under:</p> <p>Region1: Areas under the jurisdiction of Chief Engineer, Distribution South, Thiruvananthapuram</p> <ul style="list-style-type: none"> • Districts – Thiruvananthapuram, Kollam, Pathanamthitta, Kottayam <p>Region 2: Areas under the jurisdiction of Chief Engineer, Distribution Central, Ernakulam</p> <ul style="list-style-type: none"> • Districts – Alappuzha, Ernakulam, Thrissur, Idukki <p>Region 3: Areas under the jurisdiction of Chief Engineer, Distribution North, Kozhikode</p> <ul style="list-style-type: none"> • Districts – Palakkad, Malappuram, Kozhikode <p>Region 4: Areas under the jurisdiction of Chief Engineer, Distribution North Malabar, Kannur</p> <ul style="list-style-type: none"> • Districts – Kannur, Kasargode, Wayanad
vi.	Location	<p>Location identified by the authorized representative of the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB Ltd. which can include buildings of residential/ Commercial/ agricultural/ industrial/ institution/government/hospitals or other locations as applicable. Ground mounted solar plants alone or vacant land are not</p>

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		considered under this tender unless they are part of consumer premises.
vii.	Scheduled Commissioning Date	within 6 months from the construction start date.
viii.	Delivery point	shall mean the point at which the energy generated from the Solar Plant is delivered to the tendering authority (at the main electricity distribution board in the consumer premises)
ix.	Interconnection Point	The point at which energy generated by the solar PV plant is supplied to KSEB Ltd. grid (at the net metering point).
x.	Installations and all allied works upto the interconnection point	It shall be the responsibility of the developer to carry out all the installations and allied works upto the interconnecting point as per the CEA standards.
xi.	Meters	Net meter and solar energy meter shall be provided by the contractor. For capacity >10kWp, solar energy meter shall be with MODEM having facility of AMR and GPRS or Smart Meter(at the option of the bidder).
xii.	Tariff	Shall mean the firm single Tariff applicable for a period of 25 Years, quoted by the bidder in Rs. Per kWh after adjusting the accelerated depreciation benefits and other fiscal benefits and shall be construed to be at the metering point, which cannot be more than the ceiling rate specified. The bidder shall quote tariff considering the design of the plant as per site conditions, manufacture, supply, erection, testing and commissioning, project financing and supply of energy from that plants to SNO at contracted CUF as mentioned in the bid including Operation & Maintenance of the plant for 25 years from the CoD.
xiii.	Performance Ratio testing and certification of Commercial Operation Date	Performance ratio (AC) of minimum 75% shall be proved as specified for declaring commercial operation date.
xiv.	Contracted Capacity	Min 14% and Max 19%

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	Utilization Factor/ (CUF)	
xv.	Weather monitoring station	The Developer shall provide weather monitoring station at plant location for capacity above 50kWp.
xvi.	Renewable Purchase Obligation rights over the energy	Energy procured under this contract shall be accounted against the RPO of the KSEB Ltd. The bidder shall not have any rights what so ever to accredit the Plant under Renewable Energy Certificate mechanism or to make use of the energy against its own Obligation, in case it is an obligated entity.
xvii.	Permits/clearances/sanction/ connectivity	The SNO shall provide reasonable assistance for grid connectivity of the plant to the interconnection point in obtaining sanction, clearances, including Electrical Inspectorate sanction, permit and approval from appropriate authorities. However, the contractor shall bear the fee for approval payable to Electrical Inspectorate, application fee and 20% of the registration fee as per regulations of Kerala State Electricity Regulatory Commission, connectivity fee as applicable to KSEB Ltd. for obtaining connectivity as per the extant rules and Regulations. It is the sole responsibility of the SNO to collect consent of the building /land owner for installing solar plant. SNO shall also be responsible for any grid modifications beyond the interconnection point for connecting the solar plant to grid.
xviii.	Data room on identified locations	The SNO will provide a data room which can be accessed by the contractors who are awarded work. Data room contains information like geo co-ordinates of the buildings, land, indicative shade free area, road access, details of the building, proximity to KSEB Ltd. network, images of the building, rooftop measurements wherever possible.

2.2.2.2. a. Upper ceiling under tariff basis

The plant developers may avail the benefit of accelerated depreciation and other fiscal benefits available for reducing the quoted price. The bidder shall quote the tariff for the energy supplied from the solar plant including the cost of O&M for a period of 25 years from CoD. The upper ceiling of tariff for the energy supplied from the solar PV plant including O&M areas under:

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Plant capacity	Upper limit of tariff
Part-A: <= 10kWp	Rs. 3.70/unit
Part-B: 11- 100 kWp	Rs. 3.35/ unit
Part-C: >100 kWp	Rs.3.20/unit

The tariff of solar PV plants for the different requisitions as specified in this bid document shall be quoted separately. The quoted tariff shall include O&M charges for the 25 years from CoD. Bids above the upper ceiling specified above shall be rejected. The tariff shall be inclusive of all duties, taxes, freight, insurance etc .The tariff quoted by the firm shall be firm in all respect and no price variation /adjustment shall be payable.

The operation & maintenance of Solar Photovoltaic Power Plant would include wear, tear, cleaning, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors / Power Conditioning Unit (PCU), spares, consumables & other parts for a period of 25 years from CoD.

2.2.2.2.b Capacity utilization factor (CUF)

Capacity Utilization Factor(CUF) means the ratio of total kWh (units) of power generated by solar plant in a year and Contracted capacity multiplied with number of hours in the same year. Capacity Utilization Factor of the solar PV plants shall be calculated on every anniversary day of the CoD of the plant.

CUF shall be calculated on yearly basis for the plant under tariff basis. CUF shall be in the range of 14%(minimum) to 19%(maximum).In case the plant generates and supplies energy less than the energy corresponding to the minimum CUF (14%), the developer shall be liable to pay penalty to the SNO, for the shortfall in availability below such contracted CUF level. The amount of such penalty will be in accordance with the terms of the Power purchase Agreement and will be at 25% of the PPA tariff for the shortfall in energy.

In case the availability is more than the CUF specified in the Agreement, SNO shall purchase the excess generation, at 75% of the PPA tariff. The minimum CUF below which penalty is applicable is 14% and maximum CUF above which SNO shall purchase at 75% of the PPA tariff is 19%. IF the CUF falls below 10%, then the amount of penalty will be at 50% of the PPA tariff for the shortfall in energy.

2.2.2.2.c Performance Ratio testing and certification of Commercial Operation Date

Performance ratio (AC) shall be proved within a period of 7 consecutive days of energization for declaring Commercial Operation Date under Tariff basis as given below.

The **performance ratio test** as per IEC 61724 has to be carried out at site by the Developer in presence of authorized officials from SNO, deriving sample datas within a period of 7 consecutive days sufficient to provide operational data representing insolation and ambient conditions as desired by the agreement authority to prove the Performance ratio of 75%. If the specified performance ratio is not achieved, the same shall be demonstrated within a period of another 7 days immediately following the previous testing and still if it is not achieved, the Developer shall enhance the module capacity of solar plant/improve the quality of the plant by replacement of module/other components with all suitable modification requirements on balance of systems at his own cost to achieve the performance ratio. The actual energy generated will be taken from the solar energy meter installed in the plant. If a Solar Plant achieves the Minimum Performance Ratio, then the SNO will issue Commercial Operation Date Certificate. The day of issuance of the Commercial Operation Date Certificate by the SNO will be the Commercial Operation Date of the solar plant and the Solar Plant will commence supply of electricity in accordance with the PPA.

For plants having capacities less than or equal to 50kWp, PR shall be measured at 15 minute intervals for the period from 11hrs to 15 hrs during the above period and average of these values is taken for calculating PR . PR assessment shall be evaluated using the standard calibrated equipment of SNO. For plants having capacities above 50kWp, PR shall be measured using the irradiance data recorded in the weather monitoring station provided by the contractor/developer at the location and the solar energy meter reading.

The Developer shall be responsible for all required activities at his own cost for the demonstration of the specified performance ratio. The Developer shall also install Data Acquisition system as per the requirement of SNO for measuring and monitoring of various parameters of plant and also for providing remote alarm at SNO's monitoring station for generation below the specified. The Developer shall design the solar plant with sufficient number of solar PV panels to produce the agreed capacity at each location.

2.2.2.3 Scheduled Date of Commercial Operation

The period of completion of plant will be reckoned from the construction start date and time of completion will be worked out accordingly. The plant shall be completed in all

respects tested, commissioned and put in the commercial operation in co-ordination with the authorities of the SNO within 6 months from the construction start date specified in the EPC/Power Purchase Agreement.

Delay in achieving CoD beyond the scheduled Commercial Operation Date shall involve penalties on the Successful bidder as detailed out in EPC/Power Purchase Agreement.

The certificate of declaration of 'Commercial Operation Date' of the solar plant based on the performance certificate shall be issued by the authorized representative of the SNO.

2.3 BIDDING PROCESS

The bidding process consists of **pre-qualification** from all the bidders. The SNO intends to pre-qualify and short-list suitable bidders whose bid shall be opened on the date specified in the NIT and will be eligible for participation in the **financial bid** opening. The highest bidder(H1) in each requisition will be disqualified if there are more than 3 bids in the respective requisition and after elimination of H1 bidder the offered quantum of balance bidders is more than twice the required quantum in that requisition. After 2 hours of financial bid opening, eligible bidders for the next stage are intimated through system generated email to participate in **e-Reverse Auction**. The e-reverse auction shall take place for a duration of 3 hours subject to auto extension as applicable.

If needed, at the close of the e-reverse auction, there will be an **L-1 matching round** for 30 minutes. In case the requisitioned quantum is not obtained after L1 matching of the EPC and tariff basis tenders, the buyer reserves the right to go for **bucket filling process by matching at L-1 rate** for obtaining the requisitioned quantum.

The above bid processes involving pre-qualification, e-reverse, e-reverse auction, L-1 Matching and bucket filling will be carried out separately for each requisition under EPC and tariff based bids. Thus, there are 7 requisitions under Tariff basis and 3 requisitions under EPC basis in this tender.

2.4 Publishing of list of empanelled contractors

The SNO shall publish the list of empanelled contractors within 10 days from the date of publishing of bid results.

2.5 Bid Documents

The bid documents are those stated below and should be read in conjunction with amendments or corrigendum or additions, if any, issued by the SNO on a subsequent date before the last date of submission of bid.

Volume I Conditions of bid and contract

Volume II Prequalification bid

It contains prequalification questionnaire and assessment of financial and technical capability of the bidder.

Volume III Technical Specifications

It contains three parts giving specifications of works, products, equipment, machinery etc.

Part I Supply, Erection and Commissioning of Solar Plant

Part II Operation & Maintenance of the Plant

Part III Guaranteed technical Particular datasheets

The plant shall be in accordance with solar photovoltaic systems, devices and component Goods (Requirement for Compulsory Registration) order 2017 of Ministry of Power or any amendment thereof.

The bidder shall attach along with this volume:

- i) Schedule of Technical particulars to be answered by the bidder.
- ii) Construction programme.

Volume IV Price bid (to be filled up and furnished by the Bidder)

It contains:

Schedule of all inclusive Price including taxes, duties, freight as applicable & insurance charges for successful completion, commissioning and proving the performance ratio(AC) of each location as detailed in clause 2.2.2 including Operation & Maintenance of the plant for the first 2 years from CoD in case of bids on EPC basis . For bidders quoting price bids on EPC basis, the annual O&M charges for each year from 3rd year after COD until the 25th year of CoD of the plant shall be quoted separately. For bids on tariff basis, the tariff quoted shall include the O&M charges for the plant for 25 years from CoD.

Hard copies to be submitted by the bidders: The bid agreement in original & BG in original shall be sent by Registered post or Speed post or by Courier or by messenger in sealed cover so as to reach the following address, before the opening of the bid.

“The STATE NODAL OFFICER”
‘SOURA PROJECT’, KSEB LTD.
Vydyuthi Bhavanam, Pattom
Thiruvananthapuram-695 004”

The Cover containing the documents shall be super scribed with the words “Bid agreement for bid No “**STATE NODAL OFFICER’, ‘SOURA’ PROJECT, KSEB Ltd./SOURA 200**

MWp/2019-20”. The Bid agreement shall be submitted in sealed super scribed cover. Bids of those bidders who fail to submit the above originals (hard copies) within the time mentioned in NIT will not be considered. Bids without agreement or not in proper form will be rejected.

2.6 GENERAL

- 1 Bid document may be checked with the check list enclosed as Annexure-18 before submission to ensure that all information/documents required for qualification are included.
- 2 SNO may at its sole discretion, extend the bid submission due date/ time.

2.7 INSTRUCTION TO BIDDERS FOR SUBMISSION OF ONLINE BIDS IN e-TENDER AND e-REVERSE AUCTION

Bidders are requested to read the terms & conditions of this tender before submitting their online bids. Bidders who do not comply with the conditions with documentary proof (wherever required) will not qualify for opening of price bid for the e-reverse auction.

1. **Registration:** The process involves Bidder’s registration with MSTC e-procurement portal which is free of cost. Only after registration, the bidder(s) can submit his/their bids electronically. For participating in each event of the bid (EPC/Tariff), transaction fee of Rs.20,000/- plus GST is payable by the bidder. Electronic Bidding for submission of Non-financial Bid as well as Price Bid will be done through the internet. The bidder should possess Class III signing type digital certificate. Bidders are required to make their own arrangement for bidding from a computer connected with Internet. MSTC/KSEBL shall not be responsible for making such arrangement. (Bids will not be recorded without Digital Signature).
2. **The URL for online bid submission in e-tender and e-reverse auction is <https://www.mstcecommerce.com/auctionhome/renergy/index.jsp>**

Interested bidders are required to register themselves as Bidders in the above website. For this the bidder may visit the above URL and click on “Register as Bidder” and fill up the registration form with their details and submit. The bidder shall create its own user id and password during this process and bidders are advised to keep note of the same. It may be noted that no separate user id and password will be provided by MSTC/KSEBL. After successful submission of the

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registration form, Bidders will receive a system generated mail confirming their registration.

3. Contact persons:

For queries related to registration and online bidding (MSTC):

Sl. No	Name	Phone	Email
1	MSTC Help-desk	033-22901004	
2	MSTC, Trivandrum	0471-2529137	mstctvm@mstcindia.co.in
3	Shri Santhosh Kumar Rajendran	8884600700	skrajendran@mstcindia.co.in
4	Shri Kumaravel R	9946570940	kumaravelr@mstcindia.co.in

4. System Requirement:

- i) Operating System - Windows 7 or above Operating System
- ii) Internet browser – IE9 and above.
- iii) Signing type digital signature (class III)
- iv) JRE 8 (Windows X-86 Offline) and above to be downloaded and installed in the system.
 - To disable “Protected Mode” for DSC to appear in The signer box following settings may be applied.
 - Tools => Internet Options => Security => Disable protected Mode If enabled- i.e, Remove the tick from the tick box mentioning “Enable Protected Mode”.
 - Other Settings:
 - Tools => Internet Options => General => Click On Settings under “browsing history/ Delete Browsing History” => Temporary Internet Files => Activate “Every time I Visit the Webpage”.

To enable ALL active X controls and disable ‘use pop up blocker’ under Tools→Internet Options→ custom level (Please run IE settings from the page www.mstcecommerce.com once)

For detailed guidance about browser and Java configuration the bidders are advised to go through the guide available under “BIDDER GUIDE” at the home page.

5. Bidding Process:

The entire bidding process is divided into two stages – Stage I and Stage II. Stage I bidding will be through e-tender and Stage II bidding will be through e-reverse auction followed by L-1 matching and Bucket Filling.

6. Process of e-tender:

The e-tender shall have two covers - Non Financial Bid (Part 1) and Price Bid (Part 2). The bidder must fill up both the Part 1 and Part 2 of e-tender before making final submission.

During tender opening, the Non Financial bids will be opened electronically on specified date and time as given in the NIT.

The Non Financial bids will be evaluated and the bids which are found to be in accordance with the tender requirement will be shortlisted as Technically Qualified Bids and the respective bidders shall be known as Technically Qualified Bidders.

The Technically Qualified Bidders shall be invited to participate in the e-reverse auction on the stipulated date and time. Such invitation will be sent to the registered email address of the Technically Qualified Bidders and no separate intimation shall be sent. Hence bidders are advised to provide their correct email addresses during registration and keep checking their mails. Non receipt of email will not entitle any bidder to lodge any claim and no complaint in this regard shall be entertained.

7. OPENING OF PRICE BIDS OFF-TENDER:

Price bids received from only Technically Qualified Bidders in e-tender will be opened electronically. During the bid submission in e-tender, bidders are instructed to use Upload Docs button against each requirement. Multiple documents can be uploaded. Since the uploaded documents shall be downloaded for evaluation.

NOTE: 1. Uploaded documents should NOT be protected with Password.

2. The size of each document should not be more than 4 MB

The bidder should note that only a file which is “uploaded” with the e-tender event shall be considered during evaluation of the Technical Bid. Files which are not uploaded to the e-tender event shall not be considered for evaluation.

The Bidder should also note that a Bid will be considered as submitted if and only if the Bidder has made FINAL SUBMISSION. Only such Bids will be opened for which Final Submission has been made. It is further clarified that saving of Technical Bid and / or Price Bid without Final Submission will be treated as non-submission of bid in e-tender.

Since the uploaded documents shall be downloaded for evaluation of bid, bidders are advised to upload clear scanned copies (pdf format files only). MSTC/KSEBL reserves the right to call for additional copies or other documents for the purpose of bid evaluation, if deemed necessary. Such documents shall have to be submitted by the bidder within the time provided for submission.

Upon successful submission of e-tender (i.e. after Final Submission), the Bidder shall receive a bid acknowledgement mail from the system automatically in the registered email

id. The Bidders may note that the Technical Bid and the Price Bid submitted in e-tender will be encrypted by the MSTC's own software before storage in the database. This will be done to protect the sanctity and confidentiality of the Bids before the actual opening of the same.

The Bidder has an option to edit Technical Bid and Price Bid as many times till the final submission. For further assistance please follow instructions of vendor guide.

If after making Final Submission of e-tender and before the scheduled closing time for Bid submission a bidder wishes to make changes in its Bid, it can do so by clicking the "DELETE BID" option. By doing so, the entire Bid submitted by the Bidder will get deleted. A system generated email will be sent to the registered email id of the bidder acknowledging the deletion. The bidder will be able to save and submit its new Bid again. If a bidder deletes its Bid and does not submit its new Bid in the same manner as stated above, its Bid will not come up for opening or further processing.

If after final submission of Bid and before the scheduled closing time for Bid submission a bidder wishes to withdraw its bid, it can do so by clicking the "WITHDRAW BID" option. By withdrawing a bid, a Bidder will lose the opportunity to re-submit its Bid against the same-tender.

All notices and correspondence to the bidder(s) shall be sent by email only during the process till finalization of tender. Hence the bidders are required to ensure that their email address provided at the time of registration is valid and updated. Bidders are also requested to ensure validity of their DSC (Digital Signature Certificate).

Bidders are advised to see the website regularly to remain updated with latest information to ensure that they do not miss out any corrigendum / addendum uploaded against the said tender after downloading the tender document. **The responsibility of downloading the related corrigendum, if any, will be that of the bidders.**

8. Bidding in e-tender & Reverse auction:

a) Bidder(s) need to submit necessary transaction fee well in advance. Only after receipt of transaction fee bidders will be able to bid in the e-tender.

b) During bid submission process in e-tender, the bidder should allow to run a

application JAVA ENCRYPTION APPLET by accepting the risk and clicking on run. This exercise has to be done immediately before clicking on the Techno-Commercial bid (Non-Financial bid). If this application is not run then the bidder will not be able to save/submit his bid.

- c) After filling the Techno-Commercial Bid, bidder should click 'save' for recording their Techno-Commercial bid. Once the same is done, the Price Bid link becomes active and the same has to be filled up and then bidder should click on "save" to record their price bid. Then once both the Techno-Commercial bid & price bid has been saved, the bidder can click on the "Final Submission" button to register their bid.
- d) In all cases, bidder should use their own ID and Password along with Digital Signature at the time of submission of their bid.
- e) During the entire e-tender and e-reverse auction process, the bidders will remain completely anonymous to one another and also to everybody else.
- f) The e-tender floor shall remain open from the pre-announced date & time.
- g) All electronic bids submitted during the e-tender and e-reverse auction process shall be legally binding on the bidder. Any bid will be considered as the valid bid offered by that bidder and acceptance of the same by the Buyer will form a binding contract between Buyer and the Bidder for execution of supply.
- h) It is mandatory that all the bids are submitted with digital signature certificate otherwise the same will not be accepted by the system.
- i) KSEBL/MSTC reserves the right to cancel or reject or accept or withdraw or extend the tender in full or part as the case may be without assigning any reason thereof.
- j) No deviation of the terms and conditions of the tender specification is acceptable. Submission of bid in the e-tender / e-reverse auction by any bidder also confirms his acceptance of terms & conditions for the tender.
- k) The e-reverse auction process shall remain open for bid submission for a pre-declared period and shall be subject to auto extension of bid closing time by **ten minutes** from

the last bid time if any bid is received in the last ten minutes.

- l) The prevailing / current lowest bid will be displayed on the bidding screen during the course of e-reverse auction and all subsequent bids shall have to be quoted lower than the prevailing / current lowest bid. Price Bid Decrement in RA: multiples of Rs.10 per kWp in case of EPC and Rs.0.01 in case of tariff.
- m) The server time shall be treated as final and binding. Bids recorded in the server before the bid closing time will only be treated as valid bid. Bidders are, therefore, advised to submit their bids well before the closing time of e-tender / e-reverse auction. If any bid reaches the server after the bid closing time as per server time, the same will not be recorded and no complaint in this regard shall be entertained.
- n) Bidders are advised to exercise caution in quoting their bids in e-tender and e-reverse auction to avoid any mistake. Bids once submitted in e-reverse auction can't be recalled.

**Part 3
INSTRUCTIONS TO BIDDERS**

3.1. INTRODUCTION

- 3.1.1 E-tenders are invited as specified in the NIT.
- 3.1.2 The Tender documents and other details can be downloaded from the website www.kseb.in/www.sourakseb.in/www.mstcecommerce.com.
- 3.1.3 The tender cost of Rs. 17,700 /- (inclusive of GST) shall be remitted through e-Payment facility provided by the e-Procurement system. EMD shall be submitted as unconditional and irrevocable BG.
- 3.1.4 The interested bidders shall register in the e-platform for participating in the bid with relevant details and applicable fee.
- 3.1.5 All the Tender documents are to be submitted online only and in the designated covers/envelopes on the above website. All the volumes of bid documents shall be submitted in their designated online covers. Tenders/bids shall be accepted only through online mode in the website and no manual submission shall be entertained. The tender cost once paid is neither refundable on any account, nor will the amount be adjusted towards the cost of any other tender.
- 3.1.6 The bidders are advised to examine carefully all instructions, conditions, terms, specifications, drawings etc. in the bid documents and details regarding the facilities at work site, approaches, availability of labour, working seasons, geology, climate etc. The bidders are advised to familiarize with the geography and environmental conditions of the districts coming under the regions specified, before preparing the bid documents. In case of any doubt or issue, the bidder may collect whatever information required from the bidding authority. The rates shall be quoted after precisely considering all aspects that may be encountered in the implementation of solar plant. The bidder shall be responsible for the rates discovered through this tender and the rate shall remain firm during the period of contract. The Contractor is not entitled for any claim other than that agreed to in the contract.
- 3.1.7 Bidder must meet the eligibility criteria independently as Bidding Company or as a Bidding Consortium with one of the members acting as the Lead Member of the Bidding Consortium.
- 3.1.8 Bidder will be declared as a qualified bidder based on the eligibility criteria set out in this bid documents.

- 3.1.9 In case bidder is submitting bid through consortium, a Consortium Agreement as per the Annexure-7 shall be furnished along with the bid. In the consortium/Joint venture, the lead member shall meet 70% of the financial eligibility. Other consortium/Joint venture members shall meet balance 30%. Maximum three members shall only be allowed in the consortium/Joint Venture.
- 3.1.10 Further, in case where the bidding company has used the financial eligibility criteria of its parent company then it needs to be ensured that any change in the controlling equity of the Bidding Company requires prior approval of SNO.
- 3.1.11 Bidder including its member of the consortium can submit one bid only.
- 3.1.12 Bidder can submit price bids under EPC basis for Part-A, Part-B, and Part-C bids or a combination of the above categories. Bidder quoting under Tariff basis under Part-B or Part-C have to mandatorily quote under Part-A at least 25% of their quoted capacity under Part-B and Part-C. Otherwise such bids shall be treated as non responsive. Bidders can bid for Part-A alone also. The bidder can quote for a single region or for multiple regions under Tariff basis Part-A/Part-B.
- 3.1.13 Any activity or decision effecting the controlling equity (ownership in case of entities other than companies) of organization participating in the tender (either as a single entity or as a member in the consortium) using the eligibility criteria of a Parent Company or an Affiliate requires prior approval of SNO. The Bidder (in case of a consortium each member of the consortium and the consortium separately) should submit an undertaking as specified in Annexure-16.
- 3.1.14 The companies whose directors are disqualified under any of the provisions of the companies Act 2013 in the last three years immediately preceding the date of submission of bid will not be entitled to participate in the tender either as a single company nor as a member in the consortium. The Bidder (in case of a consortium each member of the consortium and the consortium separately) should submit an undertaking as specified in Annexure-16.
- 3.1.15 The bidder should not be an entity punished for committing an act of fraud and none of its directors (in case of a company)/Partners/Owners should have been punished for committing an act of fraud in the last three financial years immediately preceding the current financial year. The Bidder (in case of a consortium each member of the consortium and the consortium separately) should submit an undertaking as specified in Annexure-16.
- 3.1.16 The Bidder (in case of consortium lead member of the consortium) should provide a solvency certificate to the tune of Rs.2.65 Cr/MWp from a Scheduled Bank in the proforma attached-Annexure-17. The Solvency certificate shall be within 6 months prior to tender date.

3.2 USE OF TECHNICAL AND /OR FINANCIAL STRENGTH OF PARENTCOMPANY

3.2.1 Bidder can however use the technical and financial strength of its Parent Company or Affiliate to fulfil the Technical and/or Financial Eligibility criteria as specified in this bid(subject to clause 3.1). Members of consortium can also use the credentials of the parent company or Affiliate to fulfill the eligibility requirement. In such cases any activity or decision effecting the controlling equity (ownership in case of entities other than companies) of parent company or the affiliate in the bidding company or bidder, requires prior approval of SNO. The Bidder (in case of a consortium each member of the consortium and the consortium separately) should submit an undertaking as specified in Annexure-16. The Entity whose Technical or Financial Criteria is being used should submit an undertaking as specified in Annexure-10.

3.2.2 In above case, Bidders shall submit an Undertaking from the Parent Company of relationship of Parent Company or Affiliate with the Bidding Company as per as per Annexure-10. Company Secretary Certificate towards shareholding pattern of the Parent Company and the bidder along with a Board resolution from the Parent Company shall also be submitted.

3.3 ELIGIBILITY CRITERIA (common for EPC and Tariff bids)

3.3.1 GENERAL

'Bidder' should be a Company/Limited Liability Partnership (LLP) firm/Partnership Firm/ Proprietorship firm in any form submitting the Bid. Any reference to the Bidder includes its successors, executors and permitted assignee.

The Bidder should be a body corporate incorporated in India under the Companies Act, 1956 or 2013 including any amendment thereto or a Partnership Firm having executed partnership deed and registered as per sections 58 & 59 of the Partnership Act, 1932, as amended or a Limited Liability Partnership Firm (LLP) registered under section 12 of Limited Liability Partnership Act, 2008, as amended or Proprietorship firm. A copy of certificate of incorporation, partnership deed or LLP/ Sole Proprietor registration, as applicable and relevant, shall be enclosed along with Annexure-5.

3.3.2 TECHNICAL ELIGIBILITY CRITERIA:

The Bidder should have installed & commissioned at least 5 MWp capacity of rooftop/ground mounted solar plants in India. For quoting more than minimum capacity,

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the bidder should demonstrate installing and commissioning of at least 50% of quoted capacity six months prior to non-financial bid opening date.

ANERT empanelled contractors with grading SP1A, SP1B, SP1C, SP2A, SP2B, SP2C, SP3A, SP3B, SP3C, SP4A, SP4B, SP4C, SP5A and SP5B shall be eligible for participating in the tender. Eligibility criteria for ANERT empanelled solar PV developers with the above grading quoting for minimum capacity under Part-A($\leq 10\text{kWp}$) alone is relaxed as 0.5MWp instead of 5MWp. For quoting more than minimum capacity and for participating in Part-B and Part-C, the ANERT empanelled solar PV developers should demonstrate installing and commissioning of at least 50% of quoted capacity six months prior to non-financial bid opening date.

The above capacities can be either from ground mounted/roof top or both. Further, for becoming eligible for participating in the bid, the bidder shall have installed minimum rooftop capacity as specified below:

Quoted Capacity	Eligibility criteria
<100kWp	Shall have commissioned grid connected roof top solar plant with aggregate capacity of 0.5 MWp
$\geq 100\text{kWp}$	Shall have commissioned grid connected roof top solar plant with aggregate capacity of 1 MWp including at least one grid connected rooftop solar of $>100\text{kWp}$

The plants should have been commissioned at least six months prior to non-financial bid opening date. The list of plants commissioned at least 6 months prior to Non-Financial Bid Opening date, indicating whether the plant is grid connected, along with a copy of the Commissioning certificate and Work order / Contract /Agreement/ from the Client/Owner shall be submitted in support of Clause 3.3.2. Bidders shall not be allowed to increase their bid capacity at e-Reverse Auction greater than the technical capacity that has been demonstrated in the bid document.

The bidder shall meet the technical eligibility criteria specified in this tender for his cumulative quoted capacity under all the requisitions in which he participates. If a bidder participates under both EPC and Tariff basis, he shall meet the technical eligibility criteria for the total capacity quoted by him under EPC and Tariff Basis. Otherwise the bids shall be treated non responsive and shall be rejected.

3.3.3 FINANCIAL ELIGIBILITY CRITERIA:

The Bidder should have an Annual Turnover or Net worth as indicated below.

i. The Annual turnover of Rupees 1.5Crore per MWp for three financial years in the last 5 financial years immediately preceding the bid opening date. However, the net worth in the 3 financial years preceding the bid opening date shall be positive.

OR

ii. For companies incorporated within the last 3 financial years, the net worth shall be equal to or greater than the value calculated at rate of Rs. 0.75 Cr per MWp of capacity offered by the Bidder in its bid subject to the condition that the Bidder should at least have completed one financial year.

Note: For ANERT empanelled Solar PV developers of grading specified below and startups (quoting for <=10kWp), the above financial eligibility criteria is waived.

The bidders shall submit audited financial statements in support of their financial capability.

ANERT empanelled contractors having grading SP1A, SP1B, SP1C, SP2A, SP2B, SP2C, SP3A, SP3B, SP3C, SP4A, SP4B, SP4C, SP5A and SP5B and quoting for Part-A (<=10kWp) and for minimum capacity are exempted from meeting the financial eligibility criteria specified in the bid. ANERT empanelled contractors have to furnish the grading certificate of ANERT along with the non-financial bid.

Startups have to submit following documents.

- a. GST Registration Certificate
- b. Recognition Certificate from the Department of Industrial Policy and Promotion (DIPP) in case of Entities availing benefits of Start Ups
- c. Audited Financial Statements from the date of incorporation till the last financial year immediately preceding the bid submission date by more than 6 months
- d. In case of entities availing the benefits of start-ups documents proving the existence and carrying out of business should be uploaded (eg; tenders submitted during previous years, contracts entered with parties etc)

Following Certificates shall also be submitted by the entities whose financial eligibility criteria is waived

- a. Certificate from a Company Secretary in Practice or Chartered Accountant in practice with regard to the following
 - o It is not formed by splitting up or reconstruction of a business already in existence (amalgamation, merger, take over etc) and not formed as a successor of any entity
 - o It is not a Dormant Company under Companies Act 2013

- It has been Carrying out business (of supply and installation of Solar PV Power plants) since the date of incorporation or registration

The Computation of Net worth shall be based on unconsolidated audited annual accounts of the last financial year immediately preceding the bid submission date by 6 months.

The formula of calculation of net-worth shall be as follows:

Net-worth = (Paid up share capital) + {(Free reserves - Share premium) + Share premium of listed companies} - (Revaluation of reserves)-(Intangible assets) - (Miscellaneous expenditure to the extent not written off and carry forward losses).

For the purposes of meeting financial requirements, only unconsolidated audited annual accounts shall be used. However, audited consolidated annual accounts of the Bidder may be used for the purpose of financial requirements provided, the Bidder has at least fifty one percent (51%) equity in each company whose accounts are merged in the audited consolidated accounts and provided further that the financial capability of such companies (of which accounts are being merged in the consolidated accounts) shall not be considered again for the purpose of evaluation of the Bid.

Bidders shall furnish documentary evidence duly certified by Authorized Signatory and the Statutory Auditor / Practicing Chartered Accountant of the Bidding Company in support of their financial capability.

Bidders shall not be allowed to increase their capacity at e-Reverse Auction Stage greater than for which Financial Capacity has been demonstrated.

The bidder shall meet the financial eligibility criteria specified in this tender for the cumulative quoted capacity under all the requisitions in which he participates. If a bidder participates under both EPC and Tariff basis, he shall meet the financial eligibility criteria for the total capacity quoted by him under EPC and Tariff Basis. Otherwise the bids shall be treated non responsive and shall be rejected.

3.4 INCORPORATION OF A PROJECT COMPANY

3.4.1 In case the Bidder wishes to incorporate a Project Company, in such a case, Bidder if selected as a Successful Bidder can incorporate a Project Company. Bidder shall be responsible to get all clearance required/obtained in the name of the Bidding Company transferred in the name of the project Company.

3.4.2 The following lock-in period will be applicable to the Selected Bidder:

(i) If the Selected Bidder is a consortium of members and the Selected Bidder has incorporated a special purpose vehicle, then the members of the consortium whose technical and the financial qualification were used to meet the technical and financial requirements in the Tender Documents will jointly hold at least 51% of the equity share, and Lead Consortium Member (i.e., the Consortium Member meeting the financial qualifications will be the Lead Consortium Member) should hold at least 26% of the equity share, and Consortium Member with technical qualifications will hold at least 5% of the equity share, commencing on the incorporate of the bidder for a period of two (2) years from the last Commercial Operation Date achieved under the agreement.

(ii) If the Selected Bidder is a person and the Selected Bidder has incorporated a special purpose vehicle, then the Selected Bidder will hold at least 51% of the equity share, commencing on the incorporate of the bidder for a period of two (2) years from the last Commercial Operation Date achieved under the agreement.

3.5 BID SUBMISSION

3.5.1 Intending bidders should submit their bids **only through online mode** to the website www.mstcecommerce.com on or before the time and date specified in the Notice Inviting Tender. The information and/or documents shall be submitted by the Bidder as per the formats specified in part 7 of this document.

3.5.2 Formation of consortium by bidders is permitted, in which case the consortium shall identify a lead member, which shall be the contact point for all correspondences during the bidding process. The bidder shall meet the technical and financial criteria, and lock in requirements as stipulated in clause 3.4 for the lead member of the consortium

3.5.3 Every bid shall be accompanied by EMD as per clause 4.19. Bids not accompanied by sufficient EMD will be rejected. The EMD shall be remitted as unconditional irrevocable BG. The EMD of the unsuccessful bidders will be returned as soon as possible after publishing the list of empanelled contractors. EMD shall be non- interest bearing. The EMD of successful bidder will be refunded/adjusted on request from the contractor during execution of contract agreement.

3.5.4 A Letter of Application, the form of which is given in Annexure 1, shall accompany the Bid. The Bidder shall furnish documentary evidence, in support of meeting eligibility criteria as

indicated in Clause no. 3.3 to the satisfaction of SNO and shall also furnish unconsolidated/consolidated audited annual accounts in support of meeting financial requirement, which shall consist of balance sheet, profit and loss account, profit appropriation account, auditors report, etc., as the case may be of Bidding Company or Financially Evaluated Entity for any of the last three(3) financial years immediately preceding the Due date which are used by the bidder for the purpose of calculation of Annual Turnover or of last Financial Year in case of Net Worth.

- 3.5.5 In case the annual accounts for the latest financial year are not audited and therefore the bidder cannot make it available, the applicant shall give certificate to this effect from their directors. In such a case, the Applicant shall provide the Audited Annual Reports for the preceding year or from the date of incorporation if incorporated within less than 3 years.
- 3.5.6 The bidder should designate one person to represent the bidder in its dealings with SNO. The person should be authorized to perform all tasks including, but not limited to providing information, responding to enquires, signing of bid etc. The Bidder should submit, along with bid, a Power of Attorney in original (Annexure-6), authorizing the signatory of the Bid. The bidders shall submit separate Non-Financial and Financial bids.
- 3.5.7 Strict adherence to the formats wherever specified, is required. Wherever, information has been sought in specified formats, the Bidder shall refrain from referring to brochures /pamphlets. Non-adherence to formats and / or submission of incomplete information may be a ground for declaring the Bid as nonresponsive.
- 3.5.8 Each format has to be duly signed and stamped by the authorized signatory of the Bidder.
- 3.5.9 The bidders shall submit the Bid with agreement in the format given in Annexure 2 of this document, duly signed and attested by two witnesses, in Kerala Government Stamp Paper worth Rs.200/-. The bid agreement and BG (EMD) in original shall be sent by Registered post or Speed post or by Courier or by messenger in sealed cover to reach the address specified under clause 2.5, before the opening of the bid. The Cover containing the documents shall be superscribed with the words "Bid agreement and EMD for bid No **“STATE NODAL OFFICER’, ‘SOURA’ PROJECT, KSEB LTD./SOURA 200MWp/2019-20”**". The Bid agreement& BG shall be submitted in sealed super scribed cover. Bids of those bidders who fail to submit the aforesaid originals (hard copies) within the time mentioned in NIT will not be considered. Bids without agreement/BG or not in proper form will be rejected.

3.5.10 SNO reserves the right to reject any bid, which does not comply with the above conditions.

3.6 Signing of Bid Document

The bid including all uploaded documents shall be digitally signed by the bidder / duly authorized representative of the bidder to participate in the bid process. Bidder is responsible for ensuring the validity of digital signature and its proper usage by their employee. The bidder shall sign the bids wherever required. If the bidder is a Joint Venture undertaking, all the parties need not sign, provided that a joint venture agreement and power of attorney for the person to sign is submitted along with the bid. Bid by a Partnership Firm shall contain the full names of all partners. Bid shall be signed in the name of the Partnership Firm by one of the members of the partnership authorized for the purpose or by an authorized representative followed by the name and designation of the person signing. Bids by Corporations shall be signed with the legal name of the Corporation followed by the name, signature and designation of the President, Secretary or other person authorized to bind it in the matter.

The copy of the constitution of Firm/Partnership with the name of partners duly attested by a registered notary public and the instrument authorizing the persons to sign on behalf of the Firm shall be furnished.

3.7 CLARIFICATIONS AND PRE-BID MEETING

3.7.1 The SNO will not enter into any correspondence with the Bidders, except to furnish clarifications on tender Documents, if necessary. The Bidders may seek clarifications or suggest amendments to tender documents in writing, through a letter or by e-mail to reach the SNO at the address, date and time mentioned in NIT. The envelopes/communication shall clearly bear the following identification title:

“Queries/Request for additional Information: ‘STATE NODAL OFFICER’, ‘SOURA’ PROJECT, KSEB LTD./SOURA 200MWp/2019-20”.

3.7.2 The Bidder(s) or their authorized representative(s) is /are invited to attend pre-bid meeting(s), which will take place on date(s) as specified in NIT, or any such other date as notified by SNO.

3.7.3 The purpose of the pre-bid meeting will be to clarify any issues regarding the tender including in particular, issues raised in writing and submitted by the Bidders. The questions

raised and responses given by the SNO as Minutes of Meeting will be published in the website. Any corrigendum /modifications based on the queries/clarifications will be released within 5 days before the last date of submission of bid and will form part of the Bid document. No official clarification will be issued based on further queries raised after the pre-bid meeting

- 3.7.4 The SNO is not under any obligation to entertain/respond to suggestions made or to incorporate modifications sought.

3.8 AMENDMENTS TO TENDER DOCUMENTS

- 3.8.1 At any time prior to the due date for submission of Bids, the SNO may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the tender document by issuing clarification(s)and/or amendment(s).
- 3.8.2 The clarification(s) / amendment(s) (if any) may be notified in www.kseb.in, www.sourakseb.in, www.mstcecommerce.com ,website at least two (2) days before the proposed date of submission of the bid. If any amendment is required to be notified after this date, the due date may be extended for a suitable period.
- 3.8.3 The Bid shall be furnished taking into account the corrigendum or amendments, if any, issued as mentioned above and any failure in doing so will lead to consequences including rejection of bid for which SNO will not be responsible.
- 3.8.4 The SNO will not be responsible or liable of non-receipt of the information regarding amendments in time or otherwise. Bidders must check the website for any such amendment before submitting their Bid.
- 3.8.5 All the notices related to this Bid which are required to be published shall be uploaded on website www.kseb.in, www.sourakseb.in, www.mstcecommerce.com.
- 3.8.6 Notwithstanding anything stated above, the SNO reserves the right to verify the authenticity of the documents submitted for meeting the Qualification Requirements and may request for any additional information / documents. SNO reserves the right at its sole discretion to contact the Bidder's bank, lenders, financing institutions and any other

persons as necessary to verify the Bidder's information/documents for the purpose of qualification.

**Part 4
GENERAL BID CONDITIONS**

4.1 BID FORMATS

The bid in response to this document shall be submitted by the bidders in the manner provided under 'Method of online submission'. All the volumes of bid documents shall be submitted in three parts, in their designated online covers in electronic format. Bids shall be accepted only through online mode in the website and no manual submission shall be entertained.

Techno Commercial Bid (Non-Financial bid)

(A) Cover 1 – comprising:

- 1 Covering Letter indicating the capacity quoted for each region as per Annexure-1.
- 2 Details of tender cost remitted online as per the capacity under the bid.
- 3 Bid Agreement as per the format in Annexure-2 for the offered capacity in a separate envelope as per clause 4.19
- 4 BG for EMD as per format in Annexure-3.
- 5 Checklist for bank guarantee submission requirements as per Annexure-4.

Note: - The Scanned copy of the above documents shall be uploaded as a single pdf document in Cover-1 of the Bidding documents.

(B) Cover II – comprising:

- (i) General particulars of the bidder as per Annexure-5.
- (ii) In case of a Bidding Consortium, a Power of Attorney in favor of the Lead Member issued by the other Members of the Consortium shall be provided in original as per Annexure-6.
- (iii) In the event any Member of the Bidding Consortium is a foreign entity, it may submit Board Resolutions in place of Power of Attorney for the purpose of fulfilling the requirements under the tender, provided that such Board Resolutions shall be supported by an unqualified opinion issued by the legal counsel of such foreign entity stating that the Board Resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing Company and the authorizations granted therein are true and valid.

- (iv) Board Resolutions, duly certified by the Company Secretary or the Director of the relevant Bidder, as applicable to the Bidder and mentioned hereunder:
 - a. Board resolution from the Bidding Company or the Lead Member of the Consortium, as the case may be, in favor of the person signing the Bid;
 - b. Board resolution from each of the Consortium Members except the Lead Member in favor of the person authorized to execute the Power of Attorney in favor of the Lead Member.
 - c. Board Resolution from the Bidding Company committing one hundred percent (100%) of the equity requirement for the work / Board Resolutions from each of the Consortium Members together in aggregate committing to one hundred percent (100%) of equity requirement for the work (in case of Bidding Consortium); and
 - d. Board Resolutions from Parent and /or Affiliate (whose credentials have been used), of the Bidding Company / any Member of the Bidding Consortium, undertaking to invest the entire amount as committed by Bidding Company / Member of the Bidding Consortium, in event of failure of the same to make such investment.
- (v) In case of a Consortium, the Consortium Agreement between the Members in the Consortium as per Annexure-7 along with board resolution from each Member of the Consortium for participating in consortium;
- (vi) Format for Qualification Requirements as per Annexure-8 (Net Worth/Annual turn over Qualification, technical qualification).
- (vii) A disclosure statement as per Annexure-9 regarding participation of any related companies in this bidding process;
- (viii) 'No-deviation Certificate' as per Annexure-15 shall contain the no-deviation certificate;
- (ix) Details of offered equipment/materials including technical specifications and filled up data sheet as per Volume-III.
- (x) 'Authorization for the DSC holder' shall contain the document authorizing the DSC holders, who digitally sign the bid documents, to sign on behalf of the bidder.
- (xi) Common undertaking by the entities participating in the tender as a single entity or as a member of the consortium as per Annexure-16.
- (xii) Solvency certificate by the entities participating in the tender as a single entity or as a member of the consortium as per Annexure-17.
- (xiii) This cover shall contain: NIT, following bid documents & Corrigenda if any DIGITALLY signed by the bidder as a token of acceptance of all the terms and conditions of this tender & tender documents.

- a. Volume I Conditions of Bid and Contract,
- b. Volume II Pre-qualification bid documents
- c. Volume III Technical Specification.
- d. Pre-qualification bid questionnaire as per Clause 1 of Volume II
- e. Scanned copy of certificates in proof of financial and technical capability and any other documents specified in Volume I, II & III shall be attached.

Bids containing deviations including technical deviations and additional conditions will be summarily rejected, provided:

1. The technical deviations are unacceptable to SNO;
2. Financial implications of the deviations are not spelt out.

The bidder shall submit GST registration Certificate also.

The bidder shall submit an attested copy of PAN certificates of bidder/ Authorized Signatory/Firm along with the bid.

(xiv) Certificates proving the technical and financial eligibility criteria as per clause 3.3 of this tender document.

(xv) Kerala registered bidders shall submit the following .

For Sole Proprietors:

- License Certificate (to carry out business) from the Local Authority.
- Certificate from the Local authority that the business is being carried out in Kerala at the specified address
- Proof of Address of registration (GST registration Certificate)

For Partnership firms:

- Registration Certificate from the Registrar of Firms
- License Certificate (to carry out business) from the Local Authority
- Certificate from the Local authority that the business is being carried out in Kerala at the specified address
- Proof of Address of registration (GST registration Certificate)

For Companies:

- Certificate of Incorporation from the Registrar of Companies
- License Certificate (to carry out business) from the Local Authority
- Certificate from the Local authority that the business is being carried out in Kerala at the specified address
- Proof of Address of registration (GST registration Certificate)

In addition to the above an undertaking shall be submitted by the entity certifying that “The entity registered in the State of Kerala, is carrying on its business in the State of Kerala and is carrying on its business in the State of Kerala.”

(C) Cover III (Online Submission Only) – Price Bid (Financial bid)

This cover should contain the “**BOQ**” -**Price bid**. The Bidder shall inter-alia take into account the following while preparing and submitting the Financial Bid as per the tender, duly signed by an authorized signatory.

For submission of bids, all interested bidders have to register online. After registration, bidders shall submit their non-financial bid and financial bid online on MSTCL portal along with online payment of tender document fees. EMD has to be submitted as unconditional irrevocable BG.

4.2 Important Notes:

- The document to be uploaded in Cover - I shall be in single .pdf format.
- The document to be uploaded in Cover - II shall be in .pdf formats.
- Financial Bid shall be entered in the online portal only.
- The size of data of a document that can be uploaded by the bidder is 4 MB. The bidder is advised to take this factor into account while scanning his documents.
- Tenders/bids shall be accepted only through online mode in the website and no manual submission shall be entertained.
- The hard copies of documents as per clause 4.7 are to be submitted subsequent to the on-line submission of the bid document.
- The bidder shall send the **signed original of the Bid Agreement** on Kerala Government Stamp Paper worth Rs.200/- (Rupees Two hundred only) in the format given in Annexure-2 to reach the Bidding Authority one hour before the date of opening of the Non-Financial Bid (Cover I& II).
- The bidder shall send a hard copy of supporting documents in respect of bidding capacity details as per the scope of work.

Note:- (Bidders are advised not to submit the Financial bid to the Tendering authority in hardcopies, submission of the same shall disqualify the bidder.)

In case of any difference in the documents uploaded with the hard copy sent, only the uploaded document shall prevail, and it shall only be considered for evaluation.

- 4.3 It may be noted that Non-Financial Bid (Cover I & II) shall not contain any Information / document relating to Financial Bid. If Non-Financial Bid contains any such information /

documents, SNO shall not be responsible for premature opening of the Financial Bid leading to disqualification of the Bidder.

- 4.4 All pages of the Bid, except for the EMD and any other document executed on non-judicial stamp paper, forming part of the Bid and corrections duly Marked RED and counter signed in the Bid, if any, must be digitally signed by the authorized signatory on behalf of the Bidder. **It is clarified that the same authorized signatory shall sign on all pages of the Bid.**
- 4.5 No change or supplementary information to a Bid will be accepted after the Bid Due date, unless the same is requested by SNO. **Provided that a Bidder shall always have the right to withdraw or modify the Bid before the Bid Due date.**
- 4.6 If the respective covers I & II (Non-Financial Bid) or Cover III (Financial Bid) is not uploaded as per the specified requirement, SNO has no responsibility for this.

4.7 Submission of Hard Copies

The Envelope shall contain

- i. Details of Tender cost remitted online,
- ii. Original BG for EMD
- iii. Bid Agreement (Annexure-2)
- iv. Originals of all Agreements in stamp paper worth Rs.200/- (Joint Venture, Consortium, Power of Attorney, Lead Bidder Authorization etc.) .

The hard copy shall be submitted to the SNO after the last date of online bid submission, but on or before the date of opening of the Non-financial bid in sealed cover clearly superscribing the contents including the tender number.

Failure in submission of the above documents may lead to the rejection of the tender. Price should not be mentioned in any other documents or anywhere else other than in online BOQ.

4.8 BID DUE DATE

The bids shall be submitted within the timelines specified in the NIT.

4.9 OPENING OF BID

The bids will be opened on the date & time stipulated in the NIT.

The **Cover 1** containing Bid agreement and original BG will be opened first and verified. Cash remittance through e-Procurement system will also be verified in the e-tendering

portal while opening of bid. It will be the responsibility of the bidder to confirm and ensure that the response made towards tender cost and EMD in e-tendering portal are valid and confirmation is reflected in the e-procurement system

The '**Cover 2**' containing the Pre-Qualification Bid documents will be opened as per the bidding schedule by the bidding authority or his authorized representative **If the bidder fails to remit the tender cost & EMD and enclose the Bid agreement (in original) as per annexure-2, his Bid will be summarily rejected.**

The '**Cover 3**' containing the Price Bid will be opened by the bidding authority or his authorized representative as per the timelines specified in the NIT.

Any Bid which does not conform to all the terms, conditions or specifications of bid documents or not substantially responsive and genuine will be rejected.

4.10 BIDDING SCHEDULE

The tentative schedule of key activities of the bidding process is same as given in the Notice inviting Tender. If any day specified in the schedule falls on a holiday for the SNO, the next working day of the SNO shall be considered. Normal working hours of SNO is 10.00 am to 5.00 pm. SNO reserves the right to make necessary modifications extending the dates in the tentative schedule above, as situations warrant.

4.11 BID PRICES

4.11.1 EPC Basis: For quoting under EPC basis, the Bidder shall upload their EPC cost in Rs/kWp which shall be an all-inclusive price on a "single responsibility" basis covering all the obligations mentioned in the Bidding Documents in respect of design, engineering, manufacturing, supply, handling, storage, civil works, erection, testing & commissioning of the plant as per the scope of this tender including Warranty, taxes, duties, insurance and Operation & Maintenance for a period of 2 years from CoD. The EPC prices for Part-A, Part-B and Part-C have to be quoted separately as prescribed in BOQ of this tender. The minimum and maximum capacity that can be quoted are specified under the scope of work under clause 2.2.1. The bidders shall submit a split up of the total prices including necessary taxes in the price bid in the manner and specified format while submitting bid on EPC basis. The bid price shall be upto 2 decimal places only.

The bidder shall quote separately the annual O&M charges for the 1st and 2nd year from CoD of the plant as prescribed in BOQ of this tender. The annual O&M charge for the first year after CoD shall not be lower than 1.5% of the EPC cost excluding O&M and for the second year shall not be lower than the first year O&M with escalation rate of 5.72%. Bids with

annual O&M charges below the specified shall be rejected. The EPC Contractors may avail other fiscal benefits available for reducing the quoted price.

The bidder shall also quote separately the annual O&M charges from 3rd year to 25th year from CoD of the plant as prescribed in the format under Annexure – 19 of this tender as hard copy only. The O&M quote for these years will not be considered for bid evaluation.

The Contractor shall be eligible for any additional payment due to increase in the rates of taxes and duties enforced by Government after the date of submission of bid and amount shall be recovered from the Contractor due to any such decrease of taxes and duties. No escalation is allowed on the rates.

4.11.2 Tariff basis: The Bidder shall upload the tariff in Rs/kwh which shall be an all-inclusive tariff on a “single responsibility” basis covering all the obligations mentioned in the Bidding Documents in respect of design, engineering, manufacturing, supply, handling, storage, civil works, erection, testing & commissioning of the plant as per the scope of this tender including Warranty, taxes, duties, insurance, supply of power and Operation & Maintenance for a period of 25 years from CoD. The bidder shall quote the tariff, for each requisition separately and shall specify the same in its Financial Bid as prescribed in BOQ of this tender. The minimum and maximum bid capacity shall be as specified under scope of work under clause 2.2.1.

The quoted tariff, shall be an all-inclusive firm rate up to the metering Point and no exclusions shall be allowed. The Bidder shall take into account all costs as per the scope of the work under this tender document, statutory taxes, levies, duties while quoting such rate. Availability of the inputs necessary for commissioning/supply of power as the case may be ensured by the bidder and all costs involved in procuring the inputs (including statutory taxes, duties, levies thereof) at the plant location must be reflected in the quoted Tariff. The quoted tariff shall be upto 2 decimal places only. No additional payment due to tax variation is allowed over the quoted rate.

4.11.3 Taxes & Duties payable under EPC and Tariff basis: All Taxes, Duties etc as applicable and Recoveries and other levies payable by the Contractor/developer under the contract/PPA unless otherwise specified elsewhere in this document shall be included in the rates and prices and total bid price submitted by the bidder. The prices shall also include customs duties and any other duty applicable in case the contract includes usage of imported items. The taxes due/collected by the Contractor shall be remitted to the Government in compliance with the existing law of the land. If it is found at a later stage that the collected taxes have not been remitted, SNO will be at discretion to recover the said amount from the contractor.

In case of EPC contract, the bidders should quote all-inclusive prices with basic price and GST separately (All-inclusive price should be less than ceiling limit) and in case of Tariff basis the rate quoted by the bidder should be inclusive of all taxes prevailing at the time of submission of bid. The price has to be quoted after considering the current market rate (future expectations in case of Tariff) and after passing on the benefit of Input Tax Credit, as per section 171 of the CGST Act 2017.

Only GST registered persons are eligible to participate in the tender.

In case of EPC Contract, the detailed Breakup of the materials involved (Basic price and Taxes) and Services provided (Basic Price and Taxes) should be submitted by the empanelled successful bidder at the time of entering into the agreement with the SNO.

In case of Tariff basis, the detailed Breakup of the materials considered in the final price bid (Basic price and Taxes) and Services provided (Basic Price and Taxes) should be submitted by the empanelled bidder at the time of entering into the agreement with the SNO.

The conditions stated in the immediately following Paragraph will be applicable in case of an EPC contract.

If there is a difference in the Tax rates/Proportion of tax to basic price quoted by each bidder for the same item, the tender will be evaluated on the basis of all-inclusive price (Basic price Plus Taxes). If the Tax rates/Proportion of tax to basic price quoted by the selected bidder/(s) is more than the rate approved by the GST council , the bidder will have to raise invoice based on the prevailing GST rates approved by the council (keeping the Basic rate as the quoted amount) and if the Tax rates/Proportion of tax to basic price quoted by the selected bidder/(s) is Less than the rate approved by the GST council it will be assumed that the all-inclusive amount is inclusive of the taxes at the actual rates approved by the GST council and the bidder will have to raise the invoice based on the actual rates approved by the GST council (within the all-inclusive rate quoted).

4.11.4 Additional work: The EPC Contractor/developer shall be eligible for additional payment for the additional works, if any, required to be carried out at any location due to site peculiarities/difficulties which are not foreseen and which are necessary for completing the installation, with prior approval of the procurer.

Schedule of rates for additional works: (due to the requirement of special design): The Rates of additional electrical work within the premises will be decided at par rates of Delhi Schedule Of Rates (DSR), for Electrical works, Central Public Works Department , amended from time to time; The rates of additional civil work shall be as per at par the rates of Delhi Schedule Of Rates (DSR) for building works, Central Public Works Department, amended from time to time;

4.11.5 The Contractor/developer shall take care of all his men, machinery, finished work and ensure sufficient protection of work site from flood, fire, earthquake, slip and similar other natural calamities. In such an event, the Contractor/developer shall make his own arrangement for the rectification of damage or loss at his own cost and no compensation shall be paid by the SNO on whatsoever reasons on any account.

4.12 CURRENCIES OF BID

The currency for the bid is Indian Rupee only.

4.13 The Bidder should note that:

- a. If any Bidder conceals any material information or makes a wrong statement or misrepresents facts or makes a misleading statement in its Bid, in any manner whatsoever in order to create circumstances for the acceptance of its Bid, the SNO reserves the right to reject such Bid or cancel the Letter of Award, if issued. If such event is discovered after the Effective Date, consequences specified in the Contract /Power Purchase Agreement shall apply.
- b. If for any reason the Bid of any Successful Bidder is rejected, or letter of award issued to such Successful Bidder is cancelled, SNO may:
 - (i) Consider the next lowest Financial Bid from other than the Successful Bidder(s) whose Bids are responsive and valid; or
 - (ii) Annul the bid process; or
 - (iii) Take any such measure as may be deemed fit in the sole discretion of SNO, as applicable.
- c. Bid document submitted by the Bidders, within the due date, shall become the property of SNO and shall not be returned to the Bidders;
- d. Language of the Bid shall be English only;
- e. Bidders shall mention the name of the contact person and complete address of the Bidder in the covering letter as per Format.
- f. SNO may, at its sole discretion, ask for additional information/ document and/ or seek clarifications from a Bidder after the due date, inter alia, for the purposes of removal of inconsistencies or infirmities in its Bid. However, no change in the substance of the Plant Cost/Quoted Tariff shall be sought or permitted by SNO.
- g. Non-submission and / or submission of incomplete data / information required under the provisions of the tender shall not be construed as waiver on the part of SNO of the obligation of the Bidders to furnish the said data /information.
- h. SNO may verify the Bidder's financial data by checking with the Bidder's lenders / bankers / financing institutions / any other person as necessary.

- i. The Bidders shall satisfy themselves, on downloading the tender, that the tender is complete in all respects. Any discrepancy shall be intimated to SNO at the address provided in the NIT.
 - j. Each Bidder should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in this tender and obtain independent advice from appropriate sources.
- The identification of the plants at time of bidding is not mandatory.

4.14 Bidder to inform itself fully

The Bidder shall make independent enquiry and satisfy itself with respect to all the required information, inputs, conditions, circumstances, and factors that may have any effect on its Bid. Once the Bidder has submitted the Bid, the Bidder shall be deemed to have examined the laws and regulations in force in India, the grid conditions, and fixed its price taking into account all such relevant conditions and also the risks, contingencies and other circumstances which may influence or affect the supply of power. Accordingly, the Bidder acknowledges that, on being selected as Successful Bidder, it shall not be relieved from any of its obligations under the tender documents nor shall be entitled to any extension of time for commencement of supply or financial compensation for any reason whatsoever.

The technical requirements of integrated grid operation are specified in the State Grid Code. The Bidders should particularly acquaint themselves with the requirements of connection conditions, operating code for state grid, scheduling and dispatch code etc. The Bidders are also advised to fully familiarize themselves with the real time grid conditions in Kerala, India. Regarding the interconnection norms, the CEA regulations and CERC regulations shall prevail where there is no specific provisions in the KSERC regulations.

In their own interest, the Bidders are requested to familiarize themselves with the Electricity Act, 2003, the Income Tax Act 1961, the Companies Act, 2013, CGST Act, 2017, the Customs Act, the Foreign Exchange Management Act 1999, IEGC, the Environment Protection Act 1986 and Forest (Conservation) Act 1980, the Land Acquisition Act 1984, the regulations framed by regulatory commissions and all other related acts, laws, rules and regulations prevalent in Kerala and India, as amended from time to time. SNO shall not entertain any request for clarifications from the Bidders regarding the same. Non-awareness of these laws or such information shall not be a reason for the Bidder to request for extension in Bid Due date. The Bidder undertakes and agrees that, before submission of its Bid; all such factors as generally stated above, have been fully investigated and considered while submitting the Bid.

The Bidder shall familiarize itself with the procedures and time frames required to obtain all Consents, Clearances and Permits required for the supply of power to SNO. SNO shall facilitate obtaining Consents, Clearances and Permits required for setting up of the generation facilities and/ or supply of power.

4.15 Validity of the Bid

4.15.1 The Bidder shall submit the Bid, which shall remain valid up to 6 months from the opening of financial bid (“**Bid Validity**”). The SNO reserves the right to reject any Bid, which does not meet the aforementioned validity requirement.

4.15.1 SNO may solicit the Bidders’ consent for an extension of the period of validity of the Bid. The request and the response in this regard shall be in writing. In the event any Bidder refuses to extend its Bid validity as requested by the SNO, the SNO shall not be entitled to invoke the EMD. A Bidder accepting the SNO’s request for validity extension shall not be permitted to modify its bid and such Bidder shall, accordingly, extend the validity of the EMD as requested by the SNO.

4.16 COST OF BIDDING

All costs involved in the preparation and submission of Bid shall be borne by the Bidder. The SNO will in no case be responsible or liable for any loss to the bidders in this regard. This is applicable in the case of extension or annulment of bidding also.

4.17 LAW OF BID

The laws of India and Kerala will govern this Bid. Any dispute arising out of this bid will be subject to the exclusive jurisdiction of Civil Courts at Thiruvananthapuram.

4.18 Tender Cost

The bidders should remit non-refundable tender cost of Rs. 17,700/- to the account number given in the remittance form provided by the e-procurement system for this particular tender. Only INTERNET BANKING remittance is allowed for tender cost. No other mode of payment is allowed.

Bidders are required to avail Internet Banking Facility for making tender cost remittances in e-Procurement system.

4.19 Submission of Earnest Money Deposit

- 4.19.1 Bidder should ensure EMD of Rs. 100/- (Rupees Hundred) per kWp subject to maximum of Rs.2 Crore in the form of unconditional irrevocable Bank Guarantee (BG) from a scheduled bank in favor of "STATE NODAL OFFICER, Special Purpose Vehicle", payable at Thiruvananthapuram in the format prescribed in this document. The bidders quoting under EPC basis and tariff basis shall submit separate EMD for the quoted capacity under both type of bids. However, the maximum EMD amount shall be Rs.2 Crore only.
- 4.19.2 The initial validity of EMD shall be for a period of 6 months from the financial bid opening. The Bidders shall extend the validity of Earnest Money Deposit on request of the Tendering Authority for a further period of Six Months (6Months) for the fruitful completion of the bidding Process. The EMD of unsuccessful bidders shall be returned within 30 days from the date of execution Contract Agreement/PPA with successful bidders. The EMD shall be denominated in Indian Rupees.

Bidders submitting EMD less than that required amount for the tendered capacity shall not be considered.

Note: MSMEs shall be exempted from EMD remittance as per the applicable Government Order. However, the entities concerned should produce the relevant exemption certificates to prove their eligibility in the absence of which the tender is bound to be rejected. No exemption shall be available for the bidders from submitting EMD irrespective of Company / Corporate / Public Sector / Government Undertaking.

- 4.19.3 The EMD may be invoked by the SNO, without any notice, demur, or any other legal process upon occurrence of any of the following:
- (i) In case the Successful Bidder is a Bidding Company choosing to incorporate a project Company and in case of a Bidding Consortium: "Failure to incorporate the project Company as a legal entity within fifteen (15) days of issue of Letter of Award, or,"]
 - (ii) Failure to furnish the Performance Bank Guarantee as per tender as per tender within the timelines specified; or
 - (iii) Failure to execute the Contract /Power Purchase Agreement as per tender within the timelines specified; or
 - (iv) Failure to furnish the documents subject to the provisions of Clause of tender; or
 - (v) Bidder submitting any wrong information or making any misrepresentation in Bid as mentioned in tender.
 - (vi) A Bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice .

- (vii) a Bidder withdraws its Bid during the period of Bid validity as specified in this tender and as extended by mutual consent of the respective Bidder(s) and SNO.
 - (viii) the Selected Bidder fails within the specified time limit to sign and return the duplicate copy of LOA;
- 4.19.4 The EMDs of all Bidders, who's Bids are declared non-responsive, shall be returned and released by the SNO within thirty (30) days.
- 4.19.5 The EMD of all unsuccessful Bidders shall be returned and released by SNO on occurrence of the following:
- a) Submission of the Performance Bank Guarantee of the tender and the execution of the Contract Agreement/PPA as per tender Documents (as applicable) by the Successful Bidder(s); or
 - b) Expiry of the Bid Validity/extended validity of Bid of unsuccessful Bidders.
- 4.19.6 The EMDs of all Bidders shall be returned and released by SNO within a period of thirty (30) days of the occurrence of the termination/cancellation of Bid process by SNO.
- 4.19.7 The EMD of the Successful Bidder(s) will be returned, without any interest upon the Successful bidder signing the Contract Agreement/PPA and furnishing the performance bank guarantee in accordance with the provision thereof. The EMD shall be returned prorata basis corresponding to the quantum of work awarded and the balance work allocation. The SNO may, at the successful Bidder's option, adjust the amount of EMD in the amount of Performance Bank guarantee to be provided by him in accordance with the provisions of the Contract Agreement/PPA.
- 4.19.8 In case where the non-financial Bids of any bidders are not found acceptable due to any reason as specified in the tender document, the bids of such bidders shall be returned unopened. In effect in e-Tenders, this shall mean return of Earnest Money Deposit (EMD), but tender cost will not be returned.

4.20 Submission of Performance Bank Guarantee.

- 4.20.1 The successful bidder within 20 days of issuance of letter of award shall submit Performance Bank Guarantee as per applicable lawas per the Performa given in this tender.

The Earnest Money Deposit submitted by the bidders shall be returned only after the execution of Performance Bank Guarantee by the Successful Bidder/s. The EMD of successful bidders shall be returned on receipt and after verification of the Performance Bank Guarantee in acceptable form.

- 4.20.2 The Successful Bidder(s) shall provide to the SNO, the Performance bank Guarantee in the format provided in the tender, for their awarded quantum, an amount proportionate to 50 Lakhs/MWp for contracts awarded through tariff basis and at a rate of 10% of the total contract value in case of contracts awarded through EPC basis.
- 4.20.3. The Performance Bank Guarantee shall be issued by a scheduled bank.
- 4.20.4 In case the Successful Bidder is unable to obtain the Contract Performance Guarantee for the total amount from any one bank specified in tender, the Successful Bidder may obtain the same from not more than two banks specified in tender.
- 4.20.5 Non-submission of the PBG by the Successful Bidder(s) as per the provisions of the tender may lead to the invocation of the EMD, cancellation of the letter of award of such Successful Bidder(s) by the SNO and thereafter proceed as provisions of this tender document.
- 4.20.6 In case any extension is given to the work, the corresponding extension needs to be made in the PBG. In the case of EPC contract, the Performance Bank Guarantee shall be initially valid for a period of 12 (Twelve) months and thereafter the bank guarantee shall be extended from the commercial operation date of the solar plant in case of EPC basis up to defect liability period. 5% of the performance bank guarantee will be released after 1ST year from CoD , 10% after 2ND year , 15% after 3rd year , 20% after 4th year and balance 50% after 5th year after demonstration of desired performance ratio (AC) as per clause 2.2.2 and considering liquidated damages, if any. In the case of tariff basis, PBG will be released after COD after taking into account any liquidated damages due to delays in commissioning beyond the date of commissioning as per this tender document.
- 4.20.7 The PBG shall be forfeited without prejudice to the Bidder being liable for any further consequential loss or damage incurred to SNO, if the Successful Bidder is not able to

commission the plants to the satisfaction of SNO. In such cases, the PBG amount, pro-rata to the capacity not commissioned by the Successful Bidder shall be forfeited.

4.20.8 In the case of contracts under Tariff basis, during the operation period, the developer shall be deemed to provide to the SNO, an irrevocable and unconditional guarantee, for a sum equivalent to the monthly bill amount payable by SNO to the Developer for generation at minimum CUF of 14% for a period of 1 (one) month in accordance with the Power Purchase Agreement.

4.21 ALTERNATE OFFERS

Alternate offers mean the offers in which the scope of work and major components are deviated. No alternate offers are allowed. The bidders should submit offers which comply with the requirements of the bid documents and indicated in the specifications and drawings, if any.

4.23 CORRECTION OF ERRORS

Bids will be checked for arithmetical errors and will be corrected by SNO as follows:
"Where there is a discrepancy between amount in figures and in words, the amount in words will govern."

4.24 MODIFICATION AND WITHDRAWAL OF BID

No modification or withdrawal of any conditions of Bid once submitted will be permitted. Such withdrawal or modification will lead to forfeiture of EMD and rejection of Bid. All bids submitted in e-Reverse Auction Stage and L1 Matching will be considered final and cannot be modified after the bid has been accepted by the system.

4.25 SNO'S RIGHT TO ACCEPT OR REJECT BID

The SNO reserves the right to reject any bid or all bids or annul the bidding process at any time prior to the award of contract without assigning any reason thereof. No liability other than giving information regarding the above to the bidders shall rest with SNO.

4.26 LAST DATE FOR SUBMISSION OF BIDS

The Bids shall be submitted online on or before the stipulated date and time specified in the Notice Inviting Tender.

The SNO reserves the right at its discretion to extend the last date of submission by an amendment to the Notice Inviting Tender. Any Bid received by the SNO after the prescribed last date of submission of bids will not be considered.

4.27 OPENING OF BIDS

Cover 1 and cover II shall be opened on the date of opening of the nonfinancial bids as specified in NIT or Date Corrigenda. Cover III of the Responsive bidders submitting the requirements as given in the tender shall only be opened on the date of opening of the financial bids as specified in NIT or Date Corrigenda. The non-responsive bids shall be summarily rejected. In the event of any of above dates falling on a day which is not a working day or which is a public holiday, the Bid shall be opened on the next working day at the same venue and time as given in the NIT. The general information from each Bid shall be read out to all the Bidders at the time of opening of Cover I & II (Non-Financial Bid).

4.28 Confidentiality

The parties undertake to hold in confidence this tender and Documents and not to disclose the terms and conditions of the transaction contemplated hereby to third parties, except:

- a) Their professional advisors;
- b) Their officers, contractors, employees, agents or representatives, financiers, who need to have access to such information for the proper performance of their activities;
- c) Disclosures required under applicable Law, without the prior written consent of the other parties of the concerned agreement provided that the Successful Bidder(s) agrees and acknowledges that SNO may at any time, disclose the terms and conditions of the tender and tender Documents to any person, to the extent stipulated under the applicable Law.

4.29 CRITERIA FOR EXAMINATION, EVALUATION AND COMPARISON OF BIDS

4.29.1 STEP-1: Responsiveness check of Non- Financial bid:

A committee for evaluation of the bids (Evaluation Committee) will be constituted by SNO, with at least seven members, including at least one member with expertise in financial matters/bid evaluation.

Before pre-qualification, SNO will examine all bids for their genuineness and responsiveness.

A **genuine Bid** shall be one which contains

- (a) Authenticated documents and data.
- (b) Legally enforceable undertaking/agreements wherever required.

A **responsive Bid**:

- (a) Shall be properly signed (digital signature) and dated.
- (b) Shall contain required EMD in the prescribed manner.
- (c) Shall satisfy to the requirements of the terms and conditions as per the Bid documents.
- (d) Shall be provided with all clarifications or substantiation that the SNO may require at any time before the award of contract.
- (e) Shall contain precisely the details and data required to be furnished under schedules.
- (f) Shall be furnished with prescribed agreements executed, Proforma filled in and declarations signed.
- (g) Shall conform to all the terms, conditions and specifications of the Bid documents without material deviation or reservation.

A material deviation or reservation is one;

- (a) Which affects in the scope, quality or performance of the works.
- (b) Which is inconsistent with the Bid documents and limits the SNO's right or the bidder's obligation under the contract.
- (c) Whose rectification would affect unfairly the competitive position of other bidders submitting substantially responsive bids.

Only the genuine and responsive Bid will be considered for further evaluation for pre-qualification.

4.29.2 STEP-2: Evaluation of bidder's fulfilment of eligibility criteria

Evaluation of bidder's eligibility will be carried out based on the information furnished by the bidder as per the prescribed formats and related documentary evidence in support of meeting the eligibility criteria as specified in clause 3.3. Non-availability of information and related documentary evidence for the satisfaction of eligibility criteria may cause the bid to be non –responsive.

The pre-qualification bids will be thoroughly evaluated for the financial capability and technical soundness of the bidders. For this, the value of work done, audited annual accounts, bankers certificate etc. will be evaluated to assess their financial capability. Nature, volume, type of works done, time of completion of works done, type of clients,

tools, plants and machinery possessed by the bidder, availability of required managerial and technical persons etc. will be evaluated to assess the technical soundness.

Evaluation of ANERT empanelled contractors: ANERT empanelled contractors quoting for ≤ 10 kWp are exempted from meeting the financial eligibility criteria specified in the bid. However, the ANERT empanelled contractors of the following grading scale shall only be eligible for participating in the financial bid. ANERT empanelled contractors have to furnish the grading certificate of ANERT along with the non-financial bid.

The agencies with grading SP1A, SP1B, SP1C, SP2A, SP2B, SP2C, SP3A, SP3B, SP3C, SP4A, SP4B, SP4C, SP5A and SP5B shall only be eligible for participating in financial bid.

Only qualified Bids in the pre-qualification shall be considered for further evaluation. There should be minimum two numbers of qualified Bidders in each requisition. SNO shall re-tender the work for the requisition if there are less than 2 qualified bidders.

4.29.3 STEP-3 :Evaluation of Price Bid

Stage-1: Initial Price Offer (IPO)

Price bid of the qualified bidders shall be opened on the date specified in the NIT online. The evaluation of price bid shall be carried out based on the information furnished in the price bid.

The price bids shall be evaluated as follows:

- a) The price bids of EPC and Tariff basis shall be evaluated separately. The price bids of each requisition shall be evaluated separately. If the bidder has quoted for all the requisitions, his bid will be considered for evaluating the price bids of all the requisitions.
- b) Price bids of those bidders who quoted under Part-B and Part-C bids under Tariff basis who have not quoted under Part-A as per the condition under clause 2.2.2 of this tender document shall be rejected.
- c) The bidder shall meet the technical and financial eligibility criteria specified in this tender for his cumulative quoted capacity under all the requisitions in which he participates. If a bidder participates under both EPC and Tariff basis, he shall meet the technical and financial eligibility criteria for the total capacity quoted by him under EPC and Tariff Basis. Otherwise the bids shall be treated non responsive and shall be rejected.

- d) The annual O&M charges for the 3rd year onwards quoted by the bidders under EPC basis is evaluated separately for deciding the requirement of O&M by the bidder for the 3rd year onwards. The O&M charges quoted by the bidder for the 3rd year onwards will be binding only if the decision on awarding O&M contract to the bidder is made by the SNO within the expiry of 2 years from CoD of the plant.
- e) Bidders quoting EPC/tariff above the ceiling rate specified in the NIT shall be rejected automatically. Bidders quoting the EPC/tariff below the ceiling rate specified in the NIT shall be eligible for e-reverse auction to be conducted within 2 hours from the time of opening of financial bid. The selected bidders eligible for participating in the e-reverse auction will be intimated through system generated e-mail within 1 hour of opening of financial bid.
- f) The Financial bid shall be rejected, if it contains any deviation from the tender conditions. No clarifications shall normally be requested from bidders at this stage.
- g) **Ranking of qualified Bidders & elimination:** The Technically Qualified Bids shall be ranked in ascending order on the basis of the respective Initial Price Offer. The Initial Price Offers which are equal shall be assigned the same rank. If total numbers of bidders are more than three, the bidder who has submitted highest bid should be eliminated, provided the bid quantum of the remaining bidders is more than twice the required quantum in that requisition. This process is carried out for bidding under each requisition. If there are more than one bidder at the highest IPO the bidder who has submitted bid last in reference to time shall be eliminated. If the total number of bidders are three all bidders should be allowed for the second stage of bidding, i.e., e-Reverse Auction.
- h) After opening of IPO, and at the end of the IPO opening time, the lowest EPC rate discovered in Rs/kWp and lowest tariff in Rs/kwh of the requisitions will be displayed in the system of the bidders who participated in the particular requisition bid.

4.29.4 Stage-2: E-reverse auction (E-RA)

In e-Reverse Auction Stage, initially the price and quantity quoted by the bidder in IPO stage along with the L-1 rate against his participated requisition in the IPO shall be displayed. However, the quantity quoted by the L-1 bidder shall not be displayed. During the e-Reverse Auction Stage, the Bidders will have the option of reducing his quoted tariff in Rs/kwh in decrements of Rs.0.01 or multiples thereof or quoted EPC cost in Rs/kWp in decrements of Rs.10 per kWp or multiples thereof. During e-RA, bidder shall have the facility to either increase the quantity in multiples of 5kWp/ decrease the EPC price /tariff or both in

reference to its own last bid subject to histechnical and financial eligibility criteria and the maximum capacity of the requisition. During the entire e-RA stage, his latest quoted RA-price and quantity shall be displayed for each requisition. Also the lowest L-1 rate at that moment in e-RA shall also be displayed. Bidders quoting under EPC basis shall ensure that while decreasing the EPC price in e-RA, O&M cost conditions for the 1st year and 2nd year specified in this tender document are met. Auto extension of closing time will be given as 10 minutes.

At the end of the e-Reverse Auction, the system will identify the Bidder who has quoted the lowest Tariff therein ("Lowest Bidder" or "**L-1 Bidder**") for each requisition.

If there are more than one L-1 bidders quoting the same tariff in Rs/kwh or EPC cost in Rs/kWp, tie breaking is based on the time of submission of the bid as recorded in the e-tender site. The bidder who has submitted the bid first will be the lowest bidder (**L-1 Bidder**) and the other bidders who have quoted the L-1 rates will be ranked based on the time of submission of bids as L-2 bidder, L-3 bidder etc. After ranking bidders who have offered L-1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.

4.29.5 Stage-3 :L-1 Matching Round

L-1 matching round is carried out separately for each requisition under EPC and tariff basis, if required. .

Under this process, all bidders other than L-1 rate bidder/(s) will be asked to match the Lowest rate in the system ("L-1 Matching"). In L-1 Matching round, the Bidders will be displayed the EPC cost/tariff of the Lowest Bidder ("L-1 bidder") and they will be required to match their offered quantum with the L-1 rate. If L-2 rate bidder/(s) matches the rate of L-1, such bidders based on their rank will be selected as the subsequent lowest bidder/(s), if L-3 rate bidder/(s) matches with L-1 rate, such bidders based on their rank will be selected as the next subsequent lowest bidders/(s) and so on until the maximum requisitioned capacity specified in the bid is reached. No variation for the quoted quantity shall be allowed for the bidders in this round.

If the entire capacity of each requisition is met by L1 bidder, normally 70% of the requisitioned quantum shall be allotted to L1 bidder. Balance capacity will be allotted to other bidders who offered L-1 rate based on their ranks as above. If the required quantum is not obtained through these bidders, SNO reserves the right to allot the entire capacity to L1 bidder.

4.29.6 Stage-4: Bucket filling

In case the requisitioned quantum is not obtained after L1 matching, the buyer reserves the right to go for **bucket filling process** for meeting the requisitioned quantum.

The bidders are ranked as per their price & time as discovered through the above process. The Bidder(s), in order of their rankings, offering the quantum of power upto the requisitioned capacity would be asked to match their rate with the L-1 rate. The bidders who match with the L-1 rate based on their rank and upto the requisitioned quantum will be selected as successful bidder (s).

It is hereby clarified that the SNO will not accept the entire capacity offered by the last matched Bidder in the order of progression, in the event the capacity required gets fulfilled by a part thereof.

4.29.7 Preference to Kerala registered bidders:

- a. SNO reserves the right to allocate 10% of the quantum under each requisition (preferred quantum) to Kerala registered bidders.
- b. If at least 10% of the bid quantum under any requisition, allocated as per the above bid process does not include allocation to bidders having registered office in Kerala, then such bidders who have participated in the bid process of that requisition based on their rank will be asked to match with the L-1 rate discovered as above.
- c. If they match, they will be allocated the preferred quantum based on their rank.
- d. As part of allocation of preferred quantum to bidders having registered office in Kerala, depending on the quantum offered by Kerala registered bidders, the last ranked among other bidders under EPC/Tariff based from where these bidders are selected will get their quantum reduced according to their rank.

4.29.8 If bidders quoted under Part-B/ Part-C/ Part-B and C combined under Tariff basis did not get allocation for their full quoted quantum under these categories in the above bid process, but selected under Part-A for the full quoted quantum, they will have the option to execute under Part-A only a quantum equal to 25% of the quantum allocated to them under Part-B or Part-C or Part-B and Part-C as applicable, provided his quoted bid rate under Part-A is at the upper ceiling rate. If such an option is exercised by the bidder, the shortfall in the requisitioned quantum under Part-A shall be met through other bidders based on their rank.

If such bidder's quoted rate under Part-A is below the ceiling rate, then he shall not be eligible for exercising the above option.

4.29.9 Based on the final price discovery and quantum, the bidders shall recalculate the split up price in the BOQ under EPC. The annual O&M conditions specified above shall be complied in the final BoQ also. A hard copy of the final BOQ shall be submitted before the SNO at the address specified in this tender document through registered post/courier, after the online bid process. The bidders selected through this process will be empanelled for execution of the work/supply of power either through EPC basis or tariff basis or both.

4.30 Evaluation of quoted O&M charge for bids based on EPC basis:

The annual O&M charges for the 3rd year onwards quoted by the bidders under EPC cost basis is evaluated separately by SNO for deciding the requirement of O&M contract by the bidder.

4.31 ACCEPTANCE OF BID AND AWARD OF CONTRACT

On final selection of the successful bidder, the SNO shall notify the same indicating the allocated capacity and the awarded EPC cost/ tariff as the case may be on the website of the SNO and shall be notified by individually through Award of Empanelment. SNO will issue letter of award to the successful bidder within 10 days of publishing empanelled list at his address given in the Bid for communication, from the agreement authority. Each successful bidder shall acknowledge the Letter of Award and return duplicate copy with signature and stamp of the authorized signatory of the successful bidder to the SNO within 7 days of issue of Letter of Award. The signed copy of which, in token of acceptance by the bidder will form part of Contract agreement/PPA. The letter of award will contain the sum, which SNO will pay to the Contractor/Developer as per the accepted bid, which is called the Contract price/PPA rate and any other conditions, terms etc, on awarding the work/Power purchase, the amount of performance security etc.

After awarding the work mentioned above, the successful bidder has to furnish the required Performance security deposit as Bank Guarantee as per clause 5.1.8 and execute the Contract agreement/Power Purchase Agreement in the Form provided in the Bid document. The same shall be done within 20 days from the date of issue Letter of Award.

If the successful bidder, to whom the Letter of Award has been issued, does not fulfil any of the conditions specified in the bid document, the SNO reserves the right to annul/cancel the award of such successful bidder and forfeit the PBG/EMD.

The SNO at its own discretion has the right to reject any or all the bids without assigning any reason whatsoever, at its sole discretion. Onus of identifying the buildings/rooftops/land and obtaining consents/clearance/permits lies with the SNO.

4.32 Increase/ Decrease of minimum and maximum capacity of the bidder

The SNO reserves the right to increase/decrease the maximum capacity of 50MWp under EPC and 150MWp under Tariff basis and minimum regional capacity of 5MWp under EPC and 5MWp under Tariff basis specified in the tender upto 25% at its sole discretion. In case capacity is modified by SNO as above, the successful bidder shall submit the equivalent amount of PBG/amended PBG to SNO within 30 days of issue of Award of Empanelment for the revised capacity.

Part 5

GENERAL CONDITIONS OF CONTRACT

5.1 GENERAL

5.1.1. Execution of agreement

Within 20 days from the date of issue of letter of Award as per clause 4.33, unless the SNO has granted extension of time for execution of agreement after judiciously considering the merit of the ground urged for the extension, the successful bidder shall furnish Performance security Deposit as per clause 5.1.8, sign and execute the Contract agreement in case of bids on EPC basis or tariff basis as prescribed in Annexure-13A or Power Purchase Agreement as prescribed in Annexure-13B respectively, with the agreement authority. The EPC agreement shall be executed on Kerala Government Stamp Paper worth of Rs.1/- for every 1000/- rupees of the agreed total contract amount or as desired by the SNO subject to a maximum of Rs.1 Lakh and minimum of Rs.200/-. Power Purchase Agreement shall be executed in stamp paper worth Rs.200/-.

Failure of the Contractor/developer to comply with the above requirements shall constitute sufficient grounds for cancellation of award of work and re-arrange the work including re-bidding at the risk and cost of the Contractor/Developer.

If due to the default of the Contractor/Developer to furnish requisite Performance Bank Guarantee, execute Contract agreement /power purchase agreement and execute the work with proper diligence, the work will be arranged otherwise by SNO after forfeiting the EMD/PBG of the concerned contractor/developer. If any loss to the SNO results due to this, the same will be recovered from the contractor/developer as if it were arrears of revenue, but should it be a saving to the SNO, the original Contractor/developer shall have no claim whatsoever be the difference. Recoveries on this or on any other account will be made from the sum that may be due to the Contractor on this or any other subsisting contracts or under the Revenue Recovery Act or otherwise as the SNO, KSEB LTD. may decide.

5.1.2. Parts of agreement and Priority for bids on EPC basis

All the Bid documents except non financial Bid of the successful bidder in original with modifications, if any, as ordered by SNO, the letter of Award, correspondence between the selected bidder and the SNO deemed necessary by the agreement authority, any

other document as called for by SNO from the selected bidder and the Contract agreement executed, approved drawings issued from time to time etc. shall form the full Contract agreement. All the documents forming part of contract document are to be taken as mutually explanatory. For the purpose of interpretation, the priority of the document shall be in accordance with the following sequence:

1. The agreement executed in Kerala Government Stamp Paper.
2. Letter of Award.
3. Correspondences between SNO and the selected bidder included in the agreement.
4. Special Conditions of Contract.
5. General Conditions of Contract.
6. Technical specifications and relevant data sheets of the component proposed and the approval for installation of the plant.
7. Accepted Schedule of Technical Particulars and installation programme/ time schedule and schematic drawing for each location.
8. Accepted Schedule of Prices
9. General Bid conditions
10. Instructions to bidders.
11. Information to bidders.
12. Drawings including approved drawing issued from time to time.

5.1.3. Parts of agreement and Priority for bids on tariff basis

All the Bid documents except non financial Bid of the successful bidder in original with modifications, if any, as ordered by SNO, the letter of award, correspondence between the selected bidder and the SNO deemed necessary by the agreement authority, any other document as called for by SNO from the selected bidder and the power purchase agreement executed etc. shall form the Power purchase agreement. All the documents forming part of contract document are to be taken as mutually explanatory. For the purpose of interpretation, the priority of the document shall be in accordance with the following sequence:

1. The power purchase agreement executed in Kerala Government Stamp Paper
2. Letter of Award.
3. Correspondences between SNO and the selected bidder included in the agreement.
4. Special Conditions of Contract.
5. General Conditions of Contract.

6. Technical specifications and relevant data sheets of the component proposed and the approval for installation in the plant.
7. Accepted Schedule of Technical Particulars and installation programme/ time schedule and schematic drawing for each location.
8. General Bid conditions
9. Instructions to bidders.
10. Information to bidders.

5.1.4. Essence of Contract

Timely completion, quickness and promptness for execution, quality and cost effectiveness for work are considered as the essence of the contract.

5.1.5. Language of Contract

The language of contract shall be 'English'.

5.1.6. Law & Jurisdiction of Contract

This contract will be governed by the laws of India and Kerala. Any dispute arising out of this contract will be subject to the exclusive jurisdiction of Civil Courts at Thiruvananthapuram or Kerala State Electricity Regulatory Commission as applicable.

5.1.7. Amount of Contract

The amount of Contract will be the amount accepted by SNO as per the letter of award. The contractor is bound to furnish information and data including the data in support of his quoted amount to SNO if called upon to do so. The percentage rate of tax as applicable shall be mentioned.

5.1.8 Performance Bank Guarantee

5.1.8.1 EPC basis:

- (i) The Contractor shall submit Performance security deposit as Bank Guarantee at the time of execution of agreement in the prescribed format (Annexure 14) for performance security of the Contract and it shall be an amount equal to 10% of the total contract value. The Bank Guarantee submitted by the contractor shall be rounded off to the higher multiple of Rs 1000/-. The amount thus worked out will be informed to the successful bidder in the Letter of Award per clause 4.33.

The Performance Bank Guarantee shall be initially valid for a period of 12 (Twelve) months and thereafter the bank guarantee under EPC basis shall be extended from the commercial operation date of the solar plant up to defect liability period. 5% of the performance bank guarantee will be released after 1ST year from CoD , 10% after 2NDyear, 15% after 3rd year , 20% after 4th year and balance 50% after 5th year after demonstration of desired performance ratio (AC) as per clause 2.2.2 and considering liquidated damaged, if any. The performance ratio (AC) (as per Clause 2.2.2) will be calculated based on data from pyranometer data. Failure of the successful bidder to submit the required Performance Guarantee shall constitute sufficient grounds for termination of Contract & forfeiting the EMD.

No interest will be paid by SNO at any stage of contract on the PBG.

The performance ratio (AC) as per Clause 2.2.2 can be checked at any time in between if deemed necessary by the authorized representative of the SNO. If any unusual degradation is noticed in the PR, the contractor shall attend and rectify the same within 48 hours on intimation. If not, the PBG will be forfeited.

5.1.8.2 Tariff basis:

The Contractor shall submit Performance security deposit as Bank Guarantee at the time of execution of agreement in the prescribed format (Annexure 14) for performance security of the Contract and it shall be an amount equal to 50 Lakhs/MWp (Proportional to the awarded quantum). The Bank Guarantee submitted by the contractor shall be rounded off to the higher multiple of Rs 1000/-. The amount thus worked out will be informed to the successful bidder in Letter of Award as per clause 4.31.

The Bank Guarantee shall be initially valid from the date of agreement for a period of 1 year and thereafter extended if required till the commissioning of the plant. The performance security B.G will be released after COD of the plant and considering the liquidated damages, if any. Failure of the successful bidder to submit the required Performance Guarantee should constitute sufficient grounds for termination of Contract & forfeiting the EMD.

The successful bidder shall, during the operation period, be deemed to provide to the procurer upon occurrence of CoD, an irrevocable and unconditional guarantee, for a sum equivalent to the monthly bill amount payable by the procurer to the Developer for generation at minimum CUF of 14% for a period of 1 (one) month in accordance with the provisions of this Agreement. The performance guarantee shall constitute the first and exclusive charge on all amounts due and payable by the procurer to the developer, and

the procurer shall be entitled to enforce the performance guarantee by making a deduction from the amounts due and payable by it to the Developer.

No interest will be paid by SNO at any stage of contract on the Performance Security.

5.1.9 Operations & Responsibilities of Contractor/Developer

Standard electric drawings for the various capacity ranges of solar PV plants shall be published by the purchaser in its website. The Contractor/developer shall consider these standard drawings for plant layout. If any deviation is required from the standard drawings at a particular location, then the Contractor/Developer shall, within fifteen (15) working days of the handing over the location, handover to SNO, modified drawings of the plant for approval ("Plant layout"). The modified drawings shall have to be approved by the SNO within 7 working days from the submission of the drawings. If SNO has any objection/'recommendation in the plant layout, he shall communicate the same to Contractor/Developer within a period of ten (10) working days of the date of submission of the Drawings. Any delay will extend the SCOD and such approval shall not be unreasonably withheld.

The Contractor shall proceed with the works with diligence, expedition, supervision and shall be carried out to the entire satisfaction of the SNO who shall have full power to order the Contractor to alter, enlarge or diminish the form, dimensions, portion or quantities of any of the works or to make use of materials and workmanship of different description and qualities from those herein specified. Works are to be properly carried out to the satisfaction of the authorized representative of the SNO.

The whole work entrusted to the Contractor shall be executed in perfect conformity with the contract documents and such explanatory and detailed drawings and directions as may be furnished from time to time by the authorized representative of the SNO for the guidance of the Contractor.

The whole work entrusted to him together with any temporary works associated shall be carried out in the most substantial and proper manner with the best materials and workmanship, and to the entire satisfaction of the authorized representative of the SNO and in such order of time as he may direct. The Contractor shall attend to and execute without delay, all orders and instructions, which may from time to time be issued by the authorized representative of the SNO. When the works or appurtenant there of affects the works or the arrangements of other units of work not covered by this specification,

working methods shall be discussed with the authorized representative of the SNO and his prior concurrence shall be obtained.

The Contractor shall submit drawings and specifications for the proposed temporary works for the approval of the Authorized representative of SNO. The Contractor is responsible for design of temporary works. The approval of the Authorized representative of SNO does not exempt the Contractor's responsibility for his design for temporary works.

Preliminary, enabling and temporary works shall generally be limited to Electrification works and water supply works to the site, Civil Engineering structures connected with the installation of plants and equipment etc at site and any other work of temporary nature carried out at site by the Contractor for the execution of the tendered items of the work as decided by the Authorized representative of SNO.

In addition to whatever provisions regarding operations, responsibilities and liabilities of the Contractor stated elsewhere in the contract, the following should also be included:

The Contract is to include the whole work, whether permanent or temporary which are described in or implied by the contract documents which may be inferred to be obviously necessary for the efficiency, stability and completion of permanent works, the performance of all other operations, supply of all materials labour and chargeable expenses and things described in or implied by the contract documents which may be deemed desirable or required for the completion in all respect of the above works to the satisfaction of the Authorized representative of SNO and all such matters shall be deemed as included in the sum quoted by the Contractor.

Works shown in the drawings and not mentioned in the specifications or described in the specifications without being shown on the drawings shall nevertheless be held to be included in this contract and their execution is to be covered by the quoted sum in the same manner as if they had been expressly shown upon the drawing and described in the specification. If the Contractor has any doubt with regard to any details mentioned in the drawings or in the specifications, he may refer the matter to the Authorized representative of SNO in writing and get the clarifications needed.

The Contractor must take upon himself the entire responsibility for sufficiency of scaffolding, timbering, machinery, tools or implements, and generally of all the resources including labour, materials etc. used for the fulfilment of this Contract. Whether such means may or may not be approved or recommended by the Authorized representative of SNO, the Contractor must accept all risks in the execution of work including risks of

accidents, or damages, from whatever cause they arise, until the completion of this Contract.

The Contractor shall carry out all works required as per the specifications in the letter of award and or as per the latest version of ISS or equivalent. He shall furnish all labour, all materials except materials supplied by the SNO, machinery, plant, equipment, and shall supply and install all equipments, test and commission and meet the cost of all expendable items and other charges including incidentals and overheads for completing the works and the cost of design and drawings, if any which he may have to make in carrying out the works.

5.2 PAYMENTS

5.2.1 EPC BASIS

- a) The Contractor has to produce bank guarantee based on 10% of the total contract value as Performance Bank Guarantee at the time of executing Contract Agreement.
- b) No amount shall be released as mobilization advance.
- c) In case of plant capacity greater than or equal to 10 kWp, 50% of the contract value excluding O&M (on prorata basis), will be released to the contractor as cost of major components of the plant [PV modules, Inverter, transformers (if required) and module mounting structures] after delivery of this material at site, inspection and verification by authorized departmental officers. No part payment in case of plant capacity below 10 kWp. Location wise billing or combined bills for all installations made till the end of the previous month can be raised by the contractor for payment purpose in the subsequent month.
- d) The contractor shall inform the authorized representative of SNO about the delivery of material one week in advance.
- e) The authorized representative of SNO shall ensure the site acceptance / rejection of the received material at site within three days of delivery of material along with submitting the SAT procedure of the delivered material from the manufacture by the contractor.
- f) Invoice for 50% payment shall be submitted by the contractor as per the accepted price schedule which is to be verified and made ready for release of payment within 1 month of receipt of the invoices subject to the satisfaction of the above conditions.
- g) 100% of the total Contract amount/balance 50% (as the case may be) excluding Operation and Maintenance charges after considering any liquidated damages if any, on pro-rata

basis shall be released after CoD of the solar plant/plants. The contractor can submit the final invoice as per the accepted price schedule within 10 days on proving the Performance ratio (AC) (as per Clause 2.2.2) after completing the plant. The invoices shall be verified and final payment will be released within 2 months of receipt of the invoices subject to the satisfaction of the above conditions.

- h) In case of any delay in payment beyond the stipulated period, interest at the prevailing SBI Marginal Cost of Lending Rate (MCLR) will be paid to the contractor.
- i) The Operation & Maintenance charges shall be released at the end of each year after commissioning and demonstration of the specified Performance ratio (AC) as per clause 2.2.2 at the end of each year during O&M period (2 years).
- i) The PBG will be released as specified under clause 5.1.8. The proportionate amount for decrease in the production of energy units will be recovered as compensation as per this tender document from the amount to be released and only the remaining will be released after demonstrating the required Performance ratio. i.e the contractor shall compensate for lower generation.

5.2.2 Tariff basis

- a. The Contractor has to produce Bank Guarantee proportionate to the awarded quantum on the basis of Rs.50 Lakhs/MWp as Performance Security Deposit at the time of executing Power purchase Agreement and the same will be released after considering liquidated damage if any after satisfactory completion, testing, commissioning of the solar plant and COD.
- b. The monthly bills for the energy supplied from the solar plants of capacity shall be based on the Joint solar energy meter reading/solar energy meter reading obtained from the central monitoring system/any other mutually agreed mechanism as applicable. For capacity >10kWp, solar energy meter shall be with MODEM having facility of AMR and GPRS or Smart Meter (at the option of the bidder). The solar energy meter reading shall be verified with the reading obtained from the central monitoring system at KSEB data centre. A web based application for logging the details of all plants shall be developed by the procurer linking the data from the central monitoring system. The reading shall be taken on the 1st day of the month.
- c. From the commencement of supply of power by the bidder, the SNO shall pay to the bidder the amount of monthly Tariff as per PPA, on or before the due date in accordance with PPA. All payments shall be in Indian Rupees.

- d. The supplier shall present the bills for electricity supplied to SNO from all the plants installed by him under a region for the previous month before 7th of the next month, based on the solar energy meter reading as per 5.2.2.b. All payments shall be based on solar energy meter reading. The reasonableness of the bill may be got verified by the procurer every month with the data of central monitoring system. If the reading shows a variation exceeding +-5% for a location compared to the central monitoring system data, joint meter reading of that location may be taken separately for payment. The error in the energy meter, if any, shall be corrected immediately by the developer. The error in the central monitoring system, if any, shall be corrected by the procurer. If error is within +-5%, payment shall be released.
- e. The bills may be presented / delivered by e – mail to the State Nodal Officer, 'SOURA' Project, KSEB Ltd., VidyuthiBhavanam, Pattom, Thiruvananthapuram - 695004 or the authorized representative of the procurer followed by original bill by courier / speed post. The date of e- mail shall be treated as date of presentation of bill for determination of due date for payment, subject to the e – mail being delivered up to 11.00 am on a business day failing which the next business day shall be considered as date of presentation of bill.
- f. SNO shall arrange payment of such Monthly Bill(s) promptly through NEFT / RTGS at the designated bank account of the supplier. The procurer is entitled to deduct a rebate of 2.0 % on the payment towards the supplier's monthly bill within 5 days of submission of invoice and 1% on payment made up to thirty (30) days of receipt of bill. If such due date is a holiday next business day may be treated as due date.
- g. In case SNO disputes any amount, even then, it shall pay 90% of the disputed amount forthwith and file a written objection with the supplier within 60 days of presentation of the bill, giving following particulars:
1. Item disputed, with full details/data and reasons of dispute;
 2. Amount disputed against each item.
- The amount of excess/shortfall with respect to the said 90% payment based on finally determined amount in line with PPA shall be paid /adjusted with the applicable SBI MCLR from the date on which the amount in dispute was payable /refundable.
- If SNO does not pay the amount due within 60 days from the date of billing , then SNO shall pay interest at applicable SBI MCLR, for such payment from the date such payment was due until the payment is made in full.

5.2.3 Additional work: The EPC Contractor/Developer shall be eligible for additional payment for the additional works, if any, required to be carried out at any location due to site peculiarities/difficulties which are not foreseen and which are necessary for completing the installation, with prior approval of the procurer.

SCHEDULE OF RATES FOR ADDITIONAL WORKS: The Rates of additional electrical work within the premises will be decided on the basis of at par rates of Delhi Schedule Of Rates (DSR), for Electrical works, Central Public Works Department, amended from time to time; The rates of additional civil work shall be as per at par the rates of Delhi Schedule Of Rates (DSR) for building works, Public Works Department, amended from time to time;

5.2.4. Dues from the Contractor

All sums of money found due from the Contractor to the SNO under this contract, shall be recovered from the Contractor from his PBG and bills payable to him and from other assets movable or immovable as per Revenue Recovery Act for the time being in force or in any other manner as the SNO may deem fit.

5.3 WORK

5.3.1 Taking over the location and commencement of Work

Taking over the location and commencement of work shall be as per the conditions prescribed in EPC Agreement/Power Purchase Agreement as the case may be. The EPC Contractor/Developer shall open their local offices in each district under the region/regions where the work is awarded within one month of signing the agreement and the details are to be provided to SNO.

The developer/contractor shall proceed with the works with diligence, expedition, supervision and shall be carried out to the entire satisfaction of the SNO or his representative who shall have full power to order the developer/contractor to alter, enlarge or diminish the form, dimensions, portion or quantities of any of the works or to make use of materials and workmanship of different description and qualities from those herein specified. Deemed approval of the State Nodal Officer shall be considered for variations upto +/-10% in the quantum/capacity at a location and for variations upto +/-1% for the total awarded capacity. For further deviations, written approval of the State Nodal Officer shall be obtained. Works are to be properly carried out to the satisfaction of the authorized representative of the SNO.

5.3.2 Commencement and Completion

The work shall commence from the date of handing over the location. The declaration of Commercial Operation Date of solar plants shall be within 6 months (maximum) from the construction start date. However, the period of completion of plant as stipulated vide clause 2.2.2.3 will be reckoned from the construction start date, even if not in full, but in a manner the work can be commenced and proceeded with, in accordance with the programme of works and Time of Completion will be worked out accordingly. All the works stipulated under the scope of the Contract shall be completed in all respects, supplies made, services provided and final cleaning up done and required testing shall be completed and commissioned before the expiry of the time of completion thus worked out, unless the time of completion is postponed and period of completion is extended by a written letter from the agreement Authority.

5.3.3 Certificate of Completion of work and taking over of plant by SNO

After testing and commissioning of the Plant the contractor under EPC will have to prove a performance ratio (AC) mandatorily as per **clause 2.2.2**. If the contractor fails to prove the desired performance ratio at the time of commissioning and during any of the consecutive years of O&M period he will be given a second chance to demonstrate the PR in another 7 days. Still if it is not achieved, EPC contractor shall enhance the module capacity of solar plant/improve the quality of the plant by replacement of module/other components with all suitable modification requirements on balance of systems at his own cost to achieve the performance ratio as per clause 2.2.2. The contractor shall be responsible for all required activities to demonstrate the specified performance ratio till the end of 2 years O&M period. The SNO shall finally take over the plant only after due completion of the conditions as specified in Handing over Clause 2.5 in Part II of Vol. III.

Thereafter, subject to the execution of O&M for 2 years and successful completion of defect liability period, if there are no obligations to arise out of the Contract, authorised representative of SNO shall furnish a certificate to the Contractor to the effect that all the works are completed satisfactorily and no work remains incomplete as per the terms of the contract. Dues and liabilities if any, outstanding against the Contractor shall also be included in this certificate.

Immediately after the CoD of the plant, contractor has to take away all scaffoldings, surplus materials and rubbish and cleaned off the dirt from all wood work, doors, windows, walls, floors or from other parts of the structure before the work has been measured by the authorized representative of SNO. The Contractor shall clear the work

within the time limit specified by the authorized representative of SNO, failing which, the Contractor shall have no claims on the surplus materials and the works shall be cleared at the risk and cost of the Contractor.

The work shall be treated completed only when the Authorized representative of SNO issues certificate of completion where the actual date of completion of work will be mentioned. In case of termination or foreclosure, the SNO will issue the certificate of completion to that effect. If the contractor fails to complete any part of the work as required for satisfactory completion before taking over and / or the date of completion specified, and fails to take away the surplus materials after commission of the plant, the SNO will complete the works and remove the surplus materials etc and the amount incurred for the same will be realized from the contractor from any amount due to him from this work or any other work with SNO or his assets in appropriate proceedings. The contractor will not have any claim over the surplus materials so removed by the SNO. The solar PV plant under EPC basis will be taken over by the SNO on successful completion of 2 years of O&M after COD.

5.3.4 Defects Liability Period

The Contractor is liable to rectify any defect or damage of the equipment notified by the authorized representative of SNO, at Contractor's cost during the Defect Liability Period, which shall be 5 years reckoned from the date of COD. The Contractor shall guarantee for the performance of the equipment of the plant during this period. If any defects in the equipment appear at any time prior to the end of the Defects Liability Period, the authorized representative of SNO may instruct the Contractor to rectify the defects immediately. If the Contractor fails to carry out the directions given by the authorized representative of SNO and does not rectify the defects within a reasonable time, the authorized representative of SNO shall make alternate arrangements for making good the defects through other agencies and the cost there of recovered from the Contractor from the amounts payable to the Contractor by way of forfeiting Performance Bank Guarantee or any other means.

If the drawings, specifications and contract documents do not contain particulars of materials and work which are obviously necessary for the proper completion of the work and intention to include which is nevertheless to be inferred, all such materials and works shall be supplied and executed by the Contractor without any extra charge.

Any unusual defects like considerable dip in Performance ratio etc. ; if notified by the authorized representative of SNO shall be attended within 48hours or else SNO reserves the right to forfeit the performance security.

The Contractor is bound to furnish information and data including the data in support of his quoted amount to the SNO if called upon to do so.

If the contractor fails to prove the desired Performance ratio(AC) as per **clause 2.2.2** during any of the consecutive years the annual O&M period may be extended to that time period till the desired Performance ratio as per **clause 2.2.2** is attained .

5.3.5 Suspension of Work

The Contractor shall not suspend the work without the written consent of the authorized representative of SNO. In the event of suspension of the work without written permission of the SNO, the SNO shall have the right to recover all losses to the SNO on account of such suspension as per law and even resorting to Revenue Recovery Act provisions.

The SNO shall not be liable to pay any amount to the Contractor towards loss arising from suspension of the works or delay in execution of the Work due to any strike or agitation by the labourers of the Contractor.

The SNO shall have for just and sufficient reasons, the right to suspend the works or to delay the works by an order in writing by the authorized representative of SNO.

If such suspension is necessary for the proper execution of the works or by reason of weather conditions or by some default on the part of the Contractor or necessary for the safety of the works or any part thereof, or necessary for the safety of adjoining property, or safety of the general public, or workmen or those who have to be at the site, or to ensure safety, or to avoid disruption to traffic and utilities, or to permit fast repairs and restoration of any damaged utilities, the Contractor shall not be entitled to any extra cost incurred during the period of any suspension of work.

5.3.6 Suspension of Work because of Climatic Conditions

The authorized representative of SNO may order the Contractor in writing to suspend the Work or part of a work or work in a specified location that may be subjected to damage by climatic or weather conditions. The Contractor shall have no claim for compensation for losses in this account.

The care and safeguarding of works, site, men, machinery, materials, tools and plants are the responsibility of the Contractor without any extra payment from the SNO. Losses or damage to SNO on account of failure from the Contractor in safeguarding from weather

and climatic conditions as mentioned above will be realized from the Contractor. Any event of stoppage on account of climatic conditions shall be brought to the notice of the authorized representative of SNO immediately with reasons for such stoppage.

The SNO will grant suitable extension of time arising from suspension of works or delay by such order in writing of the SNO unless such suspension be due to some default on the part of the Contractor.

5.3.7 Tools, Plant and Equipment

The Contractor shall provide at his own expense all tools, plant and equipment required for the execution and completion of work in all respects as per the contract. The Contractors are advised to take necessary insurance coverage for the tools, plant and equipment used for the plant. The Contractor shall furnish as desired by the authorized representative of SNO all details of tools, plant and equipment mobilized to the site with date of mobilization. He shall de-mobilize no tools, plant and equipment without the written consent from the authorized representative of SNO.

5.3.8 Force Majeure

Force Majeure is defined as a cause that is beyond the control of the Contractor/Developer or the SNO which could not be foreseen with a reasonable amount of diligence and which substantially affects the performance of the contract such as,

1. Volcanic eruption, Earthquake, Cyclone, floods or droughts.
2. Civil war or war like operations or Acts classified under invasion of foreign enemies or hostilities, or Rebellion or terrorist action or Riots

No party in the contract shall be liable to the other for any loss and damage occurred due to force majeure condition and shall not apply to the obligations of either party to make payment to the other party under the contract due to occurrence of force majeure conditions.

A notice shall be given to the SNO within 7 days after the Contractor/Developer became aware or should have become aware of the relevant event or circumstances constituting force majeure. Authorized representative of SNO will ascertain the extent of delay due to the event.

They shall insure the machinery, equipment and other valuable material of the Contractor/Developer at work sitewith the insurance companies for getting their claims and take up any loss or damage due to force majeure situation. The SNO will not give any financial assistance on this account.

All equipment, machinery, works etc. which are furnished, installed, constructed and handed over / to be handed over to the SNO under the EPC contract for the completion of the plant shall be insured by the Contractor for the period of contract. The entire cost on account of this shall be borne by the Contractor. Losses or damage if occurred to such machinery, equipment and work shall be made good at the risk of Contractor.

5.3.9 Liquidated Damages / Penalty

Any delay in commissioning a plant will adversely affect the total planning which in turn will affect the SNO. Hence, for any damage or loss caused to the SNO due to the failure from the part of the Contractor/Developer in completing the Work in all respects within the stipulated period of completion vide clause 5.3.2, the Contractor/Developer shall compensate for the same. The Liquidated Damages (not as penalty) is to be realized at the end of the period of completion of plant. The maximum amount of Liquidated Damages shall be limited to the performance bank guarantee.

The rate of Liquidated Damages shall be 5 % of performance bank guarantee pro-rated to the plant capacity per week of delay subject to a maximum of 100 % of performance Bank Guarantee pro-rated to the plant capacity. If the Solar Plant do not achieve Commercial Operation Date within 20 weeks of the Schedule Commercial Operation Date, then in addition to the liquidated damages, the agreement shall be terminated by forfeiting the PBG proportionate to that capacity of the plant and the work will be arranged at the risk and cost of the contractor. In case of delay in commissioning the plant beyond the scheduled COD, LD on prorated basis of the plant capacity shall be imposed on per week basis as above. For the calculation of LD, delay of 4 days and above will be considered as delay of one week.

The Contractor shall be required to evaluate the PR at the end of every year of operation & Maintenance period. The acceptable (minimum or above) PR values to be demonstrated by the Contractor at the end of each year after accounting for the degradation are as per clause 2.2.2. If the specified PR % is not achieved PR shall be demonstrated in another consecutive 7 days. If PR is not achieved in the second chance, Contractor shall correct the plant at his own cost to achieve the minimum specified PR for each year. The O & M period will be extended to that time till the desired PR ratio is attained. The contractor shall be liable to pay compensation for lower generation.

5.3.10 Default by the Contractor/Developer

Default by the Contractor/Developer shall be dealt with as per the conditions stipulated in the Contract Agreement/ Power Purchase Agreement as the case may be.

5.3.11 Termination of Contract

The termination of contract shall be as per the conditions stipulated in the Contract Agreement/ Power Purchase Agreement as the case may be.

5.3.12 Re-Assignment of Work

The work shall not be re-assigned to any one by the Contractor/developer on any reasons

5.3.13 Possession Prior to Completion

The authorized representative of SNO has the right to take possession or use any completed part of the Work. Such possession or use shall not be deemed as acceptance of any work.

5.3.14 Communication Facilities

The Contractor shall maintain communication facilities to the site officers of the Contractor in good working order in order to have prompt communication round the clock every day.

5.3.15 Quality Assurance

The Contractor/developer shall establish a Quality Assurance system for the Work to demonstrate the compliance of such part with the requirement of the contract and specifications. The Quality Assurance system shall be subject to the approval of the authorized representative of SNO. The system shall be in accordance with the specifications stated in the Contract or with BIS specifications unless otherwise specified anywhere in this Contract. The authorized representative of SNO shall be entitled to inspect the system and the reports shall be periodically sent to him by the Contractor. Compliance with the Quality Assurance system shall not relieve the Contractor from any of his obligations or responsibilities under the Contract.

The cost of all Quality Assurance operation shall be included in the quoted amount under the price schedule and no extra claim will be entertained. The details of sampling, testing, procedures etc. for different works are given in the Technical Specifications of the Contract. If these details are not stated in the technical document, BIS specification shall

be followed. The Contractor shall provide samples and test without any extra cost and cooperate in the testing of materials if so desired by the authorised representative of SNO.

5.3.16 Supervision

The SNO will engage sufficient number of supervisory staff at the site of Work. The Contractor shall provide those necessary facilities and assistance to examine and measure the works. The supervisory staff shall not have power to revoke, alter, enlarge or relax any requirement of the Contract, but may sanction to execute the works authorized by the authorized representative of SNO. The supervisors will act as the representatives of SNO and his delegated officers and will have power to give notice to the Contractor, his supervisor of non-approval of any work, and such work shall be suspended, use of such material shall be discontinued until the decision of the authorized representative of SNO, or his delegated officer is obtained. The authorized representative of SNO shall have access at all times to the places of storage and places where materials are being manufactured or processed or equipment are being manufactured for use in work under the Contract to determine whether their manufacture and process are proceeding in accordance with the drawings and specifications.

The work shall be conducted under the general direction and control of the authorized representative of the SNO and his delegated officers and is subject to inspection to ensure strict compliance with the terms of the Contract. Any failure from the part of SNO to detect or discover errors, faults, defects or the Work not in accordance with the requirement of Contract during the progress of work shall not be deemed as acceptance thereof or waiver of defect.

The Contractor shall execute the whole and every part of the work in the most substantial manner and in all other aspects.

If any work found as unsound, imperfect or done with unskilled workmanship or any material or article provided are unsound or quality inferior to that in accordance with the Contract, the Contractor shall forthwith rectify, reconstruct or remove in whole or part at his own charge and cost as noticed by the authorized representative of SNO. In the event of failing to do so within seven days from the written notice from the authorized representative of SNO, SNO may have the right to rectify, re-execute, remove or replace such work or material as the case may be at the risk and expense of the Contractor in all respects. The SNO may reject any work at any stage, which he considers to be defective in quality.

5.3.17 Clean Up

Upon completion of the plant, the Contractor shall remove from the vicinity of the Work all plant, buildings rubbish, unused materials, concrete forms and other like materials belonging to him or under his direction during construction to the satisfaction of the authorized representative of SNO and in the event of his failure to do so, the same may be removed by the SNO at the expense of the Contractor. The cost on account of clean up shall be included in the quoted rate and no additional extra claim shall be entertained.

5.3.18 Protection of Work

The Contractor shall maintain all works including Preliminary and Enabling works, Temporary works, Care and Diversion works etc. during the progress of work till taking over, and shall take necessary measures to protect and preserve them in good condition at his own expense. The rates quoted shall include cost on account of this and no extra claims shall be entertained.

5.4 CONTRACTOR

5.4.1. Power of Attorney

The Contractor shall not execute Power of Attorney without previous sanction in writing of the authority accepting the Bid in respect of any matter relating this contract and any such Power of Attorney executed without such sanction shall neither be recognized by, nor will be binding upon the SNO or its officers. It shall be entirely within the discretion of the authority accepting the bid either to grant such sanction or to refuse it or to revoke a sanction once given.

5.4.2. Contractor/Developer's Nominee

If the Contractor/Developer is an individual or a proprietary concern and the individual or the proprietor dies, and if the Contractor/Developer is a partnership concern and one of the partners dies, then all sums payable under this contract will be paid to the nominees of the individual Contractor/proprietor if there is one or to his/her legal representative and in the case of partnership, to the surviving partners and the Contractor should fill up the 'Form of Nomination' at the time of executing the agreement and should sign in the presence of two witnesses.

5.4.3. Management of Work

It is the responsibility of the Contractor to manage the entire works to produce the results as contemplated herein. It is for him to plan, organize, execute the work and manage the labour.

In case the Contractor is not able to manage the Work properly and his conduct is conducive to create indiscipline at site and to create confusion in contract administration as adjudged by the agreement Authority, it shall be competent to the agreement Authority to terminate the Contract at the risk and cost of the Contractor as per clause 5.3.11

The Contractor shall also comply with the directions of authorized representative of SNO in respect of planning, organizing, execution and management of works. Failure to do so will lead to termination of contract at the risk and cost of Contractor. In the case of termination, provisions provided in clause 5.3.11 shall apply. In case of labour strikes, indiscipline or unrest of the labourers of the Contractor, the Contractor sustains any loss or damages, the SNO shall not be liable for any loss or damage to the Contractor. No extension of time of completion shall be granted due to labour strikes, indiscipline or unrest of the labourers of the Contractor.

5.4.4. Contractor’s Representative

The Contractor may with prior consent of authorized representative of SNO appoint his representative giving him necessary authority to act on Contractor’s behalf under the Contract. The Contractor shall furnish the name and details of such representatives to the authorized representative of SNO and to his delegated officers well in advance. Without the prior consent of authorized representative of SNO, the Contractor shall not revoke or replace such appointments.

If the Contractor’s representative is to be absent from the site, replacement shall be made by a suitable person with the prior consent of authorized representative of SNO. The Contractor’s representative shall receive instructions on behalf of the Contractor from the authorized representative of SNO and such instructions shall be deemed to have been given to the Contractor.

The Contractor’s representative shall be fluent in language for communication, competent for understanding drawing, executing and managing work.

The Contractor shall employ for the entire period of the contract, sufficient number of competent and qualified Engineering personnel (Graduates and Diploma holders) as

required and approved by the authorized representative of SNO for execution of the Work. The Contractor shall intimate the authorized representative of SNO in writing the names and identity of technical personnel proposed to be engaged on the Work.

For large works, the technical organization shall be suitably enlarged such that the works can be carried out smoothly as determined by the authorized representative of SNO. The authorized representative of SNO may require the Contractor to engage a specialist based on nature of works.

The Contractor shall intimate the authorized representative of SNO in writing the names and identity of the technical personnel proposed to be engaged on the work. In case minimum technical personnel as mentioned in this clause is not continuously engaged in the work at site by the Contractor, the expenditure that would have been incurred by the Contractor on such engagement of personnel, subject to a minimum amount assessed at the rates of minimum remuneration mentioned above will be recovered from the Contractor.

5.4.5 Notices, Instructions and Correspondence

The Contractor shall have an office in one region where notice of directions and instructions from the SNO may be served. The Contractor shall have an authorized person present in the office during all times who shall receive such notice on behalf of the Contractor.

The Contractor shall furnish the postal address of his site office, e-mail address, telephone and fax numbers. Any notice or instruction to be given to the Contractor under the terms of contract shall be deemed to have been served on him if it has been delivered to his authorized agent or representative at site or sent by registered post to the site office or address of the firm last provided by the Contractor.

5.4.6 Security of the Site

Unless otherwise stated in the Special Conditions

- (a) The Contractor shall be responsible for keeping unauthorized persons at the site and equipments installed.
- (b) Authorized persons shall be limited to the Contractor's personnel and the SNO personnel; and any other personnel notified as authorized personnel of the SNO.

5.4.7 Site Investigations and Representations

The Contractor shall satisfy himself about the nature and location of work, general and local conditions including those bearing upon transportation, disposal, handling

and storage of materials, flow through the river at site, availability and nature of labour, availability of water etc. or similar physical conditions at the site, the configuration and condition of ground, the character, quality and quantity of the surface and sub surface materials to be encountered, the character, and capacity of equipment and facilities needed preliminary to and during the execution of the Work and all other matters which can any way affect the Work or the cost thereof under this contract. Any default or failure by the Contractor to acquaint him with all the available information concerning this condition will not relieve him from the responsibility for the execution of the contract.

If the drawings, specifications or description of items do not contain particulars of materials and work which are obviously necessary for the proper completion of the Work and the intention to include which is nevertheless to be inferred all such materials and works shall be supplied and executed by the Contractor without extra charge, and the SNO will furnish to the Contractor with responsible expedition after receiving from the Contractor a request in writing thereof, such details as are necessary.

5.4.8 Liability Due to Damage of Work or Plant

The Contractor shall, during the progress of the Work, properly cover up and protect the work and plant from injury by exposure to the weather, natural calamities such as flood, rain and by any other cause. He shall take every reasonable, proper, timely and useful precaution against accident or injury to the same from any cause. The Contractor shall be and remain answerable and liable to accidents or injuries thereto which may arise or be occasioned by the acts or omissions of the Contractor or his supervisory staff or his workmen or his Sub- Contractors and all losses and damages to the works or plant arising from such accidents or injuries as aforesaid shall be made good in the most complete and substantial manner by and at the sole cost of the Contractor and to the reasonable satisfaction of the authorized representative of SNO. Should any such loss or damage happen to units of works or plant or material falling outside the scope of this contract, the same shall be replaced or compensated for, to the satisfaction of the authorized representative of SNO.

Until the Work is taken over or deemed to be taken over by the agreement Authority, the Contractor shall be liable for and shall indemnify the SNO in respect of all damages or injury to any person or to any property of the SNO or of others occasioned by the act of the Contractor or members of his organization including his workmen or his Sub- Contractors or piece - work Contractor or by defective work or materials but not due to causes completely beyond his control.

5.4.9 Time Limit for Claims

Any claim arising out of this Contract should be submitted before the agreement Authority within 30 days from the date of occurrence of the event, which leads to such claim. The Contractor is precluded from raising any such claim after the expiry of the above period

5.5 Site Inspection/Acceptance Test

- a. Except as otherwise provided in paragraph (d) hereunder, all materials and workmanship shall be subject to inspection, examination and testing by the authorized representative of SNO at any and all times during manufacture and/or construction at any and all places where such manufacture and/or construction are carried out. The SNO shall have the right to reject defective material and workmanship or require its correction/rectification. Rejected workmanship shall be satisfactorily rectified and rejected material shall be replaced with proper material without charge therefore, and the Contractor shall promptly segregate and remove the rejected material from the premises at his own cost. If the Contractor fails to proceed at once with the replacement of rejected material and/or the correction of defective workmanship, the SNO may, by a contract or otherwise, replace such material and/or correct such workmanship and charge the cost thereof to the Contractor and/ or may terminate the right of the Contractor to proceed further as provided under clause 5.3.11 of these Specifications. The Contractor and his surety are liable for any damage caused to the SNO resulting from the above.

- b. The Contractor shall furnish promptly and without any additional charge all reasonable facilities, labour and materials necessary for the safe and convenient inspection and test that may be required by the authorized representative of SNO. All inspection and test by the SNO shall be performed in such a manner as not to unnecessarily delay the work. Special, full-size, and performance tests shall be done as described in the Specification. The Contractor shall be charged with any additional cost of inspection when material and workmanship are not ready for inspection at the time of inspection, as required by the authorized representative of SNO.

- c. Should it be considered necessary or advisable by the SNO any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the same, the Contractor shall, on request, promptly furnish all necessary facilities, labour and material if such work is found to be defective with respect to the

Specifications due to the fault of the Contractor or of his Sub - Contractor who shall defray all expenses of such examination and satisfactory reconstruction.

- d. Inspection of materials and finished articles to be incorporated in the work shall be made at the place of production, manufacture or shipment wherever the quantity justifies it, unless otherwise stated in the Specifications and such inspection and written or other formal acceptance, unless otherwise stated in the Specification, shall be final except, as regards latent defects, departure from specific requirements of the Contract, damage or loss in transit, fraud or such other gross mistake if at all found later. Subject to the requirements contained in the preceding sentence the inspection of materials and workmanship for final acceptance as a whole or in part shall be made at site, nothing contained in this paragraph shall in any way restrict the SNO's right under any warranty or guarantee.
- e. If the Contractor fails to comply with any of the conditions of the Contract or with instructions or decision of the authorized representative of SNO issued there under, except where otherwise specifically provided in this contract, the authorized representative of SNO may after giving written notice to the Contractor take necessary steps for the compliance of the said conditions, instructions or decision and any expenditure thus incurred shall be recoverable from the Contractor.
- f. The work during its progress (or) during the O&M period can also be inspected by the authorized representative(s) of SNO and any defects pointed out by him shall be attended by the Contractor under intimation to the authorized representative of SNO.
- g. SAT Documentation for material approval including RFID reading for the panel shall be submitted two weeks before material acceptance test and if necessary additional test will be added and on acceptance of documents the test will commence.

5.6 Correctness of Bid

It shall definitely be understood that the SNO does not accept any responsibility for the correctness or completeness of the bid.

5.7 Orders after Award

After the Bid has been accepted by the SNO, all orders and instructions to the Contractor shall be given by the authorized representative of SNO on behalf of the SNO except otherwise provided in the Contract.

5.8 Lien Withhold Payments

The SNO shall have a lien on and over all or any money that may become due and payable to the Contractor under this Contract and over the Security deposits/guarantees, in respect of any debt or sum that may become due and payable to the Government and/or SNO by the Contractor, either alone or jointly with another or others, or either under this or under any other contracts or transactions of any nature whatsoever between the Government and/or SNO and the Contractor and also in respect of any Government tax or taxes as applicable or other money which may become due and payable to the Government by any other statutory enactment or enactments in force or modifications or substitutions thereof and SNO shall at all time be entitled to deduct the said debt or sum or tax as applicable due by the Contractor from the money, Securities like Bank Guarantee or deposit which may become payable/ returnable to the Contractor under this contract.

5.9 LABOUR

The provisions of 'Contract Labour(Regulation and Abolition) Act of India, 1970 and amendment thereof shall bind the Contractor and the Rules framed there under. He shall get himself registered under the Act at the appropriate time. Contractor shall implement the provisions of Act scrupulously.

The Contractor shall also be bound by the applicable contract labour regulations in respect of wage, payment of wages, fixation of wage periods, hours of work, leave, registers to be maintained by the Contractor, display of notices regarding wages, fines and deduction, maintenance of registers, submission of returns etc.

5.10 Accidents

It shall be the responsibility of the Contractor to take protective measures to prevent accidents on the works. He shall indemnify the SNO against any claim for damages or for injury to persons or property resulting from and in the course of the work and under the

provisions of the Workmen Compensation Act. The Contractor shall take CAR (Contractor's All Risk) policy in order to cover all risk, which may arise from the Contract, produce the certificate before the authorized representative of SNO, and convince the authorized representative of SNO of the existence of such insurance coverage failing which the payments to the Contractor will be withheld.

On the occurrence of an accident during the course of the work which results in death or which is so serious as likely to result in death, the Contractor shall report the facts stating clearly and with sufficient details, the circumstances of the accident and the subsequent action taken by him, in writing to the authorized representative of SNO, Labour Commissioner and other concerned authorities within twenty four hours of such accident. In case of fatal accidents, the Contractor shall at once inform the Commissioner for Workmen Compensation, the details of the accident stating whether he accepts or disclaims the liability. All other accidents on the works involving injuries to persons or damage to property shall also be promptly reported to the authorized representative of SNO stating clearly and with sufficient details, the facts and circumstances of the accidents and the action taken. In all cases, the Contractor shall indemnify the SNO against all losses or damage resulting directly or indirectly from the Contractor's failure to report in the manner aforesaid. This includes penalties or fines, if any, payable by the SNO as a consequence of failure to give notice under the Workmen's Compensation Act or failure to conform to the provisions of the said Act in regard to such accidents.

In the event of an accident in respect of which compensation may become payable under the Workmen's Compensation Act, the authorized representative of SNO will retain such amount which he feels sufficient to meet the liability, from the amount due and payable to the Contractor. On receipt of any award of compensation from the competent authority under the said Act, the difference in amount will be adjusted.

The authorized representative of SNO will have the right to deduct from the amount due to the Contractor any sum required for making good the loss suffered by a worker or workers on any reasons of non-fulfilment of the conditions of the Contract. The Contractor shall primarily be responsible for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim indemnity from his Labourers. The applicable contract labour regulation currently in force and future amendments thereof shall be deemed to be part of this Contract and any breach of this shall be violation of contract.

5.11 Storage of material

The Contractor shall at his own expense, provide and furnish sheds and yards in such situations and in such numbers as in the opinion of the tendering Authority and requisite for carrying on the work under this contract for the storage of materials arranged by him or handed over to him by SNO. The Contractor shall keep at each of such sheds and yards, a sufficient quantity of materials in stock so as to avoid delay in carrying out the works with due expedition.

5.12 ENVIRONMENT

5.12.1 Safeguards for Environmental Protection

The Contractor is bound to follow the safeguards that are provided herein, in respect of safeguard for environmental protection at no extra cost. The Acts, Rules and Regulations regarding environmental protection enacted from time to time shall be followed at his cost without fail.

Preservation of Existing Vegetation:

The Contractor will preserve and protect all existing vegetation such as trees on or adjacent to the site which do not interfere with or cause inconvenience to the construction as may be determined by the SNO. The Contractor will be held responsible for all unauthorised cutting or damaging of trees including damage due to careless operation of equipment, stockpiling of materials or tracking grass areas by equipment. Care shall be taken by the Contractor, especially in the existing solar plant, in felling trees authorized for removal to avoid any unnecessary damage to vegetation and trees that are to remain in place and to structures under construction by workmen. Cutting and removal of trees, if any, shall be done by the Contractor or his men only after obtaining due permission from the agreement Authority.

5.12.2 Interference with Public, Public Properties, Other Departments and Safety of Public

All access to work sites and other areas other than those specifically agreed to be constructed by the SNO herein in these specifications, if any, shall be provided by the Contractor at his own expense. The SNO assumes no responsibility for the condition of roads and structures thereon that may be used by the Contractor in performing the work under these specifications or in travelling to and from the site of the work. No Payment will be made to the Contractor by the SNO for any work done in constructing, improving, repairing or maintaining any road or structure thereon for use in the performance of the work under these specifications. All roads subject to interference by work shall be kept

open or suitable detours shall be provided by the Contractor during the period of time covered by this Contract for the SNO and others who may be engaged in other construction work in the vicinity of the Work covered by this specification.

The Contractor shall arrange and prosecute the Work under these Specifications so as not to interfere with other works or with existing improvements. The Contractor shall provide, erect and maintain all necessary barricades, suitable and sufficient red lights, danger signals and shall take all necessary precautions for the protection of the Work and the safety of the public. Roads closed to traffic shall be protected by effective barricades and warning and detour signs shall be displayed suitably.

All barricades and obstructions shall be illuminated at night and all lights shall be kept lit from sunset to sunrise.

5.12.3 Protection of Adjoining Premises, Structures etc.

The Contractor shall protect adjoining sites against structural, decorative and other damage that may be caused during the course of execution of the Work and he shall make good any such damage occurred at his own cost.

5.13 MISCELLANEOUS

5.13.1 Toll & Duties

The Contractor shall, unless otherwise specifically provided in the Contract, pay all duties, tolls, and other taxes on all materials and articles that he may use and applicable GST.

5.13.2 Tax Clearance Certificate

The SNO may require the Contractor to produce Income Tax, Agriculture Income Tax and any other applicable tax clearance certificates from the respective authorities and copy of PAN card, before entering into the agreement with him for the Contract and the Contractor will have to produce all such documents as and when called for. Final payment of the Contractor will be made only after the production of all applicable tax clearance certificates and other certificates regarding compounded rate of work, contract tax, concessional rate of sales tax, non-deduction of work contract tax etc as governed by the GST. from the departments concerned and attested copy of PAN Card in the case of Income Tax.

5.13.3 Insurance

The Contractor shall secure and maintain throughout the duration of this Contract, insurance of such types and in such amounts as may be necessary to protect himself and the interests of the SNO, against all usual hazards or risk of loss. The form and limits of such insurance and the company together with the underwriting thereof in each case, such as will be acceptable to the SNO but, regardless of such acceptance, it shall be the responsibility of the Contractor to maintain adequate insurance coverage at all times. Failure of the Contractor to maintain adequate coverage shall not relieve him of any contractual responsibility.

The Contractor, without limiting SNO obligations and responsibilities shall insure:

- (a) the works, together with materials and plant to the full replacement cost and third party liability at site.
- (b) an additional sum of 15% of such replacement cost to cover additional costs and incidental to the rectification of loss or damage including professional fees and cost of demolishing and removing any part of works and of removing debris of whatsoever nature, and
- (c) the Contractor's equipment and other things brought to site, for a sum sufficient to provide for their replacement at the site.
- (d) The insurance against third party liability at site shall be ensured before commencing the execution of work, against any damage or loss or injury which may occur to the equipment being shifted/ installed or to any property or person (including property and employees of the Employer) by or arising out of the execution of works or temporary works in carrying out of the Contract. The insurance coverage shall be revalidated till the certification of plant.

The insurances under item (a) and (b) shall be in the joint names of Contractor and SNO and shall cover:

- (i) SNO and the Contractor against all losses or damage, from whatsoever cause arising from the start of work at the site until the date of issue of the relevant taking over certificate in respect of the works or any section or part thereof as the case may be, and
- ii) The Contractor for his liability :
 - 1. during the Defects Liability Period for loss or damage arising from a cause occurring prior to the commencement of Defect Liability Period,
 - 2. for loss or damage caused by the Contractor in the course of any operations carried out by him under the terms of the Contract, and

3. for loss or damage caused by the Contractor in the course of any operation carried out by him during execution of works to the neighboring habitats , life and property around the boundary of the site.

If the Contractor fails to effect in force the insurances referred in the above clauses, or any other insurance which he may be required to effect under the terms of the contract, then and in any such case, the SNO may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by the SNO as aforesaid from any amounts due or which may become due to the Contractor, or recover the same as a debt due from the Contractor

5.13.4 Right To Information

The Contractor shall be bound to provide all documents/information required by the State Public Information Officer in discharge of his duties under the Right to Information Act.

5.13.5 Collusion and Bribery

Any bribe, commission, gift or advantage given, promised or offered by or on behalf of the Contractor or his partner, agent or servant or any one on his or on their behalf to any officer, servant, representative or agent of the SNO relating to the obtaining or to the execution of his or any other contract with the SNO shall in addition to any criminal liability which he may incur, subject the Contractor to the cancellation of this and all other contracts and also to payment of any loss or damages resulting from any such cancellation to like extent as is provided in case of cancellation under clause 5.3.11 and the SNO shall be entitled to deduct the amounts so payable from the Contractor. Any question of dispute as to the commission of any offence under the present clause shall be settled by the SNO in such manner and on such evidence or information as the SNO shall think fit and sufficient and the decision of the SNO shall be final and conclusive.

5.13.6 Observance of Local Rules, Regulation, Laws etc.

The Contractor shall conform to all laws of the land and the regulation and bye-laws of the Local Authority, Corporation, Board or Local Self Government etc. constituted as per the statute of Government of Kerala and Government of India and the Contractor shall strictly abide by all such Laws, Rules and Regulations.

5.13.7 Interventions by Extraneous Forces / Agencies

The SNO will not be liable for any damage or compensation for holdups or delay in discharge of obligations of SNO caused by intervention of court or extraneous forces beyond the control of the SNO. If, however, such delays are found to cause delay in completion of Works, and if the SNO is satisfied that the delay or hold up is not due to the fault of the Contractor, the SNO may consider suitable extension of Time Of Completion and/or revision of rates, subject to relevant provisions in the General Conditions of Contract and/or Special Conditions of Contract to compensate the losses that may be incurred by the Contractor in that respect.

5.13.8 Safety Aspects

The Contractor is bound to follow the applicable safety provisions provided in these specifications and to follow the directions of the SNO in this respect. The cost for providing safety provisions shall be deemed to be included in the rates agreed to. All safety rules and regulations introduced from time to time by appropriate authorities shall also be followed at no extra cost. All SPV system should comply with CEA (Measures relating to Safety and Electricity Supply) Regulation 2010.

5.13.9 Co-operation With Other Contractors

When two or more Contractors are engaged in the same premises, they shall work together in a spirit of co-operation and accommodation. The Contractor shall not take or cause to be taken any step or action that may cause disruption, discontentment or disturbance to the works, labour and arrangement of other Contractor(s). In the case of difficulties in coordination amongst the Contractors, the Engineer-in-Charge will direct the manner in which each Contractor shall conduct his work.

Each Contractor shall, while scheduling his works, take into account the timings for interlinking of works of other Contractors, if such interlinking is necessary for proper fulfilment of the Contract as per Schedule.

5.13.10 Foreign Exchange

No Foreign Exchange will be provided by the SNO for carrying out the works.

5.14 SAFETY ENGINEERING AND SAFETY CODE

5.14.1. General

Accident prevention shall be an essential part of the programme of the Contractor for the work in order to reduce the cost of construction measured in terms of,

- (a) human life sacrificed;
- (b) temporary and permanent disabilities to workers;
- (c) loss of materials resulting from accidents;
- (d) loss or damage to equipment;
- (e) the cost of workmen's compensation and insurance; and
- (f) loss of time due to accidents.

The safety programme should be developed to cope with the particular hazards for each operation such as drilling, excavation, transport, handling concrete etc.

5.14.2 General Safety Programme

The following programme shall be promoted by the Contractor to reduce the accident rate on construction.

- (a) Render full support to the work force in observing safety measures.
- (b) Designate a qualified person to organise and monitor safety programme.
- (c) Develop a public safety programme.
- (d) Develop a safety programme for each job.
- (e) Indoctrinate new employees. Educate the employees regarding the hazards of their work and explain to them how they can reduce the accidents to themselves and to other workers.
- (f) Make safety practices effective.
- (g) Promote good housekeeping.
- (h) Maintain adequate first aid facilities,
- (i) Seek assistance from insurance carrier, if available.

5.14.3 Safety Equipment

All necessary personal safety equipment as considered adequate by the SNO should be kept available for the use of the persons employed on the site and maintained in a condition suitable for immediate use and the Contractor should take adequate steps to ensure proper use of equipment by those concerned.

5.14.4 Display of Safety Provisions

The safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at the work spot. The persons responsible for compliance of the Safety Code shall be named therein by the Contractor.

5.14.5 Inspection by Officers

To ensure effective enforcement of the Rules and Regulations of safety precautions, the arrangements made by the Contractor shall be open to inspection by the Labour Officer, Engineer-in-Charge or their representatives.

5.14.6 Safety Acts and Rules

Notwithstanding the above clauses, the Contractor is bound to comply with all Acts, Rules and Regulations in force from time to time regarding safety of person and property.

5.14.7 Compensation

All works shall be carried out adhering to the provisions of Safety Engineering Code and the rates quoted by the Contractor shall include the costs incidental thereto.

5.15 MISCELLANEOUS

The Contractors are expected to maintain good relations with their labour/employees and trade unions and any dispute arising between the Contractors and their labour/employees will be considered as Industrial Dispute between the Contractors and their labour/employees and shall be settled by them without any delay failing which the conciliation machinery of Government of Kerala may begin to function. It may even be referred to Labour Department for arbitration. In such an event the award by the Labour Department shall be binding on the Contractors and the Contractors shall implement the award at their cost. It shall be noted that the SNO will not be liable for financial implications due to settlements as aforesaid.

5.16 HEALTH AND SANITARY PROVISIONS

All Enactments, Rules, Regulations or by-Laws regarding Health and Sanitation, with special reference to First Aid, drinking water, latrines and urinals, drainage and sewerage system, rest room in work places, facilities for children of workers, canteen etc. shall be strictly followed.

5.17 Recovery:

Wherever any recovery is made by the SNO as penalty, liquidated damages or by whatever name used, the applicable taxes in addition to the same will also be recovered and remitted to the Government.

Part 6

**SPECIAL CONDITIONS OF CONTRACT FOR SUPPLY, ERECTION & COMMISSIONING AND
OPERATION & MAINTENANCE**

6.1 INTRODUCTION

The Bidder is advised to read carefully all instructions and conditions appearing in this document and understand them fully. Bidder should furnish duly filled Bid Response sheets, Schedules, and Annexure etc contained in this Bid documents along with desired documents. Failure to provide the information as required may render the bid technically unacceptable.

The Solar PV Plants shall be complete systems and meet the Technical Specifications of the Bid Documents (Volume- III). The contractor shall design the solar plant with sufficient number of solar PV panels so as to produce the desired capacity at each location.

6.2 Documents to submit - who receives the Contract

Contractor shall specify all basic design details, including details of the PV modules and the support structures, inverters, cables, integration and power evacuation details with existing power system, with appropriate diagram and drawings.

The drawings along with detailed structure design and material selected and their standards, Guaranteed Technical Particulars, details of each items, make, model number and specification conforming to relevant standards, entire drawings, detailed test reports, list of Operation & Maintenance spares for major materials, detailed Bill of materials and Priced Bill of Quantities in respect of materials/equipments and works for the entire installation shall be submitted within 15 days of allotment of location .

The bidder should submit and get the necessary approval of the following detailed Engineering Drawings in addition to the proposed work Execution Schedule, before execution of the work:

- a. General arrangement and dimensioned layout.
- b. Single Line Diagram of the PV Power Plant
- c. Detailed Plan of PV Array installation
- d. Schematic Diagram showing the requirement of solar PV panel, Inverter, Junction boxes, AC and DC Distribution boards, Meters, etc.
- e. Module Mounting Structure (Plan & Elevation) alongwith foundation details.

- f. Itemized bill of materials for complete solar PV plant covering all the components and associated accessories.
- g. Shadow analysis of the rooftop.

The design details and other accessories should adhere to and match with the technical specification provided in the volume III of the tender document and corrigendums and as per the Guaranteed Technical Particulars offered in the bid.

The PV Plant installation shall be with the same components as per the successful bid offer.

6.3 WORK REVIEW MEETINGS

The Contractor shall present the Programme and status at various review meetings as required.

A. Monthly Review Meeting:

Level of Participation: Representative /Senior Officers of SNO and Contractors.

Agenda:

- a) Progress Status/Statistics.
- b) Completion Outlook
- c) Major hold ups/slippages
- d) Assistance required
- e) Critical issues.
- f) Client query/approval

6.4 OPERATION AND MAINTENANCE

EPC basis: Operation and maintenance of the solar plant up to the point of interconnection for a period of 2 years is the responsibility of the Contractor. Operation and Maintenance during this period shall include supply of spares of panels, inverters and all equipments in the solar plant including transportation of these items from the original manufacturer, storage, consumables, general comprehensive insurance covering fire, earthquake.

The solar plant should be maintained shadow free. The tree branches if any causing hindrance to the shadow free operation of solar plant shall be cut and removed under the supervision of SNO with the permission of appropriate authorities/land/premise owners.

The contractor shall ensure efficient operation of the Solar PV plant and achieve the maximum power generation from the plant. For this purpose the contractor shall engage the services of adequate number of Engineers and Technicians trained under "Suryamitra" Skill Development Programme of MNRE. The contractor shall also attend to all failures, rectifications, breakdowns, 2 year comprehensive Operation and Maintenance checks. The contractor shall make use of use recycled water for cleaning the panels.

Monthly System (MIS) reports with generation and downtime analysis data has to be sent to 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB Ltd. by E-mail during the construction period and biannual reports during the O&M period and defect liability period. The contractor should not misuse the land and assign responsibility or the safety of machinery within the premises. The contractor may carry out O&M of the plant from 3rd year onwards, if O&M agreement is executed with the SNO for the same.

In tariff basis: Operation and maintenance of the solar plant up to the point of supply for a period of 25 years is the responsibility of the bidder. The developer shall make use of recycled water for cleaning the panels.

6.5 PROGRESSREPORTS:

Monthly Progress Report:

This report shall be submitted (e mailed) to the agreement Authority as well as representative of SNO on a monthly basis within Ten Calendar days, covering over all scenario of the work. Report shall include but not be limited, to the following:

- a) Brief introduction of the work.
- b) Activities executed/achievements during the month
- c) Schedule/s Actual percentage progress manufacturing/delivery, sub- contracting, construction and overall work.
- d) Quantum wise status of purchase order against scheduled shall also be indicated.
- e) Areas of concern/problem/hold ups, impact and action plans.
- f) Resources deployment status.

6.6 GENERAL

- a) Special Conditions of Contract shall be read in conjunction with the general conditions of contract, Schedule of Price, technical specifications, drawings and any other document forming part of this contract wherever the context so requires. Where any portion of the Special Conditions of Contract is repugnant to or at variance with any provisions of the

General Conditions of Contract then unless a different intention appears, the provision of the Special Conditions of Contract shall be deemed to override the provisions of the General Conditions of Contract only to the extent that such repugnancy or variations in the Special Conditions of Contract are not possible of being reconciled with the provisions of General Conditions of Contract.

- b) The materials, design and workmanship shall satisfy the applicable standards, specifications contained herein and Codes referred to. Where the Detailed Technical Specifications stipulate requirements in addition to those contained in the Standard Codes and Specifications (both International and Indian Standards wherever applicable), those additional requirements shall also be satisfied. In the absence of any Standard/Specifications covering any part of the work covered in this tender document, the instructions/directions of authorized representative of SNO will be binding on the Contractor.

PART-7: ANNEXURES

(The annexures given here are for guidance only. The contents of the annexure are to be modified suitably with reference to the nature of the Contract.)

**Annexure-1
Covering letter**

(The covering letter should be on the Letter Head of the bidder)

Tender No. _____

Date: _____

From: _____ (Insert name and address of bidder)

Tel.#: _____

E-mail address# _____

To

[State Nodal Officer, 'SOURA' Project, KSEB Ltd.]

Address _____

Sub: Empanelment of EPC Contractors/Plant Developers for implementation of grid connected Roof top/Ground mounted (within consumer premises) Solar PV Systems of various capacities aggregating to 200MWp at identified locations in Kerala during 2019-20.

Dear Sir,

We, the undersigned.....[insert name of the 'Bidder'] having read, examined and understood in detail the tender document for implementation of grid connected Roof top/Ground mounted Solar PV Systems under SOURA scheme in Kerala, hereby submit our bid comprising of price bid and non financial Bid. We confirm that neither we nor any of our Parent Company / Affiliate/Ultimate Parent Company has submitted bid other than this bid directly or indirectly in response to the aforesaid tender.

1. We give our unconditional acceptance to the tender, dated.....and tender documents attached thereto, issued by [State Nodal Officer, 'SOURA' Project, KSEB Ltd.], as amended. This shall also be construed as a token of our acceptance to the tender documents including all its amendments and clarifications uploaded on www.kseb.in/www.sourakseb.in/www.mstceauction.com website .

We shall ensure that we execute such tender documents as per the provisions of the tender and all provisions of such tender documents shall be binding on us.

2. Bid Capacity

‘SOURA Phase-1 200MWp’ PROJECT

We have bid for the following capacities and have accordingly submitted our Price Bids for the same.

Sl.No.	Bid Capacity	Capacity quoted (kWp)	Whether EPC basis/tariff basis/both
1	Part-A :<=10kWp		
2	Part-B: 11-100kWp		
4	Part-C: >100kWp		
	Total bid capacity under EPC		
	Total bid capacity under Tariff basis		

3. EMD

We have enclosed a EMD of Rs.....(Insert Amount), in the form of bank guarantee no.....(Insert number of the bank guarantee) dated.....[Insert date of bank guarantee] as per Annexure-3 from(Insert name of bank providing BG) and valid up toin terms of Clauseof this tender. The offered capacity by us under EPC is.....kWp and Tariff basis iskWp.

4. Tender cost

We have paid an amount of Rs.17,700/- online.

5. We have submitted our Price Bid strictly as per Annexure 19 of this tender, without any deviations, conditions and without mentioning any assumptions or notes for the Price Bid in the said format(s).

6. Acceptance

We hereby unconditionally and irrevocably agree and accept that the decision made by [State Nodal Officer, ‘SOURA’ Project, KSEB LTD.] in respect of any matter regarding or arising out of the tender shall be binding on us. We confirm that there are no litigations or disputes against us, which materially affect our ability to fulfil our obligations with regard to execution of projects of capacity offered by us.

7. Familiarity with Relevant Indian Laws & Regulations

'SOURA Phase-1 200MWp' PROJECT

We confirm that we have studied the provisions of the relevant Indian laws and regulations as required to enable us to submit this Bid and execute the tender Documents, in the event of our selection as Successful Bidder. We further undertake and agree that all such factors as mentioned in tender have been fully examined and considered while submitting the Bid.

8. We are enclosing herewith the Cover-I (Covering Letter, Tender cost and EMD) Cover-II (Non Financial bid documents) and Cover III (Price Bids) containing duly signed formats, each one duly sealed separately as desired by you in the tender for your consideration.

It is confirmed that our Bid is consistent with all the requirements of submission as stated in the tender and subsequent communications from [State Nodal Officer, 'SOURA' Project, KSEB LTD.]. The information submitted in our Bid is complete, strictly as per the requirements stipulated in the tender and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid. We confirm that all the terms and conditions of our Bid are valid for acceptance for a period of from the opening of financial bid. We confirm that we have not taken any deviation so as to be deemed non-responsive.

Dated the _____ day of _____, 20....

Thanking you,
Yours faithfully,

Name, Designation and Signature of Authorized Person in whose name Power of Attorney/Board Resolution as per Clause.....is issued.

Annexure – 2

**(AGREEMENT TO BE EXECUTED BY THE BIDDER AND TO ACCOMPANY THE BID IN
KERALA GOVERNMENT STAMP PAPER WORTH Rs.200/-)**

Articles of agreement executed on this the.....day of.....two thousand.....between, (hereinafter referred to as "The 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.") of the one part and Sri..... (here enter name and address of the Bidder) (herein after referred to as "the bounden") of the other part.

WHEREAS in response to the invitation for Bid as per Notification No.....dated.....and subsequent amendments thereto, the bounden has submitted to the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. a Bid for thespecified therein subject to the terms and conditions contained in the said Bid documents.

WHEREAS the bounden has also furnished as Bank Guarantee towards EMD of Rs.....for execution of agreement undertaking the due fulfilment of the Contract in case his Bid is accepted by the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB Ltd.

NOW THESE PRESENTS WITNESS AND it is hereby mutually agreed as follows:

In case the Bid submitted by the bounden is accepted by the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. with or without modifications and the Contract for the execution of is awarded to the bounden, the bounden shall within 20 days of Letter of Award execute an agreement with the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. incorporating all the terms and conditions under which the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. accepts his Bid and furnish Performance Bank Guarantee(PBG).

In case the bounden fails to execute the agreement and furnish PBG as aforesaid incorporating the terms and conditions governing the Contract the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. shall have power and authority to recover from the bounden any loss or damages caused to the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. by such breach as may be determined by the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD., appropriating the EMD furnished by the bounden and if the EMD is found to be inadequate, the deficit amount may be recovered from the bounden and his properties movable and immovable and also in the manner hereinafter contained. The bounden will have no claim or right over the EMD appropriated by the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. and those EMD shall belong to the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB Ltd. All sums found due to the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. under or by virtue of this agreement shall be

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recoverable from the bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and also in such other manner as the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. may deem fit.

In witness whereof Shri/Smt.(here enter name and designation) for and on behalf of the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. and Shri/Smt.....the bounden have here unto set their names the day and year shown against their respective signatures.

Signed by Shri. / Smt.(Date)

In the presence of witnesses:

1.

2.

Annexure-3

FORMAT FOR BANK GUARANTEE FOR EMD

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

Ref. _____ Bank Guarantee No. _____

Date: _____

In consideration of the ----[Insert name of the Bidder] (hereinafter referred to as 'Bidder') submitting the response to tender inter alia for EMPANELMENT OF BIDDERS FOR IMPLEMENTATION OF 200MWp OF GRID CONNECTED ROOF TOP/GROUND MOUNTED SOLAR PV SYSTEMS IN KERALA STATE during the year 2019-20 in response to the tender No. _____ dated ____ issued by [State Nodal Officer, 'SOURA Project' KSEB LTD.] (hereinafter referred to as [State Nodal Officer, 'SOURA Project' KSEB LTD.]) and [State Nodal Officer, 'SOURA Project' KSEB LTD.] considering such response to the tender of[insert the name of the Bidder] as per the terms of the tender, the _____ [insert name & address of bank] hereby agrees unequivocally, irrevocably and unconditionally to pay to [State Nodal Officer, 'SOURA Project' KSEB LTD.] at [Insert Name of the Place from the address of [NAME OF THE ORGANISATION]] forthwith on demand in writing from [State Nodal Officer, 'SOURA Project' KSEB LTD.] or any Officer authorized by it in this behalf, any amount upto and not exceeding Rupees --- --[Insert amount not less than that derived on the basis of Rs. __ per kWp of capacity proposed by the bidder limited to Rs. 2Crore, on behalf of M/s. _____ [Insert name of the Bidder] .

This guarantee shall be valid and binding on this Bank up to and including _____ [insert date of validity in accordance with Clause 4.19 of this tender] and shall not be terminable by notice or any change in the constitution of the Bank or the term of contract or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rs. _____ (Rs. _____ only). Our Guarantee shall remain in force until _____ [insert date of validity in accordance with Clause 4.19 of this tender]. [State Nodal Officer, 'SOURA Project' KSEB LTD.] shall be entitled to invoke this Guarantee till _____ [Insert date which is 30 days after the date in the preceding sentence].

The Guarantor Bank hereby agrees and acknowledges that the [State Nodal Officer, 'SOURA Project' KSEB LTD.] shall have a right to invoke this BANK GUARANTEE in part or in full, as it may deem fit. The Guarantor Bank hereby expressly agrees that it shall not require any proof in

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addition to the written demand by [State Nodal Officer, 'SOURA Project' KSEB LTD.], made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to [State Nodal Officer, 'SOURA Project' KSEB LTD.].

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by ----- [*Insert name of the Bidder*] and/or any other person. The Guarantor Bank shall not require [State Nodal Officer, 'SOURA Project' KSEB LTD.] to justify the invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against [State Nodal Officer, 'SOURA Project' KSEB LTD.] in respect of any payment made hereunder.

This BANK GUARANTEE shall be interpreted in accordance with the laws of India and the courts at Delhi shall have exclusive jurisdiction.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank.

This BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly [State Nodal Officer, 'SOURA Project' KSEB LTD.] shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the Bidder, to make any claim against or any demand on the Bidder or to give any notice to the Bidder or to enforce any security held by [State Nodal Officer, 'SOURA Project' KSEB LTD.] or to exercise, levy or enforce any distress, diligence or other process against the Bidder.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rs. _____ (Rs. _____ only) and it shall remain in force until _____ [*Date to be inserted*] with an additional claim period of thirty (30) days thereafter. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if [State Nodal Officer, 'SOURA Project' KSEB LTD.] serves upon us a written claim or demand.

Signature _____

Name _____

Power of Attorney No. _____

Email ID _____

For

_____ [*Insert Name of the Bank*]__

Banker's Stamp and Full Address.

Dated this ____ day of ____, 20__

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Annexure-4

CHECK LIST FOR BANK GUARANTEES		
Sl.No.	Details of checks	YES/NO
a)	Is the BG on non-judicial Stamp paper of appropriate value, as per applicable Stamp Act of the place of execution	
b)	Whether date, purpose of purchase of stamp paper and name of the purchaser are indicated on the back of Stamp paper under the Signature of Stamp vendor? (The date of purchase of stamp paper should be not later than the date of execution of BG and the stamp paper should be purchased either in the name of the executing Bank or the party on whose behalf the BG has been issued. Also the Stamp Paper should not be older than six months from the date of execution of BG).	
c)	Has the executing Officer of BG indicated his name, designation and Power of Attorney on the BG?	
d)	Is each page of BG duly signed / initialed by executant and whether stamp of Bank is affixed thereon? Whether the last page is signed with full particulars including two witnesses under seal of Bank as required in the prescribed Performa?	
e)	Does the Bank Guarantees compare verbatim with the Performa prescribed in the Bid Documents?	
f)	Are the factual details such as tender No. / Amount of BG and Validity of BG correctly mentioned in the BG	
i)	Whether overwriting/cutting if any on the BG have been properly authenticated under signature & seal of executant?	

(Signature of Authorized Signatory)
With seal

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**Annexure-5
GENERAL PARTICULARS OF THE BIDDER**

1	Name of the Bidder	
2	Registered Office Address	
3	Telephone	
4	E-mail	
5	Website	
6	Authorized contact person(s) with name, designation, Address and mobile phone no., e-mail address to whom all references shall be made	
7	Year of incorporation	
8	Bidder PAN Number	
9	Bidder TAN Number	
10	Have the Bidder ever been debarred by any Govt.Dept./Undertaking for undertaking any work.	
11	Reference of any document information attached by the bidder other than specified in the tender	
12	Whether the bidder wishes to form a project company for execution of work	Yes/No/May be
13	Bidder company is listed in India	Yes/No
14	Details of the ownership structure (Details of persons owning 10% or more of the total paid up equity of the Bidding company in the Format as below	
	Bank guarantee no. for EMD	
	Validity of EMD	
	<ul style="list-style-type: none">• Banker E-mail ID• Telephone No. of the banker• Correspondence address & PIN Code	

**(Signature of Authorized Signatory)
With seal**

**Annexure-6:
POWER OF ATTORNEY**

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

(a) 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/ground mounted solar PV scheme in Kerala in response to the Tender. No dated issued by [[State Nodal Officer, 'SOURA Project' KSEB LTD.]] 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 [State Nodal Officer, 'SOURA Project' KSEB LTD.] may require us to submit. The aforesaid Attorney is further authorized for making representations to the [State Nodal Officer, 'SOURA Project' KSEB LTD.] and providing information / responses to [State Nodal Officer, 'SOURA Project' KSEB LTD.] representing us in all matters before [State Nodal Officer, 'SOURA Project' KSEB LTD.] and generally dealing with [State Nodal Officer, 'SOURA Project' KSEB LTD.] in all matters in connection with this Bid till the completion of the bidding process as per the terms of the above mentioned Tender .

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 tender.

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

1.

(Signature)

Name.....

Designation

2.

(Signature)

Name.....

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.

The person authorized under this Power of Attorney, in the case of the Bidding Company / Lead Member being a public company, or a private company which is a subsidiary of a public company, in terms of the Companies Act, 2013, with a paid up share capital of more than Rupees Five crores, should be the Managing Director / whole time director/manager appointed under Companies Act, 2013. In all other cases the person authorized should be a director duly authorized by a board resolution duly passed by the Company.

Also, wherever required, the executant(s) should submit for verification the extract of the chartered documents and documents such as a Board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

**Annexure-7:
Consortium Agreement**

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

THIS Consortium Agreement ("Agreement") executed on this _____ day of _____ between M/s [insert name of Lead Member] _____ of the bidder and having its Registered Office at _____ (hereinafter called the "Lead Member", which expression shall include its successors, executors and permitted assigns)

and M/s _____ a Company incorporated under the laws of _____ and having its Registered Office at _____ (hereinafter called the "Technical Member", which expression shall include its successors, executors and permitted assigns), which expression shall include its successors, executors and permitted assigns)

WHEREAS, each Member individually shall be referred to as the "Member" and both the Members shall be collectively referred to as the "Members" in this Agreement.

WHEREAS the [Name of the Organisation](hereinafter called [NAME OF THE ORGANISATION] or [NAME OF THE ORGANISATION]), a section ___ Company incorporated under the Company's Act, 1956 has invited response to tender No. _____ dated _____.

WHEREAS the tender documents stipulates that the Lead Member may enter into a Technical Consortium Agreement with another Company / Corporate entity to fulfill the Technical Eligibility Criteria as stipulated in the tenderdocument. The Members of the Bidding Consortium will have to submit a legally enforceable Consortium Agreement in a format enclosed with the tender document.

NOW THEREFORE, THIS AGREEMENT WITNESSTH AS UNDER:

In consideration of the above premises and agreements all the Members in this Consortium do hereby mutually agree as follows:

1. We, the Members of the Consortium and Members to the Agreement do hereby unequivocally agree that (M/s _____), shall act as the Lead Member as defined in the tender for self and agent for and on behalf of Technical Member _____.
2. The Lead Member is hereby authorized by the Technical Member of the Consortium to bind the Consortium and receive instructions for and on their behalf.
3. The Lead Member shall be liable and responsible for ensuring the individual and collective commitment of each of the Members of the Consortium in discharging all of their respective obligations. Each Member further undertakes to be individually liable for the performance of its

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part of the obligations without in any way limiting the scope of collective liability envisaged in this Agreement.

4. Subject to the terms of this Agreement, the Technical member shall be responsible for providing technical knowledge for "Design, Manufacture, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance as per tender no..... to the lead member.
5. In case of any breach of any commitment by any of the Consortium Members, the Lead Member shall be liable for the consequences thereof.
6. This Agreement shall be construed and interpreted in accordance with the Laws of India and courts at Delhi alone shall have the exclusive jurisdiction in all matters relating thereto and arising there under.
7. It is hereby further agreed that in case of being shortlisted, the Members do hereby agree that they shall abide by the terms & conditions of the tender document.
8. It is further expressly agreed that this Agreement shall be irrevocable and shall form an integral part of the tender submitted to [NAME OF THE ORGANISATION] and shall remain valid till completion of the job assigned to the Contractor.
9. The Lead Member is authorized and shall be fully responsible for the accuracy and veracity of the representations and information submitted by the Members respectively from time to time in the response to tender.
10. It is hereby expressly understood between the Members that no Member at any given point of time, may assign or delegate its rights, duties or obligations under this agreement without the explicit permission of [NAME OF THE ORGANISATION].
11. This Agreement (a) Has been duly executed and delivered on behalf of each Member hereto and constitutes the legal, valid, binding and enforceable obligation of each such Member;
(b) Sets forth the entire understanding of the Members hereto with respect to the subject matter hereof; and
(c) May not be amended or modified except in writing signed by each of the Members and with prior written consent of [NAME OF THE ORGANISATION].

IN WITNESS WHEREOF, the Members have, through their authorised representatives, executed these present on the Day, Month and Year first mentioned above.

For M/s-----[Lead Member]

(signature, Name & Designation of the person authorized vide Board Resolution Dated [●])

Witnesses: 1) Signature----- 2) Signature -----

Name:

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Name:

Address:

Address:

Annexure-8:

FINANCIAL ELIGIBILITY CRITERIA REQUIREMENT

(To be submitted on the letterhead of Bidding Company / Lead Member/)

To,

[Name of the Organisation]

(Address)

Dear Sir,

Sub: Bid for EMPANELMENT OF BIDDERS FOR IMPLEMENTATION OF 200MWp OF GRID CONNECTED ROOF TOP/GROUND MOUNTED SOLAR PV SYSTEMS IN KERALA STATE DURING 2019-20 in response to the tender No: _____ dated: _____

a. We submit our Bid(s) for the total capacity ofkWp under EPC andkWp under Tariff basis (Insert total offered capacity in kWp) and details of our Financial Eligibility Criteria as follows:

Sl.No.	Capacity	Bid Capacity
1	Part-A: <=10kWp	
2	Part-B: 11-100kWp	
3	Part-C: >100kWp	
	Total bid capacity under EPC	
	Total bid capacity under Tariff basis	

We certify that the Financially Evaluated Entity (ies) had an Annual Turnover as follows:

i. The Annual turnover of Rupees 1.5Crore per MWp for three financial years in the last 5 financial years immediately preceding the bid opening date. The net worth in the 3 financial years preceding the bid opening date is positive.

OR

ii. The net worth equal to or greater than the value calculated at rate of Rs. 0.75 Cr per MWp of capacity offered and the Bidder has completed one financial year.

(Strike Out whichever Is Not Applicable)

Financial eligibility criteria

Name of Financially Evaluated Entity*	Relationship with Bidding Company**	Financial year	Year of Incorporation of the Bidding company	***Total Maximum Annual Turnover (Rs. Crore)	Net worth as per Clause 3.3.3 (in Rs. Crore)

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--	--	--	--	--	--

* The Financially Evaluated Entity may be the Bidding Company itself.

** The column for "Relationship with Bidding Company" is to be filled only in case financial capability of Parent Company and/or Affiliate has been used for meeting Qualification Requirements.

*** Bidder shall furnish maximum annual turnover in the last three financial years.

Yours faithfully

(Signature and stamp (on each page) of Authorized Signatory of Bidding Company.

Name:

Date:

Place:

(Signature and stamp (on each page) of Chartered Accountant/Statutory Auditors of Bidding Company.

Name:

Date:

Place:

Notes:

Audited consolidated annual accounts of the Bidder may also be used for the purpose of financial criteria provided the Bidder has at least 51% equity in each company whose accounts are merged in the audited consolidated accounts and provided further that the financial capability of such companies (of which accounts are being merged in the consolidated accounts) shall not be considered again for the purpose of evaluation of the Bid.

Annexure-9:

Format for certificate of relationship of Parent Company or Affiliate with the Bidder

To,

.....

Dear Sir,

Sub: Bid for EMPANELMENT OF BIDDERS FOR IMPLEMENTATION OF 200MWp OF GRID CONNECTED ROOF TOP/GROUND MOUNTED SOLAR PV SYSTEMS IN KERALA STATE DURING 2019-20.

We hereby certify that M/s.....,M/s.....,M/s.....are the Affiliate(s) /Parent Company of the Bidding Company as per the definition of Affiliate/Parent Company as provided in this tender and based on details of equity holding as on seven (7) days prior to the Bid Deadline. The details of equity holding of the Affiliate/Parent Company/Bidding Company or vice versa as on seven (7) days prior to the Bid Deadline are given as below:

Name of Bidding Company/applicant company	Name of the Affiliate of the Bidding Company/Applicant company/ Name of the Parent Company of the Bidding Company	Name of the Company having common control on the Affiliate and the Bidding Company	Percentage of Equity Holding of Parent Company in the Bidding Company/ Applicant company

*Strike out whichever is not applicable.

.....

(Insert Name and Signature of Statutory Auditor or practicing Company Secretary of the Bidder)

**Annexure-10:
Undertaking from the Financially Evaluated Entity or its Parent Company/ Ultimate Parent
Company
(On the Letter Head of the Financially Evaluated Entity or its Parent Company/Ultimate Parent
Company)(Wherever the Technical or Financial Eligibility Criteria of the said Company
is Used)**

Name:
Full Address:
Telephone No.:
E-mail address:
Fax/No.:

To,

.....

Dear Sir,

We refer to the tender No.....dated.....for “EMPANELMENT OF BIDDERS FOR IMPLEMENTATION OF 200MWp OF GRID CONNECTED SOLAR PV SYSTEMS IN KERALA STATE AT LOCATIONS IDENTIFIED BY ‘STATE NODAL OFFICER’, ‘SOURA’ PROJECT, KSEB LTD. during 2019-20”.

“We have carefully read and examined in detail the tender, including in particular, Clauseof the tender, regarding submission of an undertaking, as per the prescribed Format ____of the tender.

We confirm that M/s.....(Insert name of Bidding Company/) has been authorized by us to use our Technical and or financial capability for meeting the Technical and or Financial Eligibility as specified in Clause....of the tender referred to above.

We have also noted the amount of the Performance Guarantee required to be submitted as per Clause....of the tender the(Insert the name of the Bidding Company) in the event of it being selected as the Successful Bidder”.

We have also noted that “ Any change in the controlling equity of this entity will have to be made only with the prior approval of the STATE NODAL OFFICER, SOURA, KSEB LTD.”

We have also noted that “Any activity or decision effecting the controlling equity of organization participating in the tender either as a single entity or as a member in the consortium requires prior approval of STATE NODAL OFFICER, SOURA, KSEB LTD.”

We have also noted that as per the tender conditions “Where the eligibility criteria of the Parent company or affiliate was used for participating in tender the controlling equity of the parent company or affiliate is maintained upto a period of two (2) Operational Years after COD in accordance with the Tender”

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In view of the above, we hereby undertake to you and confirm that in the event of failure of(Insert name of the Bidding Company) to submit the Performance Guarantee in full or in part at any stage, as specified in the tender, we shall submit the Performance Guarantee not submitted by(Insert name of the Bidding Company)". We have attached hereto certified true copy of the Board Resolution Whereby the Board of Directors of our Company has approved issue of this Undertaking by the Company.

All the terms used herein but not defined, shall have the meaning as ascribed to the said terms under the tender.

Signature of Managing Director/Authorised signatory

Common seal ofhas been affixed in my/our presence pursuant to Board of Director's Resolution dated.....

WITNESS

.....

(Signature)

Name.....

Designation.....

.....

(Signature)

Name.....

Designation.....

Annexure-11

Shareholding Certificate

Name of the Equity holder	Type and number of shares owned	% of equity holding	Extent of voting rights

(Signature of Authorized signatory & Company Secretary)
With seal

Stamp and Signature of the Company Secretary/Chartered Accountant

Annexure-12

DECLARATION BY BIDDER

I/We,.....
.....hereby declare that I am not in any way related to any 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. who is in charge of or having control of this work. I agree that if, at any stage, it is found that this declaration is untrue the Bid security/ Performance security deposit as Bank guarantee, paid by me will be forfeited and the contract entered will stand cancelled. It is understood that the relationship with 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. referred to herein will be restricted to my Father, Mother, Son, Daughter, Brother, Sister, Direct Uncle, Nephew, Father-in-law, Mother-in-law, Brother-in-law, Sister-in-law, and First Cousins of the Officer concerned.

Place:

Date:

Signature of bidder

Annexure 13A

**FORM OF EPC AGREEMENT
(ON KERALA GOVERNMENT STAMP PAPER)**

This EPC Agreement is made on the ____ [Insert date] Day of ____ [Insert month] of ____ [Insert year] at ____ [Insert place]:

Between

____ [Insert name of the EPC Contractor], a Company/Limited Liability Partnership (LLP)/ Partnership Firm/Proprietorship firm incorporated under law of [____], having its registered office at ____ [Insert address of the registered office of EPC Contractor] (hereinafter referred to as "**Contractor**"), which expression shall, unless repugnant to the context or meaning thereof, be deemed to include its successors and permitted assigns) as a Party of the first part;

And

____ [State Nodal Officer, 'SOURA' Project, Kerala State Electricity Board Limited'], having its registered office at ____ (hereinafter referred to as "**KSEB LTD.**"), which expression shall, unless repugnant to the context or meaning thereof, be deemed to include its successors and permitted assigns) as a Party of the second part.

The expressions "**Contractor**" and "**KSEB LTD.**", wherever the context so permits or requires shall collectively be referred to as "**Parties**" and individually as the "**Party**".

Whereas, pursuant to the competitive bidding initiated by KSEB LTD. for selection of EPC contractors for implementation of grid connected rooftop/ground-mounted solar PV systems of various capacities aggregating to 50 MWP at identified locations in Kerala ("**Project**"), and as set out in the tender document no [____] ("**Tender Documents**"), the Contractor has been selected by the KSEB Ltd.

Whereas, pursuant to the issuance of letter of award dated [____] by KSEB LTD. and the Tender Documents, the Parties have agreed to enter into this EPC Agreement to lay down the terms and conditions for the development and O&M of the Solar Plant.

Whereas, the Contractor is engaged in the business of constructing and operation of solar photo voltaic power plants, including grid interactive rooftop/ground mounted solar PV plants and has the necessary expertise for development and O&M of the Solar Plant.

Whereas, in accordance with the Tender Documents, the Parties have agreed to sign this EPC Agreement to record the rights and obligations of the Parties in relation to the construction and operation of the Solar Plant.

Now therefore, in consideration of the premises and mutual agreements, covenants and conditions set forth herein, it is hereby agreed by and between the Parties as follows:

1. DEFINITIONS AND INTERPRETATION

- 1.1 **Definitions:** The terms used in this EPC Agreement, unless as defined below or repugnant to the context, shall have the same meaning as assigned to them by the Electricity Act, 2003 and the rules or regulations framed there under, including those issued/ framed by Appropriate Commission as amended or re-enacted from time to time.
- 1.1.1 **"Act" or "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.
- 1.1.2 **"Change in Law"** shall have the meaning ascribed under Article 20.1.
- 1.1.3 **"Construction Start Date"** means the date on which the construction of a Solar Plant should commence on satisfaction of the Conditions Precedent in accordance with Article 4.3.3.
- 1.1.4 **"Commercial Operation Date (COD)"** shall mean the date of issuance of the Commissioning Certificate.
- 1.1.5 **"Commissioning Certificate"** shall mean the certificate jointly signed by the Contractor and representative of KSEB LTD. in accordance with Article 8.3, upon the Solar Plant demonstrating that the Solar Plant meets the Minimum Performance Ratio, and shall be issued in the form set forth in Annexure 4.
- 1.1.6 **"Completion Certificate"** shall have the meaning ascribed under Article 10.2.
- 1.1.7 **"Contract Price"** shall mean with respect to each of the Solar Plant, a fixed lump sum amount including price for construction of the Solar Plant ("**Construction Price**") and the price for O&M ("**O&M Price**"), as set out in the Letter of Award issued by KSEB LTD. to the Contractor with respect to such Solar Plant and Annexure 10 (*Payment Terms*), and proposed to be paid by KSEB LTD. to the Contractor in accordance with the terms of this EPC Agreement for development and operation of the Solar Plant.
- 1.1.8 **"Contractor"** shall have the meaning ascribed in the recital and shall include the Contractor, legal personnel, representatives, successors and assignees.

- 1.1.9 **“Contractor Event of Default”** shall have the meaning ascribed in Article 21.2.
- 1.1.10 **“Contractor Preliminary Default Notice”** shall have the meaning ascribed in Article 21.5.1.
- 1.1.11 **“Contractor Termination Notice”** shall have the meaning ascribed in Article 21.5.4.
- 1.1.12 **“Defects Liability Period”** for a Solar Plant shall mean a period of five (5) years commencing from the COD of that Solar Plant.
- 1.1.13 **“Delay Invoice Date”** shall have the meaning ascribed in Article 8.7.
- 1.1.14 **“Dispute”** shall have the meaning ascribed in Article 25.1.
- 1.1.15 **“Effective Date”** shall have the meaning ascribed in Article 3.1.
- 1.1.16 **“EPC Agreement”** shall mean this agreement entered into between the Parties for engineering, procurement, construction, operation and maintenance of the Solar Plant, and shall include all EPC Orders, as may be executed between the Parties from time to time.
- 1.1.17 **“Expiry Date”** shall have the meaning ascribed in Article 3.3.
- 1.1.18 **“EPC Order”** shall mean the order issued by KSEB LTD. to the Contractor for each of the Solar Plant/Solar Plants to be constructed, operated and maintained by the Contractor in the format provided in Annexure 7.
- 1.1.19 **“Force Majeure Event”** shall have the meaning ascribed under Article 16.1.
- 1.1.20 **“Government Instrumentality”** means any department, division or sub-division of the Government of India or the State Government in India, and includes any commission, board, authority, agency or municipal and other local authority or statutory.
- 1.1.21 **“Indemnifying Party”** shall have the meaning ascribed under Article 22.1.
- 1.1.22 **“Indemnified Party”** shall have the meaning ascribed under Article 22.1.
- 1.1.23 **“Indemnifiable Losses”** shall have the meaning ascribed under Article 22.1.

- 1.1.24 **“Interconnection Point”** shall mean the point at which energy generated by the Solar Plant is supplied to the grid (at the net metering point).
- 1.1.25 **“KSEB LTD. Event of Default”** shall have the meaning ascribed under Article 21.3.
- 1.1.26 **“KSEB LTD. Preliminary Default Notice”** shall have the meaning ascribed under Article 21.4.
- 1.1.27 **“Law”** shall mean all laws including Electricity Laws in force in India and any statute, ordinance, regulation, notification or code, rule, or any interpretation of any of them by Governmental Instrumentality having force of law and shall further include without limitation all applicable rules, regulations, orders, notifications by Governmental Instrumentality pursuant to or under any of them and shall include without limitation all rules, regulations, decisions and orders of the Appropriate Commission.
- 1.1.28 **“Lenders”** means persons providing construction or operating financing to the Contractor in connection with construction, operation and maintenance of the Solar Plant.
- 1.1.29 **“Letter of Award”** shall mean the formal acceptance letter signed and issued by KSEB to the Selected Bidder for the development and operation of the Solar Project in accordance with the Tender Documents.
- 1.1.30 **“Long Stop date”** shall have the meaning ascribed under Article 4.
- 1.1.31 **“Minimum Performance Ratio ”** means achievement of 75% of the Performance Ratio.
- 1.1.32 **“O&M”** shall mean operation and maintenance of the Solar Plant.
- 1.1.33 **“O&M Period”** shall have the meaning ascribed under Article 9.1.
- 1.1.34 **“Performance Bank Guarantee”** shall mean the bank guarantee issued by a bank acceptable to KSEB LTD. for an amount equal to 10% of the total Contract Price to secure the performance of the Contractor.
- 1.1.35 **“Performance Ratio (PR)”** is a measure for performance of a Solar Plant taking into account environmental factors (temperature and irradiation), including the availability of grid, minimum level of irradiation needed to generate electrical energy, irradiation levels at a given period as more specifically provided in Annexure 9 (*Performance Parameters*).
- 1.1.36 **“Project”** shall have the meaning ascribed in the Recital.

- 1.1.37 **"Prudent Utility Practices"** shall mean the practices, methods and standards that are generally accepted internationally from time to time by electric utilities for the purpose of ensuring the safe, efficient and economic design, construction, commissioning, operation and maintenance of power generation equipment and which practices, methods and standards shall be adjusted as necessary, to take account of: (a) operation and maintenance guidelines recommended by the manufacturers of the plant and equipment to be incorporated in the Solar Plants; (b) the requirements of Law; and (c) the physical conditions at the site of the Solar Plants
- 1.1.38 **"Selected Bidder"** means [X], who is selected for the purpose of the construction, operation and maintenance of the Solar Plants in accordance with the Tender Documents.
- 1.1.39 **"Solar Plant"** shall mean each of the solar PV power plant as provided in Annexure 6 and 7 required to be set up at the identified location consisting of solar panels, inverter, mounting structures, cables, transformers, meters or any other associated items required for the safe and satisfactory operation of the Solar Plant, in accordance with the terms and conditions set out under this EPC Agreement and the Tender Documents.
- 1.1.40 **"Schedule Commercial Operation Date" or "SCOD"** shall mean date of expiry of six (6) months from the Construction Start Date.
- 1.1.41 **"Tender Documents"** shall have the meaning ascribed in the recital of this EPC Agreement.
- 1.1.42 **"Tender Submission Date(s)"** shall mean the date of the submission of tender for the Solar Projects in accordance with the Tender Documents.
- 1.1.43 **"Works"** shall have the meaning ascribed in Article 2.1.
- 1.2 **Interpretation:** Save where the contrary is indicated, any reference in this Agreement to:
- 1.2.1 **"Article", "Recital", "Annexure"** and a **"paragraph/clause"** shall be construed as a reference to an Article, Recital, Annexure and paragraph/clause of this EPC Agreement;

- 1.2.2 **"Affiliate"** shall mean a company that either directly or indirectly controls or is controlled by or is under common control of the Contractor and **"control"** means ownership by one company of at least fifty one percentage (51%) of the voting rights of the other company.
- 1.2.3 A **"Crore"** means a reference to ten million (10,000,000) and a **"Lakh"** means a reference to one tenth of a million (1,00,000);
- 1.2.4 An **"encumbrance"** shall be construed as a reference to a mortgage, charge, pledge, lien or other encumbrance securing any obligation of any person or any other type of preferential arrangement (including, without limitation, title transfer and retention arrangements) having a similar effect;
- 1.2.5 A **"person"** shall be construed to mean any person, firm, company, corporation, society, trust or partnership (having separate legal personality);
- 1.2.6 "Rupee", "Rupees", "INR" or "Rs" shall denote Indian Rupees, the lawful currency of India;
- 1.2.7 The "winding-up", "dissolution", "insolvency", or "reorganization" of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the Law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganization, dissolution, arrangement, protection or relief of debtors;
- 1.2.8 Words importing the singular shall include the plural and vice versa;
- 1.2.9 The tables of contents, headings and sub-headings in this EPC Agreement have been inserted for ease of reference only and shall not affect the interpretation of this EPC Agreement;
- 1.2.10 All interest, if payable under this EPC Agreement, shall accrue from day to day and be calculated on the basis of a year of three hundred and sixty five (365) days;
- 1.2.11 The terms "including" or "including without limitation" shall mean that any list of examples following such term shall in no way restrict or limit the generality of the word or provision in respect of which such examples are provided;
- 1.2.12 For the purpose of interpretation, the priority of the document shall be in accordance with the following sequence:

1. This EPC Agreement;
2. The EPC Order;
3. Letter of Award;
4. Tender Documents.

2. PURPOSE & SCOPE OF THE AGREEMENT

- 2.1 The scope of the work will include construction and operation of the Solar Plant in accordance with Annexure 1 (*Scope of Work & Performance Testing*), Annexure 2 (*Technical Specification*) and the Tender Documents; and performance and fulfillment of all other obligations of the Contractor in accordance with the provisions of this EPC Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Contractor under this EPC Agreement (“**Works**”).
- 2.2 For avoidance of doubt, it is clarified that any supplies which have not been specifically mentioned in this EPC Agreement but which are necessary for the Works shall be provided by the Contractor without any extra cost and within the time schedule for efficient and smooth operation and maintenance of the Solar Plant.
- 2.3 The Contractor undertakes and acknowledges that as and when the Contractor is awarded additional Solar Project, it shall implement such Solar Plant in accordance with the terms and conditions set out in this EPC Agreement.
- 2.4 The purpose of this EPC Agreement is to establish general terms and conditions which will be applicable to all Solar Plants developed and operated by the Contractor. The Parties will enter into separate EPC Order for each of the Solar Plant/Solar Plants awarded by KSEB LTD. to the Contractor, which shall contain specific details of the Solar Plant. The terms and conditions of this EPC Agreement will be applicable to each of the EPC Order.
- 2.5 The SNO reserves the right to increase/decrease the maximum capacity of 50MWp and minimum regional capacity of 5MWp upto 25% at its sole discretion. In case capacity is modified by SNO as above, the Contractor shall submit the equivalent amount of PBG/amended PBG to SNO within 30 days of issue of Award of Empanelment for the revised capacity.
- 2.6 Every EPC Order will be annexed to this EPC Agreement and shall form an integral part of this EPC Agreement. The Contractor will not commence any work in relation to a Solar Plant until KSEB LTD. has issued such EPC Order with respect to such Solar Plant.

3. TERMS OF THE EPC AGREEMENT

- 3.1 **EFFECTIVE DATE:** The EPC Agreement shall come into effect from the date of its execution (the "**Effective Date**").
- 3.2 **Term of EPC Agreement:** This EPC Agreement shall be valid for a term commencing from the Effective Date until the Expiry Date.
- 3.3 **Expiry date:** This EPC Agreement will expire on the expiry or termination of all the EPC Orders ("**Term**").
- 3.4 Each EPC Order shall commence on the date of execution of the EPC Order and in respect of each solar plant under the EPC order will remain valid till the end of the Defect Liability Period of that Solar Plant/plants under the EPC Order.
- 3.5 This EPC Agreement may be terminated before the Expiry Date in accordance with the terms and conditions provided herein.

4. Condition Precedent

The Conditions Precedent for each of the Solar Plant will be fulfilled by the Parties within 60 (Sixty) days of signing of the EPC Order ("**Long Stop date**").

4.1 Conditions Precedent of the Contractor

- 4.1.1 The Contractor has to provide the Performance Bank Guarantee as per the tender for the awarded capacity.
- 4.1.2 Save and except the Consents which will be issued by the Government Instrumentality upon completion of the Solar Plant, the Contractor has to obtain all consents required for installation and operation of the Solar Plant at the Location.

4.2 Conditions Precedent of the Procurer

- 4.2.1 KSEB LTD. will hand over the possession of the Location to the Contractor.

4.3 Consequences of fulfilment and non-fulfilment of Conditions Precedent

- 4.3.1 Each Party, responsible for satisfying any Conditions Precedent, shall keep the other Party informed of the progress being made in fulfilling such Conditions Precedent, and also upon the fulfilment or waiver of such Conditions Precedent, as the case may be.

- 4.3.2 The Party that is responsible for satisfying a particular Condition Precedent under Article 4.1 and 4.2 above, may request waiver of such Condition Precedent by notifying the other Party (who benefits from the satisfaction of the particular Condition Precedent) in writing of its intention to seek such waiver. If the other Party provides its consent in writing that it no longer requires the satisfaction of such Condition Precedent, then the performance of such Condition Precedent will be waived. However, if the waiver of such Condition Precedent is of such an importance that it cannot in all probability be waived, then instead of waiving any of the Conditions Precedent, the other Party may (at its discretion) extend the time for the fulfilment of that particular Condition Precedent.
- 4.3.3 Upon satisfaction of the Conditions Precedent or waiver by the other Party, each Party shall give written notice to the other Party, with documentary evidence, that the Conditions Precedent have been fulfilled or waived, as the case may be. The date of satisfaction of conditions precedent or waiver thereof will be the Construction Start Date.
- 4.3.4 If the Conditions Precedent are not satisfied by the Long Stop Date for any EPC Order, then, unless the Long Stop Date for the said EPC Order is extended by mutual agreement of the Parties, the EPC Order will stand terminated.
- 4.3.5 If the Construction Start Date in relation to an EPC Order cannot be achieved due to default of the Contractor, then the Performance Bank Guarantee pro-rated to the defaulted capacity in that EPC Order will be encashed by KSEB Ltd. If the Contractor has not provided the Performance Bank Guarantee in relation to the said EPC Order, then KSEB LTD., at its discretion, will be entitled to either (i) claim the amount of the Performance Bank Guarantee from the Contractor, or (ii) claim the amount of the Performance Bank Guarantee from any other bank guarantee furnished by the Contractor and/or EMD (provided under the Tender Documents).
- 4.3.6 If the Construction Start Date in relation to an EPC Order cannot be achieved due to default of KSEB LTD., then the Performance Bank Guarantee pro-rated to the defaulted capacity in that EPC Order (if furnished by the Contractor) will be returned by KSEB LTD. to the Contractor.

5. PERFORMANCE BANK GUARANTEE

- 5.1 The Contractor shall, for the performance of its obligations under this EPC Agreement, submit to KSEB LTD. irrevocable and unconditional bank guarantees at the time of execution of this EPC Agreement in the format provided in the Tender Documents for

an amount equal to 10% of the Contract Price (“**Performance Bank Guarantee/PBG**”) corresponding to the awarded capacity.

- 5.2 The Performance Bank Guarantee shall be initially valid for a period of 12 (Twelve) months and thereafter the bank guarantee shall be extended/renewed till the expiry of the Defect Liability Period of the relevant Solar Plant/Plants. In case of any extension is given to the Works, the corresponding extension shall be made in the PBG. Further, if the Contractor fails to renew the Performance Bank Guarantee at least 30 days prior to its expiry, KSEB LTD. shall have the right to encash the PBG at the cost and risk of the Contractor.
- 5.3 KSEB LTD. shall release 5% of the Performance Bank Guarantee after 1st year of COD for a Solar Plant, 10% after 2nd year, 15% after 3rd year, 20% after 4th year and balance 50% at the end of the Defect Liability Period after demonstration by the Contractor that the Solar Plant can achieve Minimum Performance Ratio in accordance with the testing procedure provided in this EPC Agreement and the Tender Documents. If the Solar Plant is unable to reach Minimum Performance Ratio, then the Contractor will be responsible for rectifying the Solar Plant so that the Solar Plant achieves Minimum Performance Ratio. If the Contractor fails to rectify the Solar Plant, then KSEB LTD. may rectify the Solar Plant at the cost of the Contractor, which cost, among others, can be recovered from the Performance Bank Guarantees provided by the Contractor.
- 5.4 Failure of the Contractor to submit the required Performance Bank Guarantee at the time of execution of the EPC Agreement or the EPC Order, as the case may be, will constitute sufficient grounds for non-execution of this EPC Agreement or the EPC Order, as the case may be, and forfeiture of the earnest money deposited (“**EMD**”) by the Contractor pursuant to the Tender Documents.
- 5.5 No interest will be paid by KSEB LTD. at any stage of contract on the PBG.
- 5.6 The Performance Ratio (PR) can be checked at any time during the term if deemed necessary by the authorized representative of the KSEB Ltd. If any unusual degradation is noticed in the PR, the Contractor shall attend and rectify the same within 48 hours of intimation. If not, the PBG will be forfeited.
- 5.7 Notwithstanding anything otherwise provided in this EPC Agreement, KSEB LTD. shall have the right to forfeit the PBG related to a Solar Plant without prejudice to the Contractor being liable for any further consequential loss or damage incurred to KSEB LTD., if the Contractor fails to commission the Solar Plants in accordance with the requirements provided under this EPC Agreement within the SCOD.

6. KSEB LTD.'s Obligations

- 6.1 KSEB LTD. shall undertake to comply with and perform all its obligation set out under this EPC Agreement.
- 6.2 Provide access to the Contractor (and its representatives) to the Location for commissioning, operation and maintenance of the Solar Plant in accordance with this EPC Agreement.
- 6.3 KSEB LTD. shall provide data room access to the Contractor in respect of all the Locations handed over.
- 6.4 KSEB LTD. shall provide all reasonable assistance for connecting the Solar Plants with the grid of KSEB Ltd.
- 6.5 Make payment to the Contractor as per the payment terms stipulated in this EPC Agreement on achieving of the various milestones.
- 6.6 Issue a Commissioning Certificate to the Contractor on completion of Works in accordance with this EPC Agreement.
- 6.7 Take over the Solar Plant after the expiry of the 2 years O&M period of the plant in accordance with this EPC Agreement.

7. Contractor's Obligations

- 7.1 Subject to the terms and conditions of this EPC Agreement, the Contractor shall at its own cost and risk:
 - 7.1.1 obtain consents for its obligations under this EPC Agreement;
 - 7.1.2 carry out all Works;
 - 7.1.3 provide to KSEB LTD. information on the Solar Plant in accordance with Annexure 8;
 - 7.1.4 remote monitoring and data acquisition through remote monitoring system software at KSEB LTD. with latest software/hardware configuration and service connectivity for online/real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the Contractor;
 - 7.1.5 provide real-time Solar Plant monitoring data on a specified intervals (say 15 minute) through open protocol at KSEB LTD. Data Center in XML/JSON format;
 - 7.1.6 the following lock-in period will be applicable to the Selected Bidder:
 - (i) If the Selected Bidder is a consortium of members and the Selected Bidder has

incorporated a special purpose vehicle, which is the Contractor, for the purpose of this EPC Agreement, then the members of the consortium whose technical and the financial qualification were used to meet the technical and financial requirements of the Tender Documents will jointly hold at least 51% of the equity share in the Contractor, and Lead Consortium Member (i.e., the consortium member meeting the financial qualifications will be the Lead Consortium Member) should hold at least 26% of the equity share in the Contractor, and consortium member with technical qualifications will hold at least 5% of the equity share in the Contractor, commencing on the incorporate of the Contractor for a period of two (2) years from the last Commercial Operation Date achieved under the EPC Agreement;

(ii) If the Selected Bidder is a person and the Selected Bidder has incorporated a special purpose vehicle, which is the Contractor, for the purpose of this EPC Agreement, then the Selected Bidder will hold at least 51% of the equity share in the Contractor, commencing on the incorporate of the Contractor for a period of two (2) years from the last Commercial Operation Date achieved under the EPC Agreement.

- 7.1.7 fulfill all obligations undertaken by the Contractor under this EPC Agreement, read in conjunction with terms and conditions of the Tender Document;
- 7.1.8 ensure operations and maintenance of the Solar Plants for 2 years from COD in a prudent utility basis with an objective of regular generation power from the Solar Plant in accordance with this EPC Agreement;
- 7.1.9 The Contractor shall open their local offices in each district under the region/regions where the work is awarded within one month of signing the agreement and the details are to be provided to SNO.
- 7.1.10 Submission of the name of the authorized representative of the Contractor to the KSEB LTD., who will act as a single point of contact for future communication;
- 7.1.11 Submit a monthly progress report during the construction period (from Construction Start Date to COD) to KSEB LTD., within first seven (7) days of the subsequent month;
- 7.1.12 Submit biannually operation & maintenance report to KSEB LTD. for the first 2 years commencing from COD of a Solar Plant in the format provided in Annexure 8, within seven (7) days of the expiry of the half yearly period.

7.2 Contractor's Construction Responsibilities

- 7.2.1 The Contractor will be responsible for the construction of the Solar Plants in accordance with this EPC Agreement, the specifications provided in the Tender Documents and Prudential Utility Practices.
- 7.2.2 The Contractor shall minimize inconvenience and interference with the user/owner of the Locations to the extent practical for the purpose of the construction, operation and maintenance of the Solar Plant.
- 7.2.3 KSEB LTD. will provide standard drawings for different capacity of the Solar Plant to be installed at the Locations ("**Standard Plant Layout**") through a designated website, access to which will be provided by KSEB LTD.to the Contractor. The Contractor will consider the Standard Plant Layout for the design and construction of the Solar Plants. If any deviation is required from the Standard Plant Layout, then the Contractor within fifteen (15) working days of the Construction Start Date provide to KSEB LTD. modified drawings of the Standard Plant Layout for approval of KSEB LTD. ("**Modified Plant Layout**"). Within a period of seven (7) days of receipt of the Modified Plant Layout, KSEB LTD. may either approve the Modified Plant Layout or provide comments/objections to the Modified Plant Layout. If KSEB LTD.does not approve or provide any comments/objections to the Modified Plant Layout within the said period of seven (7) days, then the Modified Plant Layout will be considered as deemed approved by KSEB Ltd. If KSEB LTD. comments/objects (because of any deviation by the Contractor from the specifications of the Solar Plants provided in the Tender Documents and deviation from the Standard Plant Layout) to the Modified Plant Layout, then the Contractor will amend the Modified Plant Layout to take into consideration the comments/objections of KSEB LTD. and will furnish a revised Modified Plant Layout to KSEB LTD. within a period of seven (7) days of receipt of the comments/objections from KSEB Ltd. This process will continue until the Modified Plant Layout is approved in accordance with this provision. For the avoidance of doubt, it is clarified that any approval or deemed approval of the Standard Plant Layout or Modified Plant Layout by KSEB LTD. will not relieve the Contractor of its obligation to construction, develop and operate the Solar Plants in accordance with this EPC Agreement. No delay can be claimed by the Contractor under this provision for multiple submission of the Modified Plant Layout to KSEB Ltd.
- 7.2.4 The Contractor will provide to KSEB LTD. a list of major equipment that will be used for the construction of the Solar Plant and the connecting at the Interconnection Point. Such list of materials shall be provided within thirty (30) days of the Construction Start Date.
- 7.2.5 Unless otherwise agreed between the Parties, the Contractor will not: (a) chip the rooftop; or (b) disturb water proofing of the rooftop of a building on which the Solar

Plant is constructed; or (c) carry out any modification of the Location without the prior written consent of KSEB Ltd. If any damage (including damages as identified above) is caused to the Location or facilities at the Location due to the Contractor ("**Damaged Location**"), then the same shall be rectified by the Contractor at its own cost. The Contractor will ensure that Location is not drilled (save and except for limited purpose of setting up the Solar Plant). If Contractor fails to rectify the Damaged Location within seven (7) days of notification of the Damaged Location to the Contractor by KSEB LTD., then KSEB LTD. may get the Damaged Location rectified through a third party at the cost of the Contractor. If the Contractor fails to reimburse the cost of rectifying the Damaged Location within a period of seven (7) days, then such expenses will be adjusted by KSEB LTD. from the payments to be made by KSEB LTD. to the Contractor and/or from the Performance bank Guarantees.

- 7.2.6 All cost of construction and operation of the Solar Plant including towards temporary works required at the time of construction of the Solar Plant will be borne by the Contractor including the cost of electricity, water and any other items required if any during the construction works. The contractor shall make use of recycled water for cleaning the panels.
- 7.2.7 KSEB LTD. will be entitled to supervise and inspect the Solar Plants by giving reasonable notice to the Contractor. The Contractor will maintain at the Location and make available for inspection of KSEB LTD. at all reasonable times, copies of the results of all tests specified in the technical specifications in Volume-III of the Tender Documents. If it is found that the construction works and/or operation of the Solar Plant is not in accordance with the Tender Documents, then KSEB LTD. may seek clarifications/rectification of the works by the Contractor or require the works to be stopped or to comply with the Tender Documents.

8. Commissioning and COD

- 8.1 **Energization Certificate:** Upon completion of construction of a Solar Plants, the Contractor will notify KSEB LTD. and the Electrical Inspector (as appointed by Government Instrumentality) that the construction of the Solar Plant is completed and the Contractor is ready commence completion test. Within fifteen (15) days of the above notification by the Contractor, KSEB LTD. and Electrical Inspector will conduct test to certify if the Solar Plant is construction in accordance with this EPC Agreement and applicable Laws and if constructed in accordance with the EPC Agreement and applicable Laws, then the Electrical Inspector will issue an energization certificate for the Solar Plant ("**Energization Certificate**"). Energization certificate from Electrical Inspector is applicable only for plants with capacity above 10kWp. If the construction is not completed in accordance with the EPC Agreement and applicable Laws, then the

Electrical Inspector will provide to the Contractor a list of defects to be rectified by the Contractor. After the Contractor has rectified the defects, the procedure as provided above will be repeated by the Parties until Energization Certificate is issued or the relevant EPC Order for the Solar Plant is terminated in accordance with this EPC Agreement.

8.2 **Synchronization:** Upon issuance of the Energization Certificate (or readiness of plant for <10kWp), the Contractor will give the Discom and KSEB LTD. at least fifteen (15) days of written notice of the date on which it intends to synchronize the Solar Plant with the Interconnection Point. Subject to the Contractor fulfilling its obligations under this EPC Agreement, KSEB LTD. will ensure that the Solar Plant is connected to the Interconnection Point. The Contractor will ensure that the Solar Plant meets all the connection conditions prescribed in applicable Laws for connecting to the Interconnection Point. The equipment required for synchronization of the Solar Plant will be provided by the Contractor at its own cost.

8.3 **Performance Ratio testing and certification of Commercial Operation Date**

8.3.1 Within seven (7) days of synchronization of a Solar Plant, the Contractor will be required to conduct testing of the Solar Plant in the presence of representative of KSEB LTD. to demonstrate that the Solar Plant achieves Minimum Performance Ratio. If a Solar Plant achieves the Minimum Performance Ratio, then KSEB LTD. will issue Commissioning Certificate for that Solar Plant/ EPC Order in accordance with Annexure 4. The day of issuance of the Commissioning Certificate after demonstrating the minimum performance ratio will be the Commercial Operation Date of the relevant Solar Plant/ EPC Order and the Solar Plant will commence supply of electricity in accordance with this EPC Agreement.

8.3.2 If Minimum Performance Ratio is not achieved by a Solar Plant, then the Contractor will rectify the Solar Plant and the procedure as provided above will followed for issuance of the Commissioning Certificate. This process will be repeated until the Commissioning Certificate is issued by KSEB LTD. or the EPC Order for the Solar Plant is terminated in accordance with this EPC Agreement.

8.4 **Scheduled Commercial Operation Date**

8.4.1 The Contractor is required to achieve the Commercial Operation Date by the Schedule Commercial Operation Date. If a Solar Plant cannot achieve Commercial Operation Date by the Schedule Commercial Operation Date due to (i) Force Majeure or (ii) for any reason which is beyond the control of the Contractor, then the Contractor will give

a written notice to KSEB LTD. and KSEB LTD., if satisfied with the aforesaid reasons, will grant extension of the Schedule Commercial Operation Date.

8.4.2 Save and except as provided in Article 8.4.1 above, if the Contractor is unable to achieve Commercial Operation Date by the Schedule Commercial Operation Date, then the Contractor will be pay liquidated damages for delay of achievement of Commercial Operation Date to KSEB LTD. in accordance with Article 12.

8.5 **Ownership, possession and risk of the Solar Plant**

The ownership of the equipment and the Solar Plant will stand transferred to KSEB LTD. on the payment of the Construction Price after CoD. The possession and risks of the equipment and the Solar Plant will remain with the Contractor and will stand transferred to KSEB LTD. on the handover of the Solar Plant to KSEB LTD. in accordance with Article 10.

8.6 **Delay in COD of the plant due to location becoming non-feasible**

If any Location becoming non-feasible for the construction of the Solar Plant prior to the Commercial Operation Date due to factors beyond the control of the Contractor, then KSEB LTD. will identify an alternate Location for the Solar Plant. The Contractor will not be liable for any compensation in such cases.

8.7 **Delay in COD of the Solar Plant due to distribution/transmission infrastructure not complete by KSEB LTD.**

KSEB LTD. shall ensure that all arrangements and infrastructure for transmission or/and distribution of solar power from the Solar Plant beyond the Interconnection Point is ready on or prior to the Schedule Commercial Operation Date and is maintained in accordance with applicable laws through the Term of EPC Agreement.

After the Scheduled Commercial Operation Date, if the Solar Plant has been constructed and the Energization Certificate has been issued but necessary power evacuation/transmission infrastructure beyond the Interconnection Point is not ready for reasons not attributable to the Contractor for a period of [90] days after the issuance of the Energization Certificate ("**Delay Invoice Date**"), then the Contractor will be entitled to raise the invoice in accordance with Article 13.6 as if the Solar Plant has achieved deemed CoD.

If the evacuation/transmission infrastructure beyond the Interconnection Point is completed within [90] days of the Delay Invoice Date, then the Contractor proceed with commissioning and performance test in accordance with Article 8.2 and 8.3.

9. Operation and Maintenance of the plant

- 9.1 O&M of the solar plant up to the Interconnection Point for a period of 2 years from the COD is the responsibility of the Contractor ("**O&M Period**").O&M during this period shall include supply of spares of panels, inverters and all equipment in the Solar Plant including transportation of these items from the original manufacturer, storage, consumables, general comprehensive insurance covering fire and earthquake.
- 9.2 The Solar Plant should be maintained shadow free. The tree branches if any causing hindrance to the shadow free operation of solar plant shall be cut and removed under the supervision of KSEB LTD. with the permission of appropriate authorities/land/premise owners.
- 9.3 The Contractor shall ensure efficient operation of the Solar Plant and achieve the maximum power generation from the Solar Plant. The Contractor shall also attend to all failures, rectifications, breakdowns, and provide a comprehensive operation and maintenance checks during the O&M Period.
- 9.4 Monthly reports has to be sent to KSEB LTD. Corporate office by E-mail (as provided by KSEB LTD.) during the construction period and biannual reports during the O&M Period. The Contractor should not misuse the Location and disregard the responsibility or the safety of machinery within the Location. The Parties may extend the O&M Period by entering into a separate O&M agreement in accordance with applicable laws.
- 9.5 Operation and maintenance charges of first 2 years from COD of the Solar Plants shall be released at the end of each year based on the achievement of the Minimum Performance Ratio as specified under this EPC Agreement. The Contractor shall be required to evaluate the Performance Ratio(PR)at the end of every year of operation & maintenance period. The PR values to be demonstrated by the Contractor at the end of each year after accounting for the degradation as per the scope of work specified in this EPC Agreement .If the Minimum Performance Ratio is not achieved, then the Contractor shall demonstrate PR for another consecutive 7 days. If Minimum Performance Ratio is not achieved in the second test, then the Contractor shall rectify the Solar Plant at his own cost to achieve the Minimum Performance Ratio within the next [15] days. If the Minimum Performance Ratio is not achieved by the end of the

O&M Period, then the Contractor shall be liable to pay compensation for lower generation in accordance with the below provision.

The Contractor shall be responsible for all required activities at his own cost for the demonstration of the Minimum Performance Ratio. The Contractor shall also install Data Acquisition system as per the requirement of KSEB LTD. for measuring and monitoring of various parameters of the Solar Plant and also for providing remote alarm at KSEB LTD. monitoring station for generation below the Minimum Performance Ratio. The Contractor shall design the Solar Plant with sufficient number of solar PV panels to produce the agreed capacity at each Location.

- 9.6 The PR can be checked at any time during the Term if deemed necessary by the authorized representative of KSEB Ltd. The Contractor shall be liable to pay monetary compensation to KSEB LTD. for generation below Minimum Performance Ration. Monetary compensation shall be computed as follows:

Previously measured PR	PR1
Current PR	PR2
Average PR during the measurement period	$PR_{av} = (PR1 + PR2) / 2$
Energy generated during the measurement period	E units
Shortfall in energy due to PR below 75%	$B = E \times ((75\% - PR_{av}) / PR_{av})$ units
Monetary Compensation	= B X Solar forbearance REC price as on bid date

The compensation shall be realized from the Performance Bank Guarantee. The release of annual O&M charges shall be withheld on non-achievement of Minimum Performance Ratio.

10. HANDING OVER THE SOLAR PLANT

- 10.1 At the end of the O&M Period, if there are no obligations arising out of this EPC Agreement, then the authorised representative of KSEB LTD. will furnish a certificate to the Contractor to the effect that all the Works upto the end of O&M period of 2 years are completed satisfactorily and no work upto that period remains incomplete as per the terms of the EPC Agreement. Dues and liabilities, if any, outstanding against the Contractor shall also be included in this certificate. The Contractor shall hand over the Solar Plant to KSEB LTD. on the day of issuance of this Certificate.

- 10.2 The handing over of the plant shall be at the end of the O&M Period when the authorized representative of KSEB LTD. issues a certificate stating that the Solar Plant continues to achieve Minimum Performance Requirement and the Contractor has taken away the surplus material from the Location. If the Contractor, within a period of [30] days of expiry of the O&M period, fails to complete any work that is required for the issuance of the Certificate including rectifying the Solar Plant so that the Solar Plant reaches Minimum Performance Ratio, then KSEB LTD. will complete such work and any amount incurred for the same will be realized from the Contractor, which may be recovered from the Performance Bank Guarantees or any amount due to the Contractor (including from other EPC Orders).
- 10.3 After the handover of the Solar Plant, the Performance Bank Guarantee or any amount remaining from the Performance Bank Guarantee, as the case may be, will be returned to the Contractor on pro-rata basis i.e. 5% of the performance bank guarantee will be released after 1ST year from CoD , 10% after 2ND year , 15% after 3rd year , 20% after 4th year and balance 50% after 5th year from CoD after demonstration of desired performance ratio (AC) as per clause 2.2.2 and considering liquidated damaged, if any.

11. DEFECTS LIABILITY PERIOD

During the Defect Liability Period, the Contractor shall rectify any Works that is found defective. The Contractor is liable to rectify any defect or damage of the equipment notified by the authorized representative of KSEB LTD., at Contractor's cost during the Defect Liability Period, which shall be 5 years reckoned from the date of COD. The Contractor warrants the performance of the equipment of the Solar Plant during this period. If the Contractor fails to rectify such defect/deficiency within a reasonable time, KSEB LTD. shall have the right to rectify /make good such defects/deficiencies through other agencies at the cost and expense of the Contractor. KSEB LTD. shall have the right to recover such cost from the Contractor including from the amounts payable to the Contractor or encashment of the Performance Bank Guarantee.

The Contractor will obtain manufacturers' warranties on the PV modules, inverters, as well as other components of the power system for which manufacturer's warranties are available, in the name of the KSEB Ltd. Manufacturers' warranties will be as per the specifications provided in the Tender Documents.

If the drawings, specifications and contract documents do not contain particulars of materials and work which are necessary for the proper completion of the Work, all such materials and works shall be supplied and executed by the Contractor without any extra charge. Any unusual defects like considerable dip in Performance Ratio, etc. if notified by KSEB LTD. shall be attended within 48 hours.

On successful completion of defect liability period, if there are no obligations to arise out of the Contract, authorised representative of SNO shall furnish a certificate to the Contractor (**'Completion Certificate'**) to the effect that all the works are completed satisfactorily and no work remains incomplete as per the terms of the contract. Dues and liabilities if any, outstanding against the Contractor shall also be included in this certificate.

12. LIQUIDATED DAMAGES / PENALTY

- 12.1 Any delay in commissioning a Solar Plant beyond the SCOD will adversely affect KSEB LTD. and KSEB LTD. shall have the right to be compensated for loss cause by such delay. The maximum amount of liquidated damages shall be limited to the Performance Bank Guarantee for the relevant Solar Plant.
- 12.2 For each week of delay in achieving the Commercial Operation Date beyond the Schedule Commercial Operation Date, the Contractor will pay liquidated damages (LD) at the rate of 5 % of Performance Bank Guarantee pro-rated to the capacity of the plant in the relevant EPC Order subject to a maximum of 100 % of Performance Bank Guarantee pro-rated to the capacity of the plant in the relevant EPC Order.
- 12.3 If the Solar Plant do not achieve Commercial Operation Date within 20 weeks of the Schedule Commercial Operation Date, then KSEB LTD. shall, in addition to the right to liquidated damages provided under Article 12.2, have the right to terminate the relevant plant capacity under the EPC Order/the EPC order as the case may be and the work undertaken by a third party at the cost and expense of the Contractor.
- 12.4 For the calculation of LD, delay of 4 days and above will be considered as delay of one week.

13 PAYMENT TERMS

- 13.1 In case of plant capacity greater than or equal to 10 kWp, 50% of the contract value excluding O&M(on prorate basis), will be released to the contractor as cost of major components of the plant [PV modules, Inverter, transformers (if required) and module mounting structures] after delivery of this material at site, inspection and verification of the aforesaid equipments including RFID of solar panels by authorized departmental officers. No part payment in case of plant capacity below 10 kWp. Location wise billing or combined bills for all installations made till the end of the previous month can be raised by the contractor for payment purpose in the subsequent month.

- 13.2 The contractor shall inform the authorized representative of SNO about the delivery of material one week in advance.
- 13.3 The authorized representative of SNO shall ensure the site acceptance / rejection of the received material at site within three days of delivery of material along with submitting the SAT procedure of the delivered material from the manufacture by the contractor.
- 13.4 Invoice for 50% payment shall be submitted by the contractor as per the accepted price schedule which is to be verified and made ready for release of payment within 1 month of receipt of the invoices subject to the satisfaction of the above conditions.
- 13.5 100% of the total Contract amount/balance 50% (as the case may be)excluding Operation and Maintenance charges after considering any liquidated damages if any, on pro-rata basis shall be released after CoD of the solar plant/plants. The contractor can submit the final invoice as per the accepted price schedule within 10 days on proving the Performance ratio (AC) after completing the plant. The invoices shall be verified and final payment will be released within 2 months of receipt of the invoices subject to the satisfaction of the above conditions.
- 13.6 In case of any delay in payment beyond the stipulated period, interest at the prevailing SBI Marginal Cost of Lending Rate (MCLR) will be paid to the contractor.
- 13.7 The Operation & Maintenance charges shall be released at the end of each year after commissioning and demonstration of the specified Performance ratio (AC) as per this Agreement and tender documents at the end of each year during O&M period (2 years).
- 13.8 **Additional Work:** The Contractor shall be eligible for additional payment for the additional works, if any, required to be carried out at any location due to site peculiarities/difficulties which are not foreseen and which are necessary for completing the installation, with prior approval of the KSEB Ltd.
- 13.9 **Rates for Additional Work:** The rates of additional electrical work within the Location shall be decided on the basis of at par rates of Delhi Schedule Of Rates (DSR), for Electrical works, Central Public Works Department , amended from time to time; The rates of additional civil work shall be as per at par the rates of Delhi Schedule Of Rates (DSR) for building works, Public Works Department, amended from time to time.
- 13.10 **Taxes and Duties:** The Contractor shall bear and promptly pay all statutory taxes, duties, levies and cess, assessed/ levied on the Contractors or their employees, which are required to be paid by the Contractor as per the Law in relation to the execution of the EPC Agreement or/ and Tender Documents and for commissioning and O&M of the Solar Plant as per the terms of this EPC Agreement or/ and Tender Document. KSEB

LTD. shall not be liable for any payment of taxes, duties, levies, cess whatsoever for discharging any obligation of the Contractor beyond the quoted rate. Statutory recoveries like IT – TDS, GST-TDS, KCWWF etc will be deducted by KSEB LTD. from the amount due to the contractor and remitted to the Government duly.

14 METERING

- 14.1 The metering of the Solar Plant shall be as per the Scope of Work provided in Annexure 1 of this EPC Agreement and as specified in the Tender Documents.
- 14.2 The type and accuracy of the meters shall be as per the technical specifications provided in the Tender Documents.
- 14.3 Solar energy meter or its display shall be available near the net meter.
- 14.4 The metering system shall be tested and maintained by the Contractor. The meters shall be calibrated and tested annually by the Contractor through the TMR Divisions of KSEB LTD. or through authorized testing centres till handing over the Solar Plant.

15 WARRANTIES

- 15.1 KSEB LTD. warrants to the Contractor as follows:
 - 15.1.1 it has all corporate powers and applicable governmental approvals to issue the Tender Documents;
 - 15.1.2 it has the full legal right, capacity and authority to enter into this EPC Agreement and this EPC Agreement constitutes a legal, valid and binding obligation on it; and
 - 15.1.3 it has the corporate power and authority to execute and deliver the terms and provisions of this EPC Agreement and has taken all necessary corporate action to authorize the execution and delivery by it of this EPC Agreement and the transactions contemplated hereby.
- 15.2 The Contractor represents and warrants to KSEB LTD. that:
 - 15.2.1 it is duly organised and validly existing under the laws of India, and has full power and authority to execute and perform its obligations under this EPC Agreement and to undertake the Works contemplated hereby;
 - 15.2.2 it has taken all necessary corporate and other actions under applicable laws to authorise the execution and delivery of this EPC Agreement and to validly exercise its rights and perform its obligations under this EPC Agreement;
 - 15.2.3 this EPC Agreement constitutes its legal, valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this EPC

Agreement will be legally valid, binding and enforceable obligations against it in accordance with the terms hereof;

15.2.4 the execution, delivery and performance of this EPC Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the terms of its memorandum and articles of association or any applicable laws; and

15.2.5 it has the necessary workmanship required to execute the scope of work.

16 FORCE MAJEURE

16.1 A party effected by event of Force Majeure means KSEB LTD. or the Contractor, as the case may be, whose performance has been affected by Force Majeure Event ("**Affected Party**").

16.2 "**Force Majeure Event**" means any act or event (or combination of acts as events) that prevents the Affected Party from performing its obligation in accordance with the EPC Agreement, if such act or event is beyond the reasonable control of the Affected Party and such Affected Party had been unable to overcome such act or event (or combination of acts as events) with the exercise of due diligence. Subject to the foregoing conditions, Force Majeure Event will include without limitation the following acts or events: (i) natural phenomena, such as storms, hurricanes, floods, lightning, volcanic eruptions, earthquakes; (ii) explosions or fires arising from causes unrelated to the acts or omissions of the Affected Party; (iii) acts of war or public disorders, civil disturbances, riots, insurrection, sabotage, epidemic, terrorist acts, or rebellion blockade or strike of national nature (i.e., not at the Affected Party's business); or (iv) any action by any Governmental Instrumentality, which prevents or prohibits the Parties from carrying out their respective obligations. A Force Majeure Event shall not be based on the economic hardship of either Party.

16.3 Force Majeure Exclusions

Force Majeure shall not include (i) any event or circumstance which is within the reasonable control of the Parties, and (ii) the following conditions, except to the extent that they are consequences of an event of Force Majeure:

- (a) Inability to connect the Solar Plant to the grid;
- (b) Inability to obtain Commissioning Certificate;
- (c) Unavailability, late delivery, or changes in cost of the plant, machinery, equipment, materials, spare parts, fuel or consumables for the Solar Plant;
- (d) Delay in the performance of any contractor, sub-contractor or their agents excluding for conditions as mentioned in Article 16.2;
- (e) Non-performance resulting from normal wear and tear typically experienced in

- power generation materials and equipment;
- (f) Strikes at the facilities of the Affected Party;
- (g) Insufficiency of finances or funds or the EPC Agreement becoming onerous to perform; and
- (h) Non-performance caused by, or connected with, the Affected Party's:
 - a.i.1. i. Negligent or intentional acts, errors or omissions;
 - ii. Failure to comply with an applicable Law; or
 - iii. Breach of, or default under this EPC Agreement.

16.4 Notification of Force Majeure Event

16.4.1 The Affected Party shall give notice to the other Party of any Force Majeure Event as soon as reasonably practicable, but not later than seven (7) Days after the date on which such Party knew or should reasonably have known of the commencement of Force Majeure Event.

16.4.2 Provided that such notice of Force Majeure Event shall be a pre-condition to the Affected Party's entitlement to claim relief under this EPC Agreement. Such notice shall include full particulars of the Force Majeure Event, its effects on the Party claiming relief and the remedial measures proposed. The Affected Party shall give the other Party regular (weekly or monthly basis, as communicated and agreed upon between the Parties in writing) reports on the existence Force Majeure Event and/ or progress of those remedial measures and such other information as the other Party may reasonably request about the Force Majeure Event.

16.4.3 The Affected Party shall give notice to the other Party of (i) the cessation of the relevant Force Majeure Event; and (ii) the cessation of the effects of such Force Majeure Event on the performance of its rights or obligations under this EPC Agreement, as soon as practicable, but not later than seven (7) Days after becoming aware of each of these cessations.

16.5 Duty to Perform and Duty to Mitigate

To the extent not prevented by a Force Majeure Event pursuant to Article 16.4, the Affected Party shall continue to perform its obligations pursuant to this EPC Agreement. The Affected Party shall use its reasonable efforts to mitigate the effect of any Force Majeure Event.

16.6 Available Relief for a Force Majeure Event

16.6.1 Subject to this Article 16:

- (a) no Party shall be in breach of its obligations under this EPC Agreement to the extent that the performance of its obligations was prevented, hindered or delayed due to a Force Majeure Event;
- (b) every Party shall be entitled to claim relief in relation to a Force Majeure Event in regard to its obligations;
- (c) for avoidance of doubt, none of the Parties obligation to make payments of money due and payable prior to occurrence of a Force Majeure Events under this EPC Agreement shall be suspended or excused due to the occurrence of a Force Majeure Event.

17 INSURANCE

17.1 Insurance

The Contractor shall maintain at its own costs, throughout the Term and any extensions thereof, all mandatory insurance coverage for adequate amount including but not restricted to, theft, damages, comprehensive general liability insurance covering the Solar Plant and accidental losses, bodily harm, injury, death of all individuals employed/assigned by the Contractor to perform the services required under this EPC Agreement and the occupants of the premises as per clause 5.13.3 of the tender documents.

17.2 Application of Insurance Proceeds

17.2.1 Any insurance claim received due to loss or damage to the Solar Plant will be first applied to reinstatement, replacement or renewal or making good of such loss or damage of the Solar Plant. If the insurance claim is not adequate to reinstate the Solar Plant, then Contractor will be responsible for the payment of excess cost.

17.2.2 If a Force Majeure Event renders the Solar Plant no longer economically and technically viable and the insurers make payment on a "total loss" or equivalent basis, then KSEB LTD. will be entitled to retain the insurance proceeds without any obligation to construct a new solar plant.

17.2.3 If the Contractor fails to maintain insurance in accordance with the requirement of this EPC Agreement, then the Contractor will be responsible for any losses suffered due to non-maintenance of insurance or adequate insurance.

18 PROVISION OF DATA

The Contractor shall be under an obligation to provide all data pertaining to Works and power system during the Term, *inter alia*, about PV array energy production, solar

irradiance, wind speed, temperature, etc. for power system monitoring as per the provisions of Tender Documents.

19 REACTIVE POWER REQUIREMENTS

The inverter shall be initially set with power factor as specified in Vol-III of the tender documents and shall be capable of supplying dynamically varying reactive power support as per the grid requirement and the required power factor can be set through the front panel provided in the inverter.

20 CHANGE IN LAW

20.1 **"Change in Law"** means the occurrence of any of the following events after the Tender Submission Date resulting into any additional recurring/ non-recurring expenditure by the Contractor or any income to the Contractor including:

- (a) the enactment, coming into effect, adoption, promulgation, amendment, modification or repeal (without re-enactment or consolidation) in India, of any Law, including rules and regulations framed pursuant to such Law;
- (b) change in the interpretation or application of any Law by any Indian Governmental Instrumentality having the legal power to interpret or apply such Law, or any competent court of law;
- (c) the imposition of a requirement for obtaining any consents, clearances and permits which was not required earlier;
- (d) change in any consents, approvals or licenses available or obtained for the Solar Plant, otherwise than for default of the Contractor, which results in any change in any cost of or revenue from the business of selling electricity by the Contractor to KSEB LTD. under the terms of this EPC Agreement;
- (e) a change in the terms and conditions prescribed for obtaining any consents or the inclusion of any new terms or conditions for obtaining such consents, except due to any default of the Contractor;
- (f) any change in taxes, duties and cess or introduction of any taxes, duties and cess till hand over of Solar Plant, but shall not include: (i) any change in any withholding tax on income or dividends distributed to the shareholders of the Contractor, or (ii) change in income taxes applicable for the Contractor.

20.2 Notification of Change in Law

If the Contractor is affected by a Change in Law in accordance with this Article 20 and wishes to invoke a Change in Law provision, it shall give notice to KSEB LTD. of such Change in Law as soon as reasonably practicable after becoming aware of the same or

should reasonably have known of the Change in Law.

Notwithstanding the above, the Contractor shall be obliged to serve a notice to the KSEB LTD. if it is beneficially affected by a Change in Law. Without prejudice to the factor of materiality or other provisions contained in this EPC Agreement, the obligation to inform the KSEB LTD. contained herein shall be material. However, in case the Contractor has not provided such notice, KSEB LTD. shall have the right to issue such notice to the Contractor. Any notice served pursuant to Change in Law shall provide, amongst other things, precise details of:

- (a) the Change in Law; and
- (b) the effects on the Contractor of the matters relevant for the construction and operation of the Solar Plant.

20.3 Relief for Change in Law

20.3.1 The aggrieved Party shall be required to approach the other party for seeking appropriate relief under Change in Law. If there are disputes, such disputes shall be taken before the Courts in Trivandrum.

20.3.2 The decision of the Court and the date from which it will become effective shall be final and binding on the Parties. The purpose of the Change in Law protection is to restore the affected Party to the same economic position as if no Change in Law occurred.

21 Effect of Default and Termination

21.1 Except in the event of default under Article 21.2(b), 21.2(c), 21.2(d) and 21.3(d) or a similar default where there is a material breach of the terms of this EPC Agreement effecting all the Solar Plants, if there is a default in relation to a particular plant in a EPC Order/EPC order, then the Parties may terminate that EPC Order/the contractual obligation of the particular plant in relation to which the dispute has arisen and not the entire EPC Agreement. In such event, the Parties will continue to exercise their rights and obligations in relation to non-defaulting EPC Order/plants in the EPC order.

21.2 Contractor's Event of Default

The occurrence and continuation of any of the following events, unless any such event occurs as a result of a Force Majeure Event or a breach by KSEB LTD. of its obligations under this EPC Agreement, shall constitute a Contractor Event of Default:

- (a) the failure to achieve COD within the definite time period provided in the EPC Agreement and/or the EPC Order, or within any extension granted by KSEB LTD.;

- (b) if
 - i. the Contractor assigns, mortgages or charges or purports to assign, mortgage or charge any of its assets or rights related to a Solar Plant in contravention of the provisions of this EPC Agreement; or
 - ii. the Contractor transfers or novates any of its rights and/ or obligations under this EPC Agreement, in a manner contrary to the provisions of this EPC Agreement

- (c) If
 - i. the Contractor becomes voluntarily or involuntarily the subject of any bankruptcy or insolvency or winding up proceedings and such proceedings remain uncontested for a period of thirty (30) Days, or
 - ii. any winding up or bankruptcy or insolvency order is passed against the Contractor, or
 - iii. the Contractor goes into liquidation or dissolution or has a receiver or any similar officer appointed over all or substantially all of its assets or official liquidator is appointed to manage its affairs, pursuant to Law; or

provided that a dissolution or liquidation of the Contractor will not be a Contractor Event of Default if such dissolution or liquidation is for the purpose of a merger, consolidation or reorganization and where the resulting company retains creditworthiness similar or more than the Contractor and expressly assumes all obligations of the Contractor under this EPC Agreement and is in a position to perform them; or

- (d) any of the representations and warranties made by the Contractor in EPC Agreement being found to be untrue or inaccurate. Further, in addition to the above, any of representations made or the undertakings submitted by the Contractor at the time of submission of the Tender Documents being found to be breached or inaccurate, including but not limited to undertakings from its parent company/ Affiliates related to the minimum equity obligation; provided however, prior to considering any event specified under this sub-article to be an Event of Default, the KSEB LTD. shall give a notice to the Contractor in writing of at least fourteen(14) Days; or

- (e) the Contractor repudiates this EPC Agreement or an EPC Order and does not rectify such breach within the time period specified in this EPC Agreement; or

- (f) the Contractor is in breach of any of its material obligations pursuant to this EPC

Agreement, and such material breach is not rectified by the Contractor within fourteen(14) days of receipt of first notice in this regard given by KSEB LTD.; or

- (g) the Contractor fails to maintain the Performance Bank Guarantee in accordance with this EPC Agreement, EPC Order or the Tender Documents; or
- (h) change in controlling shareholding before the specified time frame as mentioned in Article 7.1.6; or

21.3 KSEB LTD. Event of Default

21.3.1 The occurrence and the continuation of any of the following events, unless any such event occurs as a result of a Force Majeure Event or a breach by the Contractor of its obligations under this EPC Agreement, shall constitute the Event of Default on the part of the KSEB LTD.:

- (a) KSEB LTD. fails to pay invoices for a period of ninety (90) days after the due date;
- (b) KSEB LTD. repudiates this EPC Agreement and does not rectify such breach within the time period specified in this EPC Agreement; or
- (c) KSEB LTD. is in material breach of any of its obligations ,and such material breach is not rectified by the KSEB LTD. within the time specified in this EPC Agreement; or
- (d) If
 - i. KSEB LTD. becomes voluntarily or involuntarily the subject of any bankruptcy or insolvency or winding up proceedings and such proceedings remain uncontested for a period of fourteen(14) Days; or
 - ii. any winding up or bankruptcy or insolvency order is passed against the KSEB LTD.;

or

- iii. KSEB LTD. goes into liquidation or dissolution or a receiver or any similar officer is appointed over all or substantially all of its assets or official liquidator is appointed to manage its affairs, pursuant to Law,

Provided that it shall not constitute a KSEB LTD. Event of Default, where such dissolution or liquidation of KSEB LTD. is for the purpose of a merger, consolidation or reorganization, and where the resulting entity has the financial standing to perform its obligations under this EPC Agreement and has creditworthiness similar or more than the KSEB LTD., and which entity expressly assumes all obligations of KSEB LTD. and is in a position to perform them; or

- (e) KSEB LTD. vacates the Location of a Solar Plant without providing alternate location

to the Contractor.

21.4 Procedure for cases of Contractor Event of Default

- 21.4.1 Upon the occurrence and continuation of any Contractor Event of Default under Article 21.1, KSEB LTD. will have the right to deliver to the Contractor a notice stating its intention to terminate this EPC Agreement ("**KSEB LTD. Preliminary Default Notice**"), which shall specify in reasonable detail, the circumstances giving rise to the issue of such notice.
- 21.4.2 Following the issue of a KSEB LTD. Preliminary Default Notice, the consultation period of sixty (60) days or such longer period as the Parties may agree, shall apply and it shall be the responsibility of the Parties to discuss as to what steps shall be taken with a view to mitigate the consequences of the relevant event of default having regard to all the circumstances.
- 21.4.3 During the consultation period, the Parties shall continue to perform their respective obligations under this EPC Agreement.
- 21.4.4 Within a period of seven (7) Days following the expiry of the consultation period, unless the Parties shall have otherwise agreed or the Contractor Event of Default giving rise to the consultation period have ceased to exist or have been remedied, KSEB LTD. shall have the right to terminate the EPC Agreement or the relevant EPC Order, as the case may be, and forfeit the corresponding PBG. KSEB LTD. shall be entitled to recover from the Contractor all damages it might suffer thereby. The amount thus due could be recovered from the Contractor in any manner KSEB LTD. chooses including recovery by revenue recovery proceedings.
- 21.4.5 The schedule of this EPC Agreement, if required, shall be amended by removing/modifying the defaulted EPC Order/defaulted plant capacity from the EPC order.
- 21.4.6 If termination occurs before COD, then the Contractor shall clear the Location and restore the Location to the condition that existed before handover of the Location by KSEB LTD. to the Contractor, and the cost for removable and restoration will be on the account of the Contractors without any liability to KSEB Ltd. The Contractor shall return any construction price paid by KSEB LTD. to the Contractor.
- 21.4.7 If termination occurs after COD, then the Contractor shall handover the Solar Plant to KSEB Ltd. The Solar Plant should meet the Minimum Performance Requirement. If the Solar Plant does not meet the Minimum Performance Requirement, then Contractor shall rectify the Solar Plant or KSEB LTD. may rectify the Solar Plant at the cost of the Contractor.

21.5 Procedure for cases of KSEB LTD. Event of Default

21.5.1 Upon the occurrence of any KSEB LTD. Event of Default, the Contractor shall have the right to deliver to the KSEB LTD., a contractor preliminary default notice, which notice shall specify in reasonable detail KSEB LTD. Event of Default (“**Contractor Preliminary Default Notice**”).

21.5.2 Following the issue of a Contractor Preliminary Default Notice, the consultation period of sixty (60) Days or such longer period as the Parties may agree, shall apply and it shall be the responsibility of the Parties to discuss as to what steps shall be taken with a view to mitigate the consequences of the relevant KSEB LTD. Event of Default having regard to all the circumstances.

21.5.3 During the Consultation Period, the Parties shall continue to perform their respective obligations under this EPC Agreement.

21.5.4 After a period of seven (7) Days following the expiry of the consultation period and failure by the KSEB LTD. to rectify such default within the applicable consultation period, the Contractor shall be entitled to terminate the contractual obligations corresponding to the defaulting EPC Order/plant in the EPC order and take the termination payment, calculated as per below formula by serving a fifteen (15) Day’s notice to the KSEB LTD. (“**Contractor Termination Notice**”).

21.5.5 The Contractor shall be entitled to be paid the following amount:

Termination before COD

- (a) the amounts payable for the work completed until the date of termination; plus
- (b) the cost of materials which have been delivered to KSEB LTD., or for which Contractor is liable to accept delivery: this material shall become the property of KSEB LTD. when paid for by it, and Contractor shall place the same at KSEB LTD.’s disposal; plus
- (c) [10% of the Construction Price.]

Termination after COD

- (a) O&M Price (pro rate) for the period of O&M; plus
- (b) [10% of the outstanding O&M Price, i.e., 10% of [total O&M Price less O&M Price paid under clause (a) above].

21.6 Termination due to Force Majeure

If a Force Majeure Event continuous for a period of one hundred eighty (180) days affecting performance under this EPC Agreement, then either Party shall have the right to terminate this EPC Agreement, or any EPC Order thereunder/any plant capacity thereunder. In which case, this EPC Agreement, or EPC Order, as the case may be, shall stand terminated without any obligation on the Parties to pay compensation.

22 INDEMNITY

22.2 Each Party ("**Indemnifying Party**") shall indemnify, defend and hold the other Party ("**Indemnified Party**") harmless against

- (a) any and all third party claims, actions, suits or proceedings against the Indemnified Party for any actual and direct loss of or actual and direct damage to property of such third party, or death or injury to such third party, arising out of a breach by the Indemnifying Party of any of its obligations under this EPC Agreement, except to the extent that any such claim, action, suit or proceeding has arisen due to a negligent act or omission, breach of this EPC Agreement or breach of statutory duty on the part of Indemnified Party, its contractors, servants or agents; and
- (b) any and all direct and actual losses, direct and actual damages, direct and actual costs and expenses including reasonable legal costs, fines, penalties and interest actually suffered or incurred by the Indemnified Party from third party claims arising by reason of (i) breach by the Indemnifying Party of any of its obligations under this EPC Agreement, except to the extent that any such direct and actual losses, direct and actual damages, direct and actual costs and expenses including reasonable legal costs, fines, penalties and interest (together to constitute "**Indemnifiable Losses**") has arisen due to a negligent act or omission, breach of this EPC Agreement or breach of statutory duty on the part of the Indemnified Party, its contractors, servants or agents or (ii) any of the representations or warranties of the Indemnifying Party under this EPC Agreement being found to be inaccurate or untrue.

22.3 Procedure for claiming indemnity

- (a) Where the Indemnified Party is entitled to indemnification from the Indemnifying Party, the Indemnified Party shall promptly notify the Indemnifying Party of such claim, proceeding, action or suit in respect of which it is entitled to be indemnified. Such notice shall be given as soon as reasonably practicable after the Indemnified Party becomes aware of such claim, proceeding, action or suit. The Indemnifying Party shall be liable to settle the indemnification claim within 30 (thirty) days of receipt of the above notice. Provided however that, if:

- (i) the Parties choose to contest, defend or litigate such claim, action, suit or proceedings in accordance with Article 22.2 (b) below; and
- (ii) the claim amount is not required to be paid/deposited to such third party pending the resolution of such dispute,

the Indemnifying Party shall become liable to pay the claim amount to the Indemnified Party or to the third party, as the case may be, promptly following the resolution of the dispute, if such dispute is not settled in favour of the Indemnified Party.

- (b) The Indemnified Party may contest, defend and litigate a claim, action, suit or proceeding for which it is entitled to be indemnified and the Indemnifying Party shall reimburse to the Indemnified Party all reasonable costs and expenses incurred by the Indemnified party. However, such Indemnified Party shall not settle or compromise such claim, action, suit or proceedings without first getting the consent of the Indemnifying Party, which consent shall not be unreasonably withheld.

An Indemnifying Party may, at its own expense, assume control of the defence of any proceedings brought against the Indemnified Party if it acknowledges its obligation to indemnify such Indemnified Party, gives such Indemnified Party prompt notice of its intention to assume control of the defence, and employs an independent legal counsel at its own cost that is reasonably satisfactory to the Indemnified Party.

22.4 Limitation of Liability

Except as expressly provided in this EPC Agreement, neither the Contractor nor KSEB LTD. nor their respective officers, directors, agents, employees or affiliates (or their officers, directors, agents or employees), shall be liable or responsible to the other Party or its affiliates, officers, directors, agents, employees, successors or permitted assigns (or their respective insurers) for special, incidental, indirect or consequential damages or losses, connected with or resulting from the performance or non-performance of this EPC Agreement, or anything done in connection herewith, including claims in the nature of lost revenues, income or profits (other than payments expressly required and properly due under this EPC Agreement), any increased expense of, reduction in or loss of power generation production or equipment used therefore, irrespective of whether such claims are based upon breach of warranty, tort (including negligence, whether of KSEB LTD., the Contractor or others), strict liability, contract, breach of statutory duty, operation of law or otherwise. KSEB LTD. shall have no recourse against any officer, director or shareholder of the Contractor or any Affiliate of the Contractor or any of its officers, directors or shareholders for

such claims that are excluded under this Article. The Contractor shall have no recourse against any officer, director or shareholder of KSEB LTD., or any of its officers, directors or shareholders for such claims that are excluded under this Article.

23 Independent Contractor

23.2 The Contractor shall be an independent contractor performing its obligations pursuant to this EPC Agreement and the Tender Documents.

23.3 Subject to the provisions of this EPC Agreement, the Contractor shall be solely responsible for the manner in which its obligations under this EPC Agreement or/ and Tender Documents are to be performed. All employees and representatives of the Contractor or contractors engaged by the Contractor in connection with the performance of the EPC Agreement or/ and Tender Documents shall be under the complete control of the Contractor and shall not be deemed to be employees, representatives, contractors of KSEB LTD., and nothing contained in this EPC Agreement or/and Tender Documents shall be construed to create any contractual relationship between any such employees, representatives of the Contractors and KSEB Ltd.

24 NOTICES

Any notice or other communication to be given by any Party to the other Party under or in connection with the matters contemplated by this EPC Agreement shall be in writing and shall be given by facsimile or e-mail and by letter delivered by hand to the address given and marked for attention of the person set out below or to such other person as may be intimated by the Party from time to time:

Contractor:

KSEB LTD.

25 SETTLEMENT OF DISPUTE

25.2 Amicable Settlement

25.2.1 Either Party is entitled to raise any claim, dispute or difference of whatever nature arising under, out of or in connection with EPC Agreement ("**Dispute**") by giving a written notice ("**Dispute Notice**") to the other Party, which shall contain:

- i. a description of the Dispute;
- ii. the grounds for such Dispute; and
- iii. all written material in support of its claim

25.2.2 The other Party shall, within thirty (30) Days of issue of Dispute Notice issued under Article 25.1.1, furnish:

- i. counter-claim and defences, if any, regarding the Dispute; and
- ii. all written material in support of its defences and counter-claim.

25.2.3 Within thirty (30) Days of issue of Dispute Notice by any Party pursuant to Article 25.1.1 if the other Party does not furnish any counter claim or defence under Article 25.1.2 or thirty (30) Days from the date of furnishing counter claims or defence by the other Party, both the Parties to the Dispute shall meet amicably to settle such Dispute. If the Parties fail to resolve the Dispute amicably within thirty (30) Days from the later of the dates mentioned in this Article, the Dispute shall be settled in accordance with the applicable dispute resolution procedure provided under applicable Law.

25.3 Parties to Perform Obligations

Notwithstanding the existence of any Dispute, the Parties hereto shall continue to perform their respective obligations (which are not in dispute) under this EPC Agreement.

26 LAW AND JURISDICTION OF CONTRACT

This Agreement will be governed by and construed in accordance with the Laws of India. Any legal proceedings in respect of any matters, claims or disputes under this Agreement shall be under the jurisdiction of the Civil Courts at Thiruvananthapuram.

27 RATES TO HOLD GOOD IN CASE THE PERIOD OF THE CONTRACT IS EXTENDED

The rates quoted by the Contractor in this EPC Agreement and accepted by the KSEB LTD. shall hold good for all Works done towards the completion of the Solar Projects, during the period of this EPC Agreement, including any extended period, if any.

28 ASSIGNMENT AND CHARGES

28.2 Save and except as provided herein, the Parties shall not assign this EPC Agreement.

28.3 KSEB LTD. may transfer its rights and obligations under this EPC Agreement to any other Government Instrumentality.

28.4 Notwithstanding anything contained anywhere in this EPC Agreement, the Contractor shall not create or permit to subsist any encumbrance over the Solar Plant, Location or any equipment related to the Solar Plant.

29 MISCELLANEOUS PROVISIONS

29.2 Amendment

This EPC Agreement may only be amended or supplemented by a written agreement between the Parties or their successor and permitted assign and after duly obtaining the approval of the appropriate authority, if necessary and relevant.

29.3 Third Party Beneficiaries

This EPC Agreement is solely for the benefit of the Parties and their respective successors and permitted assigns and shall not be construed as creating any duty, standard of care or any liability to, any person not a party to this EPC Agreement.

29.4 Industry Standard

Except as otherwise set forth herein, for the purpose of this EPC Agreement, the normal standards of performance within the solar photovoltaic power generation industry in the relevant market shall be the measure of whether a Party's performance is reasonably and timely. Unless expressly defined herein, words having well-known technical or trade meaning or under popular market practice at the time of execution of this EPC Agreement, or meaning under Law shall be so construed.

29.5 Waiver

29.5.1 No waiver by either Party of any default or breach by the other Party in the performance of any of the provisions of this EPC Agreement shall be effective unless in writing duly executed by an authorised representative of such Party.

29.5.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this EPC Agreement nor time or other indulgence granted by one Party to the other Parties shall act as a waiver of such breach or acceptance of any variation or the relinquishment of any such right or any other right under this EPC Agreement, which shall remain in full force and effect.

29.6 Entirety

This EPC Agreement and the Annexures and Schedules together constitute a complete and exclusive statement of the terms of the agreement between the Parties on the subject hereof, and no amendment or modification hereto shall be valid and effective unless such

modification or amendment is agreed to in writing by the Parties and duly executed by persons especially empowered in this behalf by the respective Parties.

29.7 Severability

The invalidity or unenforceability, for any reason, of any part of this EPC Agreement shall not prejudice or affect the validity or enforceability of the remainder of this EPC Agreement, unless the part held invalid or unenforceable is fundamental to this EPC Agreement.

In witness whereof the parties here to have here unto set their hands the day and year first above written,

Signed, sealed and delivered by(agreement authority)
on behalf of the KSEB Ltd.

In the presence of:

Full name, address and Signature
Full name, address and Signature

Contractor

Signed, sealed and delivered by.....on behalf of the contractor

In the presence of:

Full name, address and Signature

ANNEXURE-1: SCOPE OF WORK&PERFORMANCE TESTING

As provided in the Tender Documents including in clause [X].

ANNEXURE-2: TECHNICAL SPECIFICATIONS

As provided in the Tender Documents including in Volume – III of the Tender Documents.

ANNEXURE-3: COD SCHEDULE

COD Schedule from the Construction Start Date:

S. No.	Milestone (Activity to be Performed)	Day
1.	Construction Start Date	T
2.		T + [1 Month]
3.		T + [2 Month]
4.		T + [3 Month]
5.		T + [4 Month]
6.		T + [5 Month]
7.	COD	T + [6 Month]

ANNEXURE 4: COMMISSIONING CERTIFICATE

This is to certify that,(Contractor) has installed a _____ kWp grid connected Rooftop/Ground mounted Solar PV Capacity at location..... of KSEB LTD. in accordance with EPC Agreement and TENDER No. _____ on _____. The Solar Plant has achieved a Performance Ratio ofon conducting performance test on in the presence of representatives of KSEB Ltd.

The key features of the Solar Plant are as follows:

S. No	Parameter	Description
1.	System Size Installed	_____ kWp
2.	Expected Annual Energy Generation	
3.	Module Type	No. of Module installed: Module Supplier Name: Capacity (kWp):
4.	Inverter Type & Rating	No. of Inverter: Supplier Name: Capacity (kW or kVA)
5.	Combiner Box	Number: Supplier:
6.	Electrical Parameter for interconnection	
7.	Mounting type	
8.	Surface Azimuth Angle	
9.	Tilt Angle	
10.	Wind Resistance	
11.	Data acquisition and Centralized Monitoring System	

'SOURA Phase-1 200MWp' PROJECT

12.	Solar/Net Metering system	
13.	Sign Board	
14.	Danger Board	
15.	Internal wiring upto use points, if required	
16.	Any additional work done, please specify	

Signature of KSEB LTD. and the Contractor

ANNEXURE-5: FORMAT FOR CONSTRUCTION PERFORMANCE BANK GUARANTEE

As per the format provided in the Tender Documents.

'SOURA Phase-1 200MWp' PROJECT

ANNEXURE6(A): Solar Plants

Solar Plant No.	Locational Details**	Plant Capacity (kWp)	Date of handing over of location	PBG No. & date	PBG validity	PBG Amount	Construction start date	Project mile stones	SCOD	Tentative expiry date	Actual CoD
≤10kWp											
1											
2											
3											
.....											
11-100kWp											
1											
2											
3											
.....											
>100kWp											
1											
2											
3											
.....											

**** Locational details shall include:**

1. Name of the owner
2. Location address
3. Consumer No.
4. Voltage level:
5. Tariff Category:
6. Electric Post no.
7. Distribution T/F:
8. Name of Contractor:

Signature of the Parties

'SOURA Phase-1 200MWp' PROJECT

ANNEXURE6(B): Solar Plants

Sl.No.	Locational Details	Plant Capacity (kWp)	CoD	PR on CoD	PBG No. & date	PBG validity	PBG Amount	Amount deducted towards LD	Balance PBG to be released	PBG Release dates	Plant handing over date
		≤10kWp									
1											
2											
3											
.....											
		11-100kWp									
1											
2											
3											
.....											
		>100kWp									
1											
2											
3											
.....											

Signature of the Parties

ANNEXURE-7: EPC ORDER

Sl.No.	Location details	Capacity	Effective Date	Tentative construction start date	SC OD	Tentative expiry date	Performance Bank Guarantee Amount	Project Milestones	Payment details	Plant handing over date
1										
2										
3										

Signature of the Parties

ANNEXURE-8: OPERATION AND MAINTENANCE REPORT

Locational Details:

Plant Capacity (kWp):

COD:

Performance Ratio as on COD:

Year from CoD		Year-1: During 1st half		Year 1 : During 2nd half	
		Done on (date)	Activities carried out	Done on (date)	Activities carried out
1	Periodical checking				
2	Testing				
3	Overhauling				
4	Cleaning				
5	Preventive maintenance				
6	Details of Equipments damaged/replaced				
7	Calibration of energy meter (annually)			Yes/No	
8	Solar energy meter reading				
9	Period of Interruptions (grid outages) recorded in the inverter (hrs/minutes)				
10	Reason for tripping/breakdown				
11	Steps taken to rectify the defect				
12	Date of maintenance				
13	Checking of data acquisition system and communication facility				
14	Earth resistance				
15	Annual PR (%)				

ANNEXURE-9: PERFORMANCE PARAMETERS

Location Address:

Site Location- (Latitude & Longitude)

Total Rooftop Area (m2)

Total Usable Rooftop Area for solar installation (m2)

Type of Roof & Tilt

Radiation data reference:

Energy Simulation Results:kWh / Year for the first year

Power evacuation details: Interconnection point: Metering point:

Solar PV system in kWp:

End Of year	Average Irradiance (KW/m2)	Hours considered	Active area of PV module (m2)	PV module efficiency	Energy at Metering point ((kWh/))	PR (%) at the metering point
CoD						
1						
2						
3						
4						
5						

Performance Ratio of the solar plant for a period of time = Energy measured (kWh) during the period/ (Average Irradiance (kW/m²) on the panel x hours considered for measuring x Active area of PV module x PV module efficiency)

ANNEXURE-10: PAYMENT DETAILS

Price shall remain fixed and will not be subject to revision during the EPC Agreement duration subject to the conditions mentioned within this Agreement.

Solar Plant Details:

Total project capacity is _____kWp.

Payment for Construction

sl no.	Description	BASIC RATE	Freight Charges	Insurance	GST	Any other applicable charges	Total payable on CoD
		Rs/kWp	Rs/kWp	Rs/kWp	Rs/kWp	Rs/kWp	Rs/kWp
1	Capacity (kWp)						

Payment for O&M

Price shall remain fixed and will not be subject to revision during the Agreement duration subject to the conditions mentioned within this Agreement. The O&M for the first year shall beRs/kWp and for the 2nd year shall beRs/kWp.Total project capacity is _____kWp.

sl no.	Description	O&M charge per year without tax	GST for O&M charge per year	O&M charge per year with tax
Year 1	Capacity (kWp)			
Year 2	Capacity (kWp)			

Annexure-13B

Power Purchase Agreement

This Power Purchase Agreement (“PPA”) is made on the ____ [Insert date] Day of [*Insert month*] of [*Insert year*] at [*Insert place*]:

Between:

_____ [Insert name of the Developer], a Company/Limited Liability Partnership (LLP) firm/ Partnership Firm/Proprietorship firm incorporated in accordance with applicable law, having its registered office at _____ [*Insert address of the registered office of Developer*] (hereinafter referred to as the “**Developer**”, which expression shall, unless repugnant to the context or meaning thereof, be deemed to include its successors and permitted assigns);

And

_____ [**State Nodal Officer, 'SOURA' Project, Kerala State Electricity Board Limited'**], having its registered office at _____ (hereinafter referred to as the “**Procurer**”, which expression shall, unless repugnant to the context or meaning thereof, be deemed to include its successors and permitted assigns).

The “**Developer**” and the “**Procurer**” are individually referred to as “**Party**” and collectively referred to as “**Parties**”.

The Procurer has invited bids for selection of developers for the development of [150] MWp rooftop and ground mounted solar photo voltaic power plant at various locations in the State of Kerala (“**Project**”).

In accordance with the bid process and based on the Tender submitted by the Developer, the Developer has been selected by the Procurer for the development of the Solar Plants and supply of electricity generated from the Solar Plants to the Procurer in accordance with the terms of the Tender Documents and this PPA.

In accordance with the Tender Documents, the Parties have agreed to sign this PPA to record the rights and obligations of the Parties in relation to the development of the Solar Plant and supply of electricity from the Solar Plant.

Now therefore, in consideration of the premises and mutual agreements, covenants and conditions set forth herein, it is hereby agreed by and between the Parties as follows:

ARTICLE 1: DEFINITIONS AND INTERPRETATION

1.1 Definitions

The terms used in this PPA, unless as defined below or repugnant to the context, shall have the same meaning as assigned to them by the Electricity Act, 2003 and the rules or regulations framed there under, including those issued / framed by the Appropriate Commission (*as defined hereunder*), as amended or re-enacted from time to time.

"Act" or "Electricity Act, 2003" shall mean the Electricity Act, 2003 and include any amendments and substitution from time to time;

"Agreement" or "PPA" shall mean this agreement executed between the Developer and the Procurer, including the Annexures and supplements made in writing by the parties from time to time;

"Affected Party" shall have meaning as per Article 8;

"Appropriate Commission" shall mean the State Electricity Regulatory Commission referred to in section 82 of the Electricity Act 2003 (as amended from time to time);

"Bill Dispute Notice" shall mean the notice issued by a Party raising a Dispute regarding a Monthly Bill or a Supplementary Bill issued by the other Party;

"Business Day" shall mean a Day other than Sunday/ public holiday or a statutory holiday, on which the banks remain open for business in Kerala;

"Capacity Utilization Factor" or "CUF" shall mean the ratio of the actual kwh(units) of energy generated by a solar plant in a Year and the contracted capacity in kWp multiplied with the number of hours in the same Year. (CUF = Cumulative Annual Plant output in kWh/(Installed Plant capacity in kWp x 24 x 365));

“CERC”	shall mean the Central Electricity Regulatory Commission, constituted under sub – section (1) of Section 76 of the Electricity Act, 2003, or its successors;
“Change in Law”	shall have the meaning ascribed in Article 9;
“Commissioning”	shall have the meaning ascribed in Article 3;
“Commercial Operation Date” or “COD”	shall have the meaning ascribed in Article 3.10;
“Competent Court of Law”	shall mean any court or tribunal or any similar judicial or quasi-judicial body in Kerala that has the jurisdiction to adjudicate upon issues relating to this PPA;
“Consents”	shall mean all authorizations, licenses, approvals, registrations, permits, clearances, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained from or provided by any Governmental Instrumentality for the purpose of setting up of the Solar Plant and/ or supply of power from the Solar Plant;
“Construction Period”	shall mean the period between the Construction Start Date and COD;
“Construction Start Date”	means the date on which the construction of the Solar Plant should commence on satisfaction of the Conditions Precedent in accordance with Article 3.3;
“Consultation Period”	shall mean the period of sixty(60) Days or such other period as the Parties may agree, commencing from the date of issuance of a Developer Preliminary Default Notice or Procurer Preliminary Default Notice as provided in Article 10, for consultation between the Parties to mitigate any Dispute;

"Delivery Point(s)"	shall mean the point at which the energy generated from the Solar Plant is delivered to the Procurer (at the main electricity distribution board in the consumer premises);
"Discom"	means distribution utility of the State of Kerala with whose network the Solar Plant will be connected for the supply of electricity generated from the Solar Plant;
"Dispute"	shall mean any dispute or difference of any kind between the Procurer and the Developer, in connection with or arising out of this PPA or/ and the Tender Documents;
"Due Date"	shall have the same meaning ascribed thereto in Article 6.3;
"Effective Date"	shall have the meaning ascribed thereto in Article 2.3;
"Electricity Laws"	shall mean the Electricity Act, 2003 and the rules and regulations made there under from time to time along with amendments thereto and replacements thereof and any other law pertaining to electricity including regulations framed by the Appropriate Commission;
"Event of Default"	shall mean the events as defined in Article 10;
"PPA Expiry Date"	shall have the meaning ascribed to in Article 2.5;
"Financing Agreements"	shall mean the agreements pursuant to which the Developer has sought financing for the construction, operation and maintenance of the Solar Plant including the loan agreements, security documents, notes, indentures, security agreements, letters of credit and other documents, as may be amended, modified, or replaced from time to time, but without in anyway increasing the liabilities of the Procurer;
"Force Majeure" or "Force Majeure Event"	shall have the meaning ascribed thereto in Article 8;

“Technical Specifications”	means the technical requirements and parameters described in volume-III of the Tender Documents;
“Tender”	shall mean all proposal submitted by a bidders, in response to Tender Documents;
“Tender Documents”	means the Tender No. [<i>insert document detail</i>] issued to the bidders on [<i>insert date</i>] for the development of the Project including any amendments or clarifications thereof;
“Tender submission Date”	Means the date of submission of tender
“Grid Code”, “IEGC” or “State Grid Code”	Shall mean the Grid Code specified by the CERC under clause (h) of sub-section (1) of section 79 of the Electricity Act, as amended from time to time, and/or the State Grid Code as specified by the Concerned State Commission, referred under clause (h) of subsection (1) of section 86 of the Electricity Act, 2003 as applicable;
“Governmental Instrumentality”	shall mean the Government of India, Governments of State(s) of Kerala and any ministry, department, board, authority, agency, corporation, commission under the direct or indirect control of Government of India or Government(s) of States, any political subdivision of any of them including any court or Appropriate Commission(s) or tribunal or judicial or quasi-judicial body in India;
“Insurances”	shall mean the insurance cover to be obtained and maintained by the Developer in accordance with Article 7;
Interconnection Point	shall mean the point at which the Solar Plant is connected to KSEB LTD. grid (at the net metering point).
“Invoice” or “Bill”	shall mean either a Monthly Bill / Supplementary Bill or a Monthly Invoice/ Supplementary Invoice raised by any of the Parties in accordance with this PPA;

"Late Payment Surcharge"	shall have the meaning ascribed to it in Article 6.2;
"Liquidated Damages" or "LD"	shall mean the penalty levied on the Developer due to delay in achieving COD in accordance with Article 3;
"Law"	shall mean all laws including Electricity Laws in force in India and any statute, ordinance, regulation, notification or code, rule, or any interpretation of any of them by Governmental Instrumentality having force of law and shall further include without limitation all applicable rules, regulations, orders, notifications by Governmental Instrumentality pursuant to or under any of them and shall include without limitation all rules, regulations, decisions and orders of the Appropriate Commissions;
"Lenders"	means persons providing construction or operating financing to the Developer in connection with construction, operation and maintenance of the Solar Plant;
"Long Stop date"	shall have the meaning ascribed to it in Article 3;
"Meters" or "Metering System"	means solar energy meter, MODEM for >10kWp system, net meter and metering devices installed for measuring, communicating and recording the delivery of solar energy from the Solar Plant to the Procurer and net energy injected into the grid;
"Metering Date"	means the first Business Day of each calendar month, subsequent to the month in which the COD is achieved.
"Maintenance Outage"	shall have the meaning as ascribed to this term as per the provisions of the Grid Code;
"Minimum CUF"	shall mean the 14% CUF, which is to be maintained by the Developer for the Solar Plant throughout the term of the relevant PPA Order;
"Minimum Performance Ratio"	Shall mean 75% which shall be measured as per Annexure-4a .

"Party" or "Parties"	shall have the meaning ascribed thereto in the recital to this PPA;
"Performance Guarantee"	Bank means the irrevocable, unconditional bank guarantee to be submitted by the Developer to the Procurer in the form as mentioned in Annexure 6;
"Performance Test"	means the test carried out by the Developer for the achievement of the COD to the satisfaction of the procurer in accordance with the Tender Documents and this PPA;
"Performance Ratio"	shall have the meaning ascribed in Article 3.10.
"Preliminary Default Notice"	shall have the meaning ascribed thereto in Article 10;
"Location(s)"	shall mean the sites where the Solar Plants will be installed as identified in the PPA Orders;
"Procurer"	have the meaning ascribed thereto in recital of this PPA;
"Solar Plants"	means grid interactive rooftop/ground mounted solar PV plant to be installed at a Location as provided in Annexure 6(A) (<i>Solar Plants</i>).
"PPA Order"	means the order to be executed between the Developer and the Procurer for each of the Solar Plant/Solar Plants to be constructed, operated and maintained by the Developer in the form provided in Annexure 7;
"Prudent Utility Practices"	shall mean the practices, methods and standards that are generally accepted internationally from time to time by electric utilities for the purpose of ensuring the safe, efficient and economic design, construction, commissioning, operation and maintenance of power generation equipment and which practices, methods and standards shall be adjusted as necessary, to take account of: (a) operation and maintenance guidelines recommended by the manufacturers of the

plant and equipment to be incorporated in the Solar Plants; (b) the requirements of Law; and (c) the physical conditions at the site of the Solar Plants;

“INR”, “Rupees” or “Rs” shall mean Indian rupees, the lawful currency of India;

“Scheduled Commercial Operation Date” or “SCOD” shall mean date of expiry of six (6) months period from the Construction Start Date;

“Selected Bidder” means [.....], who is selected for the purpose of the construction, operation and maintenance of the Solar Plants in accordance with the Tender Documents;

“Supplementary Bill” or “Supplementary Invoice” means a bill other than a Monthly Bill or Monthly Invoice raised by any of the Parties in accordance with Article 6;

“Tariff” shall have the same meaning as provided for in Article 6 of this PPA;

“Tariff Payment” shall mean the payments to be made under Monthly Bills and the relevant Supplementary Bills in accordance with the Article 6;

“Term of PPA” shall have the meaning ascribed thereto in Article 2;

“Year” shall mean 365 days or 366 days in case of leap year commencing from the Commercial Operation Date;

1.2 Interpretation

Save where the contrary is indicated, any reference in this PPA to:

1.2.1. "Article", "Recital", "Annexure" and a "paragraph/clause" shall be construed as a reference to an Article, Recital, Schedule and paragraph/clause of this PPA;

1.2.2. **“Affiliate”** shall mean a company that either directly or indirectly controls or is controlled by or is under common control of the Developer and **“control”** means ownership by one company of at least fifty one percentage (51%) of the voting rights of the other company.

- 1.2.3. A “**Crore**” means a reference to ten million (10,000,000) and a “**Lakh**” means a reference to one tenth of a million (1,00,000);
- 1.2.4. An “**encumbrance**” shall be construed as a reference to a mortgage, charge, pledge, lien or other encumbrance securing any obligation of any person or any other type of preferential arrangement (including, without limitation, title transfer and retention arrangements) having a similar effect;
- 1.2.5. “**Indebtedness**” shall be construed so as to include any obligation (whether incurred as principal or surety) for the payment or repayment of money, whether present or future, actual or contingent;
- 1.2.6. A “**person**” shall be construed to mean any person, firm, company, corporation, society, trust or partnership (having separate legal personality);
- 1.2.7. “Rupee”, “Rupees”, “INR” or “Rs” shall denote Indian Rupees, the lawful currency of India;
- 1.2.8. The “winding-up”, “dissolution”, “insolvency”, or “reorganization” of a company or corporation shall be construed so as to include any equivalent or analogous proceedings under the Law of the jurisdiction in which such company or corporation is incorporated or any jurisdiction in which such company or corporation carries on business including the seeking of liquidation, winding-up, reorganization, dissolution, arrangement, protection or relief of debtors;
- 1.2.9. Words importing the singular shall include the plural and vice versa;
- 1.2.11. The tables of contents, headings and sub-headings in this PPA have been inserted for ease of reference only and shall not affect the interpretation of this PPA;
- 1.2.12. All interest, if payable under this PPA, shall accrue from day to day and be calculated on the basis of a year of three hundred and sixty five (365) days;
- 1.2.12. The terms “including” or “including without limitation” shall mean that any list of examples following such term shall in no way restrict or limit the generality of the word or provision in respect of which such examples are provided;

1.2.13 For the purpose of interpretation, the priority of the document shall be in accordance with the following sequence:

1. This PPA;
2. The PPA Order;
3. Letter of Award;
3. Tender Documents.

ARTICLE 2: SCOPE AND TERM OF PPA

2.1 Scope of Work

The Developer will construct, operate and supply power generated from the Solar Plants in accordance with this PPA, Tender Documents and applicable Laws.

2.2 Agreement Framework

The purpose of this PPA is to establish general terms and conditions which will be applicable to the Solar Plants. The Parties shall issue separate PPA Order for each of the Solar Plant/plants that have to be constructed, operated and maintained by the Developer, which will contain specific details of the Solar Plant and shall be in the form as provided in Annexure 7. The terms and conditions of this PPA will be applicable to each of the PPA Order.

The SNO reserves the right to increase/decrease the maximum capacity of 150MWp and minimum regional capacity of 5MWp upto 25% at its sole discretion. In case capacity is modified by SNO as above, the Developer shall submit the equivalent amount of PBG/amended PBG to SNO within 30 days of issue of Award of Empanelment for the revised capacity.

Every PPA Order will be annexed to this PPA and shall form an integral part of this PPA. The developer shall complete the work within 6 months of issue of PPA Order for the Solar Plant. If there is a conflict between any PPA Order and this PPA, unless specifically provided for under the PPA Order, this PPA will prevail over any such PPA Order to the extent of the conflict.

2.3 Effective Date

The date of the execution of this PPA shall be referred to as the Effective Date.

2.4 Term of PPA

This PPA shall commence on the Effective Date and continue until the PPA Expiry Date.

2.5 PPA Expiry date

This PPA will expire on the expiry or termination of all the PPA Orders.

Unless extended in accordance with this PPA, each PPA Order will commence on the execution of the PPA Order and in respect of each solar plant shall be for a period of 25 years from the Commercial Operation Date of each Solar Plant under that PPA Order.

2.6 Early Termination

A PPA Order, as the case may be, may terminate fully or partially before the relevant expiry date, if the Procurer or the Developer terminates a PPA Order pursuant to Article 3.3 (i.e., failure to fulfil Conditions Precedent) or Article 10. Partial termination of a PPA order means the termination of PPA of one or few of the solar plants (not all) in the PPA order. For the avoidance of doubt it is clarified that notwithstanding expiry or termination of a PPA Order, the Parties will continue to perform their obligations under the other PPA Orders in accordance with the terms and conditions of this PPA until the expiry or termination of the other PPA Orders. If the PPA order is terminated partially the parties will continue to perform their obligations under the PPA order for the non terminated solar plants in accordance with the terms and conditions of this PPA until the expiry or termination of the PPA Order.

2.7 Survival

Notwithstanding anything to the contrary contained herein, the expiry or termination of this PPA or any PPA Order will not affect any accrued rights, obligations and liabilities of the Parties under this PPA or a PPA Order, including the right to impose penalty as per the terms of this PPA, nor shall it affect the survival of any continuing obligations for which this PPA provides, either expressly or by necessary implication, which are to survive expiry or termination including those under Article 10 (***Events of Default and Termination***), Article 11 (***Liability and Indemnification***), Article 14 (***Governing Law and Dispute Resolution***), Article 17 (***Miscellaneous Provisions***), and other Articles of this PPA which are indispensable for survival or amicable settlement of events and transactions pursuant to this PPA.

ARTICLE 3: CONSTRUCTION, COMMISSIONING, SYNCHRONIZING AND COMMERCIAL OPERATION OF SOLAR PV PLANTS

The Conditions Precedent for a Solar Plant will be fulfilled by the Parties within 60 (Sixty) days of signing of a PPA Order ("**Long Stop date**").

3.1 Conditions Precedent of the Developer

3.1.1 The Developer has provided the Performance Bank Guarantee as per the tender for the awarded capacity.

3.1.2 Save and except the Consents which will be issued by the Government Instrumentality upon completion of the Solar Plant, the Developer has obtained all Consents required for installation (including connecting the Solar Plant to the Interconnection Point) and operation of the Solar Plant at the Location.

3.2 Conditions Precedent of the Procurer

The Procurer shall hand over the Location to the Developer.

3.3 Consequences of fulfilment and non-fulfilment of Conditions Precedent

3.3.1 Each Party, responsible for satisfying any Conditions Precedent, shall keep the other Party informed of the progress being made in fulfilling such Conditions Precedent, and also upon the fulfilment or waiver of such Conditions Precedent, as the case may be.

3.3.2 The Party that is responsible for satisfying a particular Condition Precedent under Article 3.1 and 3.2 above, may request waiver of such Condition Precedent by notifying the other Party (who benefits from the satisfaction of the particular Condition Precedent) in writing of its intention to seek such waiver. If the other Party provides its consent in writing that it no longer requires the satisfaction of such Condition Precedent, then the performance of such Condition Precedent will be waived. However, if the waiver of such Condition Precedent is of such an importance that it cannot in all probability be waived, then instead of waiving any of the Conditions Precedent, the other Party may (at its discretion) extend the time for the fulfilment of that particular Condition Precedent.

- 3.3.3 Upon satisfaction of the Conditions Precedent or waiver by the other Party, each Party shall give written notice to the other Party, with documentary evidence, that the Conditions Precedent have been fulfilled or waived, as the case may be. The date of satisfaction of conditions precedent or waiver thereof will be the Construction Start Date.
- 3.3.4 If the Conditions Precedent are not satisfied by the Long Stop Date for any PPA Order, then, unless the Long Stop Date for the said PPA Order is extended by mutual agreement of the Parties, the PPA Order will stand terminated. .
- 3.3.5 If the Construction Start Date in relation to a PPA Order cannot be achieved due to default of the Developer, then the Performance Bank Guarantee pro-rated to the defaulted capacity in that PPA Order will be encashed by the Procurer. If the Developer has not provided the Performance Bank Guarantee in relation to the said PPA Order, then Procurer, at its discretion, will be entitled to either (i) claim the amount of the Performance Bank Guarantee from the Developer, or (ii) claim the amount of the Performance Bank Guarantee from any other bank guarantee furnished by the Developer and/or EMD (provided under the Tender Documents).
- 3.3.6 If the Construction Start Date in relation to a PPA Order cannot be achieved due to default of the Procurer, then the Performance Bank Guarantee pro-rated to the defaulted capacity in that PPA Order (if furnished by the Developer) will be returned by the Procurer to the Developer.

3.4 Performance Bank Guarantees

- 3.4.1. The Developer shall, in accordance with the Tender Documents and Article 3.1, furnish the Performance Bank Guarantee to the Procurer at rate of Fifty lakhs (50)lakhs/MWp or part thereof from the banks specified in the Tender Documents in the form provided in Annexure 5.
- 3.4.2 The Developer shall, for the performance of its obligations hereunder during the operation period, be deemed to provide to the procurer upon occurrence of CoD, an irrevocable and unconditional guarantee, for a sum equivalent to the monthly bill amount payable by the procurer to the Developer for generation at minimum CUF of 14% for a period of 1 (one) month in accordance with the provisions of this Agreement. The performance guarantee shall constitute the first and exclusive charge on all amounts due and payable by the

procurer to the developer, and the procurer shall be entitled to enforce the performance guarantee by making a deduction from the amounts due and payable by it to the Developer.

3.4.3 Prior to at least 30 (thirty) days of expiry of any Performance Bank Guarantee, the Developer will provide a new Performance Bank Guarantee to the Procurer. If the Developer fails to furnish a new Performance Bank Guarantee, then the Procurer will be entitled to encash the Performance Bank Guarantee.

3.4.4 In case any extension is given to the work, the corresponding extension needs to be made in the PBG. PBG furnished shall be released after Commercial Operation Date of the plants in the PPA order on prorata basis, and after taking into account any liquidated damages due to delay in commissioning beyond the scheduled CoD.

3.4.5 The Procurer will be entitled to encash the Performance Bank Guarantee if the Developer is in breach of its obligations under this PPA.

3.5 Procurer's Obligations

3.5.1 The Procurer shall be responsible to fulfil obligation undertaken by it, including those required as assistance for installation of the Solar Plant at the Locations under this PPA.

3.5.2 Regularly pay the Bills submitted by the Developer after due verification.

3.5.3 Pay the termination payment, if required, as per the terms of PPA.

3.6 Developer's Obligations

3.6.1 The Developer undertakes to be responsible, at its own cost and risk, for the following:

a) The Consents required for the scope of work under this PPA;

i) To provide to the Procurer information on the Solar Plant as identified in Annexure 3 and in accordance with the timeline provided thereof.

ii) The following lock-in period will be applicable to the Selected Bidder:

1. (i) If the Selected Bidder is a consortium of members and the Selected Bidder has incorporated a special purpose vehicle, which is the Developer, for the purpose of this PPA,

then the members of the consortium whose technical and the financial qualification were used to meet the technical and financial requirements in the Tender Documents will jointly hold at least 51% of the equity share in the Developer, and Lead Consortium Member (i.e., the Consortium Member meeting the financial qualifications will be the Lead Consortium Member) should hold at least 26% of the equity share in the Developer, and Consortium Member with technical qualifications will hold at least 5% of the equity share in the Developer, commencing on the incorporate of the Developer for a period of two (2) years from the last Commercial Operation Date achieved under the PPA.

2. (ii) If the Selected Bidder is a person and the Selected Bidder has incorporated a special purpose vehicle, which is the Developer, for the purpose of this PPA, then the Selected Bidder will hold at least 51% of the equity share in the Developer, commencing on the incorporate of the Developer for a period of two (2) years from the last Commercial Operation Date achieved under the PPA .
- iii) Upon termination or expiry of the PPA Orders or the PPA, as the case may be, the Developer will be responsible for the restoration, cleaning the Locations and removing the panels and equipments as per the e-waste disposal rules in force.
- iv) The Developer shall open their local offices in each district under the region/regions where the work is awarded within one month of signing the agreement and the details are to be provided to SNO.
- v) Submission of the name of the authorized representative of the Developer to the Procurer, who will act as a single point of contact for all communication;
- vi) Submit a monthly progress report during the Construction Period, i.e., from Construction Start Date to COD, to the Procurer, within first seven (7) days of the subsequent month.
- vii) Submit biannually operation and maintenance report to the Procurer in the format attached as Annexure 8, within first seven (7) days of the expiry of the half yearly period commencing from COD.

3.7 Developer's Construction Responsibilities

3.7.1 The Developer will be responsible for the construction of the Solar Plants in accordance with this PPA, the specifications provided in the Tender Documents and Prudential Utility

Practices.

- 3.7.2 The Developer shall minimize inconvenience and interference with the user/owner of the Locations to the extent practical for the purpose of the construction, operation and maintenance of the Solar Plant.
- 3.7.3 The Procurer will provide standard drawings for different capacity of the Solar Plant to be installed at the Locations (“**Standard Plant Layout**”) through a designated website, access to which will be provided by the Procurer to the Developer. The Developer will consider these Standard Plant Layout for the design and construction of the Solar Plants. If any deviation is required from the Standard Plant Layout, then the Developer within fifteen (15) working days of the Construction Start Date provide to the Procurer modified drawings of the Standard Plant Layout for approval of the Procurer (“**Modified Plant Layout**”). Within a period of seven (7) days of receipt of the Modified Plant Layout, the Procurer may either approve the Modified Plant Layout or provide comments/objections to the Modified Plant Layout. If the Procurer does not approve or provide any comments/objections to the Modified Plant Layout within the said period of seven (7) days, then the Modified Plant Layout will be considered as deemed approved by the Procurer. If the Procurer comments/objections (which will because of any deviation by the Developer from the specifications of the Solar Plants provided in the Tender Documents and deviation from the Standard Plant Layout) to the Modified Plant Layout, then the Developer will amend the Modified Plant Layout to take into consideration the comments/objections of the Procurer and will furnish a revised Modified Plant Layout to the Procurer within a period of seven (7) days of receipt of the comments/objections from the Procurer. This process will continue until the Modified Plant Layout is approved in accordance with this provision. For the avoidance of doubt, it is clarified that any approval or deemed approval of the Standard Plant Layout or Modified Plant Layout by the Procurer will not relieve the Developer of its obligation to construction, develop and operate the Solar Plants in accordance with this PPA. No delay can be claimed by the Developer under this provision for multiple submission of the Modified Plant Layout to the Procurer.
- 3.7.4 The Developer will provide to the Procurer a list of major equipment that will be used for the construction of the Solar Plant and the connecting at the Interconnection Point. Such list of materials shall be provided within thirty (30) days of the Construction Start Date.

- 3.7.5 Unless otherwise agreed between the Parties, the Developer will not: (a) chip the rooftop; or (b) disturb water proofing of the rooftop of a building on which the Solar Plant is constructed; or(c) carry out any modification of the Location without the prior written consent of the Procurer. If any damage (including damages as identified above) is caused to the Location or facilities at the Location due to the Developer (“**Damaged Location**”), then the same shall be rectified by the Developer at its own cost. The Developer will ensure that Location is not drilled (save and except for limited purpose of setting up the Solar Plant). If Developer fails to rectify the Damaged Location within seven (7) days of notification of the Damaged Location to the Developer by the Procurer, then the Procurer may get the Damaged Location rectified through a third party at the cost of the Developer. If the Developer fails to reimburse the cost of rectifying the Damaged Location within a period of seven (7) days, then such expenses will be adjusted by the Procurer from the Bills of the subsequent months.
- 3.7.6 All cost of construction and operation of the Solar Plant including towards temporary works required at the time of construction of the Solar Plant will be borne by the Developer including the cost of electricity, water and any other items required if any during the construction works. The developer shall make use of recycled water for cleaning the panels.
- 3.7.7 The Procurer will be entitled to supervise and inspect the Solar Plants by giving reasonable notice to the Developer. The Developer will maintain at the Location, and make available for inspection of the Procurer at all reasonable times, copies of the results of all tests specified in the technical specifications in Volume-III of the Tender Documents. If it is found that the construction works and/or operation of the Solar Plant is not in accordance with the Tender Documents, then the Procurer may seek clarifications/rectification of the works by the Developer or require the works to be stopped or to comply with the Tender Documents.
- 3.8 Energization Certificate:** Upon completion of construction of a Solar Plants, the developer will notify the Procurer and the Electrical Inspector (as appointed by Government Instrumentality) that the construction of the Solar Plant is completed and the Developer is ready to commence completion test. Within fifteen (15) days of the above notification by the Developer, the Procurer and Electrical Inspector will conduct test to certify if the Solar Plant is constructed in accordance with this PPA and applicable Laws and if constructed in accordance with the PPA and applicable Laws, then the Electrical Inspector will issue an

energization certificate for the Solar Plant (“**Energization Certificate**”). Energization certificate from Electrical Inspector is applicable only for plants with capacity above 10kWp. If the construction is not completed in accordance with the PPA and applicable Laws, then the Electrical Inspector will provide to the Developer a list of defects to be rectified by the Developer. After the Developer has rectified the defects, the procedure as provided above will be repeated by the Parties until Energization Certificate is issued or the relevant PPA Order for the Solar Plant is terminated in accordance with this PPA.

- 3.9 **Synchronization:** Upon issuance of the Energization Certificate (or readiness of plant for <10kWp), the Developer will give the Discom and the Procurer at least fifteen (15) days of written notice of the date on which it intends to synchronize the Solar Plant with the Interconnection Point .Subject to the Developer fulfilling its obligations under this PPA, the Procurer will ensure that the Solar Plant is connected to the Interconnection Point and record the solar energy meter reading at the time of synchronization. The Developer will ensure that the Solar Plant meets all the connection conditions prescribed in applicable Laws for connecting to the Interconnection Point. The equipment required for synchronization of the Solar Plant will be provided by the Developer at its own cost.
- 3.10 **Performance Ratio testing and certification of Commercial Operation Date**
- 3.10.1 Within seven (7) days of issuance of synchronization of a Solar Plant, the Developer will be required to conduct testing of the Solar Plant as per the procedure under Annexure -4a in the presence of representative of the Procurer to demonstrate that the Solar Plant achieves Minimum Performance Ratio. If a Solar Plant achieves the Minimum Performance Ratio, then the Procurer will issue Commercial Operation Date Certificate for that Solar Plant/ PPA Order in accordance with Annexure 4b. The day of issuance of the Commercial Operation Date Certificate by the Procurer will be the Commercial Operation Date of the relevant Solar Plant/ PPA Order and the Solar Plant will commence supply of electricity in accordance with this PPA.
- 3.10.2 If Minimum Performance Ratio is not achieved by a Solar Plant, then the Developer will rectify the Solar Plant and the procedure as provided above will followed for issuance of the Commercial Operation Date Certificate. This process will be repeated until the Commercial Operation Date Certificate issued by the Procurer or the PPA Order for the Solar Plant is terminated in accordance with this PPA.

3.11 Commercial Operation Date

3.11.1 The Developer is required to achieve the Commercial Operation Date within Schedule Commercial Operation Date. If the Solar Plant cannot achieve Commercial Operation Date by the Schedule Commercial Operation Date due to (i) Force Majeure or (ii) for any reason which is beyond the control of the Developer, then the Developer will give a written notice to the Procurer and the Procurer, if satisfied with the aforesaid reasons, will grant extension of the Schedule Commercial Operation Date.

3.11.2 Save and except as provided in Article 3.11.1 above, if the Developer is unable to achieve Commercial Operation Date by the Schedule Commercial Operation Date, then the Developer will be pay liquidated damages for delay of achievement of Commercial Operation Date to the Procurer. For each week of delay in achieving the Commercial Operation Date beyond the Schedule Commercial Operation Date, the Developer will pay 5% of the Performance Bank Guarantee pro-rated to the capacity of the plant in the relevant PPA Order as liquidated damage subject to maximum of 100% of the Performance Bank Guarantee pro-rated to the capacity of the plant in the relevant PPA Order. If the Solar Plant do not achieve Commercial Operation Date within 20 weeks of the Schedule Commercial Operation Date, then the Procurer, in addition to the liquidated damages, will be entitled to terminate the relevant plant capacity under the PPA Order/the PPA order as the case may be and the work undertaken by a third party at the cost and expense of the Developer.

3.11.3 **Delay in CoD of the Solar Plant due to Location becoming non-feasible:** If any Location becoming non-feasible for the construction of the Solar Plant prior to the Commercial Operation Date due to factors beyond the control of the Developer, then the Procurer will identify an alternate Location for the Solar Plant in consultation with the developer. The Developer will not be liable for any compensation in such cases.

3.11.4 **Delay in COD of the Solar Plant due to distribution/transmission infrastructure not complete by the Procurer**

Generally the locations handed over by the procurer are feasible for power evacuation based on feasibility study. The Procurer shall ensure that all arrangements and infrastructure for transmission or/and distribution of solar power from the Solar Plant beyond the Interconnection Point is ready on or prior to the Schedule Commercial

Operation Date and is maintained in accordance with applicable laws through the Term of PPA.

After the Scheduled Commercial Operation Date, if the Solar Plant has been constructed but necessary power evacuation/transmission infrastructure beyond the Interconnection Point is not ready for reasons not attributable to the Developer, then compensation for Deemed generation will be provided to the Developer, if the number of days during which the grid is unavailable exceeds 15 days.

Deemed generation compensation rate:

Deemed generation compensation rate will be the following for the generation calculated by adopting a CUF of 14%.

90% of the PPA tariff for the 1st two years of operation, 80% of the PPA tariff for the 3rd and 4th year of operation, 70% of the PPA tariff in the 5th, 6th, 7th, 8th and 9th years of operation and 50% of the PPA tariff from 10th year of operation onwards.

Deemed generation is allowed for the period exceeding 15 days till the availability of the grid, subject to a maximum of sixty(60) days from the date of readiness of COD. During this period, the procurer shall make the grid available or else identify alternate location for shifting the Solar Plant, for which the clauses applicable for shifting shall be applied. However, if the plant is ready before SCD, but the Procurer is constrained because of inadequate/incomplete power evacuation infrastructure, no compensation shall be provided to the Developer upto SCOD.

Article 4: Operation and Maintenance of the plant

4.1 The Parties shall comply with the Tender Documents, this PPA and applicable Laws including, in particular, grid code as amended from time to time regarding operation and maintenance of the Solar Plant and all matters incidental thereto.

4.2 Capacity Utilization Factor

The Capacity Utilization Factor of the Solar Plants will be measured jointly by the Parties on each anniversary day of the COD. CUF shall be measured based on the joint solar energy meter reading/solar energy meter reading as recorded in the Central Monitoring

system/any other mutually agreed mechanism. The date of reading shall be communicated by the developer to the procurer in advance. Grid unavailability shall include grid outage as well as grid operating above or below the standard operating range. Grid outage data shall be taken from the inverter. Period during which the grid is unavailable leading to lower generation, such hours shall be excluded for the purpose of calculation of CUF. The unavailability of grid will be certified by the authorized representative of the Discom, if any dispute arises, on application by the Developer. The certification shall be furnished by the developer during the submission of supplementary bills on the basis of annual CUF. Also, period of Solar Plant disruptions coming under Article 4.4.1, 4.4.2 and 4.4.3 shall be excluded for the calculation of CUF.

4.3 Operation & Maintenance

- 4.3.1 The Developer will operate and maintain the Solar Plant in accordance with the Tender Documents and this PPA.

- 4.3.2. The Solar Plant should be maintained shadow free. The tree branches if any causing hindrance to the shadow free operation of solar plant shall be cut and removed under the supervision of KSEB LTD. with the permission of appropriate authorities/land/premise owners.

- 4.3.3 The Developer will maintain the Solar Plants to achieve a minimum annual CUF of 14%. The periodic maintenance reports of the Solar Plants will be uploaded by the Developer in the web portal (access will be provided by the Procurer) of the Procurer with details and format as provided in Annexure 8.

- 4.3.4 The inverter shall be initially set with power factor as specified in Vol-III of the tender documents and shall be capable of supplying dynamically varying reactive power support as per the grid requirement and the required power factor can be set through the front panel provided in the inverter.

- 4.3.5. The Developer shall comply with the operation and maintenance requirements specified under Part-II of Volume-3 of the Tender Documents.

- 4.3.6 Save and except any structural maintenance of the Location (unless any damage is caused to the structure of the Location by the Developer), the cost of repair and maintenance of

the Location will be on the Developer. The Developer will maintain the Location clean.

4.4 Disruptions to solar generation occurring after COD of the plant:

4.4.1 **Unavailability of grid:** If the Solar Plant is capable of generating power and the Procurer is not able to evacuate the power generated from the Solar Plant due to temporary transmission/distribution unavailability, for reasons not attributable to the Developer, provided such events are not attributable to Force Majeure, then deemed generation compensation will be provided to the Developer if the number of hours during which the grid is unavailable exceeds 300 hours in a Year and shall be calculated as follows:

Duration of Grid Unavailability	Provision for Generation Compensation
Grid unavailability in a contract year: (only period from 8 am to 6 pm to be Counted)	Generation Loss (kwh)= (Average Generation per hour during the year of the claim) x (number of hours of grid unavailability– 300 hours - hours of outage due to force majeure condition) Where, Average Generation per hour during the year (kWh) = (Total generation in the year (kWh)) of the claim / Total hours of generation in the year. Generation compensation = Deemed generation compensation rate under clause 3.11.4 * Generation loss

No generation compensation will be payable due to unavailability of grid due to transmission constraints, system constraints or due to backing down as per the instruction of SLDC, in accordance with the Grid Code and applicable Laws. Such instructions shall be in writing.

4.4.2 **Roof repair and other Plant disruptions**

In the event that (i) the Procurer repairs the Location which is not due to damage caused by the Solar Plant or the Developer, and such repair requires partial or complete shutdown, disassembly or movement of the Solar Plant, or (ii) any act or omission of the Procurer or Procurer’s employees, affiliates, agents or subcontractors (collectively, a “**Procurer Act**”) which results in a disruption or outage in the Solar Plant, provided such events are not attributable to Force Majeure, then the Procurer shall pay to the Developer for the deemed generation if the period of disruption is above 15 days in a Year and shall be calculated as

follows:

Duration of disruption	Provision for Generation Compensation
Disruption in a contract year: (only period from 8 am to 6 pm to be Counted)	<p>Generation Loss = (Average Generation per hour during the year of the claim) x (number of hours of disruption– 150 hours)</p> <p>Where, Average Generation per hour during the year (kWh) = (Total generation in the year (kWh)) of the claim / Total hours of generation in the year of the claim.</p> <p>Deemed generation shall be limited to a maximum of 45 days of generation in a year.</p> <p>Generation compensation = Deemed generation compensation rate under clause 3.11.4* Generation loss</p>

4.4.3 Shifting of location after COD

Shifting within the same location: If the Solar Plant is required to be shifted within the same Location due to shade affecting the generation from the Solar Plant or due to any other factors which is not within the control or contributed by the Developer, then the Procurer will identify another space within the Location for shifting the plant. The shifting cost will be borne by the Developer. The Developer will be paid deemed generation in accordance with Article 4.4.2 above during the period of shifting of the Solar Plant.

Shifting to a different location: If an appropriate alternate space within the Location for the Solar Plant is not available or cannot be identified within the Location within a period of 1 month by the Procurer, then the Procurer will identify a similar space as the Location within a radius of 10 kms of the Location within a period of 45 days.. Upon confirmation of the new Location by the Procurer to the Developer, the developer will shift the Solar Plant within this period of 45 days. The cost of shifting shall be borne by the developer for shifting up to 10% of the total capacity allotted. Beyond this capacity, the Developer will be compensated at a rate of Rs. 1000 per kWp for shifting. Deemed generation as per clause 4.4.2 above shall be payable during the non-availability of the Location.

If an alternate appropriate location cannot be made available to the Developer by the Procurer within 6 months, then the relevant capacity allocation under the PPA Order will stand terminated and the Developer will be entitled to compensation as per PPA terms.

ARTICLE 5: DISPATCH

5.1.1 The Solar Plants will be required to maintain compliance to the applicable Grid Code requirements and directions, if any, as specified by KeralaSLDC from time to time in accordance with applicable Grid Code and Laws.

5.1.2 The Procurer agrees to purchase one hundred percent (100%) of the solar energy generated by the Developer from the Solar Plants and made available by the Developer to the Procurer at the Delivery Point(s) during the tenure of this PPA.

5.1.3 The Procurer may identify the energy procured from the Solar Plants to meet its Renewable Purchase Obligations (as mandated by the Appropriate Commission). Entire energy generated from the Solar Plants shall be sold to the procurer and the procurer agrees to buy the entire energy from the Solar Plants at the tariff specified in this PPA. In any Year, if the annual generation from a Solar Plant is less than CUF of 14%, then the Developer will be liable to pay compensation to the Procurer for shortfall in generation of energy ("**Shortfall Energy**"). The compensation will be equal to 25% of the PPA tariff for the Shortfall Energy. If the CUF falls below 10% in any Year, then the Developer will pay compensation equal to 50% of the PPA tariff for the Shortfall Energy.

In case the CUF is more than the 19% in a Year, then the Procurer will purchase the excess generation at 75% of the PPA tariff. Compensation payments will be made through supplementary bills to be raised at the end of the Year.

5.1.4 The Developer shall be entitled to suspend delivery of electricity from the Solar Plants for the purpose of maintaining and repairing the Solar Plant upon giving notice of at least 3 days in advance to the Procurer, except in the case of emergency repairs. Such suspension of the Solar Plant will not constitute a breach of this PPA, provided that the Developer shall use commercially reasonable efforts to minimize any interruption in supply of power to the Procurer. The maintenance of the Solar Plant shall be without causing disturbances to the owner of the Location.

ARTICLE 6: METERING AND BILLING

6.1 Metering

6.1.1 The metering of the Solar Plant shall be as per the scope of work specified in Volume-1 of

the Tender Documents. The type and accuracy of the meters shall be as per the technical specifications under Volume-III of the Tender Documents.

6.1.2 Solar energy meter or its display shall be available near the net meter.

6.1.3 The Metering System shall be tested, maintained and owned by the Developer. The meters shall be calibrated and tested annually by the Developer through the TMR Divisions of KSEB LTD. or through authorized testing centres.

6.1.4 The Procurer may, at its own discretion, install a check meter, at its cost, to verify the measurements of the Metering System.

6.2 **Tariff:** The tariff of the Solar Plants will be as mentioned in the PPA Order and as adopted by Kerala State Electricity Regulatory Commission.

6.3. **Billing**

6.3.1 The monthly bills for the energy supplied from the solar plants under this PPA shall be based on the joint meter reading obtained from the data acquisition system installed by the Developer recorded in the central monitoring system or any other mutually agreed billing mechanism. A web-based application for logging the energy meter details of all plants under this PPA shall be developed by the Procurer to facilitate billing and energy accounting. The reading shall be taken on the Metering Date. The billable units will be equal to the difference between the meter reading on the Metering Date and the meter reading on the previous month's Metering Date;

6.3.2 The Developer will present the Bills for electricity supplied to the Procurer from all the Solar Plants installed by the Developer under a region for the previous month before 7th of the next month.. The Procurer may verify the Bill every month with the data from the central monitoring system. If the reading shows a variation exceeding +- 5% for a Location, the Parties will check the meter. The error in the energy meter, if any, shall be corrected immediately by the Developer. The error in the central monitoring system, if any, shall be corrected by the Procurer. If error is within +-5%, payment shall be released.

h. 6.3.3 The bills may be provided by e-mail to the Procurer through (Name of the Organization), Vidyuthi Bhavanam, Pattom, Thiruvananthapuram - 695004 (authorized representative of the Procurer) and the original bills to be sent through courier or speed post. The date of e-mail shall be treated as date of presentation of bill for determination

of due date for payment, subject to the e – mail being delivered before 11.00 am on a business day failing which the next business day shall be considered as date of presentation of bill.

- i. 6.3.4 The Procurer shall arrange payment of such Monthly Bill(s) promptly through NEFT / RTGS at the designated bank account of the Developer. The Procurer is entitled to deduct a rebate of 2.0 % on the payment of Monthly Bill if the Monthly Bill is paid by the Procurer within five (5) days of submission of the Monthly Bill and 1% on payment made up to thirty (30) days of receipt of the Monthly Bill. If due date is a holiday, then next business day will be treated as due date.
- j. 6.3.5 In case the Procurer disputes any Monthly Bill, even then, it shall pay 90% of the disputed amount forthwith and file a written objection with the Developer within sixty (60) days of presentation of the bill, giving following particulars:
 - 1. Item disputed, with full details/data and reasons of dispute;
 - 2. Amount disputed against each item.

The amount of excess/shortfall with respect to the said 90% payment based on finally determined amount will be paid /adjusted with the applicable SBI MCLR from the date on which the amount in dispute was payable /refundable.

If procurer does not pay the amount due within sixty (60) days from the date of e-mailing of the Monthly Bill, then the Procurer will pay interest at prevailing SBI MCLR, for such payment from the date such payment was due until the payment is made in full.

- 6.3.6 **Additional work:** The Developer shall be eligible for additional payment for the additional works, if any, required to be carried out at any Location due to site peculiarities/difficulties which are not foreseeable and which are necessary for completing the installation of the Solar Plant, with prior approval of the Procurer.

SCHEDULE OF RATES FOR ADDITIONAL WORKS: The Rates of additional electrical work within the Location shall be decided on the basis of at par rates of Delhi Schedule Of Rates (DSR), for Electrical works, Central Public Works Department, amended from time to time. The rates of additional civil work shall be as per at par the rates of Delhi Schedule Of Rates (DSR) for building works, Public Works Department, amended from time to time.

ARTICLE 7: INSURANCES

7.1 Insurance

The Developer shall maintain at its own costs, throughout the Term of PPA and any extensions thereof, all mandatory insurance coverage for adequate amount including but not restricted to, theft, damages, comprehensive general liability insurance covering the Solar Plant and accidental losses, bodily harm, injury, death of all individuals employed/assigned by the Developer to perform the services required under this PPA and the occupants of the premises.

7.2 Application of Insurance Proceeds

7.2.1 Except as provided in Article 7.2.2 of this PPA, any insurance claim received due to loss or damage to the Solar Plant will be first applied to reinstatement, replacement or renewal or making good of such loss or damage of the Solar Plant. If the insurance claim is not adequate to reinstate the Solar Plant, then the Developer will be responsible for the payment of excess cost.

7.2.2 If a Force Majeure Event renders the Solar Plant no longer economically and technically viable and the insurers make payment on a “total loss” or equivalent basis, then the Procurer shall have no claim on such proceeds of such insurance and the Developer will be entitled to retain the insurance proceeds without any obligation to construct a new solar plant.

7.2.3 If the Developer fails to maintain insurance in accordance with the requirement of this PPA, then the Developer will be responsible for any losses suffered due to non-maintenance of insurance or adequate insurance.

ARTICLE 8: FORCE MAJEURE

8.1.1 A party effected by event of Force Majeure means the Procurer or the Developer, as the case may be, whose performance has been affected by Force Majeure Event (“**Affected Party**”).

8.1.2 “**Force Majeure Event**” means any act or event (or combination of acts as events) that prevents the Affected Party from performing its obligation in accordance with the PPA, if such act or event is beyond the reasonable control of the Affected Party and such Affected Party had been unable to overcome such act or event (or combination of acts as events) with the exercise of due diligence. Subject to the foregoing conditions, Force Majeure

Event will include without limitation the following acts or events: (i) natural phenomena, such as storms, hurricanes, floods, lightning, volcanic eruptions, earthquakes; (ii) explosions or fires arising from causes unrelated to the acts or omissions of the Affected Party; (iii) acts of war or public disorders, civil disturbances, riots, insurrection, sabotage, epidemic, terrorist acts, or rebellion blockade or strike of national nature (i.e., not at the Affected Party's business); or (iv) any action by any Governmental Instrumentality, which prevents or prohibits the Parties from carrying out their respective obligations. A Force Majeure Event shall not be based on the economic hardship of either Party.

8.2 Force Majeure Exclusions

Force Majeure shall not include (i) any event or circumstance which is within the reasonable control of the Parties, and (ii) the following conditions, except to the extent that they are consequences of an event of Force Majeure:

- (B)** Inability to connect the Solar Plant to the grid;
- (C)** Inability to obtain commissioning certificate from Discom;
- (D)** Unavailability, late delivery, or changes in cost of the plant, machinery, equipment, materials, spare parts, fuel or consumables for the Solar Plant;
- (E)** Delay in the performance of any contractor, sub-contractor or their agents excluding for conditions as mentioned in Article 8.1.2;
- (F)** Non-performance resulting from normal wear and tear typically experienced in power generation materials and equipment;
- (G)** Strikes at the facilities of the Affected Party;
- (H)** Insufficiency of finances or funds or the PPA becoming onerous to perform; and
- (I)** Non-performance caused by, or connected with, the Affected Party's:
 - a. Negligent or intentional acts, errors or omissions;
 - b. Failure to comply with an applicable Law; or
 - c. Breach of, or default under this PPA.

8.3 Notification of Force Majeure Event

8.3.1 The Affected Party shall give notice to the other Party of any Force Majeure Event as soon as reasonably practicable, but not later than seven (7) Days after the date on which such Party knew or should reasonably have known of the commencement of Force Majeure Event.

8.3.2 Provided that such notice of Force Majeure Event shall be a pre-condition to the Affected Party's entitlement to claim relief under this PPA. Such notice shall include full particulars

of the Force Majeure Event, its effects on the Party claiming relief and the remedial measures proposed. The Affected Party shall give the other Party regular (weekly or monthly basis, as communicated and agreed upon between the Parties in writing) reports on the existence Force Majeure Event and/ or progress of those remedial measures and such other information as the other Party may reasonably request about the Force Majeure Event.

8.3.3 The Affected Party shall give notice to the other Party of (i) the cessation of the relevant Force Majeure Event; and (ii) the cessation of the effects of such Force Majeure Event on the performance of its rights or obligations under this PPA, as soon as practicable, but not later than seven (7) Days after becoming aware of each of these cessations.

8.4 Duty to Perform and Duty to Mitigate

To the extent not prevented by a Force Majeure Event pursuant to Article 8.3, the Affected Party shall continue to perform its obligations pursuant to this PPA. The Affected Party shall use its reasonable efforts to mitigate the effect of any Force Majeure Event.

8.5 Available Relief for a Force Majeure Event

8.5.1 Subject to this Article 8:

- (ii) no Party shall be in breach of its obligations under this PPA to the extent that the performance of its obligations was prevented, hindered or delayed due to a Force Majeure Event;
- (ix) every Party shall be entitled to claim relief in relation to a Force Majeure Event in regard to its obligations;
- (x) for avoidance of doubt, none of the Parties obligation to make payments of money due and payable prior to occurrence of a Force Majeure Events under this PPA shall be suspended or excused due to the occurrence of a Force Majeure Event.

ARTICLE 9: CHANGE IN LAW

9.1 Definitions

In this article, the following terms shall have the following meanings:

9.1.1 "**Change in Law**" means the occurrence of any of the following events after the Tender Submission Date resulting into any additional recurring/ non-recurring expenditure by the Developer or any income to the Developer:

- the enactment, coming into effect, adoption, promulgation, amendment,

modification or repeal (without re-enactment or consolidation) in India, of any Law, including rules and regulations framed pursuant to such Law;

- change in the interpretation or application of any Law by any Governmental Instrumentality having the legal power to interpret or apply such Law, or any Competent Court of Law;
- the imposition of a requirement for obtaining any consents, clearances and permits which was not required earlier;
- change in any consents, approvals or licenses available or obtained for the Solar Plant, otherwise than for default of the Developer, which results in any change in any cost of or revenue from the business of selling electricity by the Developer to the Procurer under the terms of this PPA;
- a change in the terms and conditions prescribed for obtaining any consents or the inclusion of any new terms or conditions for obtaining such consents, except due to any default of the Developer;
- any change in taxes, duties and cess or introduction of any taxes, duties and cess made applicable for generation and sale/ supply of power but shall not include any change in direct tax including : (i) any change in any withholding tax on income or dividends distributed to the shareholders of the Developer, or (ii) change in income tax.

9.2 Notification of Change in Law

9.2.1 If the Developer is affected by a Change in Law in accordance with this Article9 and wishes to invoke a Change in Law provision, then the Developer shall give notice to the Procurer of such Change in Law as soon as reasonably practicable after becoming aware of the same or should reasonably have known of the Change in Law.

9.2.2 The Developer is obligated to inform the Procurer if it has or will benefit from the a Change in Law. If the Developer has not given Change in Law notice to the Procurer, then the Procurer will have the right to issue such notice to the Developer.

9.2.3 Any notice served pursuant to Change in Law shall provide, amongst other, details of:

- i) the Change in Law; and
- j) the effects on the Developer on the construction, operation and maintenance of the Solar Plant.

9.3 Relief for Change in Law

9.3.1 The aggrieved Party shall be required to approach the State Electricity Regulatory Commission for seeking appropriate relief under Change in Law.

9.3.2 The decision of the State Electricity Regulatory Commission and the date from which it will become effective shall be final and binding on the Parties. The purpose of the Change in Law protection is to restore the affected Party to the same economic position as if no Change in Law occurred.

ARTICLE 10: EVENTS OF DEFAULT AND TERMINATION

10.1A Except in the event of default under Article 10.1.1(c), 10.1.1(d), 10.1.1(h) and 10.2.1(c) or a similar default where there is a material breach of the terms of this PPA effecting all the Solar Plants, if there is a default in relation to a PPA Order/a particular plant in the PPA order, then the Parties may terminate that PPA Order/the PPA obligation of the particular plant in relation to which the dispute has arisen and not the entire PPA. In such event, the Parties will continue to exercise their rights and obligations in relation to non-defaulting PPA Order/plants in the PPA order.

10.1 Developer's Event of Default

10.1.1 In addition to any other event of default provided in this PPA, the occurrence of any of the following events, unless such event occurs as a result of a Force Majeure Event or a breach by the Procurer of its obligations under this PPA, shall constitute Developer Event of Default for the entire PPA or for a particular PPA Order, as the case may be:

- the failure to achieve COD within the Schedule Commercial Operation Date;
- if the Developer assigns, mortgages or charges or purports to assign, mortgage or charge any of its assets, rights or obligations related to a Solar Plant in contravention of the provisions of this PPA; or
- If
 - the Developer becomes voluntarily or involuntarily the subject of any bankruptcy or insolvency or winding up proceedings and such proceedings remain uncontested for a period of thirty (30) Days, or
 - any winding up or bankruptcy or insolvency order is passed against the Developer, or

- the Developer goes into liquidation or dissolution or has a receiver or any similar officer appointed over all or substantially all of its assets or official liquidator is appointed to manage its affairs, pursuant to Law; or
- ⊖ provided that a dissolution or liquidation of the Developer will not be a Developer Event of Default if such dissolution or liquidation is for the purpose of a merger, consolidation or reorganization and where the resulting company retains creditworthiness similar or more than the Developer and expressly assumes all obligations of the Developer under this PPA and is in a position to perform them; or
- any of the representations and warranties made by the Developer in PPA being found to be untrue or inaccurate. Further, in addition to the above, any of representations made or the undertakings submitted by the Developer at the time of submission of the Tender being found to be breached or inaccurate, including but not limited to undertakings from its parent company/ affiliates related to the minimum equity obligation; provided however, prior to considering any event specified under this sub-article to be an Event of Default, the Procurer shall give a notice to the Developer in writing of at least fourteen(14) Days; or
- the Developer is in breach of any of its material obligations pursuant to this PPA (or in relation to a PPA Order), and such material breach is not rectified by the Developer within time specified in this PPA (if no time is specified, then within a reasonable time);
- in accordance with Article 3; or
- the Developer fails to maintain the Performance Bank Guarantee in accordance with this PPA, PPA Order and/or Tender Documents; or
- change in controlling shareholding before the specified time frame as mentioned in Article 3.6 of this PPA; or
- the Developer under a PPA Order generates solar power with annual CUF of less than 10% continuously for 2 Years period.

10.2 Procurer's Event of Default

10.2.1 In addition to any other event of default provided in this PPA, the occurrence of any of the

following events, unless such event occurs as a result of a Force Majeure Event or a breach by the Developer of its obligations under this PPA, shall constitute Procurer Event of Default for the entire PPA or for a particular PPA Order, as the case may be:

1. Procurer fails to pay Monthly Bill or a Supplementary Bill, as per Article 7, for a period of ninety (90) Days after the Due Date; or
2. the Procurer is in material breach of any of its obligations pursuant to this PPA, and such material breach is not rectified by the Procurer within fourteen(14) Days of receipt of notice in this regard from the Developer; or
3. If
3.16 Procurer becomes voluntarily or involuntarily the subject of any bankruptcy or insolvency or winding up proceedings and such proceedings remain uncontested for a period of fourteen(14) Days, or
 1. any winding up or bankruptcy or insolvency order is passed against the Procurer, or
 2. Procurer goes into liquidation or dissolution or a receiver or any similar officer is appointed over all or substantially all of its assets or official liquidator is appointed to manage its affairs, pursuant to Law,

Provided that it shall not constitute a Procurer Event of Default, where such dissolution or liquidation of Procurer or Procurer is for the purpose of a merger, consolidation or reorganization or the Procurer vacating the location to a new entity and where the resulting entity has the financial standing to perform its obligations under this PPA and has creditworthiness similar or more than the Procurer and expressly assumes all obligations of Procurer and is in a position to perform them; or

1. Procurer vacates the Location of a Solar Plant without providing an alternate location for the Solar Plant.

10.3 Consequence of Developer Event of Default

- 10.3.1 Upon the occurrence of any Developer Event of Default, the Procurer shall have the right to deliver to the Developer, with a copy to the Lenders, a notice stating its intention to terminate a particular PPA Order or this PPA ("**Procurer Preliminary Default Notice**"), which shall specify in reasonable detail, the circumstances giving rise to the issue of such

notice.

- 10.3.2 Following the issue of a Procurer Preliminary Default Notice, for a period of sixty (60) Days or such longer period as the Parties may agree ("**Procurer Consultation Period**"), the Parties will consult to resolve the dispute between the Parties. .
- 10.3.3 During the Procurer Consultation Period, the Parties shall continue to perform their respective obligations under this PPA and the PPA Orders.
- 10.3.4 Within a period of seven (7) Days following the expiry of the Procurer Consultation Period, unless the Parties shall have otherwise agreed or the Developer Event of Default have ceased to exist or have been remedied, the Lenders will have the right within a period of ninety (90) days of the end of the Procurer Consultation Period to substitute the Developer by a Selectee(a person nominated by the Lender to substitute the Developer and having at least the minimum qualification required for the Developer under the Tender Documents) for the residual period of this PPA for the purpose of performing obligations of the Developer. Such substitution of the Developer by a Selectee will be with prior approval of the Procurer, which approval will not be unreasonably withheld by the Procurer.
- 10.3.5 In the Lender does not substitute the Developer, then the Procurer will have the right to terminate the PPA Order or this PPA, as the case may be, by serving fifteen (15) days notice to the Developer. Upon termination, the Procurer will be entitled to claim termination payment in accordance with the formula provided below.

Termination per PPA Order/plant in the PPA order after COD

Termination payment to Procurer = Solar REC forbearance price prevailing at the time of termination X generation for 1 year from the terminated plant/plants calculated at 14% CUF.

On termination of a PPA Order or this PPA, as the case may be, the Developer will at its cost clear the Location of the Solar Plant which has been terminated and restore the Location to the condition that existed (except normal wear and tear) before handover of the Location by the Procurer to the Developer.

If the Developer fails to remove the Solar Plant from the Location within one (1) month from the date of termination of the PPA Order or this PPA, as the case may be, then Purchaser shall be entitled to dispose of the Solar Plant at the cost of the Developer.

10.4 Consequence of Procurer Event of Default

10.4.1 Upon the occurrence of any Procurer Event of Default specified in Article 10.2, the Developer shall have the right to deliver to the Procurer, a written notice of its intention to terminate a PPA Order or this PPA ("**Developer Preliminary Default Notice**"), which notice shall specify in reasonable detail the circumstances giving rise to its issue.

10.4.2 Following the issue of a Developer Preliminary Default Notice, the Parties shall for a period of sixty (60) Days or such longer period as the Parties may agree ("**Developer Consultation Period**"), discuss to resolve the dispute.

10.4.3 During the Developer Consultation Period, the Parties will continue to perform their respective obligations under this PPA.

10.4.4 After a period of seven (7) Days following the expiry of the Developer Consultation Period and failure by the Procurer to rectify such default within the agreed period between the Parties, the Developer will be entitled to terminate the PPA Order of the PPA, as the case may be, and will be entitled to termination compensation in accordance with the below. Upon removal of The Solar Plant by the Developer from the Location, the termination payment payable by the Procurer to the Developer will be:

If a Purchaser Default has occurred and is continuing, in addition to other remedies expressly provided herein, and subject to Section 11, the developer shall be entitled to terminate this Agreement by serving notice as per this Agreement and upon such termination, (A) the developer shall be entitled to receive from procurer the Purchase Price as per the Annexure-9 of the PPA.

10.5 Termination due to Force Majeure

If a Force Majeure Event continues for a continuous period of one hundred eighty (180) days, then either Party will have the right to terminate the relevant PPA Order or this PPA, as the case may be. In such an event, the relevant PPA Order or this PPA, as the case may be, will stand terminated without any obligation on the Parties to pay compensation (save and except any accrued obligations or payments).

ARTICLE 11: LIABILITY AND INDEMNIFICATION

11.1 Indemnity

Each Party (“**Indemnifying Party**”) shall indemnify, defend and hold the other Party (“**Indemnified Party**”) harmless against:

- (a) any and all third party claims, actions, suits or proceedings against the Indemnified Party for any actual and direct loss of or actual and direct damage to property of such third party, or death or injury to such third party, arising out of a breach by the Indemnifying Party of any of its obligations under this PPA, except to the extent that any such claim, action, suit or proceeding has arisen due to a negligent act or omission, breach of this PPA or breach of statutory duty on the part of Indemnified Party, its contractors, servants or agents; and

- (b) any and all direct and actual losses, direct and actual damages, direct and actual costs and expenses including reasonable legal costs, fines, penalties and interest actually suffered or incurred by the Indemnified Party from third party claims arising by reason of (i) breach by the Indemnifying Party of any of its obligations under this PPA (provided that this Article 11.1 shall not apply to such breaches by the Indemnifying Party, for which specific remedies have been provided for under this PPA), except to the extent that any such direct and actual losses, direct and actual damages, direct and actual costs and expenses including reasonable legal costs, fines, penalties and interest (together to constitute “**Indemnifiable Losses**”) has arisen due to a negligent act or omission, breach of this Agreement or breach of statutory duty on the part of the Indemnified Party, its contractors, servants or agents or (ii) any of the representations or warranties of the Indemnifying Party under this PPA being found to be inaccurate or untrue.

11.2 Procedure for claiming indemnity

- (a) Where the Indemnified Party is entitled to indemnification from the Indemnifying Party, the Indemnified Party shall promptly notify the Indemnifying Party of such claim, proceeding, action or suit in respect of which it is entitled to be indemnified. Such notice shall be given as soon as reasonably practicable after the Indemnified Party becomes aware of such claim, proceeding, action or suit. The Indemnifying Party shall be liable to settle the indemnification claim within 30 (thirty) days of receipt of the above notice. Provided however that, if:
 - (i) the Parties choose to contest, defend or litigate such claim, action, suit or proceedings in accordance with Article 11.2(b) below; and

- (ii) the claim amount is not required to be paid/deposited to such third party pending the resolution of the Dispute,

the Indemnifying Party shall become liable to pay the claim amount to the Indemnified Party or to the third party, as the case may be, promptly following the resolution of the Dispute, if such Dispute is not settled in favour of the Indemnified Party.

- (b) The Indemnified Party may contest, defend and litigate a claim, action, suit or proceeding for which it is entitled to be indemnified and the Indemnifying Party shall reimburse to the Indemnified Party all reasonable costs and expenses incurred by the Indemnified party. However, such Indemnified Party shall not settle or compromise such claim, action, suit or proceedings without first getting the consent of the Indemnifying Party, which consent shall not be unreasonably withheld.

An Indemnifying Party may, at its own expense, assume control of the defence of any proceedings brought against the Indemnified Party if it acknowledges its obligation to indemnify such Indemnified Party, gives such Indemnified Party prompt notice of its intention to assume control of the defence, and employs an independent legal counsel at its own cost that is reasonably satisfactory to the Indemnified Party.

11.3.3 Limitation of Liability

Except as expressly provided in this PPA, neither the Developer nor the Procurer nor their respective officers, directors, agents, employees or affiliates (or their officers, directors, agents or employees), shall be liable or responsible to the other Party or its affiliates, officers, directors, agents, employees, successors or permitted assigns (or their respective insurers) for special, incidental, indirect or consequential damages or losses, connected with or resulting from the performance or non-performance of this PPA, or anything done in connection herewith, including claims in the nature of lost revenues, income or profits (other than payments expressly required and properly due under this PPA), any increased expense of, reduction in or loss of power generation production or equipment used therefore, irrespective of whether such claims are based upon breach of warranty, tort (including negligence, whether of the Procurer, the Developer or others), strict liability, contract, breach of statutory duty, operation of law or otherwise. The Procurer shall have no recourse against any officer, director or shareholder of the Developer or any Affiliate of the Developer or any of its officers, directors or shareholders for such claims that are

excluded under this Article. The Developer shall have no recourse against any officer, director or shareholder of the Procurer, or any Affiliate of the Procurer or any of its officers, directors or shareholders for such claims that are excluded under this Article.

ARTICLE 12: GENERAL COVENANTS

12.1 Developer's Covenants

The Developer covenants and agrees to the following:

26. **Notice of Damage or Emergency:** The Developer shall (a) promptly notify the Procurer if it becomes aware of any damage to or loss of the use of the Solar Plant or that could reasonably be expected to adversely affect the Solar Plant, (b) immediately notify the Procurer once it becomes aware of any event or circumstance that poses an imminent risk to human health, the environment, the Solar Plant or the Location.

27. **Solar Plant Condition:** The Developer shall take all actions reasonably necessary to ensure that the Solar Plant is capable of generation and delivery of solar energy at agreed rate as per PPA. Subject to there being no Procurer Event of Default, the Developer shall provide 24X7 onsite / offsite monitoring and maintenance of the Solar Plant throughout the term of the relevant PPA Order at no additional cost.

28. **Consents and Approvals:** While providing the installation work, solar power and system operations, the Developer shall obtain and maintain and secure all Consents required to be obtained and maintained by the Developer and to enable the Developer to perform such obligations as required under the PPA.

29. **Interconnection with Discom:** The interconnection of the Solar Plant with the network of the distribution licensee shall be made as per the CEA (Technical standards for connectivity of distributed generated resources) regulations or CEA(Technical standards for connectivity)Regulations as amended from time to time.

30. **Health and Safety:** The Developer shall take all necessary and reasonable safety precautions with respect to providing the installation work, solar energy, and system operations that shall comply with all applicable Laws pertaining to the health and safety of persons and real and personal property.

12.2 Developer's Representatives

12.2.1 During the subsistence of this PPA, the Developer undertakes to respond to all questions, concerns and complaints of the Procurer regarding the Solar Plant in a prompt and efficient manner. The Developer designates the following individual as its representative pertaining to performance of this PPA for the period from Effective date till the COD:

Name:

Telephone:

E-mail:

12.2.2 The Developer designates the following individual as its representative and primary point of contact pertaining to performance of this PPA following the COD till termination of the PPA or the Expiry Date:

Name: _____ – Plant Manager

Telephone: +91 _____

E-mail: _____

12.3 **Procurer's Covenants**

12.3.1 Procurer covenants and agrees to the following:

33. Notice of Damage or Emergency: Procurer shall (a) promptly notify the Developer if it becomes aware of any damage to or loss of the use of the Solar Plant or that could reasonably be expected to adversely affect the Solar Plant; (b) immediately notify the Developer once it becomes aware of any event or circumstance that poses an imminent risk to human health, the environment, the Solar Plant or the Location.

34. Consents: The Procurer shall provide reasonable assistance to the Developer to obtain such Consents, rebates or other financial incentives including those required for installation of the Solar Plant at the Location and to draw/ consume/ sell solar energy in accordance with this PPA. However, it would be sole responsibility of the Developer to obtain such Consents, rebates or other financial incentives including those required for installation of Solar Plant at the Location and to draw/ consume/ sell solar energy in accordance with this PPA. The Procurer should grant similar access/grants/licenses to the Lenders and Lenders Representative to enable them smooth access to the Location for inspection.

35. In cases, where the Procurer and owner of the Location are different, then similar undertaking for access to location in favor of Lenders has to be provided by the owner of the Location.

36. Access to Location, Grant of Licenses: The Procurer hereby grants to the Developer a license co-terminus with the Term of PPA, containing all the rights necessary for the Developer to use and occupy the Location for the installation, operation and maintenance of the Solar Plant pursuant to the terms of this PPA, including ingress and egress rights to the Location for the Developer and its employees, agents, contractors and subcontractors and access to electrical panels and conduits to interconnect or disconnect the Solar Plant with the Location.

2 Security: The Procurer shall be responsible for maintaining the physical security of the Location. The Procurer will not conduct activities on, in or about the Location that have a reasonable likelihood of causing damage, impairment or otherwise adversely affecting the Solar Plant.

3 Regardless of whether the Procurer is owner of the Location or leases the Location from a building owner, the Procurer hereby covenants that (a) the Developer shall have access to the Location and Solar Plant during the Term of this PPA and for one (1) month after termination or expiry of the PPA Order to remove the Solar Plant pursuant to the applicable provisions herein, and (b) neither the Procurer nor the Procurer’s owner will interfere or handle any of the Developer’s equipment or the Solar Plant without written authorization from the Developer.

4 Temporary storage space during installation or removal: The Procurer shall provide sufficient space at the Location for the temporary storage and staging of tools, materials and equipment and for the parking of construction crew vehicles and temporary construction trailers and facilities reasonably necessary during the installation work, the Solar Plant operations or Solar Plant removal, and access for rigging and material handling.

5 Storage space during O &M period: The Procurer shall provide space, if required, for keeping minimum tools and tackles compulsory for O &M activities.

3 Evacuation: Procurer shall off take 100% of the solar energy generated, as per PPA Capacity as agreed under this PPA, from the Delivery Point(s), and pay all invoices raised

by the Developer under this PPA by the Due Date and pay interest on delayed payments, if any, as per this PPA.

4 Water: The Developer shall arrange water, as per the requirements of the Developer.

12.4 Procurer's Representatives

12.4.1 During the subsistence of this PPA, the Procurer undertakes to respond to all questions, concerns and complaints of the Developer regarding the Solar Plant in a prompt and efficient manner. The Procurer designates the following individual as its representative pertaining to performance of this PPA during the Term of PPA:

Name: _____

Telephone: _____

E-mail: _____

ARTICLE 13: ASSIGNMENTS AND CHARGES

13.1 Assignments

13.1.1 This PPA shall be binding upon, and inure to the benefit of the Parties and their respective successor and permitted assign. This PPA shall not be assigned by any Party other than by mutual consent between the Parties to be provided and evidenced in writing.

13.1.2 Provided that, respective successor or permitted assign shall meet eligibility criteria as per the Tender Documents and shall not be inferior, in any respect, to the concerned Party.

13.1.3 Provided that, the Procurer shall permit assignment of any of the Developer's rights and obligations under this PPA in favour of the Lenders of the Solar Plant, if required under the Financing Agreements.

13.1.4 Provided that, the Procurer will not require any consent from the Developer for transfer of its rights and obligations under this PPA to any other Government Instrumentality.

13.1.5 Provided further that any successor or permitted assign identified by mutual agreement of the Parties may be required to execute a new PPA on the same terms and conditions

as are included in this PPA.

13.2 Permitted Charges

The Developer shall not create or permit to subsist any encumbrance over all or any of its rights and benefits under this PPA, other than as set forth in Article 13.

ARTICLE 14: GOVERNING LAW AND DISPUTE RESOLUTION

14.1 Governing Law

This PPA will be governed by and construed in accordance with the Laws of India. Any legal proceedings in respect of any matters, claims or disputes under this PPA shall be under the jurisdiction of Kerala State Electricity Regulatory Commission.

14.2 Amicable Settlement

14.2.1 Either Party is entitled to raise any claim, dispute or difference of whatever nature arising under, out of or in connection with PPA ("**Dispute**") by giving a written notice ("**Dispute Notice**") to the other Party, which shall contain:

- 4 a description of the Dispute;
- 5 the grounds for such Dispute; and
- 6 all written material in support of its claim

14.2.2 The other Party shall, within thirty (30) Days of issue of Dispute Notice issued under Article 14.2.1, furnish:

16. counter-claim and defences, if any, regarding the Dispute; and
17. all written material in support of its defences and counter-claim.

14.2.3 Within thirty (30) Days of issue of Dispute Notice by any Party pursuant to Article 14.2.1 if the other Party does not furnish any counter claim or defence under Article 14.2.2 or thirty (30) Days from the date of furnishing counter claims or defence by the other Party, both the Parties to the Dispute shall meet amicably to settle such Dispute. If the Parties fail to resolve the Dispute amicably within thirty (30) Days from the later of the dates mentioned in this Article, the Dispute shall be settled in accordance with the applicable dispute resolution procedure provided under applicable Law.

14.3 Parties to Perform Obligations

Notwithstanding the existence of any Dispute, the Parties hereto shall continue to perform their respective obligations (which are not in dispute) under this PPA.

ARTICLE 15: SUBSTITUTION RIGHTS OF LENDERS

15.1 Substitution of the Developer

15.1.1 Subject to the terms of the PPA, upon occurrence of an Developer Event of Default under the PPA, the Lenders shall, have the right to seek substitution of the Developer by a Selectee, meeting or exceeding eligibility criteria as per Tender Documents, for the residual period of the PPA.

15.1.2 The Lenders may seek to exercise right of substitution by an amendment or novation of the PPA executed between the Procurer and the Developer in favour of the Selectee. The Procurer and the Developer shall cooperate with the Lenders to carry out such substitution.

15.2 Procurer Preliminary Default Notice

The Procurer shall, simultaneously to delivering a Procurer Preliminary Default Notice to the Developer, also issue a copy of it to the Lenders.

15.3 Substitution Notice

In the event of failure of the Developer to rectify the Event of Default giving rise to Procurer Preliminary Default Notice, the Lenders, upon receipt of a written advice from the Procurer confirming such failure, either on their own or through its representative (the "**Lenders' Representative**") shall be entitled to notify the Procurer and the Developer of the intention of the Lenders to substitute the Developer by the Selectee, meeting or exceeding eligibility criteria as per Tender Documents, for the residual period of the PPA (the "**Substitution Notice**"). This Article will be read along with Article 10 providing right of substitution to the Lenders.

15.4 Interim operation of Plant

On receipt of a Substitution Notice, no further action shall be taken by any Party to terminate the PPA, except under and in accordance with the terms of this Article.

15.5 Upon the substitution becoming effective, all the rights of the Developer under the PPA will stand transferred to the Selectee.

15.10 The Selectee shall, subject to the terms and conditions of the substitution, have a period of ninety (90) Days to rectify any breach and / or default of the Developer subsisting on the date of substitution and required to be rectified and shall incur the liability or consequence on account of any previous breach and / or default of the Developer.

ARTICLE 16: REPRESENTATIONS & WARRANTIES

16.1 Representations and Warranties of Procurer

16.1.1 The Procurer hereby represents and warrants to and agrees with the Developer as follows and acknowledges and confirms that the Developer is relying on such representations and warranties in connection with the transactions described in this PPA:

- a) The Procurer has all requisite powers and authorising and has been duly authorised to execute and consummate this PPA;
- b) This PPA is enforceable against the Procurer in accordance with its terms;
- c) The consummation of the transactions contemplated by this PPA on the part of Procurer will not violate any provision of nor constitute a default under, nor give rise to a power to cancel any charter, mortgage, deed of trust or lien, lease, PPA, license, permit, evidence of indebtedness, restriction, or other contract to which Procurer is a party or to which Procurer is bound, which violation, default or power has not been waived;
- d) The Procurer is not insolvent and no insolvency proceedings have been instituted, nor threatened or pending by or against Procurer;
- e) There are no actions, suits, claims, proceedings or investigations pending or, to the best of the Procurer's knowledge, threatened in writing against the Procurer at law, in equity, or otherwise, and whether civil or criminal in nature, before or by, any court, commission, arbitrator or governmental agency or authority, and there are no

outstanding judgements, decrees or orders of any such courts, commission, arbitrator or governmental agencies or authorities, which materially adversely affect its ability to comply with its obligations under this PPA;

16.1.2 The Procurer makes all the representations and warranties above to be valid as on the date of this PPA.

16.2 Representations and Warranties of the Developer

16.2.1 The Developer hereby represents and warrants to and agrees with the Procurer as follows and acknowledges and confirms that the Procurer is relying on such representations and warranties in connection with the transactions described in this PPA:

- a) The Developer has all requisite power and authorising and has been duly authorised to execute and consummate this PPA;
- b) This PPA is enforceable against the Developer in accordance with its terms;
- c) The consummation of the transactions contemplated by this PPA on the part of the Developer will not violate any provision of nor constitute a default under, nor give rise to a power to cancel any charter, mortgage, deed of trust or lien, lease, PPA, license, permit, evidence of indebtedness, restriction, or other contract to which the Developer is a party or to which the Developer is bound which violation, default or power has not been waived;
- d) The Developer is not insolvent and no insolvency proceedings have been instituted, or not threatened or pending by or against the Developer;
- e) There are no actions, suits, claims, proceedings or investigations pending or, to the best of Developer's knowledge, threatened in writing against the Developer at law, in equity, or otherwise, and whether civil or criminal in nature, before or by, any court, commission, arbitrator or governmental agency or authority, and there are no outstanding judgements, decrees or orders of any such courts, commission, arbitrator or governmental agencies or authorities, which materially adversely affect its ability to execute the Plant or to comply with its obligations under this PPA.

16.2.2 The Developer makes all the representations and warranties above to be valid as on the

date of this PPA.

ARTICLE 17: MISCELLANEOUS PROVISIONS

17.1 Amendment

This PPA may only be amended or supplemented by a written agreement between the Parties or their successor and permitted assign and after duly obtaining the approval of the appropriate authority, if necessary and relevant.

17.2 Third Party Beneficiaries

This PPA is solely for the benefit of the Parties and their respective successors and permitted assigns and shall not be construed as creating any duty, standard of care or any liability to, any person not a party to this PPA.

17.3 Industry Standard

Except as otherwise set forth herein, for the purpose of the PPA the normal standards of performance within the solar photovoltaic power generation industry in the relevant market shall be the measure of whether a Party's performance is reasonably and timely. Unless expressly defined herein, words having well-known technical or trade meaning or under popular market practice at the time of execution of PPA or meaning under Law shall be so construed.

17.4 Waiver

17.4.1 No waiver by either Party of any default or breach by the other Party in the performance of any of the provisions of this PPA shall be effective unless in writing duly executed by an authorised representative of such Party.

17.4.2 Neither the failure by either Party to insist on any occasion upon the performance of the terms, conditions and provisions of this PPA nor time or other indulgence granted by one Party to the other Parties shall act as a waiver of such breach or acceptance of any variation or the relinquishment of any such right or any other right under this PPA, which shall remain in full force and effect.

17.5 Entirety

17.5.1 This PPA and the Annexures are intended by the Parties as the final expression of their PPA and are intended also as a complete and exclusive statement of the terms of their

PPA.

17.5.2 Except as provided in this PPA, all prior written or oral understandings, offers or other communications of every kind pertaining to this PPA or the sale or purchase of solar energy under this PPA to the Procurer by the Developer shall stand superseded and abrogated.

17.6 Confidentiality

17.6.1 The Parties undertake to hold in confidence this PPA and not to disclose the terms and conditions of the transaction contemplated hereby to third parties, except:

- a) to their professional advisors;
- b) to their officers, contractors, employees, agents or representatives, financiers, who need to have access to such information for the proper performance of their activities; or
- c) disclosures required under Law.
- d) without the prior written consent of the other Party.

17.6.2 The Provided that the Developer agrees and acknowledges that Procurer may at any time, disclose the terms and conditions of the PPA to any person, to the extent stipulated under the Law.

17.7 Affirmation

The Developer and the Procurer, each affirm that:

- a) neither it nor its respective directors, employees, or agents has paid or undertaken to pay or shall in the future pay any unlawful commission, bribe, pay-off or kick-back; and
- b) it has not in any other manner paid any sums, whether in Indian currency or foreign currency and whether in India or abroad to the other Party to procure this PPA, and the Developer and the Procurer hereby undertake not to engage in any similar acts during the Term of PPA.

17.8 Severability

The invalidity or unenforceability, for any reason, of any part of this PPA shall not prejudice or affect the validity or enforceability of the remainder of this PPA, unless the part held invalid or unenforceable is fundamental to this PPA or remainder of this PPA.

17.9 No Partnership

None of the provisions of this PPA shall constitute a partnership or agency or any such similar relationship between the Developer and the Procurer.

17.10 Notices

17.10.1 All notices or other communications which are required to be given under this PPA shall be in writing and in the English language.

17.10.2 If to the Developer, all notices or other communications which are required must be delivered personally or by registered post or e-mail or any other method duly acknowledged to the address(es) below:

Address :

Attention :

Email : (a)

Telephone No. :

17.10.3 If to the Procurer, all notices or communications must be delivered personally or by

(b) registered post or facsimile or any other mode duly acknowledged to the address(es)

(c) below:

Address :

Attention :

Email : (d)

Telephone No. :

17.10.4 All notices or communications given by e-mail or post shall be confirmed by sending a copy of the same via post office in an envelope properly addressed to the appropriate Party for delivery by registered mail.

17.10.5 Any Party may by notice of at least fifteen (15) Days to the other Party change the address and/or addresses to which such notices and communications to it are to be delivered or mailed.

17.11 Language

17.11.1 All correspondence and communications between the Parties relating to this PPA and all other documentation to be prepared and supplied under the PPA shall be written in English, and the PPA shall be construed and interpreted in accordance with English

language convention and practice.

17.11.2 If any of the correspondence, communications or documents is prepared in any language other than English, the English translation of such correspondence, communications or documents shall prevail in matters of interpretation.

17.12 Breach of Obligations

The Parties acknowledge that a breach of any of the obligations contained herein would result in injuries as per Law. The Parties further acknowledge that the amount of the liquidated damages or the method of calculating the liquidated damages specified in this PPA is a genuine and reasonable pre-estimate of the damages that may be suffered by the non-defaulting party in each case specified under this PPA.

17.13 Commercial Acts

The Procurer and the Developer unconditionally and irrevocably agree that the execution, delivery and performance by each of them of this PPA to which it is a Party constitute private and commercial acts rather than public or governmental acts.

17.14 Independent Entity

17.14.1 The Developer shall be an independent entity performing its obligations pursuant to the PPA or/ and Tender Documents.

17.14.2 Subject to the provisions of the PPA or/ and Tender Documents, the Developer shall be solely responsible for the manner in which its obligations under this PPA or/ and Tender Documents are to be performed. All employees and representatives of the Developer or contractors engaged by the Developer in connection with the performance of the PPA or/ and Tender Documents shall be under the complete control of the Developer and shall not be deemed to be employees, representatives, contractors of the Procurer and nothing contained in the PPA or/ and Tender Documents or in any PPA or contract awarded by the Developer shall be construed to create any contractual relationship between any such employees, representatives or contractors and the Procurer.

17.16 Taxes and Duties

17.16.1 The Developer shall bear and promptly pay all statutory taxes, duties, levies and cess, assessed/ levied on the Developer, contractors or their employees, which are required to be paid by the Developer as per the Law in relation to the execution of the PPA or/ and Tender Documents and for generation/ supply/ sale of solar energy as per the terms

of this PPA or/ and Tender Documents.

17.16.2 The Procurer shall be indemnified and held harmless by the Developer against any claims that may be made against the Procurer in relation to the matters set out in Article17.16. The Procurer shall not be liable for any payment of, taxes, duties, levies, cess whatsoever for discharging any obligation of the Developer by the Procurer on behalf of the Developer.

17.17 Compliance with Law

Despite anything contained in this PPA but without prejudice to this Article, if any provision of this PPA shall be in deviation or inconsistent with or repugnant to the provisions contained in the Electricity Act, 2003, or any rules and regulations made there under, such provision of this PPA shall be deemed to be amended to the extent required to bring it into compliance with the aforesaid relevant provisions as amended from time to time.

IN WITNESS WHEREOF the Parties have caused the PPA to be executed through their duly authorized representatives as of the date and place set forth above.

For and on behalf of [Procurer]

For and on behalf of [Developer]

Name, Designation and Address

Name, Designation and Address

Signature with seal

Signature with seal

Witness:

Witness:

1.

1.

2.

2.

ANNEXURE-1: SCOPE OF WORK

As provided in the Tender Documents including in clause 2.2.2 of Volume -1.

ANNEXURE-2: TECHNICAL SPECIFICATIONS

As provided in the Tender Documents including in Volume –III of the Tender Documents.

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ANNEXURE 3: Project Milestones

COD Schedule from the Construction Start Date.

S. No.	Milestone (Activity to be Performed)	Day
1.	Construction Start Date	T
2.		T + [1 Month]
3.		T + [2 Month]
4.		T + [3 Month]
5.		T + [4 Month]
6.		T + [5 Month]
7.	COD	T + [6 Month]

Annexure-4a: Procedure for performance testing and CoD declaration

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ANNEXURE 4(b): COMMERCIAL OPERATION DATE CERTIFICATE

This is to certify that (“Developer”) has installed _____ kW Solar Plant at [*insert location*] in accordance with the PPA and the Tender Documents. The Solar Plant has achieved a Performance Ratio above 75% on performance test conducted on [*insert date*] in the presence of the representatives of the Procurer.

The key features of the Solar Plant are as follows:

S. No	Parameter	Description
1.	System Size Installed	____ kWp
2.	Expected Annual Energy Generation	
3.	Module Type	No. of Module installed: Module Supplier Name: Capacity (kWp):
4.	Inverter Type & Rating	No. of Inverter: Supplier Name: Capacity (kW or kVA)
5.	Combiner Box	Number: Supplier:
6.	Electrical Parameter for interconnection	
7.	Mounting type	
8.	Surface Azimuth Angle	
9.	Tilt Angle	
10.	Wind Resistance	
11.	Data acquisition and Centralized Monitoring System	
12.	Solar/Net Metering system	

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13.	Sign Board	
14.	Danger Board	
15.	Internal wiring upto use points, if required	
16.	Any additional work done, please specify	

Signature of Procurer and Developer

ANNEXURE-5: FORMAT FOR CONSTRUCTION PERFORMANCE BANK GUARANTEE

As per the format provided in the Tender Documents.

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ANNEXURE6(A): Solar Plants

Solar Plant No.	Locational Details **	Plant Capacity (kWp)	Date of handing over of location	PBG No. & date	PBG validity	PBG Amount	Construction start date	Project milestones	SCOD	Actual CoD	Estimated Expiry Date
Region 1											
1											
2											
3											
.....											
Region 2											
1											
2											
3											
.....											
Region 3											
1											
2											
3											
.....											
Region 4											
1											
2											
3											
.....											

**** Locational details shall include:**

9. Name of the owner
10. Location address
11. Consumer No.
12. Voltage level:
13. Tariff Category:
14. Electric Post no.
15. Distribution T/F:
16. Name of Developer:

Signature of the parties

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ANNEXURE 6(B): Solar Plants

Sl.No.	Locational Details	Plant Capacity (kWp)	CoD	PR on CoD	PBG No. & date	PBG validity	PBG Amount	Amount deducted towards LD	Balance PBG to be released	PBG Release date	Tariff (Rs/unit)
Region 1											
1											
2											
3											
....											
Region 2											
1											
2											
3											
....											
Region 3											
1											
2											
3											
....											
Region 4											
1											
2											
3											
....											

Signature of the parties

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**ANNEXURE8: Operation & Maintenance Report Format
(To be submitted biannually after COD)**

Locational Details:

Plant Capacity (kWp):

CoD:

Performance Ratio as on CoD:

Date of report:

Report for Half of Year.....

Year from CoD		Location 1		Location 2		Location.....		Location.....	
		Done on (date)	Activities carried out	Done on (date)	Activities carried out		Done on (date)	Activities carried out	Done on (date)	Activities carried out
1	Periodical checking									
2	Testing									
3	Overhauling									
4	Cleaning									
5	Preventive maintenance									
6	Details of Equipments damaged/replaced									
7	Calibration of energy meter (annually)			Yes/No		Yes/No			Yes/No	
8	Solar energy meter reading									
9	Period of Interruptions (grid outages) recorded in the inverter (hrs/minutes)									
10	Reason for tripping/breakdown									
11	Steps taken to rectify the defect									
12	Date of maintenance									
13	Checking of data acquisition system and communication facility									
14	Earth resistance									
15	Annual CUF (%)									

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Annexure-9

Purchase price on termination

The Purchase Price payable shall be the Purchase Price Specified as follows that falls on such date. Upon the payment of the Purchase Price, the developer shall cause the title of the System to transfer to the procurer and (b) the developer may exercise any other remedy it may have at law or equity or under the Agreement.

Purchase price in Rs/kWp

	<=10kWp	11-100 kWp	>100kWp
Purchase price in Year 1	37725.28	33205.12	30945.04
Purchase price in Year 2	35525.90	31269.26	29140.95
Purchase price in Year 3	33454.74	29446.26	27442.03
Purchase price in Year 4	31504.33	27729.55	25842.16
Purchase price in Year 5	29667.62	26112.91	24335.56
Purchase price in Year 6	27938.00	24590.53	22916.80
Purchase price in Year 7	26309.22	23156.90	21580.75
Purchase price in Year 8	24775.39	21806.86	20322.59
Purchase price in Year 9	23330.98	20535.52	19137.78
Purchase price in Year 10	21970.79	19338.30	18022.05
Purchase price in Year 11	20689.89	18210.87	16971.36
Purchase price in Year 12	19483.67	17149.18	15981.93
Purchase price in Year 13	18347.77	16149.38	15050.19
Purchase price in Year 14	17539.54	15437.99	14387.22
Purchase price in Year 15	16731.31	14726.60	13724.25
Purchase price in Year 16	15923.08	14015.21	13061.28
Purchase price in Year 17	15114.85	13303.82	12398.31
Purchase price in Year 18	14306.62	12592.43	11735.34
Purchase price in Year 19	13498.39	11881.04	11072.37
Purchase price in Year 20	12690.16	11169.65	10409.40
Purchase price in Year 21	11881.93	10458.26	9746.43
Purchase price in Year 22	11073.70	9746.87	9083.46
Purchase price in Year 23	10265.47	9035.48	8420.49
Purchase price in Year 24	9457.24	8324.09	7757.52
Purchase price in Year 25	8649.01	7612.70	7094.55

Part of the year will be treated as full year while arriving at the salvage value

**Annexure 14
PERFORMANCE BANK GUARANTEE**

BG No.

Date:

This guarantee is made on this day of 20..... by (complete postal address of the bank) hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD., having its registered office at Vidyuthi Bhavanam, Pattom, Thiruvananthapuram, Kerala, PIN – 695 004, hereinafter called as 'the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.'**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt(hereinafter called "**contractor(s)**") which expression unless repugnant to the context and meaning thereof shall include its successors and assigns) from depositing with the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** a sum of Rs. towards Performance Security Deposit in lieu of the said **contractor(s)** having agreed to furnish a bank guarantee for the said sum of Rs. as required under the terms and conditions of Tender No. dated (hereinafter referred as the 'bid') placed by the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** on the said **contractor(s)** and on specific request on the part of the said **contractor (s)**, we the **Bank** hereby unconditionally and irrevocably affirm and undertake-

- (a) At the request of the **contractor(s)**, we 'the **Bank**', do hereby unconditionally and irrevocably affirm and undertake that we are the Guarantor and are responsible to the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** up to a total sum of `..... [Rupees only] such sum being payable by us to the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** immediately upon receipt of first written demand from the said **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB Ltd.**
- (b) We unconditionally and irrevocably undertake to pay to the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** on an immediate basis, upon receipt of first written demand from the said **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB**

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LTD. and without any cavil or argument or delaying tactics or reference by us to the **contractor(s)** and without any need for the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** to convey to us any reasons for invocation of the guarantee or to prove the failure to perform on the part of the **contractor(s)** or to show grounds or reasons for the demand or the sum specified therein, the entire sum or sums within the limits of `..... [Rupees only].

- (c) We hereby waive the necessity of the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** demanding the said amount from the **contractor(s)** prior to serving the demand notice upon us.
- (d) We further agree and affirm that no change or addition to or other modification to the terms of the agreement, shall in any way release us from any liability under this unconditional and irrevocable guarantee and we hereby waive notice of any such change, addition or modification. We further agree with the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** that the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** shall be the sole and exclusive judge to determine that whether or not any sum or sums are due and payable to him by the **contractor(s)**, which are recoverable by the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.** by invocation of this guarantee.
- (e) This guarantee will not be discharged due to the change in constitution of the **Bank** or the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB Ltd.** We undertake not to withdraw or revoke this guarantee during its currency/validity period, except with the previous written consent of the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB Ltd.**
- (f) We unconditionally and irrevocably undertake to pay to the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.,** any amount so demanded not exceeding `..... [Rupees only] notwithstanding any dispute or disputes raised by the Employer or anyone else in any suit or proceedings before any dispute review expert, arbitrator, court, tribunal or other authority, our liability under this guarantee being absolute, unconditional and unequivocal. The payment so made by us under this guarantee to the **'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.,** shall be a valid discharge of our liability for payment under this guarantee and the **contractor(s)** shall have no claim against us for making such payment.

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(g) This unconditional and irrevocable guarantee shall remain in full force and effect and shall remain valid untiland shall be extended from time to time for such period as may be desired by the **contractor(s)** on whose behalf this guarantee has been given.

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed (value in figures) [value in words].
2. This unconditional and irrevocable Bank Guarantee shall be valid with effect from..... to
3. We are liable to pay the guaranteed amount or any part thereof under this unconditional and irrevocable Bank Guarantee only and only if 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. serves upon us a written claim or demand on or before [validity date].

For and on behalf of the Bank

[Signature of authorized signatory (ies)]

Signature:

Name :

Designation:

POA Number:

Contact Nos. : Tel..... Mobile.....

Fax No.

Email

Common seal of the Bank:

Witness:

1. _____
2. _____

Signature:

Name:

Address:

Contact No. Tel. _____ Mobile _____

email:

'SOURA Phase-1 200MWp' PROJECT

Note:

1. *For the purpose of executing the bank guarantee, the non-judicial stamp papers of appropriate value shall be purchased in the name of Bank which issues the Bank Guarantee.*
2. *The Bank Guarantee shall be signed on all the pages by the Bank authority indicating their POA Nos. and should invariably be witnessed.*

**Annexure - 15
NO DEVIATION CERTIFICATE**

Bid No.....

To

The Managing Director,
'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.

Dear Sir,

We understand that any deviation/exception in any form from our bid against the above mentioned reference number may result in rejection of our bid. We, therefore, certify that we have not taken any exceptions/deviations anywhere in the bid and we agree that if any deviation is mentioned or noticed, our bid may be rejected.

Yours faithfully,

(Signature of Authorized Signatory)

Name :

Designation :

Company seal :

Note : This "No Deviation Certificate" should be written on the letter head of the bidder indicating BID No. duly signed and stamped with date by a person competent and having the power of attorney to bind the bidder.

Annexure - 16
Common Undertaking by the entities participating in tender either as a single entity or as a member of the consortium

(On the Letter Head of Entity Participating in tender either as a single entity or as a member of the consortium)

Name:

Full Address:

Telephone No.:

E-mail address:

Fax/No.:

To,

.....

Dear Sir,

We refer to the tender No.....dated.....for "EMPANELMENT OF BIDDERS FOR IMPLEMENTATION OF 200MWp OF GRID CONNECTED SOLAR PV SYSTEMS IN KERALA STATE AT LOCATIONS IDENTIFIED BY 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD. IN A SPAN OF one YEAR (2019-20)".

"We have carefully read and examined in detail the tender, including in particular, Clauseof the tender, regarding submission of an undertaking, as per the prescribed Format ____of the tender.

We have noted that "The bidder should not be an entity punished for committing an act of fraud and none of its directors (in case of a company)/Partners/Owners should have been punished for committing an act of fraud in the last three financial years immediately preceding the current financial year".

We have noted that "The companies whose directors are disqualified under any of the provisions of the companies Act 2013 in the last three years immediately preceding the date of submission of bid will not be entitled to participate in the tender either as a single company nor as a member in the consortium.. The Bidder (in case of a consortium each member of the consortium and the consortium separately) should submit an undertaking as specified in Annexure-16.

'SOURA Phase-1 200MWp' PROJECT

We have noted that “The bidder should not be an entity punished for committing an act of fraud and none of its directors (in case of a company)/Partners/Owners should have been punished for committing an act of fraud in the last three financial years immediately preceding the current financial year”

In view of the above, we hereby undertake to you and confirm that all the tender conditions with respect to the above will be complied with and in the event of non-compliance the 'STATE NODAL OFFICER', 'SOURA' PROJECT, KSEB LTD.is at discretion to forfeit the EMD and Performance security submitted by us and take any action as it may desire.

We have attached hereto certified true copy of the Board Resolution Whereby the Board of Directors of our Company has approved issue of this Undertaking by the Company.

All the terms used herein but not defined, shall have the meaning as ascribed to the said terms under the tender.

Signature of Managing Director/Authorised signatory

Common seal ofhas been affixed in my/our presence pursuant to Board of Director's Resolution dated.....

WITNESS

.....

(Signature)

Name.....

Designation.....

.....

(Signature)

Name.....

Designation.....

Annexure – 17

SOLVENCY CERTIFICATE by the entities participating in tender either as a single entity or as a member of the consortium

This is to certify that to the best of our knowledge and information that M/s./Shri _____ (with address) a customer of our bank are / is respectable and can be treated as good for any engagement upto a

'SOURA Phase-1 200MWp' PROJECT

limit of Rs _____ (Rupees

_____).

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

(Signature)

For the Bank

Note:

- (1) Bankers certificates should be on letter head of the Bank.
- (2) In case of partnership firm, certificate should include names of all partners as recorded with the Bank.

‘SOURA Phase-1 200MWp’ PROJECT

Annexure - 18 CHECK LIST

List of required Formats/documents to be submitted online duly signed digitally by
Authorized Signatory:

Documents to be submitted in Cover No.- 1.

The bidder shall attach :

Scanned copy of agreement to accompany the Bid as per Annexure 1 shall be uploaded as a single pdf

Document to be submitted in Cover No.- 2.

- i) Pre-qualification bid questionnaire as per clause 1 of Volume II
- ii) Volume-I Conditions of Bid and Contract.
- iii) Volume-II Prequalification Bid document
- iv) Volume-III Technical Specification
- v) Unpriced list of materials/equipment/works required for successful completion, commissioning and operation & maintenance for 2 years.
- vi) Attachments to Volume-I, Volume-II, Volume-III and Additional documents if any as a single pdf.

Sl.	Necessary Attachments
1	Attested copy of PAN Card of the Authorized Signatory/Firm along with the bid.
2	Letter of application, Declaration by the bidder, No deviation certificate
3	Certificate of incorporation of the Company
4	Joint venture or consortium or group agreement or MoU executed between the parties exclusively for the Plant legally enforced by way of attesting by a notary.
5	Power of Attorney of the signatory to the Bidding Document
6	Copy of Work Order/ Contract agreement and completion certificate that the bidder has experience
7	Performance Certificate from the user regarding successful operation of the Solar PV power plant for at least six months.(documentary evidence supporting Clause 6.2.2 of Vol 1).
8	Annual Turn over or Net Worth Certificate issued by a Chartered Accountant, Audited financial statements for the at least 3 years (Annual Turnover , Balance sheet , profit and loss account)
9	Litigation History details and proof confirm that they have not been banned or de-listed by any Govt. or Quasi-Govt. Agencies or PSU's. If so banned this fact must be clearly stated by Bidder in his offer (volume 2 Cl.2(c, d))
10	Test certificates for IEC standards in full of relevant / all major equipments like Inverters, Solar Modules etc.
11	Technical particulars of components offered (Cl.5 of Vol 2),Guaranteed Technical Particular data sheet 1,2,3,4,5& 6 as per volume 3, Technical bid deliverables specified in clause 1.12 of volume 3
12	All other documents as per the tender document.
13	GST certificate with PAN card

'SOURA Phase-1 200MWp' PROJECT

O&M Charges for 10th year				
O&M Charges for 11th year				
O&M Charges for 12th year				
O&M Charges for 13th year				
O&M Charges for 14th year				
O&M Charges for 15th year				
O&M Charges for 16th year				
O&M Charges for 17th year				
O&M Charges for 18th year				
O&M Charges for 19th year				
O&M Charges for 20th year				
O&M Charges for 21st year				
O&M Charges for 22nd year				
O&M Charges for 23rd year				
O&M Charges for 24th year				
O&M Charges for 25th year				

Tariff bid		
Bidder Offer Reference No _____		
Tender No. _____		
Date: _____		
Capacity range:	Min Capacity :	
Region/(s)	Max capacity:	
Description	Tariff for 25 years	Quantity
	Rs/unit	kWp
Scope of work as per tender		

.....

TENDER No. 1/ SOURA-200 MWp/2019-20

**TENDER DOCUMENT FOR GRID CONNECTED ROOFTOP/GROUND
MOUNTED SOLAR PV PLANTS UNDER SOURA SCHEME
(Volume-II)**

**STATE NODAL OFFICER
SOURA PROJECT, KSEBL
VYDYUTHI BHAVAN, PATTOM
THIRUVANANTHAPURAM -695 004**

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PRE-QUALIFICATION QUESTIONNAIRE

Sl. No.	Questions	Answers (to be furnished by the bidder)
1	Name of Firm	
2	Nationality	
3	Head Office Address Postal Telex No Fax No. E-Mail Phone No.	
4	Former name of firm if any	
5	Branch Office & Address	
6	Type of Organization Individual Partnership Incorporated company	
7	Year & place of establishment	
8	Nature of Firm Member of a group of companies (if yes, give name, address, connections and descriptions of the other companies) Subsidiary of large organization (if yes, give name, address and descriptions of the main company)	
9	Has your firm worked as Developer As a joint venture Main contractor Sub contractor (if yes, please give name, address of prime contractor and details of contractual arrangements with the prime contractor)	
10	Give brief description of field/areas in which you have executed work. Please furnish details and particulars of such	

'SOURA Phase-1 200MWp' PROJECT

	works in the relevant formats attached. Furnish exhibits of the important projects executed by you	
11	Are you registered with any other Govt. Department /Public Sector undertaking? (if Yes give details).	
12	What type of work is usually sublet by you	
13	Have you ever failed to complete any work awarded to you? (If so when, where and why)	
14	Have you ever failed to complete the work in time? If any penalty imposed on you, give details	
15	In what other line of business are you financially interested	
16	Have you ever been denied tendering facility by any government /public sector undertaking of India or of any other country (if so give details) Have you been debarred from tendering in any Govt. departments /undertaking (if so give details)	
17	How many years have your organization been in business under present business name? What were your fields, when you established your company, when did you add new fields?	
18	Has any officer or partner of your organization ever been an officer or partner of any other organization that failed to complete construction contract? (If so, state name of the individual and other organization) Has any officer or partner of your organization ever failed to complete the construction	

'SOURA Phase-1 200MWp' PROJECT

	contract handled in his own name?	
19	Name and address of affiliate subsidiary partnerships, joint ventures and parent companies (indicate nature of the firm and present engagement)	
20	Name of any international organization for which your firm has already been registered /pre-qualified?	
21	What are your sources of finance (Please give details of bank reference –certificate from bank endorsing your financial stability and certificate to substantiate other sources)	
22	Have your company ever been declared bankrupt (if yes, please give details)	
23	What is the maximum value of projects/works that you can handle What is the maximum value of project/works that you have handled so far.	
24	Give the last three years account with auditor's reports, balance sheet, profit and loss account, and income tax clearance certificate.	
25	How much is your paid up capital How much is your working capital How much is your foreign investment How much is your annual turnover for the last 3 years (give separately for each year) How much is your net income for the last 3 years? (Give separately for each year)	
26	Do you intend to associate any other organization for the works, which you are bidding? If so, give full particulars of that	

'SOURA Phase-1 200MWp' PROJECT

	organization separately under each head of questionnaire and Forms	
27	<p>Formats(enclosed shall be filled)</p> <p>Details of Engineers & Managerial Personnel</p> <p>Details of machinery and equipment owned by the Company</p> <p>List of Machinery & equipment that company proposes to take on rent and use for the work</p> <p>Present activities in which your firm is engaged as a Main contractor (last 5 years)</p> <p>Present activities in which your firm is working in Joint Venture (last five years)</p> <p>Present activities in which your firm is working as sub contractor (last five years)</p> <p>Simultaneous contract engagement of the contractor</p> <p>Material Testing facilities available with the firm</p>	
28	Have you conducted site visit of the locations	Yes/No

Note: In the case of Joint venture/consortium/group, the lead bidder shall submit the answers as per the above questionnaire pertaining to each firm in the group.

(The bidder has to prepare the Pre-Bid Questionnaire as per this format and upload in pdf format and enclose the cover-2 of the bidding documents)

QUALIFYING REQUIREMENT OF BIDDERS:

2. Financial Criteria

- a) Bidder should meet the financial Criteria as per clause 3.3.3 of Volume -1.
- b) For proof of Annual turnover, attested copies of the following documents should be submitted along with the bid:
- i) A certificate issued by a practicing Chartered/ Cost Accountants' Firm, certifying the Annual Turnover and nature of business, and
 - ii) Audited Balance Sheet and Profit & Loss Account etc. along with the Bid to establish experience / track record and financial capabilities meeting Bid Criteria.
- c) The bidder or its Proprietor/ Partner(s)/ Director(s) of the firm should not have been convicted by a Court of Law for an offence involving moral turpitude in relation to business dealings during the past seven (7) years. The bidder shall give an affidavit to this effect. The affidavit must be affirmed before the competent judicial authority or duly notarized by the Notary. Besides, bidder should furnish litigation history of their firm or group firm. The litigation history shall include:
- (i) Arbitration cases pending.
 - (ii) Disputed incomplete works.
 - (iii) Pending civil cases against the firm and/or its Proprietor / Partner (s) / Director (s) involving moral turpitude in relation to business dealings.
 - (iv) Pending criminal cases against the firm and/or its Proprietor / Partner(s)/Director(s) involving moral turpitude in relation to business dealings.
 - (v) Punishments awarded under civil cases and/or criminal cases involving moral turpitude in relation to business dealings to the firm and/or its Proprietor/ Partner(s)/ Director(s).
- d) The Bidder should confirm that they have not been banned or de-listed by any Govt. or Quasi-Govt. Agencies or PSU's. If so banned this fact must be clearly stated by Bidder in his offer. However, it may not necessarily be a cause of disqualifying the bid. If this declaration is not given, bid will be rejected as non-responsive.
- e) The entire work of design, engineering, manufacturing, supply, handling storage, civil works, erection, testing & commissioning along with O&M of the project for successful completion, commissioning and Operation & maintenance solar PV plant for 2 years by

'SOURA Phase-1 200MWp' PROJECT

the EPC bidder and 25 years by the plant developer should be offered. Partial bidding is not acceptable.

The bidder shall prepare and submit, as part of his Bid, a complete construction programme showing in detail his proposed programme of the operation for the orderly performance of the Work within the time specified in the specifications.

3. EXPERIENCE

- i. The list of plants commissioned at least 6 months prior to Non-Financial Bid Opening date, indicating whether the plant is grid connected, along with a copy of the Commissioning certificate and Work order / Contract /Agreement/ from the Client/Owner shall be submitted in support of Clause 3.3.2. Bidders shall not be allowed to increase their bid capacity at e-Reverse Auction greater than the twice the technical capacity that has been demonstrated in the bid document.
- ii. The Bidder shall furnish the following documentary evidences to establish his qualification and experience above along with the bid.
 - a) Copy of Work Order/ Contract agreement and completion certificate that the bidder has experience as above.
 - b) Performance Certificate from the user regarding successful operation of the Solar PV power plant Project for at least six months.

The Bidder shall furnish documentary evidences to establish his qualification and experience along with the bid.

4. Technical Criteria

- i. PV modules of the bidder should have valid qualification test certificate as per IEC 61215 and IEC 61730 and PV modules must be Indian make.
- ii. Indian/foreign manufacturers of Solar Cells and PV Modules can also participate in the bidding.
- iii. Bidder should meet the technical eligibility Criteria as per clause 3.3.2 of Volume - 1.

It is proposed to promote only commercially established and operational technologies to minimize the technology risk and to achieve the commissioning of the Projects. Materials deployed in the solar power plant must have valid test certificates for their qualification as per specified IEC/ BIS Standards by one of the Accredited Test Centers in India. In case of an equipment for which such Test facilities may not exist in India, test certificates from reputed Labs abroad will be acceptable.

‘SOURA Phase-1 200MWp’ PROJECT

Bidder shall furnish details of Solar PV Module and inverters along with their offer in Guarantee Technical Particular data sheets provided in part III of Volume III.

5. TECHNICAL PARTICULARS OF COMPONENTS

Technical information to be provided			
Sl. No	Brief Description	Name and address of the manufacturer /Make/Description	Standards to which it complies as per test certificate
1	SPV modules from various locations as per specifications: Test certificate No: Date of Test certificate: Lab from which test certificate is obtained: Copy of test certificate enclosed(Yes/No)?		
2	SPV module mounting structure (depends on separate capacity each at various locations all over Kerala) SPV modules including foundation as per specifications on terrace		
3	PCUs as per specifications: Test certificate No: Date of Test certificate: Lab from which test certificate is obtained: Copy of test certificate enclosed(Yes/No)?		
4	Array Junction Boxes		
5	Data Logging system with remote monitoring as per specification		
6	DC Distribution units as per specifications		
7	AC Distribution units as per specifications		
8	Cables requirement as per design		
9	Lightning arrester		
10	Earthing complete set		
11	Spares, tools and plant for 2 years operation and maintenance in the case of EPC bidder		

'SOURA Phase-1 200MWp' PROJECT

12	Providing training to engineers and site staff for operating Maintenance and trouble shooting skills		
13	Operation and maintenance of the SPV Power Plant for a period. of 2 years from date of commissioning of the power plant in the case EPC and 25 years in the case of plant developer		
14	Engineering, electrical drawings and installations and O&M manuals		
15	Solar Radiation and Environment Monitoring System Type:		
16	Any other equipment required to complete the installation		

Bidders are to clearly mention the name and address of the manufacturer of each components quoted by them. Also to attach test certificates in full of relevant equipments.

Attach the above information in this format & upload as additional attachments in cover 2.

6 MINIMUM REQUIREMENT OF TECHNICAL PERSONS

Sl.No	Qualification	Professional Experience	No of Persons

7. FINANCIAL STATEMENT

Financial Statement (Data For Previous Three Years- In Indian Rupees)			
a. Information from Balance Sheet			
Year			
Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			

'SOURA Phase-1 200MWp' PROJECT

b. Information from Income Statement			
Year			
Total Revenue			
Profit before Tax			
Profit after tax			

'SOURA Phase-1 200MWp' PROJECT

8. TOTAL TURNOVER

(Bidder and / or each member of Joint Venture /Consortium/Group must fill in this form)

Year	Amount
Total	

9. ACTIVITIES AND COMPLETED WORKS OF THE FIRM (FORMS)

Form (A)

PRESENT ACTIVITIES IN WHICH YOUR FIRM IS ENGAGED AS A MAIN CONTRACTOR.

(Each bidder or member of Joint Venture /Consortium/Group must fill in this form)

Name & Types of Project / works which you are presently executing & its location	Brief technical description	Name & address of client	Period of contract(as provided in the agreement)	Amount of contracts.	Type & amount of portion sublet by you.	Year of starting	Percentage completed (work.)	Name & address of consultant if any.

Form(B)

PRESENT ACTIVITIES IN WHICH YOUR FIRM IS WORKING IN JOINT VENTURE

Name of the Project/ Works & its location (Phase of work for which you are responsible)	Brief technical description	Name & Address of Client.	Period of contract (as provided in the agreement.)	Construction Cost of project (in Rs.)	Year of starting	% of completed works	Name with whom you are in joint venture	Name & Address of consultants if any.
				Entire Yours				

(Each bidder or member of Joint Venture /Consortium/Group must fill in this form)

Form(C)

PRESENT ACTIVITIES IN WHICH YOUR FIRM IS WORKING AS SUB-CONTRACTORS

(indicate phase of work for which your firm is responsible.)

(Each bidder or member of Joint Venture /Consortium/Group must fill in this form)

Name of project /works and its location and phase of work.	Name and address of client.	Cost in Rs.	Name of main contractors.	Period of contract (as provided in agreement)	Year of starting.	Percentage of work completed	Name of consultant if any.
		Entire cost of your portion					

Form(D)

COMPLETED WORKS IN WHICH YOUR FIRM WAS THE MAIN CONTRACTOR

(AS ON NON-FINANCIAL BID OPENING DATE)

(Each bidder or member of Joint Venture /Consortium/Group must fill in this form)

Name & Type of Project /Works & its location	Brief technical description	Name & Address of Client.	Period of contract (as provided in the agreement.)	Cost of project (in Rs.)	Type & cost of project which you sublet.	Year of starting	Year of completion		Reasons for delay if any.	Name & Address of consultants if any.
							Schedule	Actual		

Form(E)

COMPLETED WORKS IN WHICH YOUR FIRM WAS IN JOINT VENTURE

((AS ON NON-FINANCIAL BID OPENING DATE))

(Each bidder or member of Joint Venture /Consortium/Group must fill in this form)

Name & Type of Project / Works & location.	Brief technical description.	Name & address of client.	Cost.		Period of contract (As provided in agreement)	Year of starting.	Year of completion		Reasons for delay (if any.)	Name of consultant if any.
			Entire in Rs.	Yours in Rs.			Schedule	Actual		

Form(F)

COMPLETED WORKS IN WHICH YOUR FIRM IS WORKING AS SUB-CONTRACTORS

((AS ON NON-FINANCIAL BID OPENING DATE))

(INDICATE PHASE OF WORK FOR WHICH YOUR FIRM IS RESPONSIBLE.)

(Each bidder or member of Joint Venture /Consortium/Group must fill in this form)

Name of project /works and its location and phase of work.	Name and address of client.	Cost in Rs.	Name of main contractors.	Period of contract (as provided in agreement)	Year of starting.	Percent age of work completed.	Name of consultant if any.
		Entire cost of your portion					

Signature & Seal of bidder	
---------------------------------------	--

TENDER No. 1/ SOURA-200 MWp/2019-20

**TENDER DOCUMENT FOR GRID CONNECTED ROOFTOP/GROUND MOUNTED SOLAR
PV PLANTS UNDER SOURA SCHEME
(Volume-III)**

**STATE NODAL OFFICER
SOURA PROJECT, KSEBL
VYDYUTHI BHAVAN, PATTOM
THIRUVANANTHAPURAM -695 004**

Definitions & Abbreviations	
Balance of Systems	BOS
Bureau of Indian Standards	BIS
Central Electricity Authority	CEA
Ground Fault Detector Interrupter	GFDI
International Electro technical Commission	IEC
Indian Standards	IS
Kilo-Watt Peak	kWp
Ministry of New and Renewable Energy	MNRE
Operation & Maintenance of Solar PV system	O&M
Power Conditioning Unit	PCU
Radio Frequency Identification	RFID
Solar Photovoltaic	SPV
State Transmission utility	STU
State Distribution Utility	SDU
Standard Testing Condition	STC
Surge Protection Device	SPD

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Part I

SUPPLY, ERECTION AND COMMISSIONING OF SOLAR PLANT

1.1 State Nodal Officer, Soura, KSEBL intends to empanel EPC Successful bidder/Plant Developers or both for the design as per site conditions, supply, erection, testing & commissioning of Grid Tied Rooftop/Ground mounted Solar PV Power systems of various capacities aggregating to 200 MWp (50MWp under EPC and 150MWp under Tariff basis) at identified locations in Kerala including Operation & Maintenance of the plant as specified in the clause 2.2.2 of volume 1 of this tender document. The performance ratio of each plant shall be at least 75%/ CUF 14% to 19 % as specified in clause 2.2.2 of Volume-I of tender documents.

Type of PV Modules Considered: 330 Wp or higher Poly crystalline silicon/Mono crystalline silicon/ mono PERC/ poly PERC or any other latest technology meeting the criteria as mentioned in this document.

Type of System : Fixed.

1.2 TECHNOLOGY

The Bidder is free to choose High efficiency Mono/poly crystalline silicon Solar Cell Modules, mono PERC, poly PERC or any other latest technology meeting the criteria as mentioned in this volume. The bidder shall submit the technology selected.

The successful bidder shall specify the following:

- Basic design details, including details of the PV modules and the support structures, inverters, transformers, cables, (AC & DC), Plant protection schemes, integration and power evacuation details with existing power system along with appropriate diagram and drawings.
- The drawings along with detailed structure design and material selected as per the relevant standards,
- All guaranteed technical particulars, details of each items, make, model number and specification conforming to relevant standards, entire drawings, detailed test reports, list of O & M spares for major materials, detailed Bill of materials with quantity in respect of materials /equipment and works for the entire plant shall be submitted before starting the execution of work.

All materials and equipment required for successful completion and commissioning of the plant must be included. The design details and other accessories should adhere to and match with the technical specification provided in the volume III of the tender document and as per the Guaranteed Technical Particulars offered by the bidder.

The Successful bidder shall submit all the appropriate diagram and drawings to the SNO for approval. In addition, specifications of major items such as PV modules, inverters, transformers etc. shall be submitted to the SNO for approval. Approvals for Layout of Power Plant Installation shall be issued by the SNO on submission of all the drawings within 15 days of submission of drawing/specifications. Successful bidder shall submit modifications to plant requirements within 5 days of intimation, failing which shall be a breach of contract.

1.3 Drawings and documents

The design documents to be submitted by the successful bidder will include but not limited to:

- I. String Sizing & Array design
- II. String Layout
- III. Array Layout
- IV. AC Protection
- V. Inverter sizing
- VI. DC Protection
- VII. DC Cable size calculation
- VIII. DC cable specification
- IX. DC cable schedule, voltage drop and power loss calculation
- X. String monitoring unit specification
- XI. DC & AC earthing and pit calculation
- XII. Lightning protection details/specification
- XIII. All technical specification of AC components
- XIV. Cable schedules
- XV. PV Syst Simulation Report with proposed modules and inverters

Successful bidder shall furnish the following drawings under this contract and has to obtain approvals.

- a) Shadow analysis of the roof
- b) General arrangement and dimensioned layout
- c) Schematic drawing showing the SPV panels, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
- d) Layout of solar PV Array and Single line diagram with specification of all components.
- e) Design document for mounting structure including certificate showing wind speed withstanding capacity of the structure (STAAD Pro / Equivalent).
- f) Mounting structure drawing
- g) Structural drawing along with foundation details for the structure.
- h) Civil drawings of control room building if any.
- i) Cable layout(indicating details of cable route for power & communication cables)
- j) Itemized bill of material for complete SPV plant covering all the components and associated accessories.
- k) Sizes and specification of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be furnished.

The drawings along with detailed structure design and material selected and their standards shall be submitted to SNO for approval before starting the execution work. The work will be carried out as per the approved design.

The successful bidder shall provide necessary drawings and documents required by statutory authorities and obtain the approval before taking up erection.

1.4. Quality Assurance:

The successful bidder shall establish a Quality Assurance system for the Work as per Clause 5.3.15 of Volume 1 of the tender document and shall be subject to the approval of the SNO or authorised personnel designated. Strict compliance with the approved, proven & established quality assurance systems and procedures during the different stages of the plant starting from sizing, selection of make, storage (at site), during erection, testing and commissioning have to be ensured by the successful bidder.

- The material to be supplied for the plant should be tested as per the technical specification of the tender. The successful bidder in the presence of the SNO or authorized personnel designated shall carry out all factory acceptance tests of equipment as per the specification and relevant standards.
- SNO at his own discretion may undertake the quality checks during the manufacturing stages also.
- All works shall be undertaken with the highest levels of quality and workmanship. Work shall be carried out in conformity with quality and safety norms.
- Any materials or work found to be defective or which does not meet the requirements of the specification will be rejected and shall be replaced at successful bidder's cost.
- The successful bidder shall furnish a detailed quality assurance plan (QAP) for the plant. The test and Inspection shall be done in accordance with the relevant standards and the Manufacturer's standard before the delivery to site as well as after the erection and commission at site.
- The successful bidder shall give the list of tests they will carry out at site to show the performance of plant.
- One of the staff / workers employed by the successful bidder shall be trained under "Suryamitra" Skill Development Programme of MNRE for module erection and allied electrical works.

1.5. General Quality requirements of Solar PV Plant

The bidder shall use SPV modules of adequate capacity, Inverters etc. to ensure generation of power as per design estimates.

1. This is to be done by applying de-rating factors for the array mentioned and recognizing the efficiency parameters of inverters.
2. Use of equipment and systems with proven design and performance that have a high availability record of accomplishment under similar service conditions.
3. Selection of the equipment and adoption of a plant layout to ensure ease of maintenance.
4. Strict compliance with the approved and proven quality assurance norms and procedures during the different phases of the plant.
5. Proper monitoring in the synchronizations, which ensures the availability of power to the grid.
6. Generated low voltage shall be stepped up and fed to grid voltage at the delivery point, as applicable at specified locations (Step up transformers to be installed in the plants of capacity 100 kWp and above as may be required depending on site conditions).
7. The DC injection limit shall be as per IEEE 519, IEC 61727, CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and CEA (Technical Standards for connectivity to grid) Regulations, 2007 and amendments thereof. It shall not inject DC current greater than the 0.5% full rated output of the inverter at interconnection point.
8. Ripple content should not exceed as specified in IEEE-519 2014.
9. Limits for harmonics as per CEA technical standard on Grid connectivity are as follows :
Total Voltage harmonic Distortion, Individual Voltage harmonics Distortion and total Current harmonic Distortions are as per IEEE-519 2014
10. The power plant has to operate in parallel with the grid system, which is an infinite electrical system. The Solar Power Plant design should be equipped with requisite protective measures/ relays / breakers to protect equipment in solar power plant against any of possible fault or other disturbances from the grid.
11. The Solar plant shall be equipped with necessary protection systems to ensure isolation of the solar power plant from the grid at the time of any fault.
12. The inverter shall have internal protection arrangement against any sustained fault in the feeder line and against lightning in the feeder line. MOV type surge arrestors shall be provided on AC and DC terminals for over voltage protection from lightning induced surges.
13. Successful bidder shall provide manual disconnect four pole isolation switch beside the automatic disconnection to grid to isolate the grid connection provided by the utility, so that the utility personnel can carry out maintenance of grid. The utility personnel shall lock this switch.
14. The alarm contact shall be provided for hardware failures, failures of internal and external auxiliary supplies etc. The alarm signals should be via system fault relay (voltage free contact)

15. The plant shall be capable of supplying dynamically varying reactive power support as per the grid requirement to maintain power factor within the range of 0.95 lagging and 0.95 leading.

16. The plant shall be in accordance with solar photovoltaic systems, devices and component Goods (Requirement for Compulsory Registration) order 2017 of MOP or any amendment thereof.

The Bidder must submit an offer, based upon their own design with requirement mentioned in this bid document. The bidders should be familiar of the site condition before designing the plant and offer their bid. The bidders are also required to incorporate all the system required for realizing Grid tied solar Plants at different locations and efficient operation in parallel with KSEBL supply. The successful bidder shall submit the location wise detailed design of the complete solar generating plant by using their software to optimize the string sizing considering the specific location, isolation, nature of load etc.

The equipment and materials for each location wise Grid Interactive Solar PV Power Plant with associated system (Typical) shall include but not limited to the Supply, Erection, and Testing & Commissioning of the following:

1. Solar PV modules in array (to obtain the capacity and PR specified in each of the plants) including mounting frames, structures, array foundation and module inter connection.
2. Array Junction boxes, distribution boxes and Fuse boxes. MCBs, Surge Arrestors etc.
3. Inverter, common AC power evacuation panel with bus bars and circuit breakers LT Power Interfacing Panel, D C Distribution board.
4. Metering and protection system.
5. LT Power and Control Cables including end terminations and other required accessories for both AC & DC power
6. Suitable and standard Isolation,
7. Suitable Panels and enclosures as per standards and weatherproof enclosures as applicable in outdoor installations.
8. Lightning arrestors.
9. PVC pipes and accessories/trenches
10. Tool kit and Earthing kit
11. Testing, maintenance and condition monitoring of equipment.
12. Mandatory spares for 2 years
13. Any other equipment / material required to achieve the generation from Solar Power Plants.

14. Receipt, unloading, storage, erection, testing and commissioning of all supplied material.
15. Suitable termination and Isolation from Grid for Safety of Maintenance with Lock and Key as applicable.
16. Weather stations required to be installed at each location having capacity > 50 kWp for data feed to the inverter. For small systems <=50kWp, PR will be measured at 15 minute intervals for the period from 11hrs to 15 hrs on the date of commissioning and average of these values is taken for calculating PR. Performance ratio assessment shall be evaluated using the standard calibrated equipment of SNO /KSEBL.
17. Design of Grid Interactive Solar Power Plant and its associated electrical auxiliary systems which includes preparation of single line diagrams, installation drawings electrical lay outs, design calculations for earthing etc. design memorandum and other relevant drawings and documents to be provided under this contract are covered under Bidders scope of work.
18. LT / HT evacuation from the Roof Top/ground mounted plant shall be made available at the interconnection point of the KSEBL Grid is under Bidders scope of work.
19. Successful bidder shall bear cost for obtaining all statutory clearances including sanction from Electrical Inspectorate regarding operation of the Plant. SNO, shall assist to obtain the same.

2.0 PLANT SPECIFICATION

As per the solar photovoltaic systems, devices and component Goods (Requirement for Compulsory Registration) order 2017 of MOP, the PV module and inverter must also conform to the specified Bureau of Indian standards.

2.1 PV Module Qualifications

Sl .No	Standard	Description
1	IS 14286 /IEC 61215	Crystalline silicon terrestrial photovoltaic modules - Design qualification and type approval.
2	IS/IEC: 61730 –part I	Photovoltaic module safety qualification-Requirement for construction
3	IS/ IEC: 61730 –part II	Photovoltaic module safety qualification-Requirement for testing
4	IS/IEC 61701	Salt mist corrosion test of the module
5	IS 16221(Part1)	Safety of Power Converters for use in Photovoltaic Power Systems Part 1-General Requirements

	IS 16221(Part2)	Safety of Power Converters for use in Photovoltaic Power systems.
6	IS 16170 : Part 1/IEC 61853-part1	Photovoltaic (PV) module performance testing and energy rating
7	IEC 62804	Photovoltaic (PV) Modules - Test methods for the detection of potential - induced degradation. IEC TS 62804-1 : Part 1 : Crystalline silicon
8	IEC62716	Photovoltaic PV modules: Ammonia(NH3) corrosion testing

The Solar PV Module should be of power rating 330 Wp or above and must have test certificate issued from accredited test laboratories of MNRE Govt. of India or abroad.

The Solar PV Module should be made of mono/poly crystalline Silicon Solar Cell or mono /poly PERC connected in series/parallel. The supplied modules should be Potential Induced Degradation free; a certificate should be submitted with the bid document.

Module efficiency shall be 17% or more at STC. (To be measured at standard test conditions of solar radiation at 1000W per sq. meter at 25 deg. Celsius, spectrum AM 1.5) If required, Inspection of testing of PV array will be conducted by the SNO including identification of panels ready for dispatch for the confirmation of the details provided in RFID tag using RFID reader during FAT. The RFID details of each module shall be issued to the inspector during FAT.

The bidder offering the module with highest power rating (Wattage) shall be given preference provided all other criteria are same.

PV module Type	Poly/Mono crystalline mono PERC, poly PERC or any other latest technology meeting criteria as mentioned in this volume
Make	India/Foreign make
Efficiency	≥17%
Fill factor	≥70%
Degradation Warranty	Panel Output (Wp) capacity to be ≥90% of designed nominal power up to 10 years and ≥80% of design nominal power up to 25 years.

Module frame	Non corrosive and electrolytically compatible with the mounting structure material
Termination Box	Thermo plastic, IP 65, UV resistant
Bypass diodes	Schottky Type diode shall be provided.
RFID Tag for each Module	Encapsulated inside the module or outside facilitating easy reading of the RFID details as detailed in Clause 2.3 below.
Power Output Rating	For Standard test conditions (STC) I-V Curve and Electro luminescence test report of all modules shall be submitted in soft/hard copies during FAT

2.2 Authorized Test Centres

The PV modules must qualify (enclose test reports/certificate from NABL accredited laboratory) as per relevant BIS/ IEC standard. Additionally, the performance of PV Modules at STC must be tested and approved by NABL accredited /MNRE approved test laboratory.

2.3 Identification and Traceability: - Each PV module used in any solar power plant must use a RF identification tag. The RFID tag used on each module can be inside or outside the laminate and withstand harsh environment conditions. The RFID tag should last for 25 years. The module facilitating easy reading of the RFID details as detailed below. Each PV module used in any solar power project must use a RFID tag for identification.

The following information must be mentioned in the RFID used on each module.

- i. Name of the manufacturer of PV module
- ii. Name of the Manufacturer of Solar Cells
- iii. Month and year of the manufacturer (separately for solar cells and modules)
- iv. Country of origin (separately for solar cells and module)
- v. I-V Curve for the module
- vi. Wattage, I_m , V_m and FF of the module
- vii. Unique serial no. and Model no. of the module
- viii. Date and year of obtaining IS/ IEC PV module qualification certification
- ix. Name of the test lab issuing BIS/IEC certificate
- x. Other relevant information on traceability of solar cells and module as per ISO 9000.

The successful bidder shall arrange an RFID Reader to show the RFID details of the modules transported to sites, to the site Engineer in charge, up to their satisfaction, which is mandatory for the site acceptance tests.

2.4 Mechanical Characteristics

- a) Each module shall have low iron tempered glass front for strength and superior light transmission (4 mm tempered for SSI-M6-270 & SSI-3M6-270, 3.2 mm for others).
- b) It shall have back sheet for environment protection against moisture and high voltage electrical insulation.
- c) Solar cell shall have surface anti-reflective coating to help to absorb more light in all weather conditions.
- d) Solar module shall be laminated using lamination technology using established polymer (EVA) and Tedlar/Polyester laminate.
- e) Output Cables: Polarized Weather Proof DC rated multi-contact connector of relevant international/national standards
- f) The module frame shall be made of Anodized Aluminium alloy/ corrosion resistant material, which shall be electrically compatible with the structural material.
- g) Fuses of adequate rating shall also be provided in each solar array module to protect them against short circuit. The fuse shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.
- h) Bidder must consider Shading Losses as per the relevant Industry Standard & Practice while designing the proposed power plant and the same shall be specifically indicated.
Bidder shall provide data sheet for Solar PV Modules (Under STC) along with their offer as per Guarantee Technical Particular Data Sheet- 1.

2.5 Warranties

Manufacturer's warranty certificate as shown below shall be furnished by the bidder.

a) Material Warranty:

- i. The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five(05) years from the date of sale.
- ii. Defects and/or failures due to manufacturing
- iii. Defects and/or failures due to quality of materials
- iv. Non Conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option

b) Performance Warranty:

PV modules used in grid power plants must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years

2.6 Module Mounting Structure

Photovoltaic arrays must be mounted on a stable, durable structure that can support the array and withstand wind, rain, and other adverse conditions. The modules will be fixed on structures with fixed arrangement. The module mounting structures shall have adequate strength and appropriate design suitable to the locations, which can withstand the load and high wind velocities. Stationary structures shall

support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly.

Wind/ cyclonic wind velocity withstanding capacity	150 km/hr
Structure material	Hot dip Galvanized Mild Steel (as per latest BIS specifications 2062 & 4759) or aluminium of suitable grade minimum alloy 6063 (or better)
Bolts, Nuts, fasteners, panel mounting clamps	Stainless Steel SS 304
Mounting arrangement for RCC flat roofs	With removable concrete ballast made of pre-fabricated PCC (1:2:4), M15 or suitable design without penetrating the RCC roof surface.
Minimum distance between ground level and lower edge of PV panel for RCC roof	0.3m
Access for panel cleaning and maintenance	Panel top and bottom shall be accessible for cleaning and from the bottom for access to the module junction box
Panel Tilt angle	North South Orientation with a fixed tilt angle of 8-13 degrees (depending on location) facing true South. However, these may be changed as per the site requirement and plant should meet the specified performance ratio.

The array will be installed on steel racking structures that are anchored in the ground. Racks will be laid out in parallel matrices allowing individuals to access the area between the racks for cleaning and other maintenance needs. In between the row of solar panels sufficient gap need to be provided to avoid falling of shadow of one row on the next row. Seismic factors for the site will be considered while making the design of the foundation. Array support structure shall be fabricated using corrosion resistant GI sections electrically compatible with the structural material.

2.7 Mechanical Specifications

1. The PV array structure design shall be appropriate with a factor of safety of min 1.5.
2. Array support structure fasteners or metal clamp shall be only SS 304 and no welding is allowed.
3. The support structure shall be free from corrosion when installed.

4. Screw fasteners shall use existing mounting holes provided by module manufacturer. No additional holes shall be drilled on module frames.
5. Photo-voltaic arrays must be mounted on a stable, durable structure that can support the array and withstand wind, rain, hail and other adverse conditions. Stationary structures shall support solar PV modules at a given orientation, absorb and transfer the mechanical loads to the roof properly. Adequate spacing shall be provided between any two modules secured on PV panel for improved wind resistance.
6. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.
7. All load is distributed in accordance with the building load bearing capacity. Structure design should be submitted to SNO for approval.
8. The successful bidder shall specify installation details of the PV modules and the support structures with appropriate diagram and drawings. The drawings along with detailed structure design and material selected and their standards shall be submitted to SNO for approval before starting the execution of work. The work will be carried out as per design approved by SNO.
9. Any modification in the equipment or installation that may be demanded by the inspecting authorities shall be carried out by the successful bidder without any additional cost.
10. The roof structure shall not be altered and on any instance of damage to roof due to the defect from the part of successful bidder, it shall be rectified by the successful bidder at own expense.
11. Installation of structure for solar PV mounting should not tamper with the water proofing of roofs if provided.

2.8 Junction boxes (JBs):

1. The junction boxes are to be provided in the PV array for termination of connecting cables. The Junction Boxes (JBs) shall be made of GRP/FRP/with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JB shall be such that input & output termination can be made through suitable cable glands.
2. Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
3. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP 65 standard and IEC62208 Hinged door with EPDM rubber gasket to prevent water entry, Single/ double compression cable glands, Provision of earthings. It should be placed at a height suitable for ease of accessibility.
4. Each Junction Box shall have high quality Suitable capacity Metal Oxide Varistors (MOVs)/ SPDs. The Surge Protective Device shall be of Type 2 as per IEC 60364-5-53
5. The junction Boxes shall have suitable arrangement for the followings (typical):-

- Combine groups of modules into independent charging sub-arrays that will be wired into the controller.
 - Provide arrangement for disconnection for each of the groups.
 - Provide a test point for each sub-group for quick fault location.
6. The current carrying ratings of the string combiner box/ junction box shall be suitable with adequate safety factor, to inter connect the Solar PV array.
7. All fuses shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP65 enclosures with transparent covers.

2.9 DC DISTRIBUTION BOARD

- a) DC Distribution panel to receive the DC output from the array field.
- b) DC DB shall have sheet from enclosure of dust and vermin proof, and shall be fabricated to comply with IP 65 protection. The bus bar / cables are to be made of copper of desired size. Suitable Capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors. MOV type surge arresters shall be provided on AC and DC terminals for over voltage protection from lightning-induced surges, either inside the inverters or at both ends in junction boxes / distribution boxes.

2.10 PCU/ INVERTER

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. The power generated from PV array shall be fed to the MPPT Tracker of grid tied solar inverter of nominal capacity.

Technical features of the inverter to be as follows: Inverter output should be compatible with grid supply voltage and frequency. The Inverters shall be from reputed firms, which will incorporate latest Technological advance to provide highly reliable and efficient energy conversion from DC to AC.

Inverter shall be capable to synchronize independently & automatically with KSEBL grid frequency to attain synchronization and export power generated by solar plant to grid. The inverter shall be capable of complete automatic operation, including wake-up, synchronization & Sleep mode. The power rating of the inverter shall be as per site requirement.

Maximum Power Point Tracker (MPPT) shall be integrated in the inverter to maximize energy drawn from the Solar PV array. The MPPT should be microprocessor based to minimize power losses. The successful bidder in his offer shall mention the details of working mechanism of MPPT.

The inverter shall be able to withstand an unbalanced load conforming to IS/IEC standard and relevant Indian electricity condition. The inverter shall include appropriate self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of inverter component failure or from parameters – beyond the inverter's safe operating range due to internal or external causes.

Switching devices	IGBT/MOSFET
Control	Microprocessor /DSP
Nominal AC output voltage and	415V, 3 phase, 50 Hz(In case single phase inverters are offered, suitable arrangement for balancing the phases must be made)
Frequency	
Output Frequency	50 Hz
Ambient Temperature considered	-20° C to 50° C
Humidity	95 % Non-condensing
Protection of Enclosure	IP-20 (Minimum) for indoor.
	IP-65 (Minimum) for outdoor.
No-load losses	Less than 1% of rated power
Inverter Efficiency (minimum)	
	>97% (In case of 10 KW or above without in-built galvanic isolation)
	> 90% (In case of less than 10 kW)
THD	< 3%
PF	> 0.9

- (a) Inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- (b) Inverter should have internal protection arrangement against any sustainable fault in feeder and against the lightning on feeder.
- (c) Built-in meter and data logger to monitor plant performance through external computer shall be provided.
- (d) The combined wattage of all inverters should not be less than rated capacity of power plant under STC.
- (e) Anti-islanding (Protection against Islanding of grid): The inverter shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.
- (f) The inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.

- (h) The Inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2 (1,2,14,30)/ Equivalent BIS Std.
- (i) The inverters should have facility for LVRT and HVRT protection as per CEA Technical standards guide line /CERC order.
- (j) The inverter shall be initially set with power factor as shown in the table and shall be capable of supplying dynamically varying reactive power support as per the grid requirement and the required power factor can be set through the front panel provided in the inverter.
- (k) The MPPT units environmental testing should qualify IEC 60068-2 (1, 2, 14, 30)/ Equivalent BIS standard. The junction boxes/ enclosures should be IP 65 (for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.

The Inverters shall meet the BIS/IEC specification and should be tested from the MNRE approved test centres/ NABL accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses. If necessary, the SNO will conduct required Inspection for testing of Inverter at factory.

The inverters should comply with applicable BIS/ IEC standard

Sl.no	Standard	Description
1	IEC/IS:61683	Photovoltaic systems -power conditioners -procedure for measuring efficiency.
2	IEC 60068	Environmental testing
3	IEC 62116	Islanding prevention measurement to isolate it from the grid in case of no supply, under voltage and over voltage conditions so that in no case there is any chance of accident.
4	IEC 61727	Interfacing with utility grid
5	IS 16221 part 1&2 / IEC 62109 part 1 &2	Safety of Power converters for use in photovoltaic systems.
6	IEC 60255-27	Measuring Relays & Protection Equipment –part 27: Product safety requirement.

2.11 INTERNAL PROTECTION SYSTEM (Using Electronic Detection)

- Inverter continuous overload protection
 - Over/under grid voltage AC voltage protection
 - Over/under grid frequency protection
 - DC reverse polarity protection
 - AC and DC short circuit and over current protection
 - AC and DC over voltage and temperature protection
 - Anti-islanding protection
 - Ground fault detection./ Earth leakage fault protection
- Overload capacity (for 10 sec) should be 150% of continuous rating.

Overvoltage protection against atmospheric lightning discharge to the PV array is required. On startup, a self-diagnostic system check of key parameters should occur automatically.

An alarm contact shall be provided for hardware failures, failures of internal and external auxiliary supplies etc. The alarm signals should be via system fault relay (voltage free contact).

2.12 DATAACQUISITIONSYSTEM/PLANTMONITORING

- i. Data Acquisition System shall be provided for each of the solar PV plant.
- ii. Data Logging Provision for plant control and monitoring, time and dates tamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication shall be provided.
- iii. Solar Irradiance: Weather stations required to be installed at each location having capacity > 50 kWp for data feed to the inverter. An integrating Pyranometer/ Solar cell based irradiation sensor (along with calibration certificate)provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system.
- iv. Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system at each location having capacity > 50 kWp .
- v. The following parameters are accessible via the operating interface display in real time separately for solar power plant:
 - a. AC Voltage.
 - b. AC Output Current
 - c. Output Power
 - d. Power factor
 - e. DC Input Voltage.

- f. DC Input Current.
 - g. Time of Activation of inverter.
 - h. Time of disabling of inverter.
 - i. Time of Idling
 - j. Energy produced
 - k. Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage).
- vi. All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at anytime and logging facility. The current values, previous values upto a year and the average values should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
- vii. PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided.
- Energy meter along with CT/PT should be of 0.5 accuracy class.
- viii. Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
- ix. String and array DC Voltage, Current and Power, Inverter AC output voltage and current (all 3 phases and lines), AC power (active, reactive and apparent), Power Factor and AC energy (all 3 phases and cumulative) and frequency shall be monitored.
- x. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
- xi. The data shall be recorded in a common worksheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
- xii. All instantaneous data shall be shown on the computer screen.
- xiii. Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
- xiv. Provision for Internet monitoring and download of historical data shall be incorporated.
- xv. Remote Server and Software for centralized Internet monitoring system shall also to be provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.
- xvi. Solar irradiance and Ambient/ Solar PV module back surface temperature shall also to be monitored on continuous basis (for plants have capacity >50kwp).
- xvii. Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided.

- xviii. Remote Monitoring and data acquisition through Remote Monitoring System software at KSEBL with latest software / hardware configuration and service connectivity for on line / real time data monitoring / control complete to be supplied and operation and maintenance / control to be ensured by the bidder.
- xiv. The bidders shall be obligated to push real-time plant monitoring data on a specified intervals (say 15 minute) through open protocol at KSEBL Data Center in XML/JSON format. Necessary application shall be provided at KSEBL to receive and monitor the pushed data.
- xx. Typical parameters also required in the dash board is enclosed as Annexure R

2.13 POWER QUALITY REQUIREMENTS

DC Injection into the grid: there shall not inject DC current greater than the 0.5% full rated output at interconnection point (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 and CEA (Technical Standards for connectivity to grid) Regulations, 2007 and amendments thereof.

Harmonics on AC side:

The limits for harmonics shall as follows:

- a. Total Voltage harmonic Distortion as per IEEE-519 2014
- b. Individual Voltage harmonics Distortion as per IEEE-519 2014
- c. Total Current harmonic Distortions per IEEE-519 2014
- d. Output frequency = 50Hz +/- 0.5Hz

2.14 Step Up Transformers if required (to be installed in the plants of capacity 100 kWp and above)

Transformers having 11 kV at HV side with breaker on LT and HT side shall be used for stepping up the voltage to 11kV for the solar Power Plant.

- Transformers shall be of reputed make and should have relevant IS or international certifications. Transformers shall have all relevant monitoring and protection devices as per the relevant Indian Standards.
- Rating of each transformer shall be standard type. The transformer manufacturer shall provide test certificates carried out on the transformers as per relevant IS standards.
- LV windings voltage is decided based on the inverter output voltage. The rating of transformer (kVA) is decided based on combined rating of Inverters.
- The high voltage power from the transformers is routed through 11kV HT cable to 11kV
- 11 kV Transformer shall conform to IS: 2026.
- Reverse power relay shall be provided by the successful bidder (if necessary), as per the requirement of KSEBL.

2.15 HT Equipment

The 11 kV side equipment and parts shall be earthed as required under provisions of IS 3043. The system shall be designed with appropriate CTs & PTs to have all relevant protection. In addition, CTs and PTs shall also be provided for metering and protection purposes as elsewhere specified.

The HT side shall have the following protections provided:

Over current & earth fault relay with under voltage & over voltage protection under and over frequency protection relay.

2.16 PROTECTIVE RELAYS

The Solar PV system and associated power evacuation system shall be protected as per relevant Indian Standards.

2.17 AC DISTRIBUTION BOARD (ACDB)

- a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
- b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/IS60947 part I, II and III.
- c) The change over switches, cabling work should be undertaken by the bidder as part of the project.
- d) All the Panels shall be metal clad, totally enclosed, rigid, floor mounted, air- insulated, cubical type suitable for operation on three phase/single phase, 415 or 230 volts, 50Hz
- e) The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percentage humidity and dusty weather.
- f) All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- g) Should conform to Indian Electricity Act and rules (till last amendment).
- h) All the 415 AC or 230 volts devices/equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switch gear shall be suitable for continuous operation and satisfactory performance under following conditions.

Variation in supply voltage	+/- 10%
Variation in supply frequency	+/- 3Hz

2.18 Cables:

All cables of appropriate size to be used in the system shall have the following characteristic:

- Shall conform to IEC 60227 / IS 694 & IEC 60502 / IS 1554 standards.
- Temperature Range: -10 degree Celsius to +80 degree Celsius
- Voltage rating: 660/1000V
- Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
- Flexible
- Sizes of cables between any array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%).
- For the DC cabling, XLPE or XLPO insulated and sheathed, UV stabilized single core flexible copper cables shall be used; Multi-core cables shall not be used.
- For the AC cabling, PVC or XLPE insulated and PVC sheathed single or, multi-core flexible copper cables shall be used, Outdoor AC cables shall have a UV -stabilized outer sheath IS/IEC69947.
- All LT XLPE cables shall conform to IS:7098 part I&II .
- The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%
- The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%
- The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm
- Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers
- All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50cm; the minimum DC cables size shall be 4.0mm² copper; the minimum AC cable size shall be 4.0mm² copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.
- The following color code shall be used for cable wires

DC positive: red (the outer PVC sheath can be black with a red line marking)

DC negative: black

-AC single phase: Phase: red; Neutral: black

AC three phase: phases: red, yellow, blue; neutral: black

-Earth wires: green

- Cables and conduits that have to pass through walls or ceilings shall be taken through PVC pipe sleeve
- Cable conductors shall be terminated with tinned copper end ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.
- All cables and connectors used for installation of solar field must be of solar grade which can withstand harsh environment conditions including high temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes' for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall solar grade copper (Cu) with XLPO insulation and rated for 1.1 kV as per relevant standards only.
- Bending radii for cables shall be as per manufactures recommendations and IS: 1255. Cables shall also conform to IEC 60189 for test and measuring methods.
- For laying/termination of cables latest BIS/IEC Codes/ standards shall be followed.

2.19 LIGHTNING PROTECTION FOR ROOF TOP STRUCTURE

- The SPV power plant should be provided with lightning and over voltage protection.
- The entire space occupying SPV array shall be suitably protected against lightning by deploying required number of lightning arresters. Lightning protection should be provided as per IEC 62305.
- The protection against induced high voltages shall be provided by the use of surge protection devices (SPDs) and the earthing terminal of the SPD shall be connected to the earth through the earthing system.
- Surge protection shall be provided on the DC side and AC side of the solar system.
- The DC surge protection device shall be installed in the DC distribution box adjacent to the solar grid inverter. These can also be in-built in the inverter
- The AC surge protection devices shall be In the AC distribution box. These can also be in-built in the inverter.
- The source of over voltage can be lightning or other atmospheric disturbance. The lightning conductors shall be made as per applicable Indian Standards in order to protect the entire array yard from lightning stroke.

2.20 Grid Islanding

In the event of a power failure on the grid, it is required that any independent power producing inverters connected to the grid should turn off in a short period of time. This prevents the DC to AC inverters from continuing to power into small section of grid. The roof top PV system should be equipped with islanding protection. In addition to disconnection from the grid, disconnection due to under and over voltage conditions shall also be provided.

2.21 EARTHING SYSTEM

- Earthing System shall connect all non –current carrying metal receptacles, electrical boxes, appliance frames, chassis and PV module mounting structures in one long run. The earth strips should not be bolted. Earthing GI strips shall be interconnected by proper welding.
- The complete earthing system shall be electrically connected to provide return to earth from all equipment independent of mechanical connection.
- The equipment grounding wire shall be connected to earth strip by proper fixing arrangement. Each strip shall be continued up to at least 500mm from the equipment.
- Earthing system design should be as per the standard practices and should conform to the IS 3043-1987.
- Masonry enclosure with the earth pit of size not less than 400mm X 400 mm(depth) complete with cemented brick work (1:6) of minimum 150mm width duly plastered with cement mortar (inside) shall be provided .Hinged inspection covers of size not less than 300mm X 300mm with locking arrangement shall be provided . Suitable handle shall be provided on the cover by means of welding a rod on top of the cover for future maintenance.
- Minimum four (04) numbers of interconnected earth pit needs to be provided in each location. Minimum required gap shall be provided in between earth pits as per relevant standard. Body earthing shall be provided in inverter, each panel, module mounting structure, kiosk and in any other item as required.
- Earth resistance shall not be more than 5 ohms. Earthing system must be interconnected through GI strip to arrive equipotential bonding. The size of the GI earth strip must be minimum 25mm X 6mm.
- Total no of Earth pits for solar plants:
 - Up to 50kWp: AC-01, DC-02, LA-01
 - Above 50kWp: AC-02, DC-02, LA-01
- All metal casing / shielding of the plant shall be thoroughly grounded in accordance with Indian electricity act / IE Rules. The earthing for array and LT power system shall be as required as per provisions of IS.
- The complete earthing system shall be mechanically and electrically connected to provide independent return to earth. All three phase equipment shall have two distinct earth connections. An earth bus shall be provided inside the control facility. For each earth pit, necessary test point shall have to be provided.

- In compliance to Rule 33 and 61 of Indian Electricity Rules, 1956 (as amended up to date), all non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earth electrode.

2.22 INSTALLATION OF CONTROL INFRASTRUCTURE

The bidder shall prepare the details of array layout and control infrastructure to accommodate within the existing Building / infrastructure room/ layout along with the offer.

2.23 CONNECTIVITY

Plant Capacity	Connecting voltage
Up to 5 kWp	240V-single phase or 415V-three phase at the option of the consumer
Above 5kWp and up to 100 kWp	415V – three phase or higher at the option of the consumer.
Above 100kWp	At HT/EHT level (11kV/33kV/66kV)

3.0 CLEANING

Water storage and necessary feed lines, so as to reach all installed modules, has to be provided by the successful bidder. Water lines may be drawn to feed water from the available resources. Contract has to provide additional facility including pipeline and motor for pumping to the additional overhead tank if required for cleaning the SPV modules, depending on the site conditions.

4.0 CIVIL WORKS

4.1 Detailed Structural Survey & Investigation of the Site

The EPC contractor/Developer shall be responsible for detailed Structural survey before installation and load analysis.

4.2 Development of Site activities

The EPC contractor/Developer is responsible for making the site ready by clearing dumped oddments, cutting of tree branches (if required), structure for leveling of array (wherever required) etc. for commencing the plant .

4.3 Land Development for site activities for ground mounted solar plant

The EPC contractor/Developer shall be responsible for detailed soil investigation and contour survey at required locations for the purposes of foundation design for the module structure as well as the Control room (if required). He shall also make the site ready by clearing of small bushes, felling of trees, leveling of ground (wherever required) etc. for commencing the project with the permission of SNO

4.4 Works

Existing terrace space shall be used to install Solar PV array. While installing solar power plants on rooftops the physical condition of the rooftop should be taken in to consideration.

1. PV array shall be installed in the terrace space free from any obstruction and/or shadow and to minimize effects of shadows due to adjacent PV panel rows.
2. PV array shall be oriented in the south direction in order to maximize annual energy yield of the plant. However, the contractor can select any orientation, provided the plant should meet specified PR.
3. The solar PV array must be installed on the rooftop in such a way that there is sufficient space on the rooftop for maintenance etc.
4. PV panel frames shall be fixed and grouted to RCC blocks, which in turn shall be secured to terrace structure using polyurethane bonds in a seamless manner without obstruction to storm water drains and with no impact on waterproofing of the existing terrace structure or ballast type structure shall be used.
5. There should not be any damage what so ever to the rooftop due to setting up of the solar power plant so that on a later day there is leakage of rainwater, etc. from the rooftop.
6. The contractor shall not do drilling of rooftop. In case small damages are inevitable for erecting the footings for the module mounting structure etc. the roof top may be given a suitable grading plaster with suitable leak proof compound so as to render the roof entirely leak proof.
7. If the roof top does not have any access such as stairs or Ladder, a permanent ladder must be provided to ensure easy access to the roof top in consultation with roof top owners.
8. Ample clearance shall be provided in the layout of the inverter and DC/AC distribution boxes for adequate cooling and ease of maintenance. Safe Guard Fencing
9. While cabling the array care must be taken such that no loose cables lie on the rooftops.
10. The roof top should look clean and tidy after installation of the array.
11. Neatness, tidiness and aesthetics must be observed while installing the systems.
12. RCC Works - All RCC works shall be as per IS 456 and the materials used viz. Cement reinforcement, steel etc. shall be as per relevant IS standards. Reinforcement shall be high strength TMT Fe 415 or Fe 500 conforming to IS: 1786-1985.
13. Brick Works - All brick works shall be using 1st class bricks of approved quality as per IS 3102.

14. Plastering - Plastering in cement mortar 1:5, 1:6 and 1:3 shall be applied to all.

For painting on concrete, masonry and plastered surface IS:2395 shall be followed. For distempering IS 427 shall be followed referred. For synthetic enamel painting IS 428 shall be followed. For cement painting IS 5410 shall be followed

All Civil works required for the installation of a Photo Voltaic Station (PV Station), including foundations, necessary sheds for step up transformer and other civil and electrical work in evacuation infrastructure, wherever necessary, shall be within the scope of the bidder.

4.5 Inverter Accommodation

The layout of Inverter accommodation shall be designed to enable adequate heat dissipation and space availability. Mount within the existing infrastructure available in consultation with the Site in charge. The infrastructure shall be kept in adequate enclosure locked, to avoid public intrusion. One Key of the same shall be given for the custody of the site in charge in case of EPC contract. All access to the installed infrastructure shall be made in concurrence with the Engineer in charge binding safety.

4.6 Illumination System

Supply and providing of suitable illumination system for inverter accommodation if required is in bidder's scope.

5.0 ENERGY METER

As per KSERC (Grid Interactive Distributed Solar Energy Systems) Regulation, 2014, net metering system is to be provided to the solar consumer. Net metering means a system consisting of a solar energy meter and net meter with their associated Equipment. Solar energy meter means a unidirectional meter to be installed at the delivery point of the solar energy system to measure the solar electricity generated. Net meter means the bidirectional energy meter to be installed at the interconnection point of the consumer with the network of distribution licensee. A solar meter and bidirectional energy meter suitable for the installed solar plant shall be supplied and installed by the contractor after testing and sealing from respective TMR Divisions. Energy Meters must be provided with the necessary data cables if required.

Energy meters shall be installed and maintained in accordance with the provisions of The Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended from time to time. The Contractor shall maintain the Metering System as per metering code and CEA guidelines. The defective meter shall be immediately tested and rectified/ replaced

The accuracy class of the energy meters and current and potential transformers will be selected and agreed upon by SNOL so that all levels of energy produced or taken by the Solar Power Plant will be measured accurately, and this equipment has applicable accuracy class. The solar energy meter and net energy meter shall be of accuracy as given and CT and PT shall be utilized according to CEA metering regulations 2006 and its amendment.

Upto35 kWp (LT Whole current meter)10-60A		Above 35kWp and below 100kWp (CT operated meter)		Above 100kWp (CT operated meter)	
Solar energy meter	Net meter	Solar energy meter	Net meter	Solar energy meter(LT)	HT Net meter
Class 1 (Accuracy)	Class 1 Accuracy	0.5s	0.5s	0.5s	0.2s

Meters shall be microprocessor based conforming IEC 60687 / IEC 6205211 / IEC 62053-22 / IS 14697 and solar energy meter or its display shall be placed adjacent to net energy meter.

Display parameters : LCD test, KWH import, KWH export, MD in KW export, MD in KW import, Date & Time, AC current and voltages and power factor (Cumulative KWH will be indicated continuously by default & other parameters through push-button). The solar energy meters and net energy meters should be DLMS compliant and AMR compatible with RS 485 communication port for measurement of specified electrical parameters.

The solar energy meters shall be provided with two ports for communication of the measured / collected data. One port compatible with RS 485 specifications, which shall be used for remote access through suitable GPRS modem (Technical specification of GPRS modem is attached as Annexure S). The other port shall be an optical port complying with hardware specifications detailed in IEC 62056-21.

For capacity >10kWp, solar energy meter shall be with MODEM having facility of AMR and GPRS or Smart Meter (at the option of the bidder)

6.0 SAFETY REGULATIONS

All SPV system should comply with CEA (Measures relating to Safety and Electricity Supply) Regulation 2010.

Adequate firefighting equipment and extinguishing agents of sufficient capacity and quantity must always be available at site and kept ready for immediate use.

The installation of Fire Extinguishers should conform to BIS standards. The fire extinguishers shall be provided in the control room housing inverters as well as on the Roof or site where the PV arrays have been installed. One liquefied CO2 fire extinguisher upright type of capacity 10 kg having IS: 2171 -7, IS: 10658 marked per installation of 15kWp shall be supplied by the Successful bidder and kept near the Inverter accommodation and shall also be responsible for periodic renewal during the maintenance

period. The fire extinguisher shall be suitable for fighting fire of oils, solvents, gases, paints, varnishes, electrical wiring, live machinery fires and all flammable liquid & gas

7 DRAWINGS, DATA AND DOCUMENTS

The bidder shall furnish following documents/ information along with the offer.

- a. General description of equipment offered specifying the important features, make, technical parameters, materials of construction, etc. to enable the owner to have proper understanding of the equipment offered and its operation.
- b. Technical literature, catalog and publications.
- c. Layout of Complete Power Plant Installation showing location of all major sub- systems.
- d. Single line diagram.
- e. Typical general arrangement and foundation details.
- f. Technical particulars as listed in this specification.
- g. Type tests certificates of all major equipment like transformers, switchgear, Inverters, Solar Modules etc.

8. ERECTION, TESTING & COMMISSIONING

1. The contractor shall provide necessary drawings and documents required by statutory authorities and obtain the approval before taking up erection.
2. The contractor at no additional cost to the SNO shall carry out any modification in the equipment or installation that may be demanded by the inspecting authorities of SNO .
3. In accordance with the specific installation instruction as per the manufacturers drawings or as directed by the SNO , the EPC contractor shall unload, assemble, erect, install test, commission and hand over all electrical equipment included in this contract.
4. Erection materials including all consumables, tools, testing instruments or any other equipment required for successful commissioning shall be arranged by the successful Bidder in a timely manner.
5. All equipment and instruments, indoor and outdoor, shall be marked with No. and provided with danger boards before commissioning.
6. All Power equipment shall be handled and erected as per the relevant codes of practice and manufacturer's drawings and instruction manuals.
7. The Contractor shall obtain the temporary Electrical connection for construction purposes and the same has to be dismantled off the premises after completion of erection of plant.

9 Commercial Operation Date

The date of completion of successful demonstration of the required PR will be considered as CoD of that plant. To ensure PR /CUF, the contractor/developer will be allowed to erect additional number of solar modules without extra cost addition.

10 WARRANTY:

The module mounting structure, electrical works including power conditioners/inverters / maximum power point tracker units/distribution boards/digital meters/ switchgear etc. and overall workmanship of the SPV power plants/ systems must be warranted against any manufacturing/ design/ installation defects for a minimum period of 5 years. The EPC contractor shall furnish manufacturer's warranty certificate in this regard.

Part II

OPERATION & MAINTENANCE OF THE PLANT

The EPC successful bidder shall be responsible for Comprehensive Operation and maintenance of the Solar Power Plants installed at locations for a period of first two (2) years from the COD of the solar plant. In tariff based bidding the developer is liable for doing O&M for the entire 25 years.

In the O&M period, the following services are included:

- I. Operating the solar Plant;
- II. Providing all materials and services necessary for solar Plant maintenance;
- III. Performing all duties for the safe and efficient operation and maintenance as per the standards;
- IV. Complying with all regulatory obligations;

Successful bidder shall impart basic training to the employer personnel with the concurrence of the SNO and conduct O & M Training at the designated Training centers.

The Successful bidder shall supply **manual** for Operation and Maintenance of all the system in English language.

Successful bidder shall perform the Work and supply all required spare parts in a prudent and efficient manner and in accordance with-

- (i) Manufacturers and systems designers' specifications, the Annual Operating Plan for the Plant and all operation and maintenance manuals,
- (ii) All Indian applicable laws including environmental protection, pollution, sanitary, employment and safety laws, ("Government Rules").
- (iii) Prudent Utility Practice.

Operator shall use all reasonable and practical efforts:

- To maximize plant capacity utilization
- To minimize plant downtime
- Optimize useful life of all the equipment of the energy plant.

Successful bidder shall be responsible for all the required activities for the successful running, optimum energy generation & maintenance of all the Solar Photovoltaic Power Plants covering:

- a) Monitoring controlling, troubleshooting maintaining of records, registers.
- b) Supply of all spares, consumables and fixing/application, inverters, indoor panels , cables terminals kits, Circuit Breakers, Isolators switch, and all other associated equipment of solar plant etc , for a period of 2 (two) years. Cost of these items (including Cost of spares) shall be included in the price quoted.
- c) Supply & use of consumables throughout the maintenance period as per recommendations of the equipment manufacturers.

- d) Conducting periodical checking, testing, over hauling and preventive action.
- e) Monthly General up keeping including cleaning of all equipment, Inverter accommodation enclosure, amenities, Solar Photovoltaic array area etc .
- f) Submission of Monthly reports on the energy generation & operating conditions of the solar plant by 2nd day of every month to the SNO
- g) Taking care of the full safety aspects of the Solar Power Plant.
- h) Replacement of damaged modules if any, during the period of 5(five) years.
- i) Replacement of Inverters if any used in solar plant time to time if required, during the period of 5(five) years.
- j) Insurance covering all risks (Fire & allied perils, earth quake, terrorists, and burglary).
- k) Maintaining and replacement if needed of Lightning Arrestors.
- l) Continuous monitoring the performance of the Solar Power Plant and regular inspection and maintenance of the whole system including Modules, inverters, junction boxes, underground cables, outdoor/indoor Distribution Board and all associated equipment etc. necessary for extracting and maintaining the maximum energy output from the Solar Power Plant.
- m) Successful running of Solar Power Plant for the desired Performance ratio as per clause 2.2.2 Volume I
- n) Periodic Testing/ calibration of all measuring devices shall be done as per respective manufacturer's instruction/ guideline and Regulations.
- o) Cost of calibration and rectification/ replacement, if any shall be borne by the Contractor. Error due to defective meters shall only be the responsibility of the Contractor.

1.0 Operation and Monitoring

Operation part consists of deputing necessary personnel necessary to monitor the Solar Photovoltaic Power Plant at the optimum capacity. Operation procedures such as preparation to start, routine operations with safety precautions, monitoring of Solar Power Plant etc. shall be carried out as per the manufacturer's instructions to have trouble free operation of the complete system. Performance evaluation shall be carried out annually in presence of the officials of SNO and bills shall be presented for effecting payments.

Monthly work of the operators in the Solar Photovoltaic Power Plants involves:

- .1.1. Cleaning of Modules, logging the voltage, current, power factor, power and energy output of the solar Power Plant.
- .1.2. Note down failures, interruption in supply and tripping of different relays, reason for such tripping, duration of such interruption etc.
- .1.3. The operator shall record monthly energy output, down time, etc.

2.0 Maintenance

The Successful bidder shall carry out the periodical/plant maintenance as given in the manufacturer's service manual and perform at least minimum requirement.

Preventive/Routine Maintenance shall be done by the Successful bidder at least once in a every three months and shall include activities such as, cleaning and checking the health of the SPV system, cleaning of module surface, tightening of all electrical connections, mounting structure, Inverter operations and any other activity that may be required for proper functioning of the SPV system as a whole. The Successful bidder shall ensure the generation data availability for proper monitoring of the system.

Regular periodic checks of the modules and inverters shall be carried out as a part of routine preventive maintenance.

In order to meet the maintenance requirements stock of consumables are to be maintained as well as various spare as recommended by the manufacturer at least for 2 years being available.

Particular care shall be taken for outdoor equipment to prevent corrosion. Cleaning of the junction boxes, cable joints, insulators etc shall also be carried out at every three month interval.

Resistance of the earthing system as well as individual earthing is to be measured and recorded every 6months. If the earth resistance is more than 3 ohm, suitable action is to be taken to bring down the same.

According to the recommendations, stock of special tools and tackles shall be maintained for modules, inverters and other major electrical equipment.

Solar modules surface shall be thoroughly cleaned every month to ensure maximum possible generation. Manufacturer's approved method of cleaning shall be adopted for the purpose.

A maintenance record is to be maintained by the Successful bidder to record the regular maintenance work carried out as well as any breakdown maintenance along with the date of maintenance, reasons for the breakdowns, steps taken to attend the breakdown, duration of the breakdown etc. should be maintained in each location.

The Maintenance of the Rooftop solar PV plant should be carried out only with the prior written approval of /custodian of site.

The Successful bidder will attend to any breakdown jobs immediately for repair/replacement /adjustments and complete at the earliest working round the clock. The details of the emergency assistance personnel of the Successful bidder shall be displayed in all locations. During breakdowns (not attributable to normal wear and tear) at O&M period, the Successful bidder shall immediately report the accidents, if any, to the parties involved showing the circumstances under which it happened and the extent of damage and or injury caused.

The Successful bidder shall comply with the provision of all relevant acts of Central or State Governments including payment of Wages Act 1936, Minimum Wages Act 1948, Employer's Liability Act 1938, Workmen's Compensation Act 1923, Industrial Dispute Act 1947, Maturity Benefit Act 1961, Mines Act 1952, Employees State Insurance Act 1948, Contract Labour (Regulations & Abolishment) Act 1970,

Electricity Act 2003, Grid Code, Metering Code, MNRE guide lines or any modification thereof or any other law relating whereto and rules made there under from time to time.

The Successful bidder shall at his own expense provide all amenities to his workers as per applicable laws and rules.

The Successful bidder shall ensure that all safety measures are taken at the site to avoid accidents to his Workmen.

If negligence / mal-operation of the Successful bidder's operator results in failure of equipment such equipment should be repaired replaced by Successful bidder at free of cost.

If any jobs covered in O&M Scope are not carried out by the Successful bidder during the O&M period, pro-rata deduction will be made based on the quantum of work from the O&M contract bills.

3.0 Tools and Tackles

The Successful bidder shall arrange all the necessary tools and tackles for carrying out all the maintenance work covered under this contract. The Successful bidder shall check growth of vegetation, accumulation of debris and water clogging if any.

4.0 PERFORMANCE RATIO: PERFORMANCE RATIO TEST (PR TEST)

The Successful bidder shall submit two copies of O&M manual with soft copy before the start of PR Test. PR shall be measured as per clause 2.2.2. The Successful bidder shall conduct the PR test at site in presence of the State Nodal Officer, SOURA, KSEB Ltd. as per IEC 61724. The Successful bidder for review and approval shall submit the PR test procedure.

Solar energy meter reading will be taken as actual energy generated from the plant for the PR demonstration.

Following factors shall be excluded for calculation;

- Generation loss due to grid outage or abnormal grid parameters.
- Irradiance below 250 W/m²
- The measured global solar radiation of the period of the outage of the power evacuation system shall be excluded to calculate average global solar radiation for the period of PR test.

Performance Ratio of the solar plant for a period of time = Energy measured (kWh)/ (Average Irradiance (kW/m²) on the panel x Hrs x Active area of PV module x PV module efficiency)

5.0 Handing Over

After Operation and Maintenance of the plant by the EPC Successful bidder for a period of 2 years from the COD, the Successful bidder shall hand over the complete system to SNO in the best working condition within 15 days. Any component found defective/inefficient/worn out should be rectified/ replaced/ made good at Successful bidder's cost before handing over the system to the SNO. In the case of tariff basis, the plant developer shall hand over the roof top to SNO at the end of 25 years from the COD, after clearing the location by disposing the plant materials.

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Part III

GUARANTEED TECHNICAL PARTICULAR

DATA SHEETS

Guaranteed Technical Particular Data Sheet - 1			
Solar PV Module			
Sl.No.	Particulars	Required	Offered
1	PV Module Manufacture name &Country of origin	manufacture name to be specified)	
2	PV Module type	Poly/Mono Crystalline, Poly /Mono PERC	
3	Product Code		
4	No. of PV cells per Module		
5	Total number of PV modules		
6	Max.Power, Pmp @STC	330 Wp or above	
7	Max.power tolerance (%)	Not more than 3%	
8	Max.power voltage (Vmp) @STC	To be specified	
9	Max.power current (Imp) @STC	To be specified	
10	Open circuit voltage, Voc@STC	To be specified	
11	Short circuit current, Isc@STC	To be specified	
12	Nominal voltage	To be specified	
13	Nominal Wattage	To be specified	
14	Fill Factor	Not less than 0.7	

'SOURA Phase-1 200MWp' PROJECT

15	Temp.coefficient of Voc (%/C)		
16	Temp.coefficient of Pmp (%/C)		
17	Temperature Co-efficient of Isc (%/°C)		
18	Normal Operating Cell Temperature (NOCT) (°C)		
19	Operating Temperature (°C)		
20	Max Temperature rise of solar cells under severe working conditions over Max. Ambient Temp.	To be specified	
21	Module is suitable to operate at 50° ambient	Yes/No	
22	Cell efficiency	%	
23	Module efficiency	>=17%	
24	Maximum System Voltage		
25	No. of By-pass Diodes		
26	Mounting arrangement for Solar Module	Fixed Arrangement	
27	Solar Module frame material	Anodized Aluminum	
28	Finish		
29	Types of Sections used		
30	Module dimensions cms (LxWxH)	To be specified	
31	PV panel Weight (kg)	To be specified	

'SOURA Phase-1 200MWp' PROJECT

32	Module Life (minimum)	25 years	
33	PV array area(sqm)		
34	Standards/Approvals from International Agencies	IEC 61215/IEC 61730/ IEC 61701	
35	Guaranteed output confirm	Yes	
36	Output Cables	Polarized, UV protected & Weather Proof DC rated multi-contact connector	
37	Output Terminal	PV Connectors	
38	Junction Box	Weather resistant HDPE (IP65)	
39	Construction Front Back	High transmittance glass. Polyester Ethyl Vinyl Acetate(EVA) encapsulate	
40	Glass	Low iron tempered	
43	Copies of test certificates	IEC 61215,61730 part 1&2, IEC 61701	

Guaranteed Technical Particular Data Sheet - 2

Inverter

Sl. No.	Particulars	Required	Offered
1	Manufacturer		
2	Model name/No.		

3	Number of units		
5	Nominal AC power		
6	Nominal AC voltage		
7	Nominal AC Current		
8	AC grid Frequency range	50Hz ± 0.5%	
9	AC grid voltage range		
10	Power Factor (+ and -)		
11	Total Harmonic Distortion	as per IEEE-519 2014	
12	AC over / under voltage over / under frequency protection		
13	Max PV input power		
14	Maximum DC voltage	1000V	
15	MPPT voltage range		
16	Maximum DC current		
17	No. of DC input ports		
18	Maximum Efficiency	as per IEC61683	
19	DC voltage ripple		
20	Ambient temperature range		
21	Humidity (non condensing)	95%, non-condensing	
22	Degree of protection		
23	Dimensions approx. (HxWxD)		
24	Weight		

'SOURA Phase-1 200MWp' PROJECT

25	Protective functions AC over/under voltage, AC over/under frequency, over-temperature, AC and DC over-current, DC over-voltage, against Islanding		
26	Communication Interface	RS485. MPIProfiBus/Telephone Modem/WiFi	
27	User-display standard	LCD panel with membrane keypad	
28	Enclosure environment rating		
29	Safety and EMC		
30	Anti-islanding feature	IEEE1547/UL1741/IEC62116	

TECHNICAL PARTICULAR Data Sheet - 3

11kV Step-Up Transformer

(To be furnished by the bidder)

Sl. No.	Particulars	Required	Detailed Specifications
1	Service/Make	Any reputed make approved by KSEBL	
2	Type / No. of transformers	Oil filled/ dry type	
3	Rating (kVA)		
4	Rated frequency Hz	50	
5	Number of phase HV side LV side	3 phase/3 phase	

	Neutral (separate outside)		
6	Rated Voltage a) HV winding kV b) LV winding kV	HV-11kV LV side- based on INVERTER output voltage	
7	Vector group	Dyn11	
8	Type of cooling (ONAN/ONAF)	ONAN	
9	Insulation level a) Power frequency withstand kV_{rms} (HV/LV) b) Impulse withstand voltage kV(HV/LV)	a) 28kV/3kV b)75kV/-	
10	Method of Earthing	Solidly earthed	
11	Duty		
12	Short circuit level	25kA	
13	Off circuit tap changer: a) Range % b) In steps of c) Tapping provided on HV side		
14	Tap changer type	Off load	
15	Impedance voltage at 75°C a) At principal tapping %		
16	Temperature rise above 50°C ambient a) Top of oil by thermometer °C b) Winding by resistance °C		
17	Terminal details		

	a) HV side b) LV side		
18	Losses (at 75°C and principal tapping) a) No load loss at rated voltage kW and frequency b) Load loss at rated current kW (ONAN) c) Total loss at maximum rated power kW		
19	Efficiency at 75°C and 0.9 PF a) At full load (ONAN) % b) At 75% load (ONAN) % c) At 50% load (ONAN) %		
20	Hot spot temperature in winding limit to °C		
21	Material of Earth conductor		
22	Material of Winding conductor		
23	Dimensions a)Height m b)Breadth m c)Length m		
24	Painting		
25	Reference Standards	IS:2026	

TECHNICAL PARTICULARS Data Sheet - 4

Current Transformers

(To be furnished by the bidder)

Sl. No.	Particulars	Required by KSEBL		Detailed Specifications	
1	Manufacturer's name.	Any reputed make approved by KSEBL			
2	Type designation	Oil filled/dry type(epoxy resin type)			
3	Rated voltage	11kV			
4	Insulation level a) Impulse withstand voltage b) One minute power frequency-with-stand voltage on:- i) Primary winding ii) Secondary winding	95kVp 36kVp			
5	Frequency	50			
6	Continuous thermal rating current	40Amp			
7	Short time thermal rating current	25kA for 1 sec			
8	Transformer CTs of ratio	40/5-5A			

'SOURA Phase-1 200MWp' PROJECT

9	Rated output/accuracy etc. for CTs.	Core1 (metering)	Core 2 (protection)	Core1	Core 2	
	a) Rated output					
	b) Class of accuracy	15VA	15VA			
	c) Accuracy limit factor	0.5S / 0.2S	5P10			
	d) Purpose	metering	10			
	e) Max. Instrument factor	<5	protection			
	f) Type of Insulation		-			
Relevant Standard		IS 2705				
<ul style="list-style-type: none"> • 11kV current transformers shall be single phase. • The core shall be of high grade non ageing laminated silicon steel of low hysteresis loss and high permeability to ensure high accuracy for both normal and fault current. • Magnetization curves, corresponding to all secondary taps must be submitted. • The ratings of current transformers of all classes regarding ratio error, knee point voltage, resistance of secondary winding etc shall have to be coordinated with the requirements of protective relays and protection scheme. • All the type test certificates are also needed to be furnished with tender. 						

TECHNICAL PARTICULARS Data Sheet - 5

Voltage Transformers

(To be furnished by the bidder)

Sl. No.	Particulars	Requirement of KSEBL	Detailed Specifications
1	Manufacturer's name.	Any reputed make approved by KSEBL	

'SOURA Phase-1 200MWp' PROJECT

2	Type designation	Oil filled/dry type(epoxy resin type)	
3	Highest equipment voltage	12kV	
5	No. of phases	3 phase	
6	Insulation level a) Impulse withstand voltage b) One minute power frequency-with-stand voltage on:- i) Primary winding ii)Secondary winding	95kVp 36kVp	
7	Frequency	50	
8	Transformation ratio	11kV/110 volt	
9	Rated output	50kVA	
10	Accuracy class	0.5 / 0.2	
11	Winding connection	Star/star	
12	Rated voltage factor	1.2 Times for continuous and 1.5 times for 30 sec	
13	Type of insulation	Class B	
	Relevant IS Standards	IS 3156	
		<ul style="list-style-type: none"> • PTs shall be provided with HRC type fuses on both primary and secondary side. • One number three phase voltage transformer of this rated output will be required for Each incoming indoor panel. • Voltage/ Potential transformers should be mounted in the top part of the cubicle for ease of replacement of fuses 	

Annexure-R

Column	Description
Site Name	Consumer Name or CA no. Where solar PV plant is installed
Address, Zip code	Location and Division details
Peak Power	Displays the peak power from solar array

DASHBOARD

Column	Description
Site Selection Menu	Typically a list of all the solar plants installed in the licensed area
Overview Bar	Displays the current power generated in AC from inverter/s, Energy today and Monthly total energy
Site Summary	Display the relevant details of the plant
Power & Energy	Displays the power and energy graphs which Shows the power and energy over a period of time and enables the download of the graphs in all major formats, such as xls, png and jpg
Weather	Displays the local weather conditions, like Minimum and maximum temperature, clouds conditions

Solar Radiation(Irradiation)	<p>For the plants having capacity of and below 50 kWp display the daily or monthly peak sun</p> <p>Hours, daily& monthly average solar irradiance of that location from NASA, IMD or MNRE database.</p> <p>For the plants having capacity above 50 kWp display the daily or monthly peak sun</p> <p>Hours, daily& monthly average solar irradiance of that location from the pyranometer data installed in the location.</p>
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PLANT DETAILS

Column	Description
Plant Capacity	Installed Capacity (in Kwp)
Module details	Make and electrical Specification
Module Serial No.	RFID
Last Measured	10-15minsreading(data fetching frequency)
Current (Amp)	Module output current/Inverter input current
Voltage(V)	Module output voltage/Inverter AC voltage
V DC	Inverter DC voltage
Energy(Wh)	Inverter energy

Annexure S

Detailed Technical Specification for GPRS Modems for DLMS Compatible Meters

1. Scope: The modem should be able to communicate with all makes of DLMS compliant Consumer meters (Single/Three Phase) installed at various locations by using the RS485 protocol.

- It should be capable of operating on Three phase supply drawn from the Meter input itself as well as on single phase supply. Auxiliary Power supply will not be acceptable. The operating voltage range for the modem should be 63 V ac P-P to 440 V ac P-P. Modem should also be capable of operating on single phase 230 V, 50 Hz power supply. Maximum Power Output should be 2 W at 900 MHz (Class 4) and 1W at 1800 MHz (Class 1). VA Burden of the Modem should not exceed 3.5 VA during data communication. Should withstand surge voltages up to 6KV and impulse voltage up to 8KV as per IEC61000-4-4 : 2012. Modem should be capable for continuous working for 24 hours every day under field conditions, even when enclosed in Metering Cubicles at Consumer sites.
- It should have built-in Li-ion battery with super capacitor or some other arrangement so as to obtain sufficient battery backup. Purpose of battery back up is to enable outage notification to be send to the server from modem in case of power outage. If the back up time and power in the case of super cap is sufficient to meet the objective, then the same can be used.
- There should be Auto restart feature using hardware Watch Dog Timer (WDT) in case modem fails to respond. There should be comprehensive self-diagnosis feature which will create log file. There should be a provision for an interface with PC/laptop to interact and configure the modem (eg. Changing the destination IP, passcode setting etc).
- Modem should have a program over the air (POTA) feature which will reduce the manual field visits. There should be provision to reprogram modem firmware remotely from the server. All programmable parameters in the meter should be configurable from the remote MDAS application through the Modem and any middleware if required, should also be supplied by the Modem supplier (eg. Remote time sync, MD reset etc.)
- A RS 485 Serial Link supporting up to 115,200 bauds with an auto-bauding option should be provided. The modem should use meter supported baud rate to read meter data and should use maximum network supported baud rates to push the data to server.
 - It should have a configurable scheduled meter read and data transmit feature to enable grouping of the meters so that the loading on the server is equally distributed from all the field installed modems. It should have selective on-demand meter read feature through which server can send an on demand request to modem to read the selective parameters from the meter. Modem should also return Instantaneous Parameters when it receives on demand SMS request.
 - Modem should be a compact model that can be housed in a polycarbonate/engineering plastic/Metallic enclosure. The modem should comply with IP51 degree of protection. Size of modem should be such that it can be fixed inside meter box and modems should have the capability for mounting arrangement on meter box side. Modem should withstand vibration of 2g and shock of 40g.
 - The Modem should be supplied with power cable, High Gain antenna with co-axial cable of suitable length, RS 485 connecting cable with suitable connector (RJ11, DB9, optical) for meter side, mounting adopter etc.
 - The modem should have an on-line tamper detection feature through which modem will continuously poll the meter for any new tamper and in case of any tamper event, should send the event to the server and also to a set of pre- programmed mobile numbers as an SMS alert. It should also send real time outages to the server and other configured mobile numbers. Modem should have a provision to collect and send all the billing data from meters.
 - The modem should be compatible with linux based MDAS application of KSEBL and required middle ware components for such communication should be provided by the supplier.

2. Sealing: The modem should cover and body should have arrangement for sealing. The SIM container should have a cover. SIM should be inserted in modem without opening the cover of modem.
3. Antenna: Modem should have flexible external high gain antenna to enable placement of the antenna at the location of strongest signal inside the Metering Cubicle. RF functionalities should comply with the GSM phase II/II+ compliant, EGSM 900/GSM 1800 recommendations.
4. Outage Notification: In the event of an outage, the modem should be able to initiate separate call or send SMS / notification to a particular IP, predefined number to notify the outage event with data and time of occurrence and restoration.
 - The Modem should act in such a way that the commands received from Data acquisition server to meter and meter to data acquisition server are transmitted without any changes in data. Data collection from meter should take place only after connection is established between Data acquisition server and Meter.
 - The Modem should be capable of operating with 3G/4G SIMs of Service providers in the area. Data enabled SIM card will be provided by the utility and monthly SIM charges will be borne by the utility. The modem should accept the standard SIM Card. Modem should be suitable for long duration data transmission and should be protected from external interference of systems working at different bands. There should be a provision to seal SIM card slot/cover to avoid unauthorized access. Modem should be Dual Band modem capable of operating at 900 and 1800 MHz GSM transmission. Modem should support both Data and SMS transmission. Modem should support hot swapping of SIM cards.
5. Data Features:- Modem should use standard AT Command set for settings of the modem. TCP/IP stack access via AT commands
6. Internet Services: TCP, UDP, HTTP, FTP, SMTP, POP3
7. SMS Features: - Text and PDU
8. Point to point (MT/MO) Cell broadcast
9. Environmental Specifications :- The Modem shall meet the following environmental specifications :
 - Storage Temperature : -20 degrees to +70 degree Celsius
 - Operating Temperature: -10 degrees to +60 degree Celsius
 - Humidity:- 95% RH (Non – Condensing)
10. Operational Indicator :- The Modem should have separate LED indications sufficiently visible from outside, to transmit data, receive data, carrier detects and Power ON, etc. to indicate Power on position and to indicate the availability of signal at the place of installation.
 - Modem should have facilities for time synchronizing the meter with Head End System or Server/Network time by passing the required commands to meter. Plug-n-play installation with automatic meter detection for all DLMS meters.
 - Modem should comply with IEC61000-4-2 for Electrostatic Discharge standards and IEC61000-4-4 Fast Transient Burst.

